



Alaska Canada Rail Link

Logistics Evaluation for Forestry Resources

Work Package: A-2 (E)

June 1, 2006

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Table of Contents

Executive Summary	4
1.0 Overview of Forestry Resource Activities	8
1.1 Yukon.....	8
1.12 Timber Resources in the Yukon: The Yukon Forestry Planning Framework	10
1.13 Competitiveness of Yukon Forest Industry.....	11
1.2 Alaska	12
1.21 Timber Resource of Alaska	13
1.3 British Columbia	16
1.31 Cassiar Timber Supply Area	16
3.0 The Alaska-Canada Railway Network (ALCAN)	19
3.0 Competitive Options & Revenue Projections for ALCAN railway.	20

Table of Figures

Figure 1	Timber Harvest Levels in Yukon 1990-2005.....	8
Figure 2	Productive Forests in the Yukon.	9
Figure 3	Forest Areas of Alaska.	13
Figure 4	Location of Tanana Valley State Forest.	14
Figure 6	Cassiar TSA / Northern BC Timber Species Distribution	17
Figure 7	Cassiar TSA Harvest Volumes	18
Figure 9	Direct Rail versus Rail/Marine/Rail Transportation Costs – Fairbanks to Chicago.	20
Figure 10	Comparison of rail vs. truck log haul costs: Dease Lake to Houston / Smithers.....	21



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To: Kells Boland – Project Manager - Alaska-Canada Rail Link

Subject: Work Package A2 (e) – Logistics Evaluation for Forestry Resources

Attached is the report of QGI Consulting for the above noted work package within the market analysis phase of the ongoing feasibility study for the proposed Alaska-Canada Rail Link.

The principal objectives of this work assignment were to:

- Building on data tables developed in Work Pack A2 (b), assess the market for rail transport of forest products from Eastern Alaska, Yukon and Northern B.C.
- Develop long range production forecasts and determine rail rate levels required for competitive positioning relative to existing transportation capability;
- Estimate bulk rail traffic and revenue streams

Sincerely,

Milt Poirier
Partner
QGI Consulting Ltd.

Executive Summary

The purpose of this study is to review the potential for the Alaska Canada Rail link (ALCAN) to handle forest products traffic from Eastern Alaska, Yukon and Northern British Columbia. If potential forest products traffic is identified, the study will determine the volumes of such traffic, the rate levels required to handle the traffic via the ALCAN compared to competing transportation options and estimate the revenue streams for such traffic.

This study builds upon the data tables developed in Work Package A2 (b) to develop the required estimates of rail traffic. In order to complete this study, a general literature search of publicly available information on the current state and future of the forest industry in the affected regions was undertaken, as well as interviews with experts in the forest resources of these regions.

Yukon Territory

The Yukon does not have a large scale commercial forest industry at present and harvest levels of timber are very low. The current annual allowable cut (AAC) of timber in the Yukon is sharply reduced from levels of a decade ago, but even at the previously elevated levels the AAC would have been only sufficient to supply the needs of a single large sawmill of the scale common in southern Canada. While approx. 57% of the Yukon is covered in productive forest, from a commercial perspective only about 3% of this forested area is considered as medium or high timber productivity forest. While forestry interests in the Yukon have lobbied for increasing the annual allowable cut to support the development of a larger lumber industry, forestry planning in the Territory has evolved to include the recognition of the broader values of forest resources including; environmental, economic, social and cultural values. The region within the Yukon with the largest potential for commercial forestry development is the Southeast Yukon where the Kaska Forest Resource Stewardship Council has released their interim wood supply plan for this territory. This plan, which is the first step in a longer and more comprehensive forest planning exercise, will allow for the harvesting of up to 128,000 cubic metres (m³) of wood annually for three years from the southeast Yukon. In the South Central Yukon, the Teslin Tlingit Traditional Territory Strategic Forest Management Plan is being developed. The draft plan recognizes a current annual allowable cut of 25,000 m³. In the Southeast region, the Strategic Forest Management Plan for the Champagne and Aishihik Traditional Territory has not yet established a formal annual allowable cut for timber. However, in the past decade, up to 6200 m³ of timber has been harvested annually with up to 18,000 m³ allowable.

In 2005, on behalf of the Watson Lake Chamber of Commerce and with funding from the Government of the Yukon, PricewaterhouseCoopers (PwC) completed a study of the economic potential and impact of forest development in the Southeast Yukon.¹ This review estimated the competitiveness of a dimensional lumber mill that had access to a theoretical 500,000 m³ of timber per year. Note that this level is far above the current interim available wood supply of 128,000 m³ per year under the current Southeast Yukon Interim wood supply agreement. This level of harvest was selected to supply a mid-size mill by the standards of British Columbia and Alberta – capable of producing over 100 Mfbm² of lumber per year. The PwC analysis suggests that at present, economic reality does not favour the development of a large scale lumber industry that exports commodity products outside the local markets in the Yukon. Based on the PwC analysis of woodlands and manufacturing costs plus taxes, the calculated breakeven costs for a mill in southeast Yukon were \$544 / Mfbm, compared to an average of \$392 / Mfbm in the rest of Canada. Prices for lumber have ranged in recent years from a low of \$381 to a high of \$512 per Mfbm and forecasts suggest that lumber prices will be in the \$318 - \$357 range in coming years. Even if annual timber harvests are substantially increased in the Yukon - and there is at present no indication that this will be recommended in the forest management plans now being developed - a lumber industry based in the southeast Yukon will still face substantial economic disadvantages compared to its southern competitors.

Alaska

While forestry has played an important role in the economic history of Alaska, it has been in decline in recent years. In 2000, the total annual capacity of all sawmills in the main forestry region of southeast Alaska was 340,000 Mfbm (log processing capacity). By 2004 this had declined to 250,000 Mfbm and production from these mills has been running at only 12 – 16 percent of total capacity over the past few years.³

Alaska's timber resources are found in two distinct types of forest. The coastal zones in southeast and south central Alaska are primarily composed of softwood species whereas the interior boreal forest has a wider range of slower growing species including softwoods such as spruce and a variety of hardwood species such as alder, birch and aspen.

The forest industry of southeast Alaska would not reasonably be expected to utilize any of the alignments of the proposed Alaska Canada railway to access North American markets. Any

¹ Economic Assessment of Forest Industry in Southeast Yukon. PricewaterhouseCoopers LLP. August 2005.

² Mfbm = thousand board feet; a standard unit of measure for dimensional lumber. The PwC report used a standard lumber recovery factor from timber of 0.255 Mfbm/m³ to calculate lumber output from a cubic metre of supplied timber for the proposed/hypothetical mill.

³ *Timber Products Output and Timber Harvests in Alaska: Projections for 2005-25*. Brackley, Rojas and Haynes. DRAFT report - US Department of Agriculture, Forest Service, Pacific Northwest Research Station.

forest industry development in this region would either use the much shorter overall routing via Prince Rupert to connect to the North American rail system or a marine-rail combination via a Washington state port.

The Tanana Valley forest region of central Alaska is comprised of 3.3 million acres of State owned land within the Tanana River basin. In addition, there are another 1.5 million acres of other land in the region with forest as a primary classification. Based on the forest plan developed for the Tanana Valley, an allowable harvest has been established for the region at 375 million cubic feet per 10 year period. This level of harvest would yield a total production of up to 270,000 Mfbm of lumber annually if all of the AAC was allocated to a single mill. No mill of this scale exists, or is known to be planned, for the foreseeable future. In addition, the State of Alaska offers timber in commercial sales and most of the timber utilized has not been sold in the last several years.

In addition, State of Alaska legislation⁴ encourages the sale of timber to firms who ensure that Alaskan forest resources are processed in-state to maximize benefits to the region so it is unlikely that large scale timber harvesting for the purposes of raw log export will be permitted. Most of the challenges that apply to the forest industry in the Yukon as identified in the PwC study also apply to the Tanana valley. While the further development of small mills and niche operations is likely, it is unlikely that given the limited timber resources available in the Tanana Valley that a large scale mill capable of creating dimensional lumber or other wood products such as veneers and panels could be developed for the purposes of selling products to markets outside of Alaska as the mill would have no competitive advantages over larger scale mills in other regions.

British Columbia

The proposed alignment for the ALCAN between Watson Lake and Hazelton traverses the Cassiar Timber Supply area in British Columbia. This remote and largely undeveloped region does not currently have a well developed forest industry. The Cassiar timber supply area (Cassiar TSA) is located in the northeast corner of British Columbia and it is the largest timber supply area in the province covering approximately one-sixth of BC. While extremely large in size, only about 1.3% of the total of the Cassiar TSA is considered available for timber harvesting.⁵ The current annual allowable cut for the Cassiar TSA was established in 2002 at 305,000 m³ per year. However, harvest levels in the TSA have never approached this level in recent years. Interviews with industry representatives indicated that the existence of the ALCAN railway on the proposed alignment through the Cassiar TSA would not likely lead to the development of further sawmilling or manufacturing capacity in the region, but may allow the

⁴ Alaska Statute 38.05.123 Negotiated Timber Sales for Local Manufacture of Wood Products.

⁵ Cassiar Timber Supply Area Analysis Report. Government of British Columbia, Ministry of Forests, March 2001.

more economical harvesting of logs from the Dease Lake area which could be moved via rail to the large sawmills on CN's mainline along the Highway 16 corridor in west central BC.

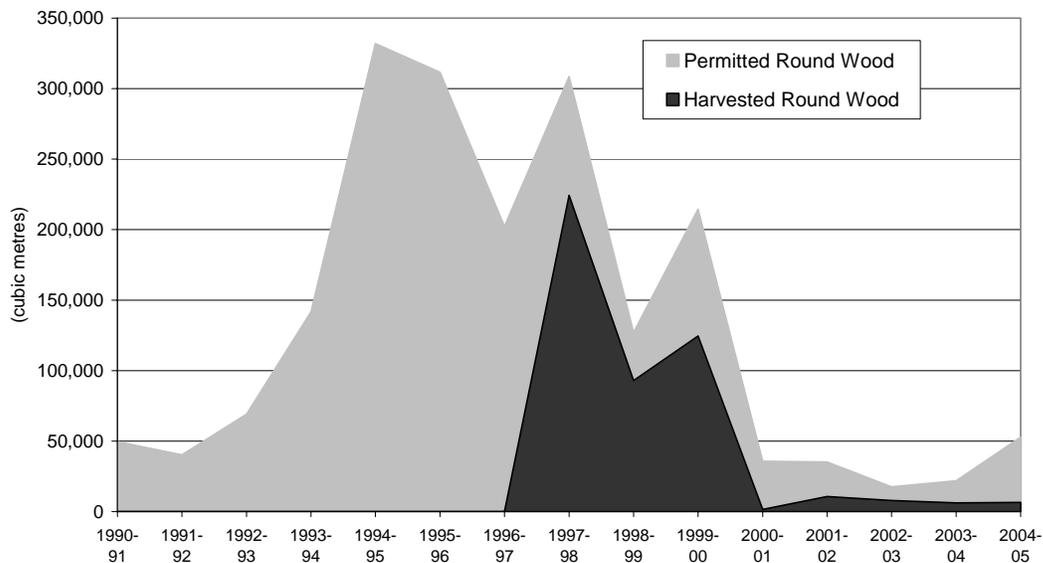
A comparison of highway log haul and rail log transportation revealed that rail movement of logs from the Dease Lake area to mills in the Smithers / Houston area would be feasible as the rail costs were lower than trucking costs. Based upon an estimate of 25 – 50% of the total AAC in the Dease – Liard supply block of the Cassiar TSA moving via rail to mills on the CN mainline, the total annual revenue to the Alaska – Canada Rail link would be from C\$ 293,000 – 586,000 per year. However, given the current and expected future impact of the pine beetle infestation in British Columbia upon timber supplies in the region, it is not expected that logs would begin to move from the Dease Lake area to the southern mills for the next 20 years, after the surplus lodgepole pine timber killed by beetles has either been logged or has ceased to have merchantable value.

1.0 Overview of Forestry Resource Activities

1.1 Yukon

As was identified in the traffic data development report for forestry resources⁶ the Yukon does not have a large scale commercial forest industry at present and the current harvest levels of timber are very low. The following chart, which is reproduced from the above mentioned report shows round wood harvest levels for the period 1990 – 2005.

Figure 1 Timber Harvest Levels in Yukon 1990-2005

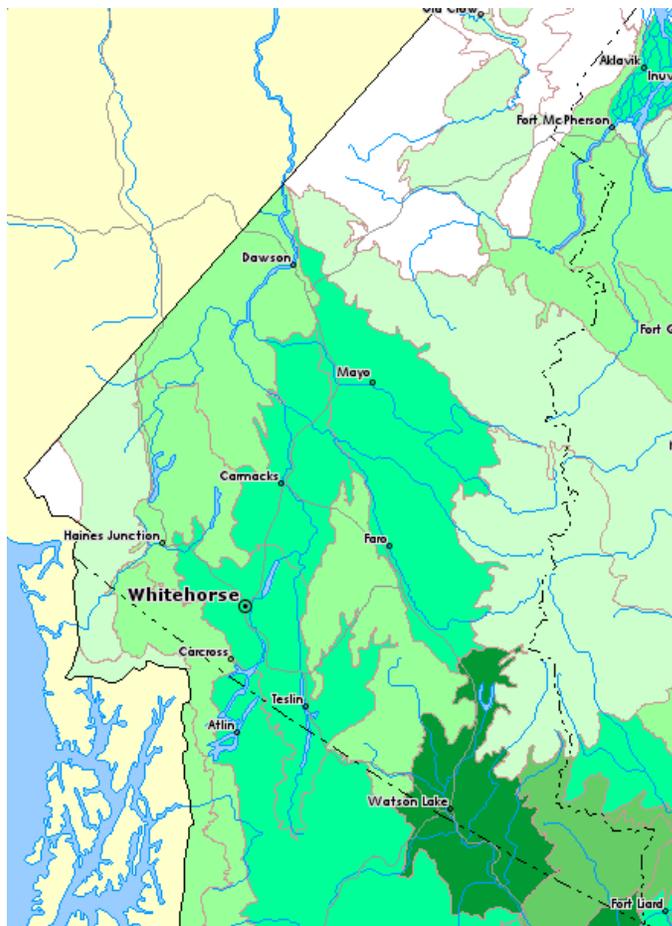


Source: Yukon Energy Mines and Resources
Note: Timber harvest volumes not available prior to 1997/98

Even during the peak harvesting period from 1997 – 1999, much of the timber harvested was shipped out of the Yukon to mills in British Columbia. To put these figures in perspective, even at its peak in 1994-1995, the annual allowable cut (AAC) in the Yukon represented only a fraction of the total available Canadian forest resource (0.13% of the total annual allowable cut in Canada). This level of AAC was very controversial and has subsequently been sharply reduced. Even so, at its peak, the AAC would have been only sufficient to supply the needs of a single large sawmill of the scale common in southern Canada. Most of the very small current harvest supplies small niche operations serving local markets. Most of the Yukon’s commercial timber resources are south of 61 degrees North Latitude, within 111 kilometres of the Yukon-British Columbia border and within this narrow band the majority of the resource is in the southeast of the territory, centered on the town of Watson Lake.

⁶ Work Package WPA2b. Vector Research.

Figure 2 Productive Forests in the Yukon.



From the Atlas of Canada:
Natural Resources Canada⁷

Percentage of Productive Forest⁸



While this map shows that a high percentage (approx. 57%) of the Yukon is covered in productive forest, from a commercial perspective only about 3% of this forested area is considered as medium or high timber productivity forest.

While small scale sawmills have operated in the past, none were of a size to compete with the large

dimensional lumber mills in southern Canada.⁹ In 1998 an attempt was made to begin a commercial lumber industry in the Yukon with the investment of \$7.4 million by the South Yukon Forest Corporation in a new lumber mill in Watson Lake. This company began operations in spite of the fact that it did not have a long term timber supply agreement with the Territorial authorities. There has been much controversy over the reasons for this company's failure with their inability to secure long term timber supply at levels sufficient to support full operations being cited as a contributing cause, along with high operating and transportation costs. The mill ceased operations in 2000.

⁷ Maps available from the Atlas of Canada on the Internet at: <http://atlas.nrcan.gc.ca/>

⁸ Productive forest land depicts the area of timber productive forest divided by the area of each of the 194 Terrestrial Ecoregions of Canada. Timber productive forest refers to the almost 2.5 million square kilometres of forested land that is capable of producing timber, although not necessarily managed to do so.

⁹ Yukon Forest Products operated for many years at a loss, and finally closed after going into receivership in 1990.

1.12 Timber Resources in the Yukon: The Yukon Forestry Planning Framework

Prior to the devolution of powers from the Government of Canada to the Yukon Territorial Government (YTG), forest planning in the Yukon was the responsibility of the federal Department of Indian Affairs and Northern Development with input from the YTG. While forestry interests in the Yukon have lobbied for increasing the annual allowable cut to support the development of a larger lumber industry, forestry planning in the Territory has evolved to include the recognition of the broader values of forest resources including; environmental, economic, social and cultural values. In the 1980's and 1990's a number of groups recommended the development of new resource planning processes for the Yukon's forests that would include First Nations and community based groups as equal partners with government and industry in the development of forest management plans that would consider a broader range of values and uses of the forests beyond the sustainable yield of the timber resources.

As of April 2003, the YTG has taken over responsibility for forest management planning in the territory and while the government is still in the process of developing new legislation and regulations, interim planning is proceeding on the development of collaborative forest management plans in the three key regions where some degree of commercial forestry is feasible. The region with the largest potential for commercial forestry development is the Southeast Yukon where the Kaska Forest Resource Stewardship Council has released their interim wood supply plan for this territory. This plan, which is the first step in a longer and more comprehensive forest planning exercise, will allow for the harvesting of up to 128,000 cubic metres (m³) of wood annually for three years from the southeast Yukon.

In the South Central Yukon, the Teslin Tlingit Traditional Territory Strategic Forest Management Plan is being developed. The draft plan recognizes a current annual allowable cut of 25,000 m³ of timber with the possibility of that being raised as high as 45,000 m³ following further study and risk mitigation. The maximum timber resources in the region were estimated for the region's forest management planning group at 118,000 m³ annually.

In the Southeast region, the Strategic Forest Management Plan for the Champagne and Aishihik Traditional Territory has not yet established a formal annual allowable cut for timber. However, in the past decade, up to 6200 m³ of timber has been harvested annually with up to 18,000 m³ allowable. Most of this timber has been beetle killed timber, as this area has borne the brunt of the infestation of Spruce and Pine Beetles in the Territory.

In addition to these timber resources, in the southeast of the Territory in the Barney Lake and False Canyon Creek regions, Forevergreen Wood Products of Watson Lake has been granted a

permit to harvest 340,000 m³ of timber over the next 10 years. This timber is all fire affected timber from regions which were affected by large forest fires in 2004.

1.13 Competitiveness of Yukon Forest Industry

In 2005, on behalf of the Watson Lake Chamber of Commerce and with funding from the Government of the Yukon, PricewaterhouseCoopers (PwC) completed a study of the economic potential and impact of forest development in the Southeast Yukon.¹⁰ This review estimated the competitiveness of a dimensional lumber mill that had access to a theoretical 500,000 m³ of timber per year. Note that this level is far above the current interim available wood supply of 128,000 m³ per year under the current Southeast Yukon Interim wood supply agreement prepared by the Kaska Forest Resource Stewardship Council. This level of harvest would be necessary to support the construction of a dimensional lumber mill capable of producing over 100 Mfbm¹¹ of lumber per year. This would be a mid-size mill by the standards of British Columbia and Alberta where approximately 50% of lumber mills produce more than 100 Mfbm annually. As noted in the PwC report, such a mill would likely need to focus on higher value products such as non-standard sized rough and finished lumber rather than commodity lumber in order to maximize revenues from the mill. Nevertheless, from a cost perspective, it would have to compete with larger dimensional lumber mills in the rest of the country in terms of both attraction of investment and in pursuit of markets.

Based upon the benchmark 500,000 m³ timber harvest level and with the above noted implied mill size, PwC then completed a multi-jurisdictional competitive analysis of such a mill to determine if it could be competitive in national and international markets, with mills in the rest of Canada. PwC created a pro forma cost structure for Southeast Yukon to compare operating results to other regions in Canada with similar forest resource conditions. The comparative analysis also compared the hypothetical Yukon mill to mills of a similar scale elsewhere in Canada - not to the most efficient large scale mills. Based on the PwC analysis of woodlands and manufacturing costs plus taxes, the calculated breakeven costs for a mill in southeast Yukon were \$544 per Mfbm, compared to an average of \$392 / Mfbm in the rest of Canada. While delivered fibre costs to the mill were a small factor in the difference, the biggest differences between Yukon and the rest of Canada were the higher energy, labour and other direct manufacturing costs. Transportation costs were of course also a factor, accounting for \$90 / Mfbm compared to an average of \$52 in the rest of Canada.

¹⁰ Economic Assessment of Forest Industry in Southeast Yukon. PricewaterhouseCoopers LLP. August 2005.

¹¹ Mfbm = thousand board feet; a standard unit of measure for dimensional lumber. The PwC report used a standard lumber recovery factor from timber of 0.255 Mfbm/m³ to calculate lumber output from a cubic metre of supplied timber for the proposed/hypothetical mill.

As noted in the PwC report, lumber prices have ranged in recent years from a low of \$381 / Mfbm to a high of \$512 / Mfbm. Current forecasts for lumber over the period 2006-2007 range from \$318 - \$357 / Mfbm.¹²

The PwC analysis suggests that at present, economic reality does not favour the development of a large scale lumber industry that exports commodity products outside the local markets in the Yukon. Even if annual timber harvests are substantially increased in the Yukon - and there is at present no indication that this will be recommended in the forest management plans now being developed - a lumber industry based in the southeast Yukon will still face substantial economic disadvantages compared to its southern competitors.

1.2 Alaska

Over the course of Alaska's history, the forest industry has been an important contributor to the region's economy. However, with the closure of the state's pulp mills which were located in the southeast Alaska coastal towns of Ketchikan and Sitka, and with the closure of the Gateway sawmill, timber harvests in Alaska have declined significantly and the contribution made by the forest industry to the state has declined as well.

In 2000, the total annual capacity of all sawmills in the main forestry region of southeast Alaska was 340,000 Mfbm (log processing capacity). By 2004 this had declined to 250,000 Mfbm and production from these mills has been running at only 12 – 16 percent of total capacity over the past few years.¹³ The decline of the Japanese market for Alaskan forest products, combined with increasing competition from larger and more economic mills in Canada and the continental United States are cited as reasons for the decline in the lumber industry in Alaska. In addition, the lack of a large scale integrated industry in Alaska prevents Alaskan mills from getting high utilization from all elements of the forest resource (wood chips, waste, and other wood residue) and reduces Alaskan mills competitiveness compared to large modern mills in the south.

At present, the sawmill industry in Alaska includes 3 mills that manufacture 10,000 Mfbm or more of lumber per year and more than 100 small mills many of which produce then than 1,000 Mfbm per year.

¹² Bank of Montreal Financial Group Economics Department.

¹³ *Timber Products Output and Timber Harvests in Alaska: Projections for 2005-25*. Brackley, Rojas and Haynes. DRAFT report - US Department of Agriculture, Forest Service, Pacific Northwest Research Station.

1.21 Timber Resource of Alaska

Figure 3 Forest Areas of Alaska.¹⁴

Alaska's timber resources are found in two distinct types of forest. The coastal zones in southeast and south central Alaska are primarily composed of softwood species whereas the interior boreal forest has a wider range of slower growing species including softwoods such as spruce and a variety of hardwood species such as alder, birch and aspen.



For the purposes of this analysis, the forest resources and forest

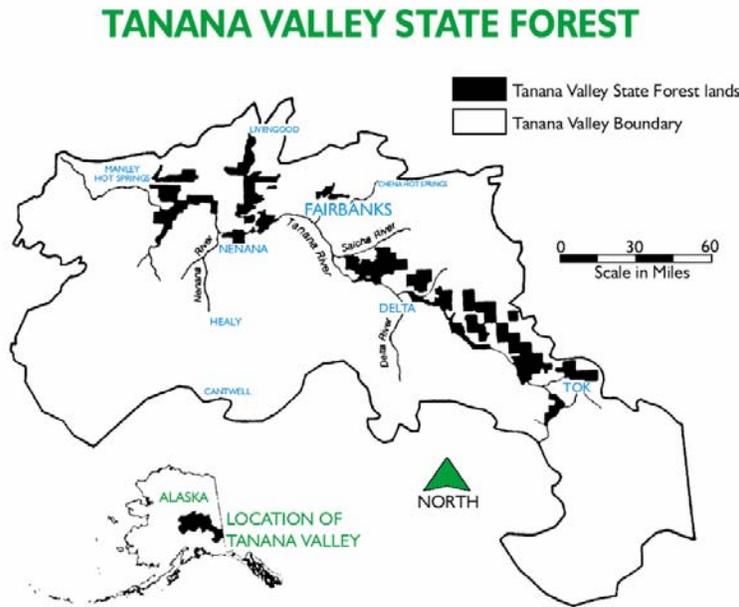
industry of southeast Alaska would not reasonably be expected to utilize any of the alignments of the proposed Alaska Canada railway to access North American markets. Any forest industry development in this region would either use the much shorter overall routing via Prince Rupert to connect to the North American rail system or a marine-rail combination via a Washington state port.

While total forested acreage covered by interior forests is large at 115 million acres, these forests do not have the density of commercially useful timber that is found in the coastal forests and contain only 23% of Alaska's total timber supply. Most of this boreal forest timber is located in the Tanana Valley.

The Tanana Valley forest region is comprised of 3.3 million acres of State owned land within the Tanana River basin. In addition, there are another 1.5 million acres of other land in the region with forest as a primary classification. The Tanana Valley has been the subject of extensive consultations on the use of its forest resources and the State of Alaska, with the support of a 12 member advisory committee made up of a variety of state forest users developed a management plan for these resources. Based on the forest plan developed for the Tanana Valley, an allowable harvest has been established for the region at 375 million cubic feet per 10 year period. Using a conversion factor of 35.3145 cubic feet / cubic metre, this equates to 10.6 million m³ or approximately 1.06 million m³ per year. Using the same conversion factor employed in the PricewaterhouseCoopers study of the southeast Yukon forest industry, of .255 Mfbm of lumber produced per cubic metre of timber, would yield a total production of up to 270,000 Mfbm of lumber from the annual allowable cut in the Tanana Valley region.

¹⁴ Map reproduced from *Alaska Forest Products: Using Resources Well*. United States Department of Agriculture, Forest Service. Pacific Northwest Research Station. Sept. 2003.

Figure 4 Location of Tanana Valley State Forest.15



However, this rate of recovery assumes the existence of a single large producer of lumber and that the entire annual allowable cut would be allocated to this single mill. No mill of this scale exists, or is known to be planned, for the foreseeable future. In addition, the State of Alaska offers timber in commercial sales and most of the timber utilized has not been sold in the last several years. For

the period 1998-2003 a total of 103,959 Mfbm of timber was offered for sale in the Northern Region (primarily the Tanana Valley), however only 41,888 Mfbm was sold - only 40% of the timber resources offered.¹⁶

In addition, State of Alaska legislation¹⁷ encourages the sale of timber to firms who ensure that Alaskan forest resources are processed in-state to maximize benefits to the region so it is unlikely that large scale timber harvesting for the purposes of raw log export will be permitted. Most of the challenges that apply to the forest industry in the Yukon as identified in the PwC study also apply to the Tanana valley. While the further development of small mills and niche operations is likely, it is unlikely that given the limited timber resources available in the Tanana Valley that a large scale mill capable of creating dimensional lumber or other wood products such as veneers and panels could be developed for the purposes of selling products to markets outside of Alaska as the mill would have no competitive advantages over larger scale mills in other regions.

Alaska remains a net importer of lumber with approximately 80,000 – 90,000 Mfbm of lumber imported annually to the state¹⁸ with a production of approximately 40,000 Mfbm. The Alaska

¹⁵ Alaska Department of Natural Resources, Division of Forestry. Map reproduced from the Department's website at: <http://www.dnr.state.ak.us/forestry/>

¹⁶ Alaska Division of Forestry, 2003 Annual Report.

¹⁷ Alaska Statute 38.05.123 Negotiated Timber Sales for Local Manufacture of Wood Products.

¹⁸ Alaska Forest Products: Using Resources Well. United States Department of Agriculture, Forest Service. Pacific Northwest Research Station. Sept. 2003

market is estimated at between 90,000 – 100,000 Mfbm per year including both dimensional lumber and other products.¹⁹ Currently, the excess lumber produced in Alaska, almost exclusively in the southeast region, is exported primarily as rough green lumber.

Given Alaska policies to increase the value added forest products industry in the state, and given the scale of the timber resources available in the Tanana Valley, it seems likely that the development of forest products manufacturing based on the resources of the interior boreal forests will be dedicated to smaller scale production of higher value products such as furniture, cabinets, paneling and siding, and that the primary market for these products would be the local Alaska market, which is currently served from suppliers outside the region.

¹⁹ US Department of Agriculture. Sept 2003

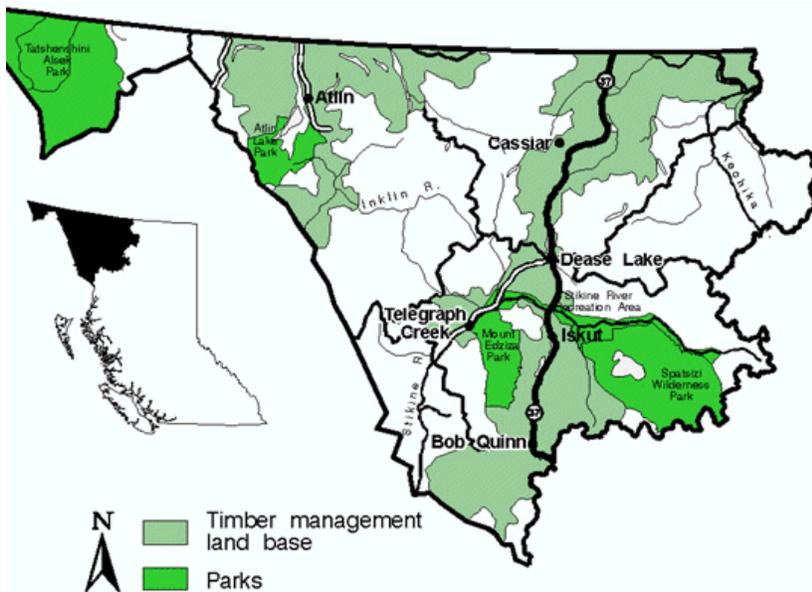
1.3 British Columbia

In northeast British Columbia there is a well-developed forest industry, based in Ft. Nelson where Canfor Corporation has large scale operations producing panel products such as oriented strand board (OSB) and plywood from the forest resources of the Ft. Nelson Timber supply area. However, none of the alignments of the Alaska-Canada railway under consideration would be expected to generate incremental forest products traffic within this region as the transportation infrastructure for inbound materials supply and outbound finished products from the large facilities in Ft. Nelson is already established. It is not reasonable to expect that facilities in close proximity to Ft. Nelson would be established as a result of the construction of a new railway between Ft. Nelson and Watson Lake as there would be no competitive advantage to do so.

However, the proposed alignment between Watson Lake and Hazelton, which traverses the Cassiar Timber Supply area, will go through areas where the forest industry is not currently highly developed and it is worthwhile to examine whether or not this rail alignment would lead to the development of forestry activity that may be able to utilize these new railway services.

1.31 Cassiar Timber Supply Area

The Cassiar timber supply area (Cassiar TSA) is located in the northeast corner of British

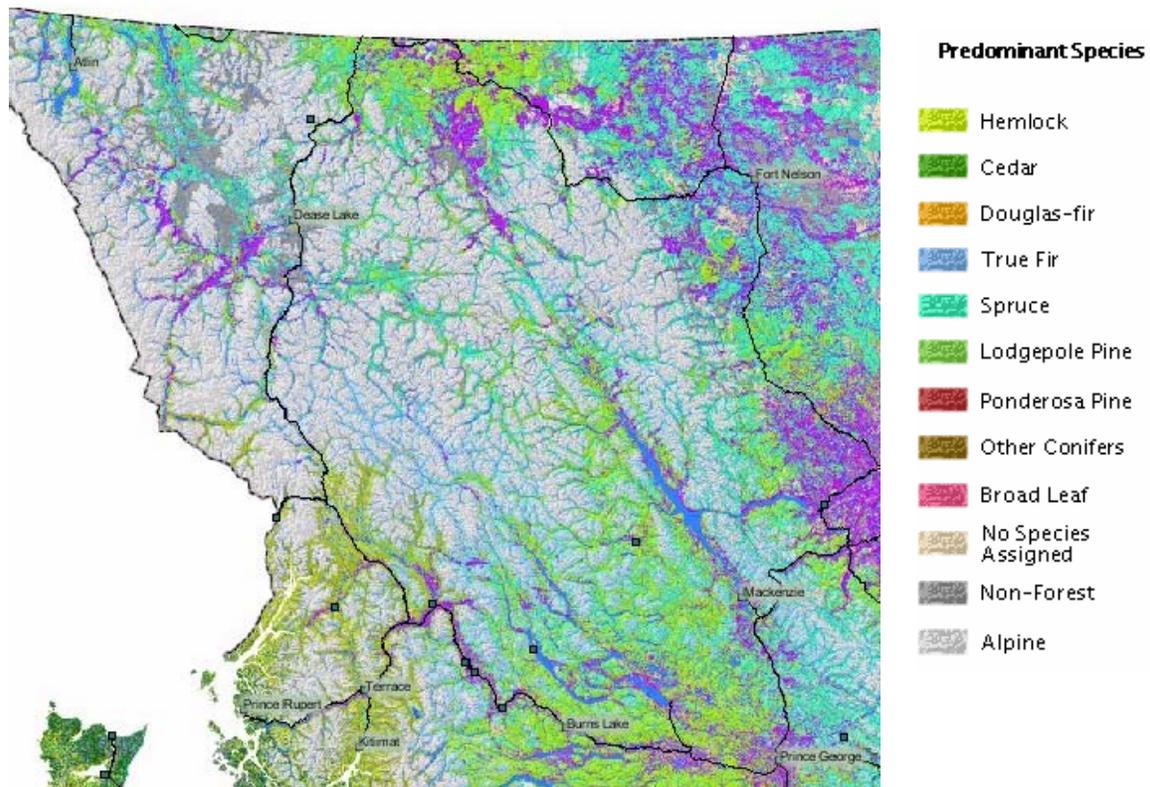


Columbia and it is the largest timber supply area in the province covering approximately one-sixth of BC. While extremely large in size, only about 1.3% of the total of the Cassiar TSA is considered available for timber harvesting.²⁰ Much of the Cassiar TSA consists of alpine areas, parks, ecological reserves and various special use permit areas.

²⁰ Cassiar Timber Supply Area Analysis Report. Government of British Columbia, Ministry of Forests, March 2001.

The current annual allowable cut for the Cassiar TSA was established in 2002 at 305,000 m³ per year. However, harvest levels in the TSA have never approached this level in recent years due to both the remote nature of the region, and the relative economics of the species available in the region. The more attractive species for the existing sawmills located along the Highway 16 corridor in British Columbia, on the CN mainline, are the spruce and pine timber which are found in limited areas in the valley bottoms in the north central regions of the TSA.

Figure 6 Cassiar TSA / Northern BC Timber Species Distribution²¹



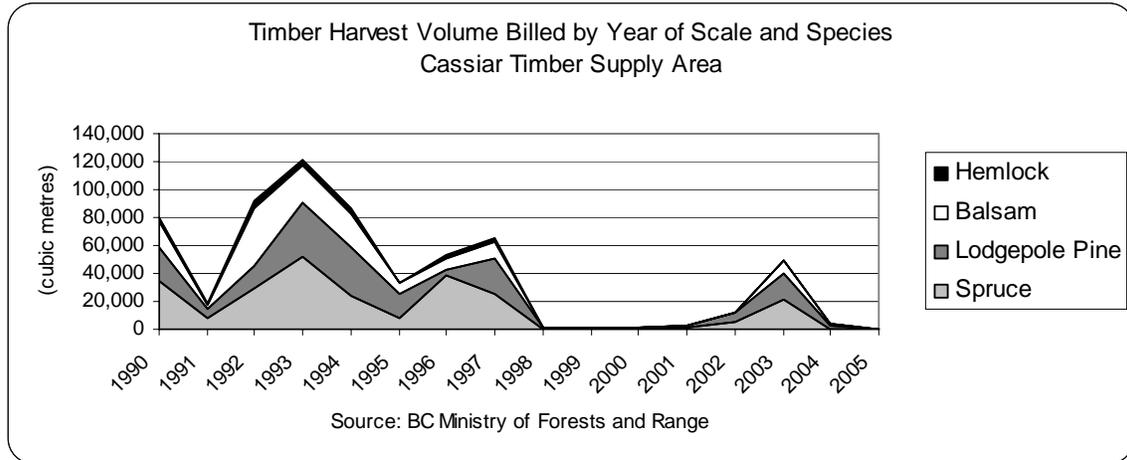
In order to determine whether or not the construction of a new railway between Watson Lake and Hazelton might lead to the development of new forestry production, or accelerated harvesting within the Cassiar TSA, interviews were conducted with senior forest industry representatives with experience in this region of BC. These interviews confirmed that the proposed rail alignment was not expected to provide access to attractive new timber resources in the southern sections of the alignment. However, in the north central regions of the TSA, industry representatives speculated that the availability of rail transportation may lead to increased logging of spruce and pine timber for processing into dimensional lumber given the opportunity to move

²¹ Map reproduced from ©2006 BC Market Outreach Network www.bcforestinformation.com

logs via rail from the Dease Lake area to the large sawmills located on the CN mainline along the Highway 16 corridor.

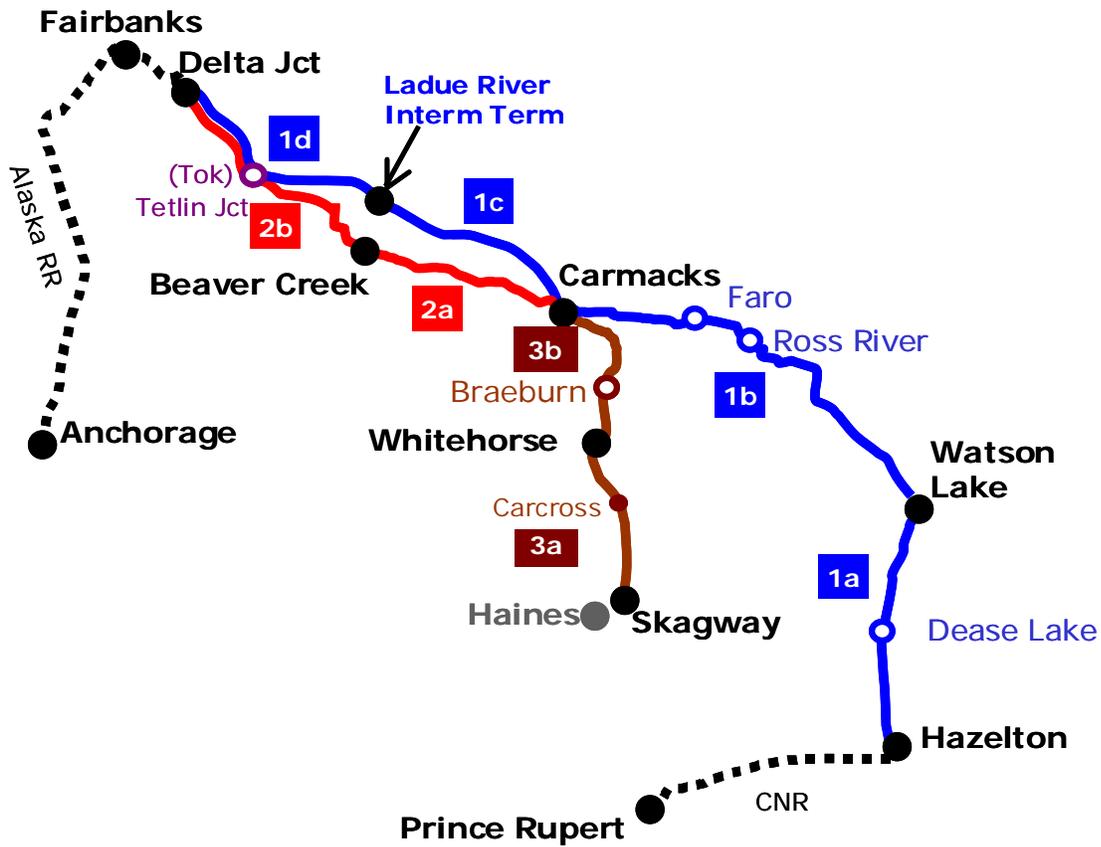
These industry representatives did not believe that the existence of the railway would significantly affect the relative production economics for forest products along the new rail corridor to the extent that it would lead to the development of new sawmilling capacity in the region. They pointed out the remoteness of the area from any potential users of residual materials, especially pulp mills, and the expected high costs of power and labour compared to the very large sawmills in central BC. Furthermore, the total timber resources of the regions are such that they would not support investment in a large scale high productivity dimensional lumber mill – even if the power, labour costs, and challenges in use of residual materials, could be overcome.

Figure 7 Cassiar TSA Harvest Volumes²²



22 Graph reproduced from Work Package WPA2b. Vector Research

3.0 The Alaska-Canada Railway Network (ALCAN)



The terms of reference established for the rail route engineering analysis and capital cost assessments of the Alaska Canada Railway (ALCAN) initially specified multiple routings between Delta Junction, the terminus of the Alaska Railroad, and connections to Canadian National at either Ft. Nelson, Minaret or New Hazelton, BC. The final route chosen, as illustrated on the map above, chooses the New Hazelton option, and includes alternative routings between Tok and Carmacks as well as an additional route segment incorporating the routing of the White Pass and Yukon Railway between Whitehorse and Skagway with a connecting line from Whitehorse to Carmacks. The New Hazelton route for southbound movements to Prince Rupert, when measured from the common junction of Watson Lake, offers a distance savings of 541 miles and 622 miles respectively as compared to the Minaret and Fort Nelson routes to Prince Rupert. This routing can provide the ALCAN railway with two benefits as compared to other route options – longer hauls on southbound traffic and higher revenues based on longer length of haul.

3.0 Competitive Options & Revenue Projections for ALCAN railway.

This analysis suggests that there is limited opportunity for the Alaska Canada railway to handle incremental volumes of forest products from Alaska, Yukon Territory or northern British Columbia.

From Alaska, it is evident that from the southeast Alaska coastal forests, more competitive transportation options via marine rail combinations over either Prince Rupert, or Seattle will be available. As stated earlier, it is unlikely based upon the potential scale of new forest industry operations in the Tanana Valley that an export oriented forest industry is likely to develop in that region in the foreseeable future due to limitations in growth of the annual harvest. In addition, while the forest industry in British Columbia may in future be interested in obtaining log supply for BC mills from the Tanana region, Alaska State policies encourage value-added processing of the state’s forest resources within Alaska and discourage the export of raw logs. Even if a smaller scale industry does develop in Alaska, the following analysis suggests that a rail routing to markets in the lower 48 states would not be significantly more competitive than the current options available via the Alaska Railroad – Marine routings with which it would compete. For comparison purposes, an origin location of Fairbanks was chosen as the preferred location for a hypothetical sawmill, as this would provide access to ancillary services and labour supply. The destination of Chicago was chosen to represent a typical market area for northern lumber producers.

Figure 9 Direct Rail versus Rail/Marine/Rail Transportation Costs – Fairbanks to Chicago.

Mode: Direct Rail			Route Miles				Revenue Per Car Per Carrier			
Origin	Destination	Route	ARR	ALCAN	CN	Total	ARR	ALCAN	CN	Total
Fairbanks, AK	Chicago, IL	ARR - Delta Jct. - ALCAN - New Hazel. - CN	106	1295	2105	3596 \$	954	\$ 3,869	\$ 6,290	\$ 11,113
Mode: Rail - Barge - Rail			ARR	ARM	BN	Total	ARR	ARM	BN	Total
Fairbanks, AK	Chicago, IL	ARR - Whittier - ARM - Seattle - BN	420	N/A	2161	2581 \$	1,255	\$ 4,050	\$ 6,457	\$ 11,762

The comparison above utilizes data developed for Work Package A-2 (d) (Logistics Evaluation for Mineral Resources). These assumptions are:

- Revenue per ton mile for ALCAN railway and CN \$0.0332 cents²³
- Revenue per ton mile Alaska Railroad \$0.100
- Whittier – Seattle Barge service \$45.00 per ton
- Weight per carload 90 tons

23 This is the average revenue per ton mile for CN forest products traffic as reported in CN financial reports.

- All figures are quoted in \$US for comparison purposes.

While the direct rail versus rail-marine-rail comparison suggests that the direct rail option would be approximately 6% less costly than the existing option, this comparison is made based upon the current rates available for the marine portion. Given the existence of competition between the rail-marine and direct rail mode it seems reasonable to expect that the marine operators would attempt to match the direct rail competition, removing or diminishing any advantage in favour of direct rail.

Given this study's findings with respect to the scale, competitiveness and projected growth of the forest industry in central Alaska, and given the competitive analysis above, it would not be prudent to project any significant volume of forest products traffic from central Alaska will be handled by the proposed Alaska Canada rail link. While the rail option from the Tanana valley would likely be competitive with the rail/marine/rail combination, it is unlikely that a forest industry capable of competing with the larger scale southern mills will develop in this region.

While this study suggests that the existence of a new rail line between Watson Lake and New Hazelton is unlikely to generate new investment in sawmills or panel products production in the Cassiar Timber Supply area, it is possible that mill operators located on the CN mainline in west central BC may wish to use the new railway to move logs from the Dease Lake area to mills at locations such as Smithers and Houston, BC. The following analysis compares the transportation costs for the two options of direct truck, versus rail movement from Dease Lake to these two sample destinations.

Figure 10 Comparison of rail vs. truck log haul costs: Dease Lake to Houston / Smithers

Origin	Destination	CN		ALCAN Rail		Rail Cost per ton	Road Cost per ton
		Rail Miles	Miles	Road Miles	Road Hours		
Dease Lake	Houston	81	298	413	10.3	\$17.76	\$32.26
	Smithers	43	298	375	9.4	\$15.98	\$29.29
<i>Truck Rate per ton/hour</i>		\$3.12					
<i>Rail Rate per ton/mile</i>		\$0.047					

The above rates are all in \$C. Assumptions used in this analysis are:

- The rail rate for forest products of US\$0.0332 per ton mile for long haul traffic has been increased by 20% to reflect a shorter haul and the need to provide specialized log hauling rail cars for the move.
- The assumed exchange rate for conversion to Canadian funds assumes a long term rate of \$0.85 US dollars per Canadian dollar.

- Rate per ton/hour for log hauling reflects current rate agreement between log haulers and major companies in central British Columbia as reported in trade publications.

This analysis suggests, that even with the requirement to absorb the costs of running a log dump and transfer facility at Dease Lake, the rail option for log movement will be attractive to mills on the CN main line who wish to source logs from the Dease Lake area.

Discussions with forest industry representatives suggest that timber supply from the north central areas of the Cassiar TSA will only be attractive to mills in south central BC once the excess supply of timber affected by the current pine beetle epidemic in BC abates. According to BC Government sources²⁴ the epidemic can be expected to continue for up to 10 years and timber killed by the insects remains merchantable for up to 18 years. Overall, the epidemic is expected to kill 80 percent of the province's lodgepole pine inventory. This species accounts for 25-30% of the timber harvesting land base in BC. Based upon the above statistics and with input from industry representatives, no movement of logs via the ALCAN railway from the north-central regions of the Cassiar TSA to the Highway 16 corridor mills is forecast for the next 20 years.

Beyond 20 years, it is assumed that most of the timber moved will be from the limited supply of primarily spruce timber in the vicinity of Dease Lake. The allocation for the entire Dease–Liard supply block under the current AAC determination is 153,000 m³ per year. A reasonable base case would be the movement via rail of approximately 25% of the total AAC apportioned to the Dease Liard block. While a higher percentage of the AAC could conceivably move via the ALCAN to mills in central BC, it is assumed for this analysis that only timber from the Dease Lake area would move south to the BC mills. As an upper limit on log movements, up to 50% of the AAC for the Dease – Liard supply block could be used.

Using the base case figure of 25% of the total timber harvest from the region, the annual volume of logs moved via the ALCAN railway from Dease Lake to New Hazelton for connection to CN, would be²⁵:

- $153,000 \text{ m}^3 * .25 * 620 \text{ kg/m}^3 = 18,972 \text{ tonnes (20,913 tons)}$

This volume of logs would provide revenue to the ALCAN railway of approximately C\$ 293,000 based upon the mileage and rate used in the earlier analysis. The upper limit of 50% of the available timber supply would therefore be C\$ 586,000.

²⁴ *British Columbia's Mountain Pine Beetle Action Plan 2005 – 2010*. Province of British Columbia.

²⁵ Conversion factor of 620 kg/m³ for green logs assumes a mixture of spruce and pine timber.

