

## 9. HIGHWAY TRANSPORTATION

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# 9. Highway Transportation

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Of the road/highway, air and marine transportation implications of the Galore Creek project, air and marine transportation issues focus on site specific features – airports and ports – typically associated with specific communities. Air and marine transport issues may best be considered as part of the social and economic fabric of a community.

Roads and highways are linear and issues associated with roads and highways transcend communities. Because of this linearity, issues may not focus on specific communities. Accordingly, it is more appropriate to consider road and highway transportation issues from a regional perspective.

This section of the Socio-Economic Impact Assessment focuses on issues pertaining to the road and highway network. These issues arise from the transport of concentrate to port, shuttle of employees from communities to the mine site, and the transport of goods and services to the mine site.

## 9.1 Regional Highway Traffic

Highway 37 extends northward from Kitimat and Terrace to the Yukon. From the junction with Highway 16 in the south to the junction of the Alaska Highway in the north Highway 37 is 727 kilometers (454 miles) in length and constitutes one of two overland routes to Alaska. From Highway 37 at Meziadin Junction, Highway 37A connects to Stewart.

Most of Highway 37 is hard surface (either pavement or sealcoat) but some portions are gravel. Road conditions vary depending on the weather and the time of year. Since the late 1990s, the BC Ministry of Transportation has managed highway upgrading and repairs particularly on Highway 37 north of Dease Lake. Improvements have included wider shoulders, improved sight lines, bridge improvements, seal coating and others.

The three worst accident locations are north of Dease Lake. Locations are posted and they are due for redesign and re-construction in 2006. Over \$10 million has been expended on highway improvements from Wilson Creek south to Dease Lake in recent years.<sup>321</sup>

No weight restrictions have applied to Highway 37 south of the Eskay Creek mine access road in 2005. No weight restrictions will apply anywhere on Highway 37 after 2006. All of Highway 37 is expected to be hard surfaced by 2008-2009.<sup>322</sup>

Highway 37 has an 80 km/h speed limit. An increase in commercial traffic has occurred in recent years. A significant increase in truck traffic may increase the need for maintenance but such requirements are unknown at this time.

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<sup>321</sup> W. Maitland, BC Ministry of Transportation, Dease Lake, Personal Communication, August 23, 2005.

<sup>322</sup> W. Maitland, BC Ministry of Transportation, Dease Lake, Personal Communication, August 23, 2005.

Highway 37A is a paved highway and is considered to be in good repair. No weight restrictions apply. The highway is designed to accommodate current levels of mining and logging traffic. Significant increases in truck traffic are likely to increase the need for maintenance. A significant increase in truck traffic will also trigger a re-examination of the highway paying particular attention to curves and sight lines. Some capital expenditures on improvements are possible.<sup>323</sup>

### 9.1.1 Traffic Volumes

Data on traffic volumes along Highway 37 near Dease Lake are available until 1999 (Figures 9.1-1 and 9.1-2).

Between 1996 and 1999, total average annual daily traffic (AADT) approached 700 vehicles per day, with as much as 80% of this traffic (in 1999) southbound. Southbound traffic is believed to represent tourist traffic from Alaska and the Yukon bound towards southern Canada and the United States.

Local traffic accounts for traffic volumes being notably higher at this location than near the junction of Highway 37A.

Summer average daily traffic accounts (SADT) for increased traffic volumes, typically by holiday and tourist traffic, during the summer months. During summer, between 1996 and 1999, total summer average daily traffic ranged from a high of 872 vehicles in 1996 to a low of 823 vehicles in 1998. Summer average daily traffic was approximately one-third greater than average annual daily traffic.

Highway traffic count data are available for Highway 37 just north of Meziadin Junction from 1993 through 1996 and from 2000 – 2001.

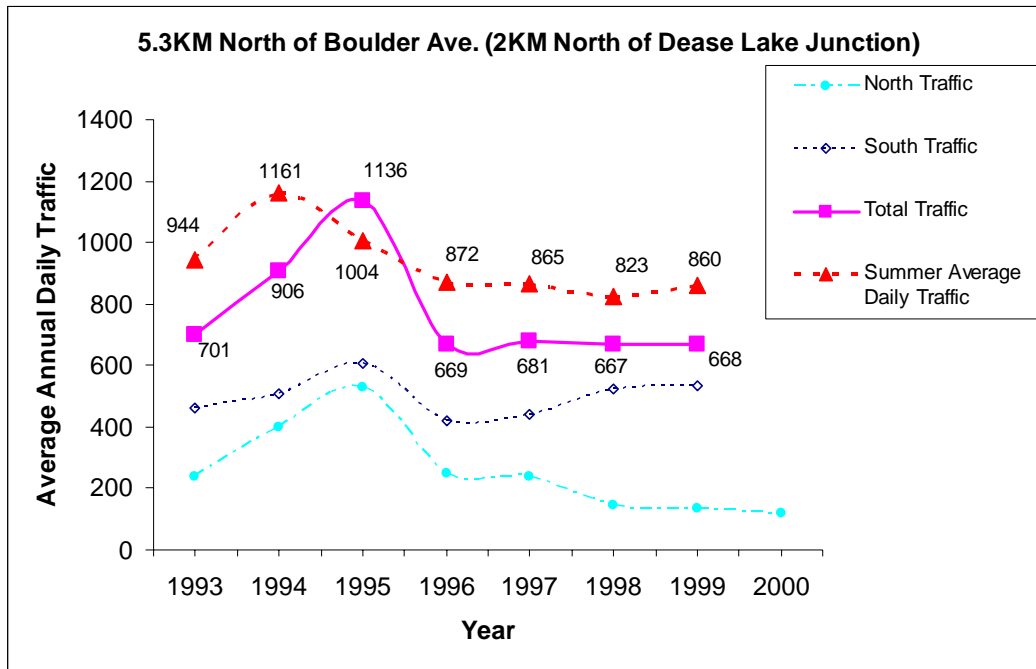
Average annual daily traffic of approximately 500 vehicles per day on Highway 37 immediately north of Meziadin Junction, accounts for approximately 75% of volumes at Dease Lake. Traffic is also more evenly distributed between northbound and southbound traffic.

Total summer average daily traffic north of Meziadin approximated 650 vehicles in 2001, approximately 30% greater than average annual daily traffic.

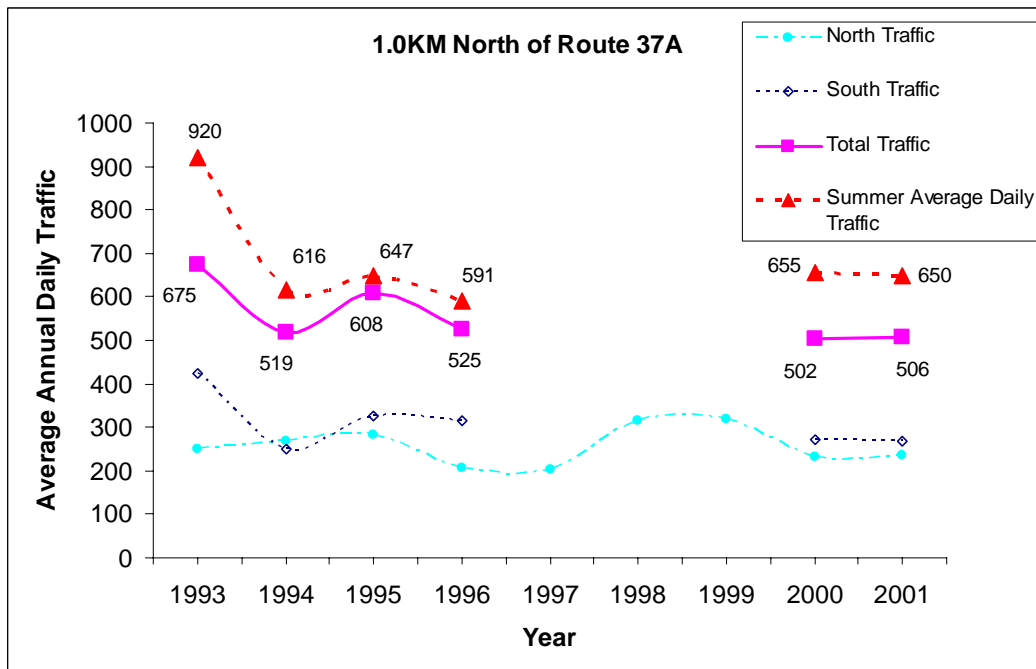
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323 G. Nelson, District Area Manager, Smithers, BC Ministry of Transportation, Personal Communication, February 9, 2006.

## 9.1-1 Average Annual Daily Traffic (AADT), Highway 37 near Dease Lake<sup>324</sup>



## 9.1-2 Average Annual Daily Traffic (AADT), Highway 37 near Highway 37A (Meziadin Junction)<sup>325</sup>



<sup>324</sup> BC Ministry of Transportation.

<sup>325</sup> BC Ministry of Transportation.

### 9.1.2 Accident Histories

#### *Highway 37*<sup>326</sup>

Between Dease Lake (Boulder Street) and Meziadin Junction, Highway 37 is sub-divided into three reporting districts. From north to south these are:

- Hwy 37 at Boulder Street to Burrage River Bridge, (160 km.)
- Burrage River Bridge to Bell Irving River Bridge, ( 90 km); and
- Bell Irving River Bridge to Meziadin Junction (95 km).

Between Dease Lake and the Burrage River Bridge, a total of 22 injuries and fatalities were recorded between 2000 and 2005. Of these 22, four were fatalities. This same reporting area also recorded 24 incidents of property damage. Both property damage and injuries and fatalities appear to be concentrated along a 10km stretch of highway on each side of the Stikine River crossing. Most accidents involve passenger vehicles including small trucks; two accidents involved motorhomes; truck/trailer combination units accounted for six accidents.

Over the 2000 – 2005 period of record, 15 traffic accidents resulting in injuries or fatalities were reported between the Burrage River and the Bell Irving River Bridges. Four accidents involved truck/trailer combination units. Along this stretch of highway 80.01% of all incidents involving injuries occurred along 30 km between Snowbank Creek and Gamma Creek.

Another 16 accidents constituted property damage only. These incidents do not appear to have been concentrated along any particular stretches of highway 37.

The 95 kilometres between Bell Irving River Bridge and Meziadin Junction experienced 22 vehicle accidents involving personal injury or fatalities between 2000 and 2005. Another 14 accidents involved property damage only. Accidents are most frequent just north of Meziadin Junction, near the Hodder Lake Rest Area and Bell II access. Accidents are also notable near logging road accesses near the Bell Irving River Bridge Crossing.

#### *Highway 37A*<sup>327</sup>

Between 2000 – 2005, a total of 18 motor vehicle accidents involving personal injury (15), serious injury (1) and fatalities (2) were recorded over the 80km of Highway 37A from the Alaska - BC border at Hyder/Stewart through to Meziadin Junction. Over one third (38.89%) of these occurred along the first 10 kilometres of highway eastward from the international border. These 10 kilometres reflect highway routing through Stewart.

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326 D. Murray, NCO North Pacific Traffic Services, Terrace, RCMP, Personal Communications, November 14, 2005.

327 D. Murray, NCO North Pacific Traffic Services, Terrace, RCMP, Personal Communications, November 14, 2005.

Of the 15 incidents recording personal injuries, two incidents involved tractor trailer and pup combinations, one incident involved an intercity bus leaving the road. All other incidents involved light trucks, sport utility vehicles, passenger cars and motorcycles.

During the same 2000 – 2005 period and the 80 kilometre length of the highway, 20 vehicle incidents involved property damage but no injuries to people. Three of these incidents involved tractor trailer and pup combinations while two involved log trucks and pole trailers.

### 9.1.3 Projected Traffic Volumes

No projections of traffic volume along Highway 37 are available, therefore no data is available in order to project Highway 37A traffic.

Consistent traffic data for Highway 37 from the mid 1990's suggests however that projected traffic along Highway 37 from Dease Lake to Meziadin Junction is likely to continue to approximate  $\pm 670$  AADT<sup>328</sup> and  $\pm 860$  SADT<sup>329</sup> south of Dease Lake, and  $\pm 500$  AADT and  $\pm 650$  SADT immediately north of Meziadin Junction unless economic developments occur to increase traffic volumes.

Projected increases in traffic along Highway 37 are most probable if proposed mine developments in northwestern BC and the Yukon become operational. Closure of the Eskay Creek mine will reduce truck traffic on Highway 37 and 37A to Stewart by 3-5 trucks (6 – 10 trips) per day. Transport of copper concentrate from the Huckleberry mine to Stewart comprises approximately 10 trucks per day, but will terminate when milling stops in 2007.<sup>330</sup> Huckleberry Transport does not impact on Highway 37 traffic north of Meziadin Junction.

After 2007, reductions in Eskay Creek and Huckleberry mines truck traffic will be most notable on Highway 37A.

Beginning in 2006, Yukon Zinc will transport concentrate to Stewart, followed possibly by Red Chris in 2007 and Fortune Minerals in 2008 and Galore Creek in 2010. Galore Creek traffic alone will approximate 50 trucks per day (100 round trips). From all of these mining operations as many as 95 trucks will be making 190 round trips daily to port facilities at Stewart in 2010.

Known mine developments are expected to generate increased truck traffic along Highway 37 and Highway 37A in accordance with the schedule presented in Table 9.1-1.

The distribution of projected increases in truck traffic along Highways 37 and 37A is presented in 9.1-3.

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<sup>328</sup> AADT: Average Annual Daily Traffic

<sup>329</sup> SADT: Summer Average Daily Traffic

<sup>330</sup> Imperial Metals Corporation, Annual Information Form, 2005, p.37

<http://www.imperialmetals.com/s/Huckleberry.asp>

**Table 9.1-1  
Projected Changes in Truck Traffic, Highway 37, 37A**

Mine Closure	Date of Closure	Date of Operation	Change in Truck Traffic*	Change in Other Traffic**	Location
Eskay Creek	2007		-1 - 3 trucks/day; 2 - 6 return trips		Highway 37 at Eskay Creek access road to Meziadin Junction and Highway 37A to Stewart
Huckleberry	2007		-10 trucks/day; 20 return trips		Highway 16 to Highways 37 and 37A
Red Chris		2007	+12 trucks per/day; 24 return trips		Ore trucks from Iskut access to Stewart
Galore Creek		2010	+50 trucks/day; 100 round trips	15-18 round trips/day	Ore trucks from Devils Creek access to Stewart; service vehicles from Dease Lake, Terrace, Smithers, etc to mine site
Fortune Minerals		2008?	+ 20 trucks/day; 40 round trips		Consideration of optional rail access from Dease Lake
Yukon Zinc		2006?	+13 trucks per day; 26 round trips <sup>331</sup>		Ore trucks from Yukon to Stewart

\* Unless otherwise noted, truck traffic refers to concentrate haulage in 40 tonne vehicles configured in a B-train formation. These vehicles will use Highway 37 from Devil's Road south to Meziadin Junction and then Highway 37A to Stewart.

\*\* Includes all other traffic including shuttle vehicles, service and delivery vehicles. Use of Highway 37 will be dispersed and will include use of shuttles from Telegraph Creek, Dease Lake and Iskut, and service and supply vehicles from these and other communities including Stewart, Terrace, Smithers and others.

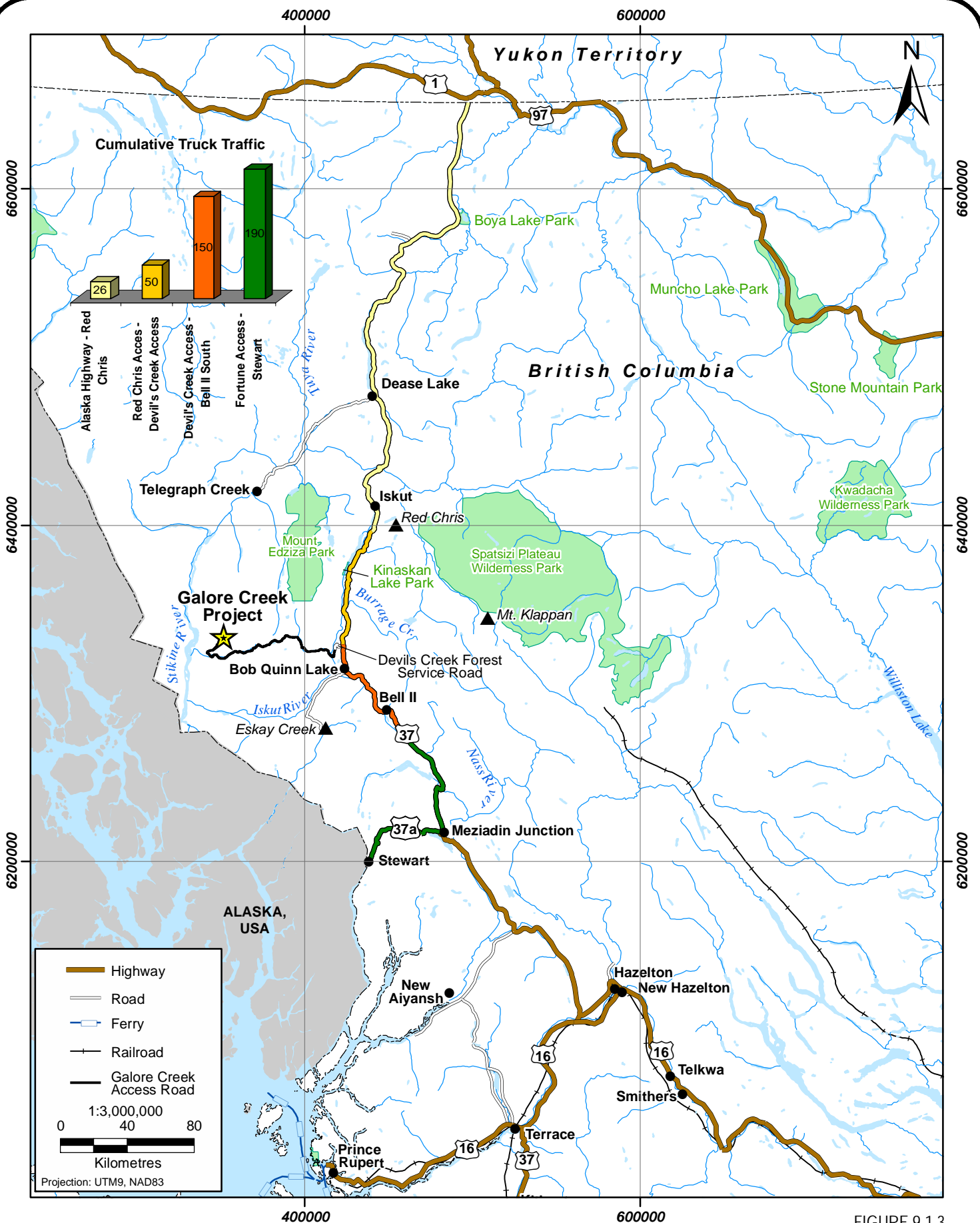
## 9.2 Dust

From a socio-economic perspective, dust and its impacts on the natural environment and human health may arise from two sources:

- Dust generated during mining and milling operations, and
- Dust generated from the transport of concentrate.

Dust arising from mining and milling operations will be managed within the context of the BC Occupational Health and Safety legislation and regulation.

<sup>331</sup> P. Ladyman, Vice President, Environmental Affairs, Yukon Zinc Corporation, Personal Communication, January 9, 2006.



# Highway 37, 37A: Projected Truck Traffic

FIGURE 9.1.3

Workplace air quality is covered by BC occupational health and safety guidelines. NovaGold will ensure adequate air ventilation and dust collectors in the workplace to ensure that occupational standards are met. Most of the Galore Creek ore processing operations are wet; hence dust is not a concern in the process plant. The primary crusher and covered ore conveyors will be fitted with dust suppression systems to keep dust under control.

A second potential source of dust arises from the transport of concentrate. In the instance of Galore Creek, concentrate will be pipelined from the mill to a truck loadout facility at the filter plant near Highway 37. From this location, concentrate will be loaded onto trucks whose route to port is fully paved.

While the filter plant will remove most of the water content from concentrate it will not be powder dry. Concentrate trucks (B-train) travelling on Highway 37 and 37A to Stewart will be covered to prevent wind blown loss of the concentrate.

Dust arising from the transport of concentrate has not been identified as an issue by any person or organization represented in the impact areas, and is not believed to be an issue of socio-economic concern.

### 9.3 Noise

From a socio-economic perspective, noise and its impacts on the natural environment and human health may arise from two sources:

- Noise generated during exploration, construction and operations activities, and
- Noise generated from the transport of concentrate.

Noise generated by helicopters has been identified by one hunting outfitter as an impediment to the wilderness experience demanded by clientele. Noise also scares away wildlife when helicopters are in the vicinity. With continuing exploration into the future, helicopter generated noise will continue.

Noise arising from mining and milling operations will be managed within the context of the BC Occupational Health and Safety legislation and regulation.

Further elaboration on mining and milling generated noise is presented in section 7.4.

A third potential source of noise arises from the transport of concentrate through Stewart to port facilities.

Heavy 40 tonne trucks will transport concentrate to port 24 hours per day. This frequency translates into an average of one laden port-bound truck every 15 minutes, and an empty returning truck every 30 minutes. A truck could pass a residence or commercial establishment every 15 minutes.

The noise generated by this vehicular traffic will:

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- Disturb the sleeping habits of Stewart residents living close to the highway,
- Disturb the sleeping habits of visitors to accommodation facilities in Stewart, and
- Be a continuing and recurring noise level through residential and commercial areas throughout the day.

## 10. SOCIO-ECONOMIC IMPACT ANALYSIS

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# Part III: Socio-Economic Impact Analysis

## 10. Socio-Economic Issues: Valued Ecosystem Components

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### 10.1 From Issues to Valued Ecosystem Components: Methodology

The **Northwest BC Mining Projects, Socio Economic Impact Assessment** prepared for BC Ministry Of Small Business And Economic Development in 2005,<sup>332</sup> documented a range of socio-economic issues confronting Dease Lake and Dease Lake Reserve 9, Iskut and Telegraph Creek. These ranged from drug and alcohol abuse, lack of employment opportunities, economic development and overcoming the boom and bust economic cycle, lack of education and skills development, lack of recreational opportunity, lack of some health services, and others.

Data and extensive community interviews further elaborate on these issues and suggest that there are similarities and differences between the communities.

Data sources accessed for this socio-economic impact assessment ultimately fall back on Stats Canada 1996 and 2001 Census Data. BC Stats employs Census data for analyses and projections, as do numerous other provincial, municipal and private sources of data. One notable exception is the Skeena Native Development Society which undertook independent survey research to document labour force conditions and circumstances in First Nation communities in northern BC.

Because of the size of the communities in the primary impact area, much of the socio-economic data available for Dease Lake, Iskut, Telegraph Creek and Stewart has been agglomerated and masks differences between the communities. Even at the agglomerated level, such as Local Health Areas, data is often unavailable for confidentiality reasons. Labour force data provided by the Skeena Native Development Society is one notable exception to this generalization.

Community specific data for Smithers and Terrace are more readily available. Populations are great enough to preserve confidentiality. Nevertheless, data on socio-economic indicators and indices are still agglomerated to Local Health Areas and care must be taken in interpreting such agglomerated data.

Broadly and from a regional perspective a review of the data reveal that:

- Community populations in northern BC declined in the 1990s and early 2000s,

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332 Northwest BC Mining Projects, Socio Economic Impact Assessment prepared for BC Ministry Of Small Business And Economic Development by G.E. Bridges & Associates Inc., July 2005.

## ***Socio-Economic Issues: Valued Ecosystem Components***

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- Approximately 60% of the membership of the Tahltan Nation have emigrated outside the primary impact area,
- Women are better educated than men and generally occupy more technical and professional positions than do men,
- Men are less well educated than women and are more likely to occupy labourer and trades and vocational positions than are women, and
- By 2004, rates of reliance on provincial income assistance had declined notably since the early 2000s.

To augment interpretation of the data, the socio-economic impact assessment has relied on NovaGold's community liaison and consultation program to provide guidance in the identification of issues to be addressed in the socio-economic impact assessment. NovaGold has benefited from the establishment of effective communications channels and networks with the Tahltan Nation since 2002. Two structures involving the Tahltan, government and NovaGold have been very important in identifying and documenting socio-economic issues. These structures have been the:

- Tahltan Heritage Resource Environmental Assessment Team (THREAT), and the
- Socio-Economic Working Group comprising representatives of NovaGold, First Nations, and representatives of provincial and federal environmental assessment agencies.

Other qualitative data are drawn from interviews of representatives of a broad range of local, municipal, regional, provincial, federal, private sector and other organizations and agencies.

A list of persons interviewed is presented in Appendix 2 of this socio-economic impact assessment.

### **10.2 Dease Lake**

#### ***Data suggests that:***

- The Dease Lake population base is comprised of the populations of Dease Lake community and Dease Lake Reserve 9,
- The combined population base is small: 384 persons in 2001,
- Dease Lake and Dease Lake Reserve 9 populations declined by approximately one-third between 1996 and 2001 from a total of approximately 583 persons in 1996 to 384 in 2001,
- The median age of the 66 Dease Lake Reserve 9 residents is 25 years of age,
- Assuming that population increases are proportionate across the LHA, Dease Lake's population may increase to 364 in 2010 and 447 in 2030. Under the same assumptions, projected populations for Dease Lake Reserve 9 may approximate 85 in 2010 and 103 in 2030,

## ***Socio-Economic Issues: Valued Ecosystem Components***

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- Education and employment data relating to the Dease Lake populations are inadequate to form the basis of any conclusions,
- Income statistics for the Dease Lake populations are unavailable.

### ***Community Representatives reveal that:***

While Dease Lake populations fully accept the complexity and inter-relatedness of many socio-economic issues, they also appear to be more focused on economic development as a priority, that employment opportunities and economic development are the primary drivers that will help address other socio-economic issues. From this arise other concerns related to education and skills attainment, the need for qualifications, papers and certification, career advancement, business development opportunities, contracting opportunities, and opportunities for Dease Lake to develop over the longer term as a mine supply centre for northwestern British Columbia. Much focuses on capacity building and to acquire the knowledge and skills required to permit individuals and the community to exert greater control over their lives and futures.

Interviews with a spectrum of Dease Lake and Dease Lake Reserve 9 representatives suggests that the Dease Lake populations view issues somewhat differently from views expressed by Iskut and Telegraph Creek populations.

About 20 Dease Lake residents are employed at the Eskay Creek mine.

The Dease Lake perspective on issues may arise from the commercial and service base that has already developed at Dease Lake, the substantial employment and business history that Dease Lake residents possess, and the long history of educated and qualified residents leaving the community to seek and take advantage of opportunities elsewhere. An important driver of the economic development perspective is the Tahltan Nation Development Corporation, based at Dease Lake, an active incubator of new businesses, often joint ventures, the community's largest employer, and a committed player in developing sustainable opportunities that will outlast the boom and bust history of resource exploitation.

As much as employment and economic development may be issues at Dease Lake and Dease Lake Reserve 9 community representatives also stress a variety of existing social issues which have a bearing on the well being of the community. These issues include substance abuse and consequent spousal and family violence and suicides, family stresses arising from work schedules and the absences of a parent, and money management issues arising from the inappropriate spending of pay cheques.

The Galore Creek project, together with Red Chris, provide building blocks for further economic development and diversification and provide the time required to build capacity to address eventual closure of the mines.

It is from this development perspective that the issue of Dease Lake governance is regarded by some as an important issue. Although the community is somewhat divided on the issue, and the community is currently examining costs and benefits of local governance, and the taxation associated with it, some community leaders are convinced that local governance and speedier

## ***Socio-Economic Issues: Valued Ecosystem Components***

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decision making are necessary to permit Dease Lake to take advantage of the opportunities presented by NovaGold's Galore Creek project and other pending and potential mine developments in northwestern BC.

### ***Valued Ecosystem Components***

Valued Ecosystem Components (VECs) are derived from and represent the issues identified in Section 3 of this Socio-Economic Impact Assessment.

Major Issues relevant to Dease Lake are:

- Community Development
- Education
- Employment
- Health
- Communications

VECs addressing these issues are:

- Economic Development
  - Community Growth
  - Community Governance
- Employment Opportunities
  - Awareness of Opportunities
  - Access to Employment
  - Career Advancement
- Business Development Opportunities
  - Awareness of Contracts
  - Access to Contracts
  - Capacity Building
- Community Health
  - Work Rotations
  - Drug and Alcohol Abuse
  - Family Stress
- Education
  - Skills Training
  - Apprenticeships

- Capacity Building
- Communications

### **10.3 Iskut**

#### ***Data suggests that:***

- An Iskut First Nation population resident at Iskut increasing from 284 in 1994 to 309 in 2003,
- Iskut was the place of residence to 50.8% of Band members in 2003, compared to 58.1% in 1994,
- 1996 and 2001 censuses both suggest significant movement away from the community by youth and young adults, and
- 30.8% of those between the ages of 20 and 34 have not graduated from secondary school,
- Those between the ages of 20 and 34 years of age are generally better educated than those who are older,
- Females are better educated than males, with fewer leaving high school without graduating, more with some postsecondary, more with a college certificate or diploma,
- Those with trades certificates or diplomas are males; and
- Those with a university degree, certificate or diploma are more likely to be male than female and between the ages of 35 and 44 years of age.
- Iskut may experience an increase in population to 373 in 2010 and 545 in 2030.
- Skeena Native Development Society revealed in 2003 that employed females significantly outnumber males in all age classes except the 15-24 age category in public sector employment. Males predominate in the fisheries, mining and forestry sectors, and to a somewhat lesser extent in tourism,
- Employed females by wide margins outnumber males with professional and technical skills. Males outnumber females by considerable margins in labour and manual occupations. While more men than women have vocational skills, there is more parity in numbers than with the professional or technical occupations.
- Health and education represented the largest single source of employment in industry sector,
- Resource based industry (mining) and construction together represented the second largest employment sectors,
- Census data reveal that in 2001, earnings as a percent of total income approximated 75.1% of income while 25.2% was comprised of government transfers.

#### ***Community Representatives reveal that:***

The Iskut First Nation appears to be generally supportive of NovaGold's Galore Creek project and anticipates that the project will be good for employment. Galore Creek construction

## ***Socio-Economic Issues: Valued Ecosystem Components***

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beginning in 2007 will help provide employment to the 20-25 Iskut residents currently employed at the Eskay Creek mine which is expected to close in 2007.

The Iskut First Nation also recognizes that the issues confronting the Band - employment, health, family distress, education, recreation, cultural - are all inter-related and that many if not all of them can be successfully addressed only by adopting a coherent, multi-faceted and multi-dimensional approach to community and individual life and health. These issues are exacerbated by a lack of adequate housing, a propensity for some working young adults to live with their parents resulting in family stress arising from incompatible lifestyles. Lack of recreational opportunity encourages children and youth to drift into destructive behaviours.

Substance abuse issues stand out from other issues at Iskut, but are inter-connected with them – education of employees in money management, productive use of scheduled time outs, organized recreational opportunity as alternatives to partying, healing centres and holistic camps to return individuals to health, more advanced training and skills development to foster opportunity for alternative employment, career advancement, responsibility, success, role models, and community sustainability.

Fly-in/fly-out schedules raise concerns related to family separations and behaviour of employees when they return to Iskut on the fly-out. The concern is based on previous experience with mines operating on a fly-n/fly-out schedule. Scheduled outs have too often degenerated into party time, substance abuse, and suicides. There is increasing concern about crystal methamphetamines some of which may be sold as cocaine, currently the most commonly used drug.

There is concern that the Galore Creek project, because of the high wages paid to employees who have little or inadequate knowledge/experience with money management, will exacerbate the substance abuse problem and the social ills that accompany it. Rent and mortgage payments too often remain unpaid. There is a need for education in personal finances, paying bills and money management and teaching employees to learn to spend their incomes in a better fashion.<sup>333</sup>

Capacity building is a central theme, expressed even in the acknowledgement that assistance is required in preparing applications and proposals.

### ***Valued Ecosystem Components:***

Valued Ecosystem Components (VECs) are derived from and represent the issues identified in Section 3 of this Socio-Economic Impact Assessment.

Major Issues pertinent to Iskut are:

- Community Development
- Cultural

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333 Manager, Iskut First Nation, Personal Communication, August 24, 2005.

## ***Socio-Economic Issues: Valued Ecosystem Components***

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- Education
- Employment
- Family
- Health
- Communications

VECs addressing these issues are:

- Employment Opportunities
  - Awareness of Opportunities
  - Access to Employment
  - Career Advancement
- Business Development Opportunities
  - Awareness of Contracts
  - Access to Contracts
  - Capacity Building
- Community Health
  - Work Rotations
  - Drug and Alcohol Abuse
  - Family Stress
  - Housing
- Education
  - Skills Training
  - Apprenticeships
  - Capacity Building
- Cultural Strengthening
  - Facilities
  - Traditional Use of Land
  - Family
- Communications

### **10.4 Telegraph Creek**

#### ***Data suggests that:***

- Between 1994 and 2003, the Telegraph Creek population increased from 268 persons to 325 persons. Over this period, Telegraph Creek remained the place of residence for approximately 20% of the Tahltan Band population,
- Telegraph Creek may experience an increase in population to 389 in 2010 and 567 in 2030,
- The public sector was the single largest source of employment while mining constituted the second largest source of employment in 2003. These two sectors provided 95.9% of employment,
- 64.0% of employment in 2003 was labourer/manual, while another 28.9% was vocational. 7.2% of employment was considered technical in 2003, and
- Data on income and earnings for the Telegraph Creek population is not available.

#### ***Community Representatives reveal that:***

Telegraph Creek is the cultural heart of the Tahltan Nation.

Unlike Dease Lake and Iskut which are located adjacent to Highway 37, Telegraph Creek is sited at the end of a dangerous road and a considerable distance from the economic and social opportunities presented by Highway 37. Telegraph Creek is sited at the heart of the Stikine River recreation and tourism potential which largely remains untapped. It is to some of these recreation and tourism opportunities that the 16/37 Community Futures Development Corporation has provided financial and other assistance.

Approximately 15 residents are employed at the Eskay Creek mine.

The single largest issue confronting Telegraph Creek appears to be substance abuse. Drugs and alcohol are starting at a very early age. Role models are substance abusers. There is a need for properly trained youth workers and a need for an integrated, coordinated approach to counselling at the mine and in the community. Telegraph Creek needs a suicide coalition similar to the FASD coalition.

Related to substance abuse is people's response to two week in – two week out work rotations. Comment was made that when he (a mine employee) comes out he needs his break; he has to come out and be spouse and father. In the meantime, the woman also needs a break from the kids and from house work. Employees need two days of rest and spend the rest of the time with family. There may be activities or opportunities that could be developed over the two week out period. There is a need for education including financial planning and money management. Finally, Telegraph Creek sees a need for assistance in developing recreational facilities, programming, coaching, training and other support services that provide for sustained opportunity for youth participation in activities which will deflect interest in substance abuse. Day care services are needed where both parents are working.

## ***Socio-Economic Issues: Valued Ecosystem Components***

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Telephone service to Telegraph Creek is erratic.

Telegraph Creek suffers from a lack of emergency services. Fire department volunteers need training. Health Canada regulations state that nurses cannot work outside the clinic and remain covered by liability insurance. There is a strongly felt need for full scale emergency services: there is no training for first responders; no fire training; no first aid training; no paramedic training; no Level 3 first aid. There has been a complete lack of training funds, and in the absence of all this, a lack of interested people.

### ***Valued Ecosystem Components***

Valued Ecosystem Components (VECs) are derived from and represent the issues identified in Section 3 of this Socio-Economic Impact Assessment.

Major Issues relevant to Telegraph Creek are:

- Cultural
- Education
- Employment
- Family
- Health
- Communications

VECs addressing these issues are:

- Employment Opportunities
  - Awareness of Opportunities
  - Access to Employment
  - Career Advancement
- Business Development Opportunities
  - Awareness of Contracts
  - Access to Contracts
  - Capacity Building
- Community Health
  - Work Rotations
  - Drug and Alcohol Abuse
  - Family Stress
- Education
  - Skills Training

- Apprenticeships
- Capacity Building
- Cultural Strengthening
  - Facilities
  - Traditional Use of Land
  - Family
- Communications

### **10.5 Stewart**

#### ***Data suggests that:***

- By 1991 the population of Stewart had increased to about 1,200 but by 1996 the population had declined to about 900 and has been around 700 since 1999,
- In 2001, 30.3% of Stewart's population was between the ages of 25 and 44, and 34.9% of the population was between the ages of 0 and 24 compared to 31.3% of the population under 24 years of age in BC generally,
- From a base of 775 persons in 2001, the population of Stewart and its environs is projected to increase to 846 in 2010 and 911 in 2030,
- The public sector is the largest single source of employment in Stewart employing approximately 125 of 390 persons in 2001. Nearly half (41%) of employment is generated from private services while another 3% is generated from trade. Logging supports the employment of approximately 50 persons or approximately 13% of the labour force.
- Employment in the community is broadly based and includes the transportation, mining, logging, retail and hospitality sector, and public administration sectors. Support services such as heavy-duty mechanics, welding shops, and transportation-related businesses provide services to all the basic resource industries,
- Of the \$12,488,000 in total income accruing to Stewart tax filers in 2001, 82.8% of income was generated from employment. Only 0.2% of income was generated from self-employment. That only 5.3% of income was pension income suggests out-migration of senior citizens,
- In 2001, the unemployment rate was 21.4 percent, compared to 8.5 percent for BC overall.

#### ***Community Representatives reveal that:***

The most frequently referenced issue confronting Stewart is economic development. As a community traditionally dependant on resource industries, Stewart's population has fluctuated with the presence or absence of accessible mining operations. Recent exploration has given some degree of hope that mine development will resume.

## ***Socio-Economic Issues: Valued Ecosystem Components***

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A significant share of Stewart's tax revenue comes from port facilities catering to log and ore shipments. The impending closure of the Huckleberry and Eskay Creek ore shipments will lead to reduced employment, income and tax revenue to Stewart. In the absence of new mining development, Stewart will be severely impacted from scheduled mine closures in terms of lost mining jobs, lost transport jobs and reduced port-shipping business, leading to further population decline. NovaGold's Galore Creek project is perceived as a means of reinvigorating Stewart's economy.

Concern was noted in the Northwest Regional Socio-Economic Impact Assessment, July 2005 that some opposition existed to having mine truck traffic transport ore to the port via the highway through downtown Stewart. Discussion with municipal and other Stewart representatives reveal that opposition is localized and is very much a minority view. Rather, community opinion discounts the impact of truck traffic in Stewart but nevertheless recognizes that a truck route by-passing downtown Stewart is recognized in the District's Official Community Plan and may proceed if truck traffic increases.

Concerns with truck traffic focus on the amount of traffic on Highway 37A, the narrow roadway, the volume of tourist traffic, particularly recreational vehicles, and the unfamiliarity of tourists with the highway and its mine and logging traffic.

### ***Valued Ecosystem Components:***

Valued Ecosystem Components (VECs) are derived from and represent the issues identified in Section 3 of this Socio-Economic Impact Assessment.

Major Issues relevant to Stewart are:

- Community Development
- Education
- Employment
- Health
- Communications

VECs addressing these issues are:

- Economic Development
  - Community Growth
  - Traffic
- Employment Opportunities
  - Awareness of Opportunities
  - Access to Employment
  - Career Advancement

- Business Development Opportunities
  - Awareness of Contracts
  - Access to Contracts
- Community Health
- Education
  - Skills Training
  - Apprenticeships
  - Capacity Building
- Communications

### **10.6 Secondary Impact Communities: Smithers and Terrace**

#### ***Data suggests that:***

- Smithers with a 2001 population of 5,414, is located on Highway 16, approximately The population of Smithers in 2001 at 5,414 was approximately 200 less than in 1996, but by 2004 had recaptured much of its population loss,
- Terrace had a 2004 population of 12,565. Between 1997, when Terrace's population peaked at 13,417 and 2002 when the population had bottomed at 12,520, the Terrace population had declined approximately 900 persons.
- Smithers' and Terrace's populations are younger than that of the province generally. Similarly, ratios of dependent senior populations are lower than for the province generally,
- Assuming that Smithers community population continues to account for 30.4% of the Smithers LHA population, Smithers population may increase to 5,848 by 2010 and 6,626 by 2030. Terrace's population may increase to 13,300 in 2010 and 14,555 in 2030.
- Projected to 2014, BC Stats projects for both Smithers and Terrace child dependency rates significantly higher than for the province generally, and elderly dependency rates significantly below the provincial rate. These rates suggest increase in young and family rearing populations in both communities,
- The percentages of the population aged 20 – 34 years of age with less than high school graduation are greater in both Smithers and Terrace than for BC generally, but the percentage of males in Terrace without high school graduation is especially notable,
- Higher percentage of Smithers and Terrace populations aged 20 – 34 have trades certificates or diplomas than does the comparably aged BC population,
- Smaller percentages of the Smithers (14.7%) and Terrace (11.1%) populations have graduated with a university certificate, diploma or degree than for the province generally (23.5%). Only 7.8% of Terrace males in this age group have such credentials,

## ***Socio-Economic Issues: Valued Ecosystem Components***

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- As a broad generalization, older populations in Smithers appear to be better educated than the younger while in Terrace, younger populations are better educated than the older,
- Generally, males in Smithers appear to be better educated than females. Except in trades training, females in Terrace are better educated than males,
- In Smithers, the 2001 unemployment rate of 9.3% was somewhat higher than for the province generally, with males more likely to be unemployed than females. In 2001, Terrace's unemployment rate of 13.5% was substantially higher than the provincial rate of 8.5% with the unemployment rate of males being notably higher than that of females,
- Smithers' share of employment in management occupations exceeds the provincial share; Terrace's share is slightly less than the provincial share,
- In Smithers, employment in the natural and applied sciences exceeds provincial percentages; employment in social science, education and government in Terrace exceeds provincial averages,
- 2001 Census data reveals that for both Smithers and Terrace over 81% of income was generated from employment. This compares to 75.8% for the province generally,
- With an index ranking of -0.12, the Smithers LHA ranked 51 of 77 provincial LHAs in terms of economic hardship. This ranking suggests that in spite of downturns in the regional and provincial economies in recent years, a diversified local economy has served overall to constrain hardships arising from economic dislocations,
- With an index ranking of 0.96, the Terrace LHA ranked the 6th of 77 provincial LHAs in terms of economic hardship. This ranking is suggestive of the impact of forestry and petrochemical plant closures on the economy of the Terrace area.

### ***Community Representatives reveal that:***

Smithers and Terrace, because of their transportation, business, service and residential roles, are likely to provide Galore Creek with a variety of labour, goods and services.

While Smithers has approximately half the population of Terrace, both communities have complex infrastructures which are capable of accommodating significant growth. Terrace's current infrastructure has accommodated the requirements of more than 15,000 persons. Smithers' infrastructure is believed sufficient to accommodate the needs of over 7,000 persons.

Both Smithers and Terrace have adopted aggressive economic development strategies to further develop and diversify local economies. Smithers has adopted a major capital investment program to expand and improve airport facilities and services. Major proposed developments at Smithers include the Blue Pearl mine and expansion of Hudson Bay Mountain ski facilities. The economic impacts of these developments can be accommodated within existing infrastructure and within the scope of regular anticipated capital investments. Smithers has also developed a public-private partnership with the NWCC to establish a School of Exploration and Mining. This infrastructure presents a strong support to Smithers' large mining service sector.

## ***Socio-Economic Issues: Valued Ecosystem Components***

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Terrace also has a mining support and service role supported by the necessary transportation services. Terrace's location on Highway 37 also serves to connect Terrace directly to Stewart, Dease Lake, Iskut and Telegraph Creek. Terrace is closer to the Highway 37 communities than is Smithers and with a larger economy, provides a broader range of professional, educational, health, government, commercial, retail and other services than does Smithers.

Terrace's larger economy, particularly in association with Kitimat and Prince Rupert, appears to have retained its manufacturing/processing/industrial base while emphasizing transportation roles for the future. The development of container port facilities and LNG storage present service sector employment opportunities heretofore largely unavailable.

To date, Smithers economy appears to have been less resource dependent than that of Terrace and was able to withstand economic downturns in the 1990s and early 2000s better than did Terrace. Indices of economic hardship prepared by BC Stats in 2004 revealed for instance that Smithers ranked 51 of 77 (with a ranking of 77 being the best) LHAs while Terrace ranked 6 of 77 (with a ranking of 77 being the best). The differential indices of economic hardship also highlighted other differences between the two communities with rankings of several socio-economic indices placing Smithers in a "better off" position compared to Terrace.

While care must be taken in using the regional LHA indices,<sup>334</sup> it is also clear that in 2004, Smithers' high index rankings were unique in the northern BC interior, and the Terrace rankings were more typical: 6 of the 13 lowest ranking LHAs in BC in terms of overall regional socio-economic index were LHAs encircling the Smithers LHA. The low ranking in 2004 for these LHAs may have arisen from a variety of issues confronting the forestry industry. Nevertheless, the Terrace indices also reveal other social issues that are more deeply embedded in the community, than is the case with Smithers and that cannot be explained by issues in the forestry sector. These indices pertain to lower levels of education attainment, higher incidence of high school drop out, and incidence rankings of children and youth at risk that do not characterize Smithers.

### ***Valued Ecosystem Components:***

Valued Ecosystem Components (VECs) are derived from and represent the issues identified in Section 3 of this Socio-Economic Impact Assessment.

Major Issues relevant to Smithers and Terrace are:

- Community Development
- Education
- Employment
- Health
- Communications

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334 The Smithers LHA # 54 includes the community of Houston.

## **Socio-Economic Issues: Valued Ecosystem Components**

VECs addressing these issues are:

- Economic Development
  - Community Growth
- Employment Opportunities
  - Awareness of Opportunities
  - Access to Employment
  - Career Advancement
- Business Development Opportunities
  - Awareness of Contracts
  - Access to Contracts
- Community Health
  - Indices of Hardship
- Education
  - Skills Training
  - Apprenticeships
  - Capacity Building
- Communications

### **10.7 Summary**

The distribution of effects and their component issues are summarized by community in Table 10.7-1.

**Table 10.7-1  
Summary Distribution of VECs and Component Issues**

<b>VEC</b>	<b>Dease Lake</b>	<b>Iskut</b>	<b>Telegraph</b>	<b>Stewart</b>	<b>Smithers, Terrace</b>
Economic Development					
Community Growth	X			X	
Community Governance	X				
Traffic				X	
Population and Housing	X	X		X	X
Municipal Infrastructure	X	X		X	X
Port Facilities				X	
Employment Opportunities					
Awareness of Opportunities	X	X	X	X	X

(continued)

## Socio-Economic Issues: Valued Ecosystem Components

**Table 10.7-1**  
**Summary Distribution of VECs and Component Issues (continued)**

VEC	Dease Lake	Iskut	Telegraph	Stewart	Smithers, Terrace
Access to Employment	X	X	X	X	
Career Advancement	X	X	X	X	
Construction Contracts	X			X	X
Trucking Contracts	X			X	X
Port Service Contracts				X	
Direct Employment	X	X	X	X	X
Indirect Employment	X	X	X	X	X
Employment Incomes					
Employment Incomes	X	X	X	X	X
Business Opportunities					
Awareness of Contracts	X	X	X	X	X
Access to Contracts	X	X	X	X	
Capacity Building	X	X	X		
Construction Contracts	X			X	X
Operations Contracts	X			X	X
Closure Contracts	X			X	X
Trucking Contracts	X			X	X
Port Facilities				X	
Community Health					
Community Health	X	X	X		
Work Rotations	X	X	X		
Drug/Alcohol Abuse	X	X	X		
Family Stress	X	X	X	X	
Housing	X	X	X		
Indices of Hardship	X				X
Education					
Pre-employment	X	X	X		
Skills Training	X	X	X		
Apprenticeships	X	X	X		
Capacity Building	X	X	X		
Cultural Strengthening/Tahltan Culture					
Facilities	X	X	X		
Traditional Activities	X	X	X		
Family	X	X	X		
Language	X	X	X		
Access of Employees to Cultural Events	X	X	X		

(continued)

## **Socio-Economic Issues: Valued Ecosystem Components**

**Table 10.7-1  
Summary Distribution of VECs and Component Issues (completed)**

<b>VEC</b>	<b>Dease Lake</b>	<b>Iskut</b>	<b>Telegraph</b>	<b>Stewart</b>	<b>Smithers, Terrace</b>
Cross-cultural Awareness	X	X	X		
Ceremonies	X	X	X		
Fishing and Hunting	X	X	X		
Recognition of Tahltan Names	X	X	X		
Communications					
Communications	X	X	X	X	X
Tahltan Communications	X	X	X		
Employment Opportunities	X	X	X	X	X
Contract Opportunities	X	X	X	X	X
Public Information	X	X	X	X	X
Traffic					
Traffic Volume, Noise				X	
Traffic Hazards				X	
Wilderness				X	

Table 10.7-2 shows the Galore Creek mine components that may have an effect on an identified socio-economic VEC. For socio-economics, the mine components are focused on those relating more closely to communities and human activities. The table helps identify any direct linkages between mine components and socio-economic VECs.

**Table 10.7-2  
Potential Issues to Socio-Economic VECs from Mine Development Components**

Mine Component	Valued Socio-Economic Component															
	Employment and Economy				Capacity Building		Health			Tahltan Cultural			Land Use		Highway Infrastructure	
	Employment Opportunity	Business Opportunity	Employment incomes	Community Growth	Education, Training	Community Infrastructure	Occupational Health and Safety	Substance abuse	Family stress	Recognition of Tahltan Culture	Traditional Activities	Cross-cultural Sensitivities	Wilderness	Guiding, Outfitting	Highway 37/37A Truck Traffic	Truck traffic and noise in Stewart
Mine, Mill and Other Facilities (Unless otherwise noted Below)	X	X	X	X	X		X									
A Access Road to Mine Site	X	X	X								X		X	X		
C Transportation of Concentrate and supplies	X	X	X	X	X					X	X	X			X	X
D Workplace Conditions					X		X									
E Work Rotations		X	X			X		X	X							
F Contracting Practices	X	X	X	X	X	X										

x

## 11. IMPACT ASSESSMENT METHODOLOGY

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# 11. Impact Assessment Methodology

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## 11.1 Conceptualization

Measurement of socio-economic impact has always struggled with quantification and attempts to be as objective as possible. Much of the measurement issue focuses on the inexorability of change and the human response to change. Change per se is neither positive nor negative; neither good nor bad; it simply is. People's perceptions of change, however, are coloured by their interpretations of the desirability of change, the pace at which change occurs and the ability to respond or adapt to the change. These perceptions provide for personal interpretations of the effect of change that are subjective to the individual but potentially quantitative to the collective if there are sufficient numbers of similar individual responses to make a collective response.

Quantification in some cases, such as jobs, is readily achieved. In other cases, however, quantification is less readily attained and is more likely to produce meaningless results, or worse, to mask uncertainty or introduce certainty where none exists. Misleading conclusions arise particularly when straight line cause-effect relationships are imputed. An example might be the impact of a mine on substance abuse. The mine is unlikely to have any impact on substance abuse. The mine will however employ people whose individual decisions to use or not use substances may lead to substance abuse issues. Such indirect impacts cannot be realistically quantified; quantification is too distant from the original decision; quantification becomes speculation.

The assessment of socio-economic impact may best be approached by considering original decisions as creating outwardly expanding ripples each of which impact people who make further decisions based on their experience.

Like economic impacts which are typically considered to be direct, indirect and induced; so are social impacts. Like direct economic impacts, direct social impacts may be more or less reliably quantified, but as we move to indirect and induced, quantification becomes less meaningful.

The presentation of quantifiable direct socio-economic impacts to less quantifiable or unquantifiable indirect and induced impacts might best be illustrated as decision trees. These decision trees also serve to illustrate the inter-relatedness and connectedness of issues, decisions and impacts that characterize the Tahltan wellness model and Health Canada's health impact assessment methodology.

## 11.2 Methodology

### 11.2.1 Effects assessment approach

The Effects Assessment approach and methodology was developed by Rescan Environmental Services.

In summary, potential Valued Ecosystem Components (VECs) were identified via an issues scoping exercise. Each potential VEC was then screened for inclusion in the Environmental Effects Assessment (EEA) through an evaluation of the results of secondary research, consultation, interviews and cultural significance, and the potential for each to be affected by the Project.

The effects assessment followed a structured approach summarized in Table 11.1-1. Effects were identified by establishing relationships between VECs and project components (the different physical entities and activities which together make up the Project) as demonstrated in Table 10.7-2 above.

**Table 11.1-1  
Outline of Effects Assessment Methodology**

Step 1. Establish relationships between project components and VECs
Step 2. Effects Assessment
<ul style="list-style-type: none"> <li>• Assess the effects of each project issue on VECs</li> <li>• Identify appropriate mitigation, management and monitoring techniques</li> <li>• Identify residual effects</li> </ul>
Step 3. Assessment of Significance

For each effect, an assessment was made that considered the following criteria: level (regional, community, family or individual), type (direct or indirect) direction (positive or adverse), timing, duration, magnitude, geographic extent, frequency and probability of occurrence. Opportunities to mitigate adverse effects or enhance positive effects are identified. The residual effects (effects after mitigation and enhancement) are then assessed as having either negligible or considerable potential to be significant. Classification of residual effects is based upon the expected effectiveness of mitigation or enhancement measures, literature reviews and the judgement of professional experts.

Residual effects with a potential to be significant are assessed according to their magnitude, geographic extent and duration, described in Table 11.1-2.

**Table 11.1-2  
Effects Assessment Significance Ratings**

Magnitude	Geographic Extent	Duration	Significance Rating
Negligible	-	-	Not Significant
Low	-	-	Not Significant
Moderate	Local	-	Not Significant
	Landscape	Short	Not Significant
		Medium	Not Significant

(continued)

**Table 11.1-2  
Effects Assessment Significance Ratings (completed)**

Magnitude	Geographic Extent	Duration	Significance Rating	
High	Regional	Long	Not Significant	
		Far Future	Significant	
		Short	Not Significant	
		Medium	Not Significant	
		Long	Significant	
		Far Future	Significant	
		Transboundary	Short	Not Significant
			Medium	Significant
	Long		Significant	
	Far Future		Significant	
	Local	Short	Not Significant	
		Medium	Not Significant	
		Long	Significant	
		Far Future	Significant	
		Landscape	Short	Not Significant
			Medium	Significant
			Long	Significant
			Far Future	Significant
	Regional	-	Significant	
	Transboundary	-	Significant	

**11.2.2 Effects Assessment Definitions**

The effects on the project issues for each VEC were assessed using a standard set of criteria and descriptors (Table 11.2-3). The definitions for each descriptor were revised for socio-economics to ensure appropriateness and these are presented in Table 11.2-4. If a potential effect could not be assessed due to unavailability of data it was described as ‘uncertain’. Where the effects of a particular issue were likely to differ over the life-time of the project the assessment was divided between construction, operation, decommissioning and closure and post-closure phases.

For each project issue, a table is used to guide the assessment process and to ensure that all potential effects were assessed. Each table detailed the VEC(s) and project components related to that issue and described the potential effects using the criteria. The completed effects assessment tables are presented later in Section 14.

**Table 11.2-3  
Environmental Effects Assessment Criteria**

Criteria	Explanation	Descriptor
Timing	When the effect will begin	Construction Phase Operation Phase Decommissioning & Closure Phase Post-Closure Phase
Duration	How long the effect will last	Short Term Medium Term Long Term Far Future
Geographic Extent	The area over which the effect will occur	Local Landscape Regional Trans-Boundary
Direction	The direction of change	Positive Neutral Adverse
Magnitude	The scale of the environmental effect	Negligible Low Moderate High
Frequency	How often an effect will occur	One Time Periodic Continuous
Probability of Occurrence	How likely the effect is to occur	Nil Low Moderate High

### 11.2.3 Employment Impact Ratios and Multipliers<sup>335</sup>

Direct employment impact refers to the number of persons employed at a facility. For example, an industrial plant may have 100 employees. That would be the direct employment.

**Indirect** employment or indirect ratios are entirely concerned with any additional employment generated in the community because of other spending associated with the direct employment. However, the plant may also make other local purchases which lead to related employment – *e.g.* they may purchase some supplies from local retail stores, they may consult with local accountants or lawyers, or they may contract with local tradesmen for special jobs which their employees are not trained to handle. All of these hired services generate indirect employment. Strictly speaking, of course, it is not the direct employees themselves that generate the indirect employment but the other non-wage spending by the industry employing the direct workers.

<sup>335</sup> G. Home, BC Stats, British Columbia's Heartland At the Dawn of the 21st Century: 2001 Economic Dependencies and Impact Ratios for 63 Local Areas, 2004, p.24.

**Table 11.2-4  
Socio-Economic Descriptor Criteria Definitions**

Timing (Start Time of Effect)	Duration (of Effect; how long will effect last?)	Direction	Magnitude	Geographic Extent	Frequency	Probability of Occurrence
<p><b>Construction Phase:</b> effect starts during pre-construction and/or construction phases</p> <p><b>Operations Phase:</b> effect starts during mine operation phase</p> <p><b>Decommissioning and Closure Phase:</b> effect starts in mine decommissioning phase</p> <p><b>Post Closure Phase:</b> Effect is initiated after mine closure (e.g. loss of employment)</p>	<p><b>Short Term:</b> &lt; 1 year, to be defined in text</p> <p><b>Medium Term:</b> 1-3 years (define in text)</p> <p><b>Long Term:</b> lasts between 3-30 years</p> <p><b>Far Future:</b> lasts more than 30 years</p>	<p><b>Positive:</b> effect creates conditions that are more desirable for individuals/households/communities relative to baseline conditions</p> <p><b>Neutral:</b> effect creates conditions for individuals/households/communities that are neither better or worse relative to baseline conditions</p> <p><b>Adverse:</b> effect creates conditions that are less desirable for individuals/households/communities relative to baseline conditions</p>	<p><b>Negligible:</b> no detectable change from baseline conditions</p> <p><b>Low:</b> differs from the average value/condition for baseline conditions, but within the range of existing variation</p> <p><b>Moderate:</b> differs from the average value/condition for baseline conditions, approaches the limits of existing variation</p> <p><b>High:</b> predicted to differ from baseline conditions so that there will be a detectable change beyond the range of existing variation (i.e., change of state from baseline conditions)</p>	<p><b>Primary:</b> effect is limited to the primary communities (Iskut, Dease Lake, Telegraph Creek and Stewart)</p> <p><b>Secondary:</b> effect on primary study area and secondary communities (Smithers, Terrace)</p> <p><b>Regional:</b> effect on NW BC</p> <p><b>Transboundary:</b> effect extends beyond NW BC (i.e. rest of BC, other provinces, Alaska)</p>	<p><b>One time:</b> effect is a one-off event confined to one discrete period in time during the life of the Project and potentially beyond the life span of the Project</p> <p><b>Periodic:</b> effect occurs intermittently but repeatedly over the life span of the Project and potentially beyond the life span of the Project</p> <p><b>Continuous:</b> effect occurs constantly during the life of the Project and potentially beyond the life span of the Project</p>	<p><b>Nil:</b> an effect has no probability of occurring</p> <p><b>Low:</b> an effect is unlikely but could occur</p> <p><b>Moderate:</b> an effect is likely but may not occur</p> <p><b>Unknown:</b> the likelihood of occurrence of an effect can not be predicted (not enough information or evidence)</p> <p><b>High:</b> it is certain that an effect will occur (based on previous studies and experiences)</p>

**Cassiar Iskut-Stikine Land and Resource Management Plan**



### 11.2.4 Employment Impact Ratios and Multipliers<sup>336</sup>

Direct employment impact refers to the number of persons employed at a facility. For example, an industrial plant may have 100 employees. That would be the direct employment.

**Indirect** employment or indirect ratios are entirely concerned with any additional employment generated in the community because of other spending associated with the direct employment. However, the plant may also make other local purchases which lead to related employment – *e.g.* they may purchase some supplies from local retail stores, they may consult with local accountants or lawyers, or they may contract with local tradesmen for special jobs which their employees are not trained to handle. All of these hired services generate indirect employment. Strictly speaking, of course, it is not the direct employees themselves that generate the indirect employment but the other non-wage spending by the industry employing the direct workers.

**Induced** employment or indirect plus induced ratios, in addition to the indirect employment, (account for) some portion of the non-basic employment in the community to the income source generating the direct employment. Suppose, for example, that of the identified 1000 non-basic jobs in a given community, and that Industry X's share of the after-tax basic income is 20%. The model will then assign 20% of the 1000, or 200, non-basic jobs to Industry X, increasing the employment impact ratio accordingly.

The social safety net (specifically, transfer payments like employment insurance and income assistance) comes into the picture because when there are major changes in a community's industrial structure, estimation of the total impacts of those changes depends on how the income changes translate into changes in spending, because it is spending by local residents that supports the non-basic sector. In the case of a mill closure for example, if it is assumed that employment income drops to zero and it is not replaced with anything, then we have to assume that spending also drops to zero with a correspondingly drastic effect on the non-basic sector. However, if, as normally happens in the short-run at least, employment income is replaced by transfer payments then the effect is not nearly so dramatic. The Safety Net case may also be thought of as the No-Migration case where everyone stays put and waits to see what will happen next – this is the likely Short-Run scenario. The No-Safety Net case is comparable in reality to a scenario where everyone who loses their job moves away from the community to seek work elsewhere – from the community's perspective their income and spending have dropped to zero. The No-Safety Net case is also what is more likely to happen in the long run.

BC Stats has identified the following employment impact ratios (multipliers) that will be employed in this socio-economic impact assessment. These are:

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336 G. Horne, BC Stats, British Columbia's Heartland At the Dawn of the 21st Century: 2001 Economic Dependencies and Impact Ratios for 63 Local Areas, 2004, p.24.

**Indirect Employment Ratios (Multipliers) for Mining<sup>337</sup>**

Primary Impact Communities:

Stikine <sup>338</sup>	1.25
Stewart	1.22

Secondary Impact Communities

Smithers	1.31
Terrace	1.30

**Indirect Plus Induced Employment Ratios (Multipliers) for Mining<sup>339</sup>**

	With Safety-Net	Without Safety-Net
<u>Primary Impact Communities:</u>		
Stikine <sup>340</sup>	1.31	1.40
Stewart	1.27	1.34
<u>Secondary Impact Communities</u>		
Smithers	1.48	1.67
Terrace	1.41	1.58

### **11.3 Base Case: In the Absence of the Galore Creek Project**

If NovaGold’s proposed Galore Creek mine development were not to proceed, events, circumstances and developments would continue to occur which will affect the future of communities in northwestern BC.

If Galore Creek were not to proceed, current conditions and circumstances will continue unchanged. Current employment at the Eskay Creek mine will terminate in 2007, leaving employees without employment and income. Similarly, many of the existing social issues that confront Telegraph Creek, Iskut, Dease Lake Reserve 9 and Dease Lake will continue to exist. These include substance abuse, spousal and family violence, suicides, family stress arising from current work rotations, low education attainment, housing shortages, lack of recreational opportunities and others.

Whether the Galore Creek project proceeds or not, future developments are likely to include the following:

- Construction and development of the Red Chris mine by bcMetals ,
- Continuing exploration activity:

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337 G. Horne, BC Stats, British Columbia’s Heartland At the Dawn of the 21st Century: 2001 Economic Dependencies and Impact Ratios for 63 Local Areas, 2004, Table 3-1, p.28.

<sup>338</sup> Includes Dease Lake, Iskut and Telegraph Creek

339 G. Horne, BC Stats, British Columbia’s Heartland At the Dawn of the 21st Century: 2001 Economic Dependencies and Impact Ratios for 63 Local Areas, 2004, Table 3-2, 3-3, pp.30-32.

<sup>340</sup> *Ibid.*

- Coal bed methane (Shell Canada),
- Mount Klappan project (Fortune Minerals Limited), and
- Kutcho Creek project (Western Keltic Mines Inc.)

Of these activities, the Red Chris development is the closest to receiving all necessary certificates, licenses and permits but development is subject to a Provincial government decision on the construction of an electric power supply.

Other major developments may also have a bearing on northwestern BC. These include the construction of the:

- 30 inch Gateway pipeline by Enbridge Pipelines Inc. from Edmonton to salt water near Prince Rupert with construction possibly occurring in 2008 and operational by 2009/10,<sup>341</sup>
- Kitimat LNG Terminal, with construction planned for completion in 2008,<sup>342</sup> and
- Fairview Container Terminal at Prince Rupert, with construction of the first phase starting in 2005, and phase II construction in 2007 for completion by 2010.<sup>343</sup>

These projects, singly and cumulatively, will have demographic, employment, business, infrastructural, lifestyle and other impacts on northwestern BC whether the Galore Creek project proceeds or not.

### 11.3.1 Demography

On the basis of Local Health Area population projections and recognizing the caution necessary in interpreting projections of small area populations, BC Stats projections suggest total population increases as presented in Table 11.3-1 below.

**Table 11.3-1  
Primary Impact Communities, Population Projections to 2030**

Community	Baseline	Projected to:	
		2010	2030*
Dease Lake	318	364	447
Dease Lake Reserve 9	66	85	103
Iskut	309	373	545
Telegraph Creek	325	389	567
Stewart	775	846	911

\* BC Stats cautions the reader that projections of populations of small communities and areas are unreliable. BC Stats notes, for example, that such populations fluctuate considerably because of resource dependencies, limited economic diversification and boom-bust cycles.

<sup>341</sup> <http://www.enbridge.com/pipelines/about/plannedSystemGrowth/system-growth-gateway.php>

<sup>342</sup> Kitimat LNG Terminal, Application to for Environmental Assessment Certificate, May, 2005

[http://www.eao.gov.bc.ca/epic/output/documents/p244/d20404/1118333329883\\_bbce5a9b6126427fa1cfc791f9f67f26.pdf](http://www.eao.gov.bc.ca/epic/output/documents/p244/d20404/1118333329883_bbce5a9b6126427fa1cfc791f9f67f26.pdf)

<sup>343</sup> <http://www.rupertport.com/facilities.htm>

The Red Chris project, if it proceeds, is expected to replace employment provided by the Eskay Creek mine and hence is not expected to have a notable demographic impact upon primary impact communities.

The possible development of the Red Chris project, its proximity to Iskut and the prospects of being able to live at home and commute to work, however, may serve to attract Tahltan who have, for purposes of employment, moved to other locations. The return of such expatriates is not expected to be significant, at least in the short to intermediate futures, because of:

- The distance from the Red Chris site to Dease Lake, Dease Lake Reserve 9, Telegraph Creek,
- Unwillingness of Tahltan residents of Smithers, Terrace and other communities to give up the greater residential, commercial, educational, health, recreational, and other opportunities available in those communities, and
- Shortages of housing and developable land for housing in Dease Lake, Dease Lake Reserve 9, Iskut and Telegraph Creek.

While the possible development of the Red Chris project may, by itself, not serve to attract Tahltan or other residents to the primary impact area, the mine may serve to restrain out-migration from the communities.

### **11.3.2 Economy**

The economies of the primary impact communities and the economy of the Tahltan Nation are currently highly dependant upon public service employment and mining, and to a much lesser extent tourism. Opportunities for local residents are limited and help explain the out-migration of approximately 60% of the Tahltan population.

Local Tahltan communities – Dease Lake, Iskut and Telegraph Creek – have developed economies to serve local populations. The economies of Iskut and Telegraph Creek are oriented towards the provision of residential and public services. Dease Lake possesses a range of commercial and industrial services to serve local requirements. The Dease Lake economy however is restrained by a small population such that many goods and services are provided from Terrace. The Dease Lake, Iskut and Telegraph Creek populations regularly and routinely travel to Terrace for consumer goods, many building supplies, vehicle purchase, maintenance and repair, medical and dental services, business services and other goods and services. Similarly, local businesses acquire their supplies from Terrace suppliers. As a consequence, economic leakage from employment and business revenues is great. Indirect and induced impacts from economic activity is minimal beyond expenditures on accommodation, food, fuel and entertainment.

The Stewart economy is similarly restrained by its size. Although comprising larger tourism and industrial bases than the Tahltan communities, economic leakage from the Stewart economy is similarly great and indirect and induced impacts from economic activity are constrained by a small market.

In the absence of the Galore Creek project, the economies of communities in the primary impact area are expected to remain much as they are. Closure of the Eskay Creek mine may be substantially replaced by the opening of the Red Chris project, if it proceeds, but the replacement of one mine with another is not expected to have a notable impact on local economies.

The absence of Galore Creek also represents foregone opportunity and restrains the Tahltan objective of developing more sustainability into their communities. Galore Creek, as a second mine, presents the opportunity for local communities to build upon current levels of economic activity to generate a more sustainable economy through more secure and diversified employment, incomes and business opportunities. Galore Creek also presents the Tahltan with the opportunity to capitalize on impending labour shortages to advance skills training, apprenticeships and career development.

### **11.3.3 Employment**

Mining has been a historic staple of employment both for the Tahltan and for the Stewart populations and fluctuations in mining activity have resulted in boom and bust cycles of economic activity. Currently Barrick Gold Corporation's Eskay Creek mine is the only operating mine in the study area. Eskay Creek and its contractors have employed approximately 98 Tahltan members of whom approximately 70 reside in the communities of Dease Lake, Iskut and Telegraph Creek. Eskay Creek has also operated during a period which has experienced historic lows in exploration activity and investment. A resurgence of mining activity has resulted from an increase in ore prices and from the sale of mineral claims to new operating companies. The Red Chris development by bcMetals is the first of several developments being actively pursued.

If it were to proceed, the Red Chris development could substantially replace the employment and economic impact generated by Eskay Creek scheduled for closure in 2007. Red Chris could potentially absorb the approximately 70 Eskay Creek employees resident at Dease Lake, Iskut and Telegraph Creek and these individuals would likely commute to the mine site.

In the absence of the Galore Creek project, employment in the mining sector will remain substantially as it has been over the late 1990s through to 2007. It is likely however that logistics will preclude the 6 – 10 residents of Stewart now employed at Eskay Creek from gaining employment at Red Chris. The District of Stewart may experience a decline in mining employment.

Northwestern British Columbia will continue to rely on the economic use of mining, forestry, and environmental/scenery (tourism) resources for wealth and employment generation for the foreseeable future. Regional variations of this scenario will continue, with forestry and tourism contributing more to the local economy of Stewart than to the communities of Dease Lake, Dease Lake Reserve 9, Iskut and Telegraph Creek. The resource based economy and particular reliance on mining has subjected the region to boom-bust economies, but major cyclical fluctuations in particular industries will continue to occur as markets, prices, exchange rates, technology and other factors affect resource production. The distance of the region from large

markets suggests that further development of secondary and tertiary forms of economic activity will be a slow and long-term process.

With the exception of Terrace, larger communities sited adjacent to Highway 16 – Prince George, Smithers, Kitimat and Prince Rupert – have experienced demographic and economic growth in recent years. Terrace, Kitimat and Prince Rupert will benefit from the upcoming pipeline, gas storage and container port developments and the re-opening of forest products establishments. These developments will reduce unemployment and dependency on income assistance programs, enhance incomes, and generally provide an uplift to an economy which has been somewhat depressed. Smithers' economic base, more service oriented than those of Terrace, Kitimat or Prince Rupert, will continue to grow with local investments in tourism, and as Smithers expands its role as a mine service centre for northern BC.

### 11.3.4 Foregone Employment Income

The absence of the Galore Creek mine will represent for each year of operation foregone direct and indirect income to primary and secondary impact communities of approximately \$44,130,000 in current dollars (Table 11.3-2).

**Table 11.3-2  
Estimated Annual Foregone Income (No Project)**

<b>Primary Impact Communities</b>	
Dease Lake, Dease Lake Reserve 9	\$4,650,000
Iskut	\$6,800,000
Telegraph Creek	\$6,800,000
Stewart	\$7,200,000
<b>Secondary Impact Communities</b>	
Smithers, Terrace	\$18,680,000
<b>Total Primary and Secondary Impact Communities</b>	<b>\$44,130,000</b>

The absence of this income may be partly compensated for by the construction and opening of the Red Chris Mine if it were to be developed.

Nevertheless, not proceeding with the Galore Creek project will represent a reduction in employment opportunity and therefore income. This reduction in income may lead, in the absence of alternatives, to continued out-migration and/or to an increased need for income assistance programs.

### 11.3.5 Regional Unemployment

While Stats Canada 2001 data indicate unemployment rates in the primary impact area are somewhat higher than provincial averages, more recent anecdotal evidence in 2005 suggests that unemployment rates have declined because of employment in mining exploration, environmental, contract services, and construction.

Current unemployment may be exacerbated by the closure of the Eskay Creek mine in 2007, but alleviated by the possible opening of the Red Chris Mine in the same year. People with experience and skills appropriate to the mining industry appear to be available but are in short supply in the region.

### **11.3.6 Projected Shortages of Skilled Labour**

Without Galore Creek, projected shortages of skilled construction and operating labour may still occur unless stakeholders take steps to prevent future shortages either from occurring or from getting worse.

Impending shortages of labour, skilled and unskilled, have arisen from a multitude of considerations including an aging population, rapidly increasing numbers of retirees combined with, low numbers of people entering the labour market, attitudes towards trades and technical occupations and employment, and the national, provincial and local competing demands for labour.

In BC, some of these shortages will occur because of the level of construction occurring in the Lower Mainland in preparation for the 2010 Winter Olympic Games.

While public and private sector organizations often project skill shortages into the second decade of the 21st century, there is considerable debate as to the magnitude of the issue, the extent to which shortages fluctuate between regions, and which occupations are likely to be impacted the greatest. There does appear, however, to be something of a consensus on a small number of macro issues including:

- The most notable shortage of skilled labour will be in construction trades and technology industries;
- Labour shortages will be the greatest where skill levels are the greatest;
- Skilled labour will be drawn to the Lower Mainland and to the Okanagan because of demand and the probable willingness of employers to pay higher wages to attract employees;
- Current initiatives to address shortages of skilled construction and trades occupations may alleviate labour shortages in these areas by 2010.

Regardless of initiatives to increase the number of skilled trades and construction personnel in the near future, construction of Galore Creek between 2007 and 2010 is likely to be impacted by the large demand for skilled labour occasioned by construction associated with the 2010 Winter Olympics. The demand for skilled labour will likely translate into upward pressure on wages, salaries and benefits across the construction and trades industries across the province, including northwestern BC.

After 2010, the demand for skilled construction and trades labour occasioned by the Winter Olympics will have abated, but the demand for skilled labour from other developments – in northwestern BC, the Prince Rupert containerport, LNG facility, other mine developments – may serve to prolong demand/supply imbalances.

The BC Ministry of Economic Development has researched potential future skill shortages for numerous occupations including those in the mining industry.<sup>344</sup> Accounting for withdrawals from the labour force because of an aging population, and entry from educational institutions, apprenticeships, immigration, and people leaving provincial income assistance, the supply and demand balance for occupations in the mining industry revealed the following occupations under significant pressure (Table 11.3-3):

**Table 11.3-3**  
**Mining Related Occupations With Demand Likely to Exceed Supply**

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Sr Managers - Goods Production, Utilities, Transportation And Construction  
Human Resources Managers  
Facility Operation and Maintenance Managers  
Primary Production Managers (Except Agriculture)  
Financial And Investment Analysts  
Executive Assistants  
Purchasing Agents And Officers  
Storekeepers And Parts Clerks  
Dispatchers And Radio Operators  
Geological And Mineral Technologists And Technicians  
Industrial Instrument Technicians And Mechanics  
Engineering Inspectors And Regulatory Officers  
Ambulance Attendants And Other Paramedical Occupations  
Contractors & Supervisors, Electrical Trades & Telecommunications Occupations  
Contractors And Supervisors, Mechanic Trades  
Contractors And Supervisors, Heavy Construction Equipment Crews  
Steamfitters, Pipefitters And Sprinkler System Installers  
Industrial Electricians  
Stationary Engineers And Auxiliary Equipment Operators  
Machinists And Machining And Tooling Inspectors  
Ironworkers  
Welders  
Construction Millwrights And Industrial Mechanics  
Heavy-Duty Equipment Mechanics  
Heavy Equipment Operators (Except Crane)  
Public Works Maintenance Equipment Operators  
Truck Drivers  
Railway Conductors And Brakemen/Women  
Supervisors, Landscape And Horticulture  
Supervisors, Mining And Quarrying

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(continued)

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344 J. Mansfield, Manager, Labour Market Policy, BC Ministry of Economic Development.

**Table 11.3-3  
Mining Related Occupations With Demand Likely to Exceed Supply  
(completed)**

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Underground Production And Development Miners
Underground Mine Service And Support Workers
Logging Machinery Operators
Mine Labourers
Supervisors, Mineral And Metal Processing
Supervisors, Petroleum, Gas And Chemical Processing And Utilities
Machine Operators, Mineral And Metal Processing
Concrete, Clay And Stone Forming Operators
Water And Waste Plant Operators
Machining Tool Operators
Labourers In Mineral And Metal Processing

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A similar list of shortages has been identified by the Mining Industry Training and Adjustment Council (MITAC).<sup>345</sup>

The potential shortfalls in labourers skilled in mining and related occupations may occur whether or not the Galore Creek project proceeds. The objective of forecasting labour requirements is to highlight needs in advance of the event and to encourage stakeholders to adopt measures to prevent or minimize the shortage.

The projection of skilled labour shortages ten or twenty years into the future is speculative. The best that can be realized is an understanding of actual and potential issues, what is being done to address them and to posit possible or probable scenarios that increase levels of awareness on the part of stakeholders so that they may be able to respond quickly and effectively to prevent or otherwise address shortages. These stakeholders include the mining industry, First Nations, government and organizations such as the BC Industry Training Authority.

Impending labour shortages provide significant opportunity for First Nation populations to capture employment opportunities which may not otherwise have existed.

### **11.3.7 Continued Development of the Tourism Industry**

Continuing promotion of the tourism attributes of northwestern BC, and the increasing match between product and market suggest continued growth of the tourism industry in northwestern BC generally and around Stewart in particular. This may lead to additional investment, and additional employment opportunities.

Nevertheless, growth of the tourism industry in northwestern BC will be slow and remains one of potential.

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345 [http://www.mitac.ca/WebForms/industry\\_primer/occupational\\_profiles\\_e.aspx](http://www.mitac.ca/WebForms/industry_primer/occupational_profiles_e.aspx)

Tourism in northwestern BC is largely road based with tourism along the Highway 37 corridor attracting visitors from Canada, the United States and overseas. Travellers choose the route as a destination or are en route to and from Alaska and the Yukon.

The Cassiar area is considered to have some of the best big game hunting in North America. There are 11 guide outfitters operating in the LRMP area and several just outside of it. Their industry depends on conservation of populations of sheep, mountain goats, caribou, bear and moose, and on the maintenance of intact wilderness.<sup>346</sup> Equally important, the industry depends upon perceptions of wilderness and a small number of high income earners for sustainability.

Other than Stewart, the viability of the tourism sector in Northwestern BC is questionable. The two guiding and outfitting establishments in the Galore Creek study area are available for sale; so is the one business operating adventure tours on the Stikine River.

The demand for wilderness tourism may increase, but the lack of travel infrastructure will restrain growth of the touring market. Seasonality and part-time employment may be expected to characterize the industry along Highway 37 for some years.

Unlike Highway 37 communities, tourism at Stewart is more diversified. Summer touring traffic is combined with a strong winter component. Over much of the 2000s tourist registrations at the Stewart-Hyder International Chamber of Commerce Tourist Information Office have fluctuated around 10,000. Even recognizing that at least 10% of the tourists do not visit the information centre,<sup>347</sup> registration data do not show recent growth in tourist numbers. While the Northwest Tourism region is taking an active role in promoting tourism in northwestern BC, Stewart is more likely to benefit from promotion than are Highway 37 communities.

### 11.3.8 Community Sustainability

The Tahltan Nation recognizes the potential of mining development as a tool for the advancement of community sustainability. Sustainability is a major theme in the Tahltan's approach to mining as expressed in "*Out of Respect*." As expressed in "*Out of Respect*" mining, properly undertaken, offers opportunity for the Tahltan to acquire greater control over their destiny and provides a tool through which and upon which a broad range of socio-economic issues could begin to be addressed in achieving healthy individuals and communities.

Recognizing the range of economic opportunities currently available in northwestern BC, the absence of Galore Creek restrains the drive towards sustainability.

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346 June 2005 Galore Creek Project Description Canadian Environmental Assessment Agency, NovaGold Canada Inc. 2-30 Rescan™ Environmental Services Ltd. (Proj. #670-2), p.3-41.

347 Red Chris Development Co. Ltd., Application for an Environmental Assessment Certificate, Red Chris Porphyry Copper-Gold Mine Project, October 2004, p. 5-70

## 12. SOCIO-ECONOMIC IMPACTS ON THE PRIMARY IMPACT AREA

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# 12. Socio-Economic Impacts on the Primary Impact Area

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## 12.1 An Overview

In July 2005 an overview assessment of socio-economic impacts associated with prospective mine developments in northwestern BC was published. Serving as a socio-economic baseline, Northwest BC Mining Projects: Socio Economic Impact Assessment prepared for the BC Ministry of Small Business and Economic Development concluded that:<sup>348</sup>

Most of the social concerns related to the new developments in the most effected communities, exist presently and in general, are not specific to mining development. Rather they are characteristic of economic development problems experienced in many communities in the North. Nevertheless, in spite of the uncertainties and limitation noted above, we feel some firm conclusions are evident, and would remain valid over a wide range of alternative project configurations.

In the absence of new mining development, Highway 37 communities will be severely impacted in terms of lost mining jobs, lost trucking jobs and reduced port-shipping business, leading to population declines (*e.g.* Stewart). Stewart Bulk Terminals will lose Eskay and Huckleberry's shipping business, presently their main customers -- Eskay closing will put about 100 Tahltan people out of work.

With respect to mine development impacts, communities along the Highway 16 corridor that would likely be affected by the mines, have adequate capacity to address the incremental needs. The region is recovering from the economic downturn of the 1990's and has excess capacity with respect to social service infrastructure. Also, the respective communities are incorporated, providing them a framework and capacity to plan for, finance and deliver services that might be required, and to meet the incremental growth from the new mine development.

It is reported that the Iskut and Tahltan communities are having difficulty coping with the problems that bear some association with existing mine operations. There is evidence to suggest (*e.g.* mortality data) that existing education, social and health programs and capacities are not adequate to meet present demands. The closure of Eskay mine, and the opening of one or more of the proposed mines, may increase the stress on the present communities. Either future poses challenges to these vulnerable communities.

The potential socio-economic impacts of a large, long lived mine, such as Galore Creek (*e.g.* 2010 to 2030), could provide stable employment, training and apprenticeship openings, and business supplier opportunities that would provide economic stability to a region that is otherwise prone to shorter-term 'boom to bust' cycles.

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<sup>348</sup> BC Ministry of Small Business and Economic Development, *Northwest BC Mining Projects: Socio Economic Impact Assessment*, prepared by G.E. Bridges and Associates Inc., Consulting Economists, July 2005.

## Socio-Economic Impacts on the Primary Impact Area

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The Tahltan and Iskut communities are small and their ability to participate in the mines is limited. Hence, the effect of one mine proceeding may be significant, while the impact of a second or third mine proceeding would be less so. Nevertheless, for the community of Iskut, the Red Chris Mine poses the more significant range of challenges because of its proximity. ”<sup>349</sup>

### Summary Mining Development Impacts<sup>350</sup>

#### New Mine Developments (General)

##### Positive Aspects

###### Highway 16

Based on the opinions of the interviewees, all would like to see mining projects proceed. Region needs economic development and to retain (and expand) its skilled labour force and population.

As a result of declining populations since the late 1990's most communities have excess capacity in schools, hospitals. In some cases, may need some expansion of staff for service delivery (not identified).

###### Highway 37

Stewart has ample capacity in physical infrastructure, housing stock and developable land (likely truckers hauling from the new mines would live in Stewart).

Mining developments may increase population of Dease Lake near previous level in the 1990's and increase general prosperity of the region.

Some optimism that more Tahltans may return to their traditional territory.

Need training for local population to take full advantage of operating employment opportunities.

Opportunity for region and population to participate in real economic development.

Red Chris

Highway 37

Although not mentioned in the interviews, the proximity of Red Chris may allow residents to

##### Negative Aspects

###### Highway 16

No major issues reported.

###### Highway 37

With the exception of Stewart, small regional population results in corresponding sized capacity in infrastructure and social service delivery. Small increments to population can lead to noticeable reduction in service, or conversely need to add capacity education, health and housing.

Reported that the higher incomes from the mining developments will exacerbate existing drug and alcohol related social and community problems.

Camp takes members from community and when they return after 2 weeks they are ready to 'bust out'. For those living in the community it's described as a non-stop party, which is expected to get worse.

Reported that Iskut and Tahltan Band health resources are unable to cope with additional population, given resources are at capacity currently.

Reported that mines are not contributing to Band programs to ameliorate social problems.

While many Tahltan's participate in the modern consumer economy, mining development will contribute to the 'erosion' of Tahltan's traditional way of life and culture.

Reported that the fly in/fly out camps facilitate drugs coming from outside communities (view not substantiated, may have been more apparent with Golden Bear, current sources of drugs not identified).

Highway 37

Concern that the mine is too close to Iskut and will overwhelm the community. Examples cited include

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<sup>349</sup> BC Ministry of Small Business and Economic Development, *Northwest BC Mining Projects: Socio Economic Impact Assessment*, prepared by G.E. Bridges and Associates Inc., Consulting Economists, July 2005.

<sup>350</sup> BC Ministry of Small Business and Economic Development, *Northwest BC Mining Projects: Socio Economic Impact Assessment*, prepared by G.E. Bridges and Associates Inc., Consulting Economists, July 2005.

## Socio-Economic Impacts on the Primary Impact Area

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### New Mine Developments (General)

#### Positive Aspects

commute to the mine eliminating the 2-week camp rotations for Iskut First Nation members.

Similar to Eskay in terms of Tahltan participation, Red Chris would neatly fill employment gap left by the pending closing of Eskay Creek.

#### Negative Aspects

Cassiar/ Good Hope Lake, Faro/Ross River (note that the mechanism for overwhelming may also be noted so this concern is double counted. Also, there are probably examples where the experience has been positive, but no one cited these examples).

Reported concern is the intermingling (e.g. inter-marriage) of Iskut First Nation members with non-Indian status mine workers could lead to loss of Indian Status within a couple of generations.

Non-native workers could set up seasonal homes around lakes in areas, as there is private land, and commute to work. Tahltan's could become a minority in their traditional territory.

Health issues: dust from Red Chris would affect many Iskut community members who suffer from asthma – noise from mine also mentioned as an issue.

## 12.2 Socio-Economic Impacts on Dease Lake

Valued Ecosystem Components (VECs) are derived from and represent the issues identified in Section 3 of this Socio-Economic Impact Assessment and are supported by interviews with a broad spectrum of local, Tahltan, regional and other northwestern BC representatives.

Major Issues relevant to Dease Lake are:

- Community Development
- Education
- Employment
- Health
- Tahltan Culture
- Communications

### 12.2.1 Valued Ecosystem Components (VECs)

VECs addressing these issues are:

- Economic Development

Community Growth

Community Governance

- Employment Opportunity

## ***Socio-Economic Impacts on the Primary Impact Area***

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Awareness of Opportunities

Access to Employment

Career Advancement

- Employment Incomes
- Business Opportunity

Awareness of Contracts

Access to Contracts

Capacity Building

- Community Health

Work Rotations

Substance Abuse

Family Stress

- Education

Pre-Employment

Skills Training

Apprenticeships

Capacity Building

- Tahltan Culture

Language

Access of Employees to Cultural Events

Participation of Tahltan in Traditional Resource Activities

Cross-cultural Awareness

- Communications

Tahltan Communication

Employment Opportunities

Contract Opportunities

## **Socio-Economic Impacts on the Primary Impact Area**

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### ***Public Information***

Valued Ecosystem Components (VECs) below are described in terms of the issues, timing, duration whether they are positive, neutral or adverse and their probability of occurring. On the basis of this information, the magnitude of each VEC is assessed before mitigation occurs.

### **12.2.2 Overall Community Economic Development Impacts**

Economic development is generally perceived by many Dease Lake and Dease Lake Reserve 9 residents as one of the primary benefits of construction and operation of the Galore Creek project. Employment and business opportunities are perceived as ways and means of enhancing community sustainability, The 20 year life of the Galore Creek project is also seen as a building block - providing the time required to develop the capacity to take advantage of opportunities and to develop complementary, supportive and alternative sources of employment and livelihood.

### ***Population Growth***

BC Stats projections of population growth at Dease Lake and Dease Lake Reserve 9 suggest population growth to 449 persons in 2010 and 550 in 2030. Some in the community believe that the Galore Creek project will encourage some of the 60% of Tahltan people who live outside the area to return.

The Galore Creek project may discourage out-migration by offering employment to those who otherwise would relocate to communities outside the primary impact area. Development of the Red Chris Mine, if it were to proceed, together with the construction and operation of Galore Creek introduces the likelihood that Dease Lake will experience a labour shortage. Such a shortage further introduces the possibility that non-resident Tahltan will return.

Should it occur, the return of Tahltan to the community is less likely to occur during the construction phase because of the short term nature of construction employment and more likely to occur during the operations phase when employment is more secure. As closure approaches, relocation to Dease Lake will become increasingly unattractive if alternative sources of employment are not available.

The probabilities of the return of Tahltan expatriates to Dease Lake are considered to be low. Some who have close family ties and who may live with parents or relatives may return but the shortage of housing and the general lack of community infrastructure and services will serve to discourage large-scale and early return. The experience of Eskay Creek, for example, suggests that Tahltan employees resident in Terrace or Hazelton or Smithers or other communities will commute to the minesite and not relocate back to Dease Lake.

The return of Tahltan to Dease Lake will generate a demand for housing. Approximately 15 housing lots are available for development either within the townsite or within the subdivision. Opportunity for the construction of new houses within the townsite are limited because of the frequency of existing residents to have double lots and because of the location of septic fields. Any significant increase in the Dease Lake population is likely to generate pressure to install piped water service.

## ***Socio-Economic Impacts on the Primary Impact Area***

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Other possibilities for economic growth may arise from opportunities to provide goods and services to NovaGold. Local firms such as the TNDC and Spatsizi Remote Services already provide contract services to Eskay Creek and may build upon that experience to provide services to Galore Creek as well as to Red Chris. Companies such as Spatsizi Remote Services may expand employment, and companies such as TNDC may expand the provision of construction services. But the ability of companies to expand into related businesses or to create new services is restrained by capacity, by the lack of available commercial/industrial land, and by the lack of both physical and human resources infrastructure.

Community growth is likely to occur slowly and primarily through internal population growth and restrained out-migration. Some in-migration may occur after operations begin (2010) but in-migration is likely to be minimal.

### ***Community Governance***

Dease Lake is an unorganized community governed in accordance with the Local Services Act. Dease Lake community as described does not include Dease Lake Reserve 9. Local decision making is very limited. While discussions are proceeding with Dease Lake residents about future governance, the definition of community boundaries will await completion of the Tahltan Band's application to INAC for an "Addition to Reserve."

The ability of Dease Lake community to benefit from residential and business opportunities arising from both the Red Chris and the Galore Creek projects would be substantially improved if Dease Lake had greater local decision making authority. Until Dease Lake is able to respond more speedily with land development, building and construction, and infrastructure construction and improvements, the community may not be able to capitalize on potential economic development opportunities.

Construction and operation of the Galore Creek project will affect overall economic development at Dease Lake through community growth and governance. Impacts on community growth will be positive and, because of the size of the community, are expected to be moderate to high. The impact of closure will be major. Community economic development impacts are summarized in Table 12.2-1.

Addressing Dease Lake governance issues currently being explored by the community is likely to speed up with construction, but the time required to implement local governance suggests that it will not occur until the mine is operating. Once a local degree of governance is achieved it will be independent of the mine and will not be affected by eventual mine closure.

The issues and impacts described above are components of two VECs: Community Growth and Governance. Each of these is further described in terms of mitigation measures, residual impact and cumulative impact in Part IV.

**Table 12.2-1  
VEC, Overall Economic Development Impact, Dease Lake**

Component	Timing	Duration	Direction	Probability	Magnitude Of Impact
<b>Community Growth</b>					
Return of Tahltan expatriates	Construction	Short Term	Neutral to Positive	Nil to Low	Negligible
	Operation	Medium Term	Neutral to Positive	Low-Moderate	Low-Moderate
	Closure	Long Term	Adverse	High	Negligible
<b>Governance</b>					
Adoption of local governance structure	Construction	Short Term	Neutral to Positive	Low	Negligible
	Operation	Medium Term	Positive	Moderate	Moderate

### 12.2.3 Employment Impacts

In 2005, NovaGold employed 15 residents of Dease Lake in various exploration related activities associated with the Galore Creek project. In addition, NovaGold contractors employed approximately 31 First Nation employees, most of whom came from Dease Lake. Some of these 46 positions were seasonal but many of the employees have expressed a willingness to continue employment with NovaGold.<sup>351</sup> In addition to NovaGold employment, another 20 Dease Lake residents are employed at Eskay Creek. In spite of the seasonality of some employment, the absence of provincial income assistance files at Dease Lake suggests that most of the Dease Lake labour force was able to find employment in 2005.

Construction from 2006 through 2007 of the Red Chris Mine may, if development of the mine proceeds, employ many of the 46 Dease Lake residents that have been seasonally employed by NovaGold. With operation of the Red Chris Mine scheduled to begin in 2007, many if not all of the 20 persons currently employed by Eskay Creek may be expected to acquire employment at Red Chris. Some of the 46 seasonally employed by NovaGold may also be expected to acquire more permanent employment at Red Chris.

Assuming that construction of the Red Chris project begins as planned, construction of Galore Creek from 2007 through 2010 may be expected to lead to a competitive market in Dease Lake for mining and mine related employment.

Construction beginning in 2007 of the Galore Creek mine will be primarily undertaken by contractors. Galore Creek construction is expected to occur year-round from 2007 through 2010. Assuming that NovaGold's 15 Dease Lake seasonal employees and contractors' 31 employees

<sup>351</sup> J. Munzert, NovaGold, Personal Communication, January 17, 2006.

## **Socio-Economic Impacts on the Primary Impact Area**

during 2005 continue with employment approximately 46 Dease Lake residents will be employed during construction of the Galore Creek project. This number may increase somewhat as production declines at Eskay Creek, but the potential construction of the Red Chris Mine during the same period would introduce a competition for labour that will act against much of an increase. It is anticipated that the same circumstances will apply to contractor personnel.

If the Red Chris mine were not to proceed, Galore Creek mine operation may employ 40 Dease Lake residents. If the Red Chris mine did proceed, an estimated 20 residents of Dease Lake could be employed at Galore Creek during the operation phase. The impact of employment of this number of people in a small community will be major.

NovaGold anticipates employing as many local residents as possible and recognizes that this achievement will address five issues -- awareness of employment opportunities, access to employment, skills training, apprenticeships, and career advancement - which may be described as components of the Employment and Education VECs. Employment impacts are summarized in Table 12.2-2.

**Table 12.2-2  
VEC, Employment Impacts, Dease Lake, Dease Lake Reserve 9**

<b>Component</b>	<b>Timing</b>	<b>Duration</b>	<b>Direction</b>	<b>Probability</b>	<b>Magnitude of Impact</b>
<b>Employment</b>					
Jobs	Construction	Short Term	Positive	High	High
	Operation	Medium Term	Positive	High	High
	Closure	Long Term	Adverse	High	High
	Post Closure	Far Future	Positive	High	Low
<b>Awareness of Opportunity</b>					
Notification; Posting; First Choice	Construction	Short Term	Positive	High	High
	Operation	Medium Term	Positive	High	High
	Closure	Long Term	Adverse	High	Negligible
<b>Access to Employment</b>					
Qualifications; Essential Skills Evaluation; Preferential Hiring; Pre-Employment Training	Construction	Short Term	Positive	Moderate	Moderate
	Operation	Medium Term	Positive	High	High
	Closure	Long Term	Adverse	High	High
<b>Skills Training</b>					
On-the-Job Training	Construction	Short Term	Positive	High	Moderate
	Operation	Medium Term	Positive	High	High
	Closure	Long Term	Adverse	High	Low

(continued)

**Table 12.2-2  
VEC, Employment Impacts, Dease Lake, Dease Lake Reserve 9  
(completed)**

<b>Component</b>	<b>Timing</b>	<b>Duration</b>	<b>Direction</b>	<b>Probability</b>	<b>Magnitude of Impact</b>
<b>Apprenticeships</b>					
Apprenticeship Qualification, Training; Papers;	Construction	Short Term	Positive	Low	Negligible
Transferability and Mobility	Operation	Medium Term	Positive	High	Moderate
	Closure	Long Term	Adverse	High	Negligible
<b>Career Advancement</b>					
Skills Training and Enhancement; Career Pathing	Construction	Short, Term	Positive	Low	Negligible
	Operation	Medium Term	Positive	High	High
	Closure	Long Term	Adverse	High	Negligible

Overall impact on employment will be positive until mine closure when termination of employment will create an adverse impact on individuals and the community. Employment will have a major impact on individuals and the community.

Employment issues and impacts described above are components of the Employment and Education and Training VECs. Each of these is further described in terms of mitigation measures, residual impact and cumulative impact in Part IV.

### **12.2.4 Income Impacts<sup>352</sup>**

Employment, both during construction and operations, offers the prospect of long-term sustainable employment for employees. Incomes to persons will be substantial and in many cases tax free.

As much as these incomes will permit employees to acquire a range of goods and services, some employees will spend their incomes inappropriately. Substance abuse is a broadly-based concern and increased employment generating good and reliable incomes may worsen the problem. Family violence is a related concern. Family stress arises from the amount of money spent on drugs and alcohol at the expense of rent and mortgage payments, utilities, vehicles and other goods and services. There is an often mentioned concern that too many employees will not have the skills to manage their incomes successfully.

#### **12.2.4.1 Without Red Chris**

If the Red Chris Mine were not to proceed, a larger number of residents of Dease Lake and Dease Lake Reserve 9 will be available for employment at Galore Creek. The discussion below

<sup>352</sup> All incomes data and projections are based upon current 2006 dollar values, not adjusted for inflation.

## **Socio-Economic Impacts on the Primary Impact Area**

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describes potential Galore Creek employment and income impacts if Galore Creek were the only mine to be developed.

### ***Incomes from Construction***

The annual income impact of construction through the year-round employment of 46 Dease Lake residents by contractors from 2007 through 2010 at an assumed 2005 average annual wage of \$60,000<sup>353</sup> approximates:

$$46 \text{ persons} \times \$60,000 = \$2,760,000$$

Direct incomes from construction are based on 2005 data and may approximate \$3,680,000 for each of three years. Wages paid for construction labour between 2007 and 2010 will likely increase because of the demand for construction labour created by numerous large construction programs in BC over the 2006-2010 period.

Indirect impacts from this employment income are expected to focus on the provision of goods and services to construction personnel. Spatzisi Remote Services, for example, may provide camp and catering services. Contractors such as Spatzisi and TNDC, who provide goods and services to Galore Creek, may be expected to earn incomes, measured in 2005 dollars, from \$25,000 (Spatsizi Remote Services employees) to \$80,000 (equipment operators) or a median of approximately \$50,000.

Assuming BC Stats employment multiplier of 1.25, indirect employment may amount to:

$$(\text{multiplier}) 46 \times .25 = 11.5 \text{ persons}$$

Indirect incomes generated through contractor employment may then approximate:

$$(\text{multiplier}) 11.5 \text{ persons} \times \$50,000 = \$575,000$$

NovaGold's use of local businesses, such as Spatsizi Remote Services, suggests that indirect employment at Galore Creek may be greater than what the multiplier suggests. With Spatsizi Remote Services employing 108 persons in 2005, it is possible that indirect employment of Dease Lake residents could reach 35 persons by Spatsizi Remote Services alone, with the remaining employees coming from Iskut and Telegraph Creek. Added to other indirect employment, it is possible that total indirect employment of Dease Lake residents could reach 45 persons.

Under these circumstances, total indirect construction employment incomes to Dease Lake residents could reach \$2,250,000 for each of the three years of construction:

$$45 \text{ persons} \times \$50,000 = \$2,250,000$$

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<sup>353</sup> Lower average incomes account for lower wages paid to employees of service companies such as Spatsizi.

## ***Socio-Economic Impacts on the Primary Impact Area***

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**Induced employment impacts:** While employment incomes will be more stable than under seasonal employment conditions, employees will be drawn from the existing population, market size will not change, and total local incomes from construction may not be sufficient to generate further local downstream impacts on employment and incomes.

Induced employment at a multiplier of 1.31 may be expected to generate 4 additional jobs elsewhere in the community with incomes totalling \$120,000 from private sector service employers.

### ***Incomes from Operational Employment***

The annual direct income impact of operating mine employment through the full time employment of 40 Dease Lake residents by NovaGold from 2010 through 2030 at an assumed average annual wage of \$80,000 approximates:

$$40 \text{ persons} \times \$80,000 = \$3,200,000$$

Indirect impacts from this employment income are expected to focus on the provision of goods and services to operations personnel. Assuming 40 direct employees and BC Stats multiplier of 1.25, total indirect employment may amount to:

$$(\text{multiplier}) 40 \times .25 = 10 \text{ persons}$$

Spatzisi Remote Services, for example, may provide camp and catering services. Contractors such as Spatzisi Remote Services and TNDC who provide goods and services to Galore Creek may be expected to earn incomes, measured in 2005 dollars, from \$25,000 (Spatzisi Remote Services employees) to \$80,000 (equipment operators) or a median of approximately \$50,000. Indirect incomes generated through contractor employment may then approximate \$500,000 annually:

$$(\text{multiplier}) 10 \text{ persons} \times \$50,000 = \$500,000$$

NovaGold's use of local businesses, such as Spatsizi Remote Services, suggests that indirect employment at Galore Creek may be greater than what the multiplier suggests. With Spatsizi Remote Services employing 108 persons in 2005, it is possible that indirect employment of Dease Lake residents could reach 35 persons by Spatsizi Remote Services alone with the remaining employees coming from Iskut and Telegraph Creek. Added to other indirect employment, it is possible that total indirect employment could reach 45 persons.

Under these circumstances, total indirect employment incomes to Dease Lake residents could reach \$2,250,000 annually for each of 20 operating years:

$$45 \text{ persons} \times \$50,000 = \$2,250,000$$

Spatzisi Remote Services experience suggests that approximately 60% of employees will be women.

## Socio-Economic Impacts on the Primary Impact Area

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Incomes are based on 2005 data. Wages paid for contractor employment after 2010 may increase to new base levels because of the demand for construction labour created by numerous large construction programs in BC over the 2006-2010 period.

**Induced employment impacts:** While employment incomes will be more stable than under seasonal employment conditions, employees will be drawn from the existing population, market size will not change, and total local incomes from operations may not be sufficient to generate further local downstream impacts on employment and incomes. Induced employment at a multiplier of 1.31 may generate 2.4 additional jobs elsewhere in the community. In Dease Lake, these positions are likely to be in the private sector in service positions.

$$40 \text{ persons} \times 1.31 - 1.25^{354} = 2 \text{ persons}$$

Induced incomes may approximate \$70,000.

### *Incomes Upon Closure*

Closure of the Galore Creek mine will involve the termination of employment and the cessation of incomes to most of the 85 direct and indirect employees. Cessation of employment will lead to the termination of as much as \$5,450,000 of direct and indirect employment income to Dease Lake and Dease Lake Reserve 9 employees.

Environmental monitoring of the closed mine will involve the continued seasonal part-time employment of 1 - 5 local residents who will be reimbursed at 2030 wage levels. The incomes generated from such employment may range from \$50,000 to \$100,000 per year if all employees resided in Dease Lake or Dease Lake Reserve 9. Assuming two of these persons lived in the community, annual income may approximate \$50,000.

In the absence of alternative sources of employment, closure of the mine will involve major dislocation of local employees.

### *Summary of Impacts Without Red Chris Mine*

Employment and income impacts of the Galore Creek project proceeding without the concurrent development of the Red Chris Mine are presented below in Table 12.2-3.

**Table 12.2-3**  
**Dease Lake and Dease Lake Reserve 9, Employment and Income:**  
**Galore Creek Proceeding without Red Chris Mine**

Construction	Employment	Incomes
Direct	46	\$3,680,000
Indirect	45	\$2,250,000
Induced	4	\$120,000

(continued)

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<sup>354</sup> Induced employment multiplier minus indirect employment multiplier

**Table 12.2-3  
Dease Lake and Dease Lake Reserve 9, Employment and Income:  
Galore Creek Proceeding without Red Chris Mine (completed)**

<b>Construction</b>	<b>Employment</b>	<b>Incomes</b>
<b>Operations</b>		
Direct	40	\$3,200,000
Indirect	45	\$2,250,000
Induced	2	\$70,000
<b>Closure</b>	1-5 part-time, seasonal	\$50,000 - \$100,000

**12.2.4.2 With Red Chris**

If the Red Chris Mine proceeds according to plan, two mines in the primary study area will offer employment. Recognizing the sizes of the communities in the primary study area, two mines will introduce labour force competition such that fewer residents will be available for employment at Galore Creek. Assuming that the Red Chris Mine employs a significant number of Dease Lake and Dease Lake Reserve 9 residents, it is possible that the number of residents employed directly at Galore Creek may approximate 20. The discussion below describes potential Galore Creek employment and income impacts if both Red Chris and Galore Creek mines were developed (Table 12.2-4). The number of indirect employees would similarly decrease to approximately 25-30.

**Table 12.2-4  
Dease Lake and Dease Lake Reserve 9, Employment and Income:  
Galore Creek Proceeding with Red Chris Mine**

<b>Construction</b>	<b>Employment</b>	<b>Incomes</b>
Direct	20	\$1,600,000
Indirect	25-30	\$1,250,000 to \$1,500,000
Induced	1	\$35,000
<b>Operations</b>		
Direct	20	\$1,600,000
Indirect	25-30	\$1,250,000 to \$1,500,000
Induced	1	\$35,000
<b>Closure</b>	1-5 Part time, seasonal	\$50,000

The same multipliers apply as if Galore Creek proceeded without Red Chris.

The Galore Creek project, through employment of local and regional residents, may be expected to have a major impact on Dease Lake employment incomes. The expenditure of these incomes may be expected to exacerbate existing money management, substance abuse and family stress issues in Dease Lake. Indirect and induced incomes will be minor in magnitude because of the small community market and are likely to focus on commercial services. (Table 12.2-5). These are components of the Community Health VEC, and are discussed further in section 12.2.6

## **Socio-Economic Impacts on the Primary Impact Area**

(Health Impacts). Because of the complexity of these issues, substance abuse and family stress are also considered as separate VECs.

**Table 12.2-5  
VEC, Income Impacts, Dease Lake, Dease Lake Reserve 9**

<b>Component</b>	<b>Timing</b>	<b>Duration</b>	<b>Direction</b>	<b>Probability</b>	<b>Magnitude of Impact</b>
<b>Incomes</b>					
Employment Incomes	Construction	Short Term	Positive	High	Major
	Operation	Medium Term	Positive	High	Major
	Closure	Long Term	Adverse	High	Major
<b>Inappropriate Spending</b>					
Substance Abuse; Money Management	Construction	Short Term	Adverse	High	Moderate
	Operation	Medium Term	Adverse	High	Moderate
	Closure	Long Term	Adverse	High	Moderate
<b>Family Stress</b>					
Inappropriate Spending of Incomes; Money Management; Substance Abuse; Spousal violence	Construction	Short Term	Adverse	High	Moderate
	Operation	Medium Term	Adverse	High	Moderate
	Closure	Long Term	Adverse	High	Moderate
<b>Indirect Impact of Employment Incomes</b>					
Basic Commercial Services Only; Small Market Population	Construction	Short Term	Positive	High	Minor
	Operation	Medium Term	Positive	High	Minor
	Closure	Long Term	Adverse	High	Major
<b>Indirect and Induced Impact of Employment Incomes</b>					
Basic Commercial Services Only; Small Market Population	Construction	Short Term	Positive	Low	Minor
	Operation	Medium Term	Positive	High	Minor
	Closure	Long Term	Adverse	High	Major

Issues and impacts described above are also components of the following VECs: Substance Abuse and Family Stress. Each of these is further described in terms of mitigation measures, residual impact and cumulative impact in Part IV.

### **12.2.5 Business Development Impacts**

While Dease Lake has a small number of commercial enterprises, the construction and operation of the Galore Creek project represents opportunity for Dease Lake businesses to acquire contracts to provide goods and services to NovaGold. Important potential contractors are TNDC,

## **Socio-Economic Impacts on the Primary Impact Area**

Spatsizi Remote Services, Rescan/RTEC and other local contractors who already provide services to Galore Creek.

Other Dease Lake individuals and businesses may also provide services, particularly construction services, on an ad-hoc basis.

During the operation phase, as much as \$8,000,000 annually in contracts may be awarded to local firms. Most of the firms will be located in Dease Lake. Contract opportunities will extend from construction through post closure phases of mine development and will contribute significantly to indirect employment and employment incomes to Dease Lake residents.

NovaGold will establish practices with local contractors relating to the notification of upcoming contracts, access to contracts through bidding assistance, bonding waivers, and other practices.

Table 12.2-6 summarizes issues and impacts associated with the business development VEC.

**Table 12.2-6  
VEC, Business Development Impacts, Dease Lake, Dease Lake Reserve 9**

<b>Component</b>	<b>Timing</b>	<b>Duration</b>	<b>Direction</b>	<b>Probability</b>	<b>Magnitude of Impact</b>
<b>Awareness of Contracts</b>					
Notification;	Construction	Short Term	Positive	High	Major
Postings;	Operation	Medium Term	Positive	High	Major
First Choice.	Closure	Long Term	Adverse	High	Major
<b>Access to Contracts</b>					
Limited Number of Enterprises;	Construction	Short Term	Positive	High	Major
Qualifications;	Operation	Medium Term	Positive	High	Major
Opportunity for First Refusal;	Closure	Long Term	Adverse	High	Major
<b>Contract Administration and Management</b>					
Indirect Employment;	Construction	Short Term	Positive	High	Major
Employment Incomes	Operation	Medium Term	Positive	High	Major
	Closure	Long Term	Adverse	High	Major
	Post Closure	Far Future	Positive	High	Low
<b>Capacity Building</b>					
Education;	Construction	Short Term	Positive	High	Major
Experience;	Operation	Medium Term	Positive	High	Major
Joint Ventures; Management Skills	Closure	Long Term	Adverse	High	Major

## ***Socio-Economic Impacts on the Primary Impact Area***

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Because of the small number of commercial enterprises in Dease Lake, the overall magnitude of business development impacts on Dease Lake will be major because of the indirect effect of such contracts on local employment and incomes, enhanced business experience and capacity building, attitudes towards work, and the opportunity for contractors to build, expand and generate community sustainability.

Issues and impacts described above are also components of the following VECs: Education and Training and Employment Impacts. Each of these is further described in terms of mitigation measures, residual impact and cumulative impact in Part IV.

### **12.2.6 Health Impacts**

The physical, mental and social dimensions of health are inter-twined with economic issues of development, employment and incomes. Healthy individuals are a prerequisite for healthy communities and the Galore Creek project contributes to healthy individuals and community by providing economic development, employment and incomes. These provide individuals and the community with some of the components of health but also raise concerns stemming from fly-in/fly-out work rotations and employee money management.

Identifiable health issues, most notably substance abuse and related spousal and family violence, existed in Dease Lake before NovaGold arrived. Nevertheless, documentation of health impacts associated with the Galore Creek project gives recognition to the issues, illustrates the relationship to employment and incomes, and highlights the negative side of employment and incomes in an environment where incomes confront few alternative employment prospects, few recreational opportunities, peer pressure, and limited faith in the future.

From the perspective of this socio-economic impact assessment, health issues revolve around the two week in / two week out work rotations, and the resulting concerns of:

- Money management by employees, and the propensity of some employees to spend their pay cheques inappropriately,
- Family stress, arising from the absence of the husband/father from the household, responsibilities of the wife/mother to operate the household and raise the children, and the expenditure of incomes on items other than family and household maintenance,
- Substance Abuse, including both drug and alcohol abuse arising in part from the inappropriate expenditure of incomes, and often leading to family violence and suicide,

In addition to these, the safety of employees at the mine site raises issues pertaining to occupational health and safety. Health impacts are summarized in Table 12.2-7.

## Socio-Economic Impacts on the Primary Impact Area

**Table 12.2-7  
VEC, Health Impacts, Dease Lake, Dease Lake Reserve 9**

Component	Timing	Duration	Direction	Probability	Magnitude of Impact
<b>Occupational Health and Safety</b>					
Workplace Accidents	Construction	Short Term	Adverse	Low	Low
	Operation	Medium Term	Adverse	Low	Low
	Closure	Long Term	Adverse	Low	Low
	Post Closure	Far Future	Adverse	Low	Low
<b>Work Schedules</b>					
Fly-in / Fly-out; Family Separation; Parent Absenteeism	Construction	Short Term	Adverse	Medium to High	Major
	Operation	Medium Term	Adverse	Medium to High	Major
	Closure	Long Term	Positive	Medium to High	Major
<b>Substance Abuse</b>					
Drug and Alcohol Abuse; Family Violence; Inappropriate Role Models	Construction	Short Term	Adverse	Medium to High	Moderate
	Operation	Medium Term	Adverse	Medium to High	Moderate
	Closure	Long Term	Adverse	Medium to High	Moderate
<b>Family Stress</b>					
Inappropriate Spending of Incomes; Money Management; Spousal stress	Construction	Short Term	Adverse	Medium to High	Moderate
	Operation	Medium Term	Adverse	Medium to High	Moderate
	Closure	Long Term	Adverse	Medium to High	Moderate

Overall, health may be expected to continue to be a major issue, and exacerbated by the incomes generated from mine employment.

Issues and impacts described above are also components of the following VECs: Employment Impacts and Occupational Health and Safety. Each of these is further described in terms of mitigation measures, residual impact and cumulative impact in Part IV.

### 12.2.7 Education Impacts

The Galore Creek project will have an overall positive impact on the education of Dease Lake employees. This impact arises from the preparation of potential employees for employment, on-the-job training, apprenticeship programs and opportunities for career advancement.

## **Socio-Economic Impacts on the Primary Impact Area**

Most education impacts will be experienced through mine operation rather than during the construction phase.

Employment at Galore Creek will not require graduation from secondary school for all positions. Rather, NovaGold will use the TOWES Essential Skills or equivalent program of assessing employee reading, document use and numeracy to determine appropriateness of employment. Continuing on-the-job training and opportunity for apprenticeships leading to trades papers and credentials represent an investment in education. This investment contributes over the long term to capacity building and the opportunity for some individuals and the community to expand the range of goods and services available from Dease Lake. Education impacts are summarized in Table 12.2-8.

**Table 12.2-8  
VEC, Education Impacts, Dease Lake, Dease Lake Reserve 9**

<b>Component</b>	<b>Timing</b>	<b>Duration</b>	<b>Direction</b>	<b>Probability</b>	<b>Magnitude of Impact</b>
<b>Pre-Employment Training</b>					
Qualification; Skills Evaluation	Construction	Short Term	Positive	Moderate	Moderate
	Operation	Medium Term	Positive	High	High
	Closure	Long Term	Adverse	High	Low
	Post Closure	Far Future	Positive	High	Negligible
<b>Skills Training</b>					
On-the-Job	Construction	Short Term	Positive	Moderate	Moderate
	Operation	Medium Term	Positive	High	High
	Closure	Long Term	Adverse	High	Low
	Post Closure	Far Future	Positive	High	Negligible
<b>Apprenticeships</b>					
Qualifications; Apprenticeships	Construction	Short Term	Neutral	Moderate	Moderate
	Operation	Medium Term	Positive	High	High
	Closure	Long Term	Adverse	High	Negligible
	Post Closure	Far Future	Positive	High	Negligible
<b>Capacity Building</b>					
Skills Training; Continuing Education; Experience	Construction	Short Term	Positive	High	High
	Operation	Medium Term	Positive	High	High
	Closure	Long Term	Adverse	High	Low

The educational impacts of the Galore Creek operation will be positive, long-term and of high magnitude. Educational impacts arising from construction will generally be positive but will be available only for three years. The educational impacts of closure will be adverse to the extent that no further educational programming would be available.

## **Socio-Economic Impacts on the Primary Impact Area**

Issues and impacts described above are components of Employment Impacts and Education and Training VECs. Each of these is further described in terms of mitigation measures, residual impact and cumulative impact in Part IV.

### **12.2.8 Cultural Impacts**

Dease Lake Reserve 9 is a Tahltan community; Dease Lake is substantially so. Cultural identity is as much of an issue in these communities as it is in Iskut and Telegraph Creek. Like other Tahltan communities, the numbers of people who know the Tahltan language is declining. Preservation of the Tahltan culture is a stated priority of the Tahltan Central Council and is interpreted as an essential element in individual and community health of the Tahltan.

Language is but one, albeit a critically important, component of culture. Other elements include participation in ceremonies such as funerals and celebrations, uses of the land and water resource base for hunting or fishing and the expression of culture in arts and crafts. Yet another dimension of cultural issues is the reduction of inter-cultural conflict in the workplace. Cultural impacts are summarized in Table 12.2-9.

The importance of the relationship between culture and individual and community health is recognized in the Tahltan's holistic approach to wellness and articulated in "*Out of Respect*". The holistic approach has similarly been adopted by Health Canada. Accordingly, preservation of the Tahltan culture is extremely important in giving the Tahltan pride in their heritage, in providing individuals and the community a sense of who they are, a sense of self-confidence and self-worth, and the optimism that the future may be better than the past or the present. Through these contributions, preservation of the Tahltan culture is believed to be a necessary component in addressing individual and community health issues.

**Table 12.2-9  
VEC, Cultural Impacts, Dease Lake**

<b>Component</b>	<b>Timing</b>	<b>Duration</b>	<b>Direction</b>	<b>Probability</b>	<b>Magnitude of Impact</b>
<b>Tahltan Culture</b>					
Tahltan Language	Construction	Short Term	Adverse	High	Unknown
	Operation	Medium Term	Adverse	High	Unknown
	Closure	Long Term	Adverse	High	Unknown
<b>Ceremonies, Events</b>					
Participation of Employees During Fly-In Work Rotations	Construction	Short Term	Adverse	High	High
	Operation	Medium Term	Adverse	High	High
	Closure	Long Term	Adverse	High	High

(continued)

## **Socio-Economic Impacts on the Primary Impact Area**

**Table 12.2-9  
VEC, Cultural Impacts, Dease Lake (completed)**

<b>Component</b>	<b>Timing</b>	<b>Duration</b>	<b>Direction</b>	<b>Probability</b>	<b>Magnitude of Impact</b>
<b>Trapping, Fishing and Hunting</b>					
Access by Non-Residents; Participation by Resident Employees	Construction	Short Term	Adverse	High	Moderate
	Operation	Medium Term	Adverse	High	Moderate
	Closure	Long Term	Adverse	High	Moderate
<b>Cross-Cultural Sensitivities</b>					
Cross-Cultural Conflict	Construction	Short Term	Adverse	High	Moderate
	Operation	Medium Term	Adverse	High	Moderate
	Closure	Long Term	Adverse	High	Moderate

Issues and impacts described above are also components of the recognition of the Tahltan Culture, Traditional Activities and Cross-Cultural Sensitivities VECs. Each of these is further described in terms of mitigation measures, residual impact and cumulative impact in Part IV.

### **12.2.9 Communications Impact**

Dease Lake community and Dease Lake Reserve 9 have highlighted the need to maintain effective communications with the Tahltan Central Council, the Tahltan Band and Iskut First Nations and the public at large in order to keep residents aware of opportunities and for the community to benefit from those opportunities.

Developing and maintaining communication channels, the provision of contact names (for example, for complaints), documentation of procedures (for example, for job applications), posting notices and requirements, and notification of employment and contract opportunities comprise part of a communication program which, depending upon implementation, could facilitate the Galore Creek project or detract from it.

The NovaGold communication program also serves to inform the public about the Galore Creek mine development and the achievements of local residents. Communication channels and media also serve to notify the Tahltan of company responses to Tahltan events such as funerals and ceremonies, time off for hunting and fishing, and participation in community events.

NovaGold communication has been effective to date and bears much of the responsibility for the positive response of the Tahltan to the Galore Creek project.

NovaGold's communication program will continue throughout the construction and operation of the Galore Creek project.

Overall, communication impacts are expected to be positive, long term and of high magnitude. Communication impacts are summarized in Table 12.2-10.

## **Socio-Economic Impacts on the Primary Impact Area**

**Table 12.2-10**  
**VEC, Communication Impacts, Dease Lake, Dease Lake Reserve 9**

<b>Component</b>	<b>Timing</b>	<b>Duration</b>	<b>Direction</b>	<b>Probability</b>	<b>Magnitude of Impact</b>
<b>Tahltan Communication</b>					
Tahltan Central Council	Construction	Short Term	Positive	High	High
	Operation	Medium Term	Positive	High	High
	Closure	Long Term	Positive	High	High
	Post Closure	Far Future	Positive	High	High
<b>Employment Opportunities</b>					
Notification; Postings; First Choice.	Construction	Short Term	Positive	High	High
	Operation	Medium Term	Positive	High	High
	Closure	Long Term	Positive	High	High
	Post Closure	Far Future	Positive	High	Low
<b>Contract Opportunities</b>					
Notification; Postings; First Choice.	Construction	Short Term	Positive	High	High
	Operation	Medium Term	Positive	High	High
	Closure	Long Term	Positive	High	High
	Post Closure	Far Future	Positive	High	Low
<b>Public Information</b>					
Newsletter; Meetings.	Construction	Short Term	Positive	High	High
	Operation	Medium Term	Positive	High	High
	Closure	Long Term	Positive	High	High

Issues and impacts described above are also components of Employment Impacts and Education and Training VECs. Each of these is further described in terms of mitigation measures, residual impact and cumulative impact in Part IV.

### **12.3 Socio-Economic Impacts on Iskut**

The Galore Creek project will be constructed from 2007 through 2010 with operations beginning in 2010. During this timeframe, the Red Chris mine, if it proceeds, would be constructed for planned operation in 2007. Sited approximately 23 kilometres from Highway 37 south of Iskut, the Red Chris mine would be within commuting (bus in / bus out) distance of Iskut. Construction of the mine would require a workforce of up to 500 persons; operations would provide direct full-time employment for some 252 persons and another 32 – 50 persons employed full time by contractors.<sup>355</sup> The effect of the Red Chris construction and development program will, if

<sup>355</sup> Red Chris Development Company Ltd., Application for an Environmental Assessment Certificate: Red Chris Project, Executive Summary, 2004, p.4.

## ***Socio-Economic Impacts on the Primary Impact Area***

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development occurs, be to offer an alternative source of employment to residents of Dease Lake, Iskut and Telegraph Creek. It is anticipated that because of its proximity to Iskut, the Red Chris mine could become a preferred source of employment to Iskut residents.

It is therefore believed that construction and operation of the Galore Creek mine will not attract a large number of Iskut residents. It is possible, however, that the competition for labour may serve to draw Iskut non-residents back to Iskut.

Valued Ecosystem Components (VECs) are derived from and represent the issues identified in Section 3 of this Socio-Economic Impact Assessment and are supported by interviews with a broad spectrum of local, Tahltan, regional and other northwestern BC representatives.

Major Issues pertinent to Iskut are:

- Community Development
- Cultural
- Education
- Employment
- Family
- Health
- Communications

VECs addressing these issues are:

- Employment Opportunities

Awareness of Opportunities

Access to Employment

Career Advancement

- Employment Incomes
- Business Development Opportunities

Awareness of Contracts

Access to Contracts

Capacity Building

- Community Health

Work Rotations

Substance Abuse

Family Stress

Housing

- Education

Pre-Employment

Skills Training

Apprenticeships

Capacity Building

- Cultural Strengthening

Language

Ceremonies

Fishing and Hunting

Recognition of Tahltan names

- Communications

Employment Opportunities

Contract Opportunities

Public Information

### **12.3.1 Employment Impacts**

In 2005, NovaGold employed six residents of Iskut in various exploration related activities associated with the Galore Creek project. In addition, NovaGold contractors employed a small number of Iskut residents. In addition to NovaGold employment, another 20 - 25 Iskut residents are employed at Eskay Creek.

Construction beginning in 2007 of the Galore Creek mine will be primarily undertaken by contractors and will compete with full-time employment being offered at the Red Chris mine if that mine proceeds to development. Assuming that NovaGold's six Iskut seasonal employees and the contractors' 35 employees employed during 2005 continue with employment, and the availability of as many as 20 former Eskay Creek employees, then approximately 60 Iskut residents could be employed during construction of the Galore Creek project.

Operation of the Galore Creek mine in 2010 presents opportunity for year round employment but many potential employees from Iskut will have become employed at Red Chris. Iskut non-

## **Socio-Economic Impacts on the Primary Impact Area**

residents may be attracted back to Iskut if employees are required to be residents at the point of hire to qualify for employment.

If the Red Chris Mine were not to proceed, approximately 70 Iskut residents could achieve employment at the Galore Creek mine. If Red Chris were to be developed, and recognizing the appeal of the Red Chris project to Iskut residents because of its close proximity to Iskut, approximately 10 Iskut residents would be employed at the Galore Creek mine during operations.

NovaGold anticipates employing as many local residents as possible and recognizes that this achievement will address four issues - awareness of employment opportunities, access to employment, skills training, apprenticeships, and career advancement - which may be described as components of the Employment Valued Ecosystem Component (VEC). Impacts in this area are summarized in Table 12.3-1. Other employment related issues such as substance abuse are more properly associated with the employment incomes and community health impacts VEC.

**Table 12.3-1  
VEC, Employment Impacts, Iskut**

<b>Component</b>	<b>Timing</b>	<b>Duration</b>	<b>Direction</b>	<b>Probability</b>	<b>Magnitude of Impact</b>
<b>Employment</b>					
Jobs	Construction	Short Term	Positive	High	High
	Operation	Medium Term	Positive	High	High
	Closure	Long Term	Adverse	High	High
	Post Closure	Far Future	Positive	High	Low
<b>Awareness of Opportunity</b>					
Notification; Posting; First Choice	Construction	Short Term	Positive	High	High
	Operation	Medium Term	Positive	High	High
	Closure	Long Term	Adverse	High	Negligible
<b>Access to Employment</b>					
Qualifications; Essential Skills Evaluation; Preferential Hiring; Pre-Employment Training	Construction	Short Term	Positive	Moderate	Moderate
	Operation	Medium Term	Positive	High	High
	Closure	Long Term	Adverse	High	High
<b>Skills Training</b>					
On-the-Job Training	Construction	Short Term	Positive	High	Moderate
	Operation	Medium Term	Positive	High	High
	Closure	Long Term	Adverse	High	Low

(continued)

**Table 12.3-1  
VEC, Employment Impacts, Iskut (completed)**

<b>Component</b>	<b>Timing</b>	<b>Duration</b>	<b>Direction</b>	<b>Probability</b>	<b>Magnitude of Impact</b>
<b>Apprenticeships</b>					
Apprenticeship Qualification, Training; Papers; Transferability and Mobility	Construction	Short Term	Positive	Low	Negligible
	Operation	Medium Term	Positive	High	Moderate
	Closure	Long Term	Adverse	High	Negligible
<b>Career Advancement</b>					
Skills Training and Enhancement; Career Pathing	Construction	Short Term	Positive	Low	Negligible
	Operation	Medium Term	Positive	High	High
	Closure	Long Term	Adverse	High	Negligible

Galore Creek employment of Iskut residents will likely be restrained if the Red Chris mine is developed because of the proximity of the mine to Iskut and the probability that Red Chris would be a preferred source of employment to Iskut residents. Overall impact on employment will be positive until mine closure when termination of employment will create an adverse impact on individuals and the community. Because of the limited number of employees involved, employment will have a major impact on individuals but minor impact on the community.

Employment issues and impacts described above are components of the Employment and Education and Training VECs. Each of these is further described in terms of mitigation measures, residual impact and cumulative impact in Part IV.

### **12.3.2 Income Impacts, Iskut<sup>356</sup>**

Employment, both during construction and operations, offers the prospect of long-term sustainable employment for employees. Incomes to persons will be substantial and in many cases tax free.

As much as these incomes will permit employees to acquire a range of goods and services, some employees will spend their incomes inappropriately. Substance abuse is a broadly-based concern and increased employment, generating good and reliable incomes may worsen the problem. Family violence is a related concern. Family stress arises from the amount of money spent on drugs and alcohol at the expense of rent and mortgage payments, utilities, vehicles and other goods and services. There is an often mentioned concern that too many employees will not have the skills to manage their incomes successfully.

<sup>356</sup> All income data and projections are based on constant 2006 dollars. No adjustments are made for inflation.

## **Socio-Economic Impacts on the Primary Impact Area**

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### **12.3.2.1 Without Red Chris**

If the Red Chris Mine were not to proceed, a larger number of residents of Iskut will be available for employment at Galore Creek. The discussion below describes potential Galore Creek employment and income impacts if Galore Creek were the only mine to be developed.

#### ***Incomes from Construction***

The annual income impact of construction through the employment of 60 Iskut residents by contractors from 2007 through 2010 at an assumed 2005 average annual wage of \$80,000 approximates:

$$60 \text{ persons} \times \$80,000 = \$4,800,000$$

Direct incomes from construction are based on 2005 data and may approximate \$4,800,000 for each of three years. Wages paid for construction labour between 2007 and 2010 will likely increase because of the demand for construction labour created by numerous large construction programs in BC over the 2006-2010 period.

Indirect impacts from this employment income are expected to focus on the provision of goods and services to construction personnel. Few commercial enterprises at Iskut suggest that few indirect employment and income impacts will be experienced by Iskut businesses. Indirect employment and incomes will likely be generated through companies such as TNDC and Spatsizi Remote Services, based at Dease Lake and employing Iskut residents. Using BC Stats employment multipliers for the Stikine Region, indirect employment from construction may amount to

$$\text{(multiplier)} 60 \times .25 = 15 \text{ persons}$$

Contractors such as Spatsizi and TNDC who provide goods and services to Galore Creek may be expected to earn incomes, measured in 2005 dollars, from \$25,000 (Spatsizi Remote Services) to \$80,000 (equipment operators) or a median of approximately \$50,000. Indirect local incomes generated by construction of Galore Creek may approximate additional income to Iskut residents of:

$$\text{(multiplier)} 15 \text{ persons} \times \$50,000 = \$750,000$$

NovaGold's use of local businesses, such as Spatsizi Remote Services, suggests that indirect employment at Galore Creek may be greater than what the multiplier suggests. With Spatsizi Remote Services employing 108 persons in 2005, it is possible that indirect employment of Iskut residents could reach 35 persons by Spatsizi Remote Services alone with the remaining employees coming from Dease Lake and Telegraph Creek. Added to other indirect employment, it is possible that total indirect employment could reach 50 persons.

Under these circumstances incomes generated indirectly through contractor employment may then approximate \$2,500,000 annually over the construction period:

$$50 \text{ persons} \times \$50,000 = \$2,500,000$$

## ***Socio-Economic Impacts on the Primary Impact Area***

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Spatsizi Remote Services experience suggests that approximately 60% of employees will be women.

**Induced employment impacts:** While employment incomes will be more stable than under seasonal employment conditions, employees will be drawn from the existing population, market size will not change, and total local incomes from construction may not be sufficient to generate further downstream impacts on employment and incomes. Induced employment at a multiplier of 1.31 may generate 4 additional jobs elsewhere in the community. These positions are likely to be in the public service sector where total employment revenues may approximate \$200,000.

### ***Incomes from Operational Employment***

The annual direct income impact of operating mine employment through the full time employment of 70 Iskut residents by NovaGold from 2010 through 2030 at an assumed average annual wage of \$80,000 approximates:

$$70 \text{ persons} \times \$80,000 = \$5,600,000$$

Indirect impacts from this employment income are expected to focus on the provision of goods and services to construction personnel. Contractors such as Spatsizi and TNDC who provide goods and services to Galore Creek may be expected to earn incomes, measured in 2005 dollars, from \$25,000 (Spatsizi Remote Services employees) to \$80,000 (equipment operators) or a median of \$50,000. Assuming a BC Stats employment multiplier of 1.25, indirect employment may amount to:

$$(\text{multiplier}) 70 \times .25 = 18 \text{ persons}$$

Incomes generated indirectly through contractor employment may then approximate \$612,000 annually over the life of the mine:

$$(\text{multiplier}) 18 \text{ persons} \times \$50,000 = \$900,000$$

NovaGold's use of local businesses, such as Spatsizi Remote Services, suggests that indirect employment at Galore Creek may be greater than what the multiplier suggests. With Spatsizi Remote Services employing 108 persons in 2005, it is possible that indirect employment of Iskut residents could reach 35 persons by Spatsizi Remote Services alone with the remaining employees coming from Dease Lake and Telegraph Creek. Added to other indirect employment, it is possible that total indirect employment could reach 53 persons.

Spatsizi Remote Services experience suggests that approximately 60% of employees will be women.

Under these circumstances, total indirect employment incomes to Iskut residents during mine operations could reach \$2,650,000 annually:

$$53 \text{ persons} \times \$50,000 = \$2,650,000$$

## **Socio-Economic Impacts on the Primary Impact Area**

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Incomes are based on 2005 data. Wages paid for contractor employment after 2010 may increase to new base levels because of the demand for construction labour created by numerous large construction programs in BC over the 2006-2010 period.

**Induced employment impacts:** While employment incomes will be more stable than under seasonal employment conditions, employees will be drawn from the existing population, market size will not change, and total local incomes from operations may not be sufficient to generate further downstream impacts on employment and incomes. Induced employment at a multiplier of 1.31 may be expected to generate four additional jobs elsewhere in the community. In Iskut, these positions are likely to be in the public service sector.

$$70 \text{ persons} \times 1.31 - 1.25 = 4 \text{ persons}$$

Total induced incomes are expected to approximate \$200,000.

### ***Incomes Upon Closure***

Closure of the Galore Creek mine will involve the termination of employment and the cessation of incomes to most of the 123 direct and indirect employees. Cessation of employment will lead to the termination of \$6,800,000 of direct and indirect employment income to Iskut residents.

Environmental monitoring of the closed mine will involve the continued seasonal part-time employment of 1 - 5 local residents who will be reimbursed at 2030 wage levels. The incomes generated from such employment may range from \$50,000 to \$100,000 per year if all employees resided in Iskut. Assuming one of these persons lived in Iskut, annual income may approximate \$25,000.

In the absence of alternative sources of employment, closure of the mine will involve major dislocation of local employees.

### ***Summary of Impacts Without Red Chris Mine***

Employment and income impacts of the Galore Creek project proceeding without the concurrent development of the Red Chris Mine are presented below in Table 12.3-2.

**Table 12.3-2  
Iskut Employment and Income: Galore Creek Proceeding without Red  
Chris Mine**

<b>Construction</b>	<b>Employment</b>	<b>Incomes</b>
Direct	60	\$4,800,000
Indirect	50	\$2,500,000
Induced	4	\$200,000
<b>Operations</b>		
Direct	70	\$5,600,000
Indirect	53	\$2,650,000
Induced	4	\$200,000
<b>Closure</b>	1-5 part time, seasonal	\$25,000

## **Socio-Economic Impacts on the Primary Impact Area**

### **12.3.2.2 With Red Chris**

If the Red Chris Mine proceeds according to plan, two mines in the primary study area will offer employment. Recognizing the sizes of the communities in the primary study area, two mines will introduce labour force competition such that fewer residents will be available for employment at Galore Creek. Assuming that the Red Chris mine employs a significant number of Iskut residents, it is possible that the number of residents employed directly at Galore Creek may approximate 10. The discussion below describes potential Galore Creek employment and income impacts if both Red Chris and Galore Creek mines were developed (Table 12.3-3). The number of indirect employees may also be expected to decrease to approximately 20 – 25 persons.

The same multipliers apply as if Galore Creek proceeded without Red Chris.

The Galore Creek project, through employment of local and regional residents, may be expected to have a major impact on Iskut employment incomes (Table 12.3-4). The expenditure of these incomes may be expected to exacerbate existing money management, substance abuse and family stress issues in the community. These are components of the Employment Incomes VEC. Because of the complexity of these issues, substance abuse and family stress are also considered as separate Community Health VECs.

**Table 12.3-3  
Iskut, Employment and Income: Galore Creek Proceeding with Red Chris Mine**

<b>Construction</b>	<b>Employment</b>	<b>Incomes</b>
Direct	10	\$800,000
Indirect	20-25	\$1,000,000 to \$1,250,000
Induced	1	\$50,000
<b>Operations</b>		
Direct	10	\$800,000
Indirect	20-25	\$1,000,000 to \$1,250,000
Induced	1	\$50,000
Closure	1-5 Part time, seasonal	\$25,000

**Table 12.3-4  
VEC, Income Impacts, Iskut**

<b>Component</b>	<b>Timing</b>	<b>Duration</b>	<b>Direction</b>	<b>Probability</b>	<b>Magnitude of Impact</b>
<b>Incomes</b>					
Wages, Salaries	Construction	Short Term	Positive	High	High
	Operation	Medium Term	Positive	High	High
	Closure	Long Term	Adverse	High	High

(continued)

## **Socio-Economic Impacts on the Primary Impact Area**

**Table 12.3-4  
VEC, Income Impacts, Iskut (completed)**

<b>Component</b>	<b>Timing</b>	<b>Duration</b>	<b>Direction</b>	<b>Probability</b>	<b>Magnitude of Impact</b>
<b>Inappropriate Spending</b>					
Substance Abuse;	Construction	Short Term	Adverse	High	Moderate
Money Management;	Operation	Medium Term	Adverse	High	Moderate
	Closure	Long Term	Adverse	High	Moderate
<b>Family Stress</b>					
Inappropriate	Construction	Short Term	Adverse	High	Moderate
Spending of Incomes;	Operation	Medium Term	Adverse	High	Moderate
Money Management;	Closure	Long Term	Adverse	High	Moderate
Substance Abuse;					
Spousal violence;					
<b>Indirect Impact of Employment Incomes</b>					
Basic Commercial	Construction	Short Term	Positive	High	Low
Services Only; Small	Operation	Medium Term	Positive	High	Low
Market Population	Closure	Long Term	Adverse	High	High
<b>Indirect and Induced Impact of Employment Incomes</b>					
Basic Commercial	Construction	Short Term	Positive	Low	Low
Services Only; Small	Operation	Medium Term	Positive	High	Low
Market Population	Closure	Long Term	Adverse	High	High

Issues and impacts described above are components of the Employment Incomes, Substance Abuse and Family Stress VECs. Each of these is further described in terms of mitigation measures, residual impact and cumulative impact in Part IV.

### **12.3.3 Business Opportunity Impacts**

The construction and operation of the Galore Creek project represents opportunity for Iskut businesses to acquire contracts to provide goods and services to NovaGold. Iskut possesses, however, few commercial and industrial enterprises which could provide goods and services to Galore Creek. Nevertheless, one or two businesses could provide contracting services on an ad-hoc basis. The overall magnitude of business development impacts on Iskut will be minor because of the lack of commercial and industrial enterprises at Iskut (Table 12.3-5). Impacts to business opportunities are summarized in Table 12.3-5.

NovaGold has established practices with local contractors relating to the notification of upcoming contracts, access to contracts through bidding assistance, bonding waivers, and other practices.

**Table 12.3-5  
VEC, Business Opportunity Impacts, Iskut**

<b>Component</b>	<b>Timing</b>	<b>Duration</b>	<b>Direction</b>	<b>Probability</b>	<b>Magnitude of Impact</b>
<b>Awareness of Contracts</b>					
Notification; Postings; First Choice.	Construction	Short, Intermediate Term	Positive	High	Minor
	Operation	Long Term	Positive	High	Minor
	Closure	Long Term	Adverse	High	Minor
<b>Access to Contracts</b>					
Limited Number of Enterprises; Qualifications; Opportunity for First Refusal	Construction	Short, Intermediate Term	Positive	High	Minor
	Operation	Long Term	Positive	High	Minor
	Closure	Long Term	Adverse	High	Minor
<b>Capacity Building</b>					
Education; Experience; Joint Ventures; Management Skills	Construction	Short, Intermediate Term	Positive	High	Minor
	Operation	Long Term	Positive	High	Minor
	Closure	Long Term	Adverse	High	Minor

### 12.3.4 Health Impacts

The physical, mental and social dimensions of health are inter-twined with economic issues of development, employment and incomes. Healthy individuals are a prerequisite for healthy communities and the Galore Creek project contributes to healthy individuals and community by providing economic development, employment and incomes. These provide individuals and the community with some of the components of health but also raise concerns stemming from fly-in/fly-out work schedules and employee money management.

Identifiable health issues existed in Iskut before NovaGold arrived and as long as individuals make unhealthy choices health issues will remain. Nevertheless, documentation of health impacts associated with the Galore Creek project gives recognition to the issues, illustrates the relationship to employment, and highlights the negative side of employment in an environment where incomes confront few alternative employment prospects, few recreational opportunities, peer pressure, and limited faith in the future.

From the perspective of this socio-economic impact assessment, health issues revolve around the two week in / two week out work rotations, and the resulting concerns of:

- Money management by employees, and the propensity of some employees to spend their cheques inappropriately,

## **Socio-Economic Impacts on the Primary Impact Area**

- Family stress, arising from the absence of the husband/father from the household, responsibilities of the wife/mother to operate the household and raise the children, the expenditure of incomes on items other than family and household maintenance, and the lack of housing which requires those with housing to accommodate returning family members and adapt to their lifestyles, and
- Substance Abuse, including both drug and alcohol abuse arising in part from the inappropriate expenditure of incomes, and often leading to family violence and suicide.

Overall, health may be expected to continue to be a major issue, and exacerbated by the incomes generated from mine employment. Health impacts are summarized in Table 12.3-6.

**Table 12.3-6  
VEC, Health Impacts, Iskut**

<b>Component</b>	<b>Timing</b>	<b>Duration</b>	<b>Direction</b>	<b>Probability</b>	<b>Magnitude of Impact</b>
<b>Work Schedules</b>					
Fly-in / Fly-out; Family Separation;	Construction	Short, Intermediate Term	Adverse	Medium to High	Minor
Spousal stress; Parent Absenteeism	Operation	Long Term	Adverse	Medium to High	Minor
	Closure	Long Term	Adverse	Medium to High	Minor
<b>Substance Abuse</b>					
Drug and Alcohol Abuse; Family Violence; Inappropriate Role Models	Construction	Short, Intermediate Term	Adverse	Medium to High	Minor
	Operation	Long Term	Adverse	Medium to High	Minor
	Closure	Long Term	Adverse	Medium to High	Minor
<b>Family Stress</b>					
Inappropriate Spending of Incomes; Money Management; Spousal stress	Construction	Short, Intermediate Term	Adverse	Medium to High	Minor
	Operation	Long Term	Adverse	Medium to High	Minor
	Closure	Long Term	Adverse	Medium to High	Minor

The extent to which NovaGold exacerbates health issues at Iskut will depend upon the extent to which Red Chris draws employees from Iskut. If the Red Chris mine proceeds, it is sited close enough to Iskut to permit employees to commute daily to and from the minesite. As such, Red Chris may be expected to be a preferred employer for Iskut residents. Should this be the case, it is anticipated that the Galore Creek project will not have a major employment impact on Iskut

## **Socio-Economic Impacts on the Primary Impact Area**

and many of the health issues connected with employment will be reduced in magnitude to minor (Table 12.3-6).

### **12.3.5 Education Impacts**

The Galore Creek project will have an overall positive impact on the education of Iskut employees. This impact arises from the preparation of potential employees for employment, on-the-job training, apprenticeship programs and opportunities for career advancement.

Most education impacts will be experienced through mine operation rather than during the construction phase (Table 12.3-7).

Employment at Galore Creek will not require graduation from secondary school for all positions. Rather, NovaGold will use the TOWES Essential Skills program, or an equivalent program, of assessing employee reading, document use and numeracy to determine appropriateness of employment. Continuing on-the-job training and opportunity for 30 to 40 apprenticeships leading to trades papers and credentials represent an investment in education. This investment contributes over the long term to capacity building and the opportunity for some individuals and the community to expand the range of goods and services available from Iskut.

Assuming that many Iskut residents successfully seek employment with Red Chris and its contractors, the number of Iskut residents who seek employment with the Galore Creek project may be limited. With this scenario, education will be important to the individuals involved but will have a minor impact on the community.

**Table 12.3-7  
VEC, Education Impacts, Iskut**

<b>Component</b>	<b>Timing</b>	<b>Duration</b>	<b>Direction</b>	<b>Probability</b>	<b>Magnitude of Impact</b>
<b>Pre-Employment Training</b>					
Qualification; Skills Evaluation.	Construction	Short Term	Positive	Moderate	Moderate
	Operation	Medium Term	Positive	High	High
	Closure	Long Term	Adverse	High	Negligible
	Post Closure	Far Future	Positive	High	Negligible
<b>Skills Training</b>					
On-the-Job;	Construction	Short Term	Positive	Moderate	Moderate
	Operation	Medium Term	Positive	High	High
	Closure	Long Term	Adverse	High	Low
	Post Closure	Far Future	Positive	High	Negligible

(continued)

## Socio-Economic Impacts on the Primary Impact Area

**Table 12.3-7  
VEC, Education Impacts, Iskut (completed)**

Component	Timing	Duration	Direction	Probability	Magnitude of Impact
<b>Apprenticeships</b>					
Qualifications;	Construction	Short Term	Neutral	Moderate	Low
Apprenticeships	Operation	Medium Term	Positive	High	Moderate
	Closure	Long Term	Adverse	High	Low
	Post Closure	Far Future	Positive	High	Negligible
<b>Capacity Building</b>					
Skills Training;	Construction	Short, Intermediate Term	Positive	High	High
Continuing Education;	Operation	Long Term	Positive	High	High
Experience.	Closure	Long Term	Adverse	High	Low
	Post Closure	Far Future	Positive	High	Negligible

The educational impacts of the Galore Creek operation on Iskut will be positive and long-term, but of minor magnitude. Educational impacts arising from construction will generally be positive but will be available only for three years. The educational impacts of closure will be adverse to the extent that no further educational component would be available.

Issues and impacts described above are components of Employment Impacts and Education and Training VECs. Each of these is further described in terms of mitigation measures, residual impact and cumulative impact in Part IV.

### 12.3.6 Cultural

The Iskut First Nation concern about the survival of the Tahltan culture is reflected in the numbers of Iskut residents who learn and speak Tahltan. In 2001, approximately three quarters of Iskut residents spoke English only and only 12.7% speak Tahltan at home. The use of only English at work, English media, lack of recognition of Tahltan names and work schedules which prevent participation in ceremonies and traditional activities have all contributed to the decline of the Tahltan culture.

Language is but one, albeit a critically important, component of culture. Other elements include ceremonies such as funerals, uses of the land and water resource base, arts and crafts.

The importance of the relationship between culture and individual and community health is recognized in the Tahltan's holistic approach to wellness and articulated in "*Out of Respect*". The holistic approach has similarly been adopted by Health Canada. Accordingly, preservation of the Tahltan culture is extremely important in giving the Tahltan pride in their heritage, in providing individuals and the community a sense of who they are, a sense of self-confidence and self-worth, and the optimism that the future may be better than the past or the present. Through

## **Socio-Economic Impacts on the Primary Impact Area**

these contributions, preservation of the Tahltan culture is believed to be a necessary component in addressing individual and community health issues. Cultural impacts are summarized in Table 12.3-8.

**Table 12.3-8  
VEC, Cultural Impacts, Iskut**

<b>Component</b>	<b>Timing</b>	<b>Duration</b>	<b>Direction</b>	<b>Probability</b>	<b>Magnitude of Impact</b>
<b>Tahltan Culture</b>					
Tahltan Language	Construction	Short Term	Adverse	High	Unknown
	Operation	Medium Term	Adverse	High	Unknown
	Closure	Long Term	Adverse	High	Unknown
<b>Ceremonies, Events</b>					
Participation of Employees During Fly-In Work Rotations	Construction	Short Term	Adverse	High	High
	Operation	Medium Term	Adverse	High	High
	Closure	Long Term	Adverse	High	High
<b>Trapping, Fishing and Hunting</b>					
Access by Non-Residents; Participation by Resident Employees	Construction	Short Term	Adverse	High	Moderate
	Operation	Medium Term	Adverse	High	Moderate
	Closure	Long Term	Adverse	High	Moderate
<b>Cross-Cultural Sensitivities</b>					
Cross-Cultural Conflict	Construction	Short Term	Adverse	High	Moderate
	Operation	Medium Term	Adverse	High	Moderate
	Closure	Long Term	Adverse	High	Moderate

Issues and impacts described above are also components of the recognition of Tahltan Culture, Traditional Activities and Cross-Cultural Sensitivities VECs. Each of these is further described in terms of mitigation measures, residual impact and cumulative impact in Part IV.

### **12.3.7 Communications Impacts**

The Iskut community has highlighted the need to maintain effective communications with NovaGold in order to keep residents aware of opportunities and for the community to benefit from those opportunities.

Developing and maintaining communication channels, the provision of contact names (for example, for complaints), documentation of procedures (for example, for job applications), posting notices and requirements, and notification of employment and contract opportunities comprise part of a communication program which, depending upon implementation, could facilitate the Galore Creek project or detract from it.

## **Socio-Economic Impacts on the Primary Impact Area**

The NovaGold communication program also serves to inform the public about the Galore Creek mine development and the achievements of local residents. Communication channels and media also serve to notify the Iskut First Nation of company responses to events such as funerals and ceremonies, time off for hunting and fishing, and participation in community events.

NovaGold communication has been effective to date and bears much of the responsibility for the positive response of the Tahltan to the Galore Creek project.

NovaGold's communication program will continue throughout construction and operation of the Galore Creek project.

Overall, communication impacts are expected to be positive, long term and of high magnitude (Table 12.3-9).

**Table 12.3-9  
VEC, Communication Impacts, Iskut**

<b>Component</b>	<b>Timing</b>	<b>Duration</b>	<b>Direction</b>	<b>Probability</b>	<b>Magnitude of Impact</b>
<b>Tahltan Communication</b>					
Tahltan Central Council	Construction	Short Term	Positive	High	High
	Operation	Medium Term	Positive	High	High
	Closure	Long Term	Positive	High	High
	Post Closure	Far Future	Positive	High	High
<b>Employment Opportunities</b>					
Notification; Postings; First Choice	Construction	Short Term	Positive	High	High
	Operation	Medium Term	Positive	High	High
	Closure	Long Term	Positive	High	High
	Post Closure	Far Future	Positive	High	Low
<b>Contract Opportunities</b>					
Notification; Postings; First Choice	Construction	Short Term	Positive	High	High
	Operation	Medium Term	Positive	High	High
	Closure	Long Term	Positive	High	High
	Post Closure	Far Future	Positive	High	Low
<b>Public Information</b>					
Newsletter; Meetings	Construction	Short Term	Positive	High	High
	Operation	Medium Term	Positive	High	High
	Closure	Long Term	Positive	High	High

## ***Socio-Economic Impacts on the Primary Impact Area***

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Issues and impacts described above are also components of Employment Impacts and Education and Training VECs. Each of these is further described in terms of mitigation measures, residual impact and cumulative impact in Part IV.

### **12.4 Socio-Economic Impacts on Telegraph Creek**

Valued Ecosystem Components (VECs) are derived from and represent the issues identified in Section 3 of this Socio-Economic Impact Assessment.

Major Issues pertinent to Telegraph Creek are:

- Employment
- Cultural
- Education
- Health
- Communications

VECs addressing these issues are:

- Employment Opportunities

Awareness of Opportunities

Access to Employment

Career Advancement

- Employment Incomes
- Business Development Opportunities

Awareness of Contracts

Access to Contracts

Capacity Building

- Community Health

Work Rotations

Substance Abuse

Family Stress

Housing

- Education

Pre-Employment

Skills Training

Apprenticeships

Capacity Building

- Cultural Strengthening

Language

Ceremonies, Events

Trapping, Fishing and Hunting

Cross-Cultural Sensitivities

- Communications

Employment Opportunities

Contract Opportunities

Public Information

### **12.4.1 Employment Impacts**

In 2005, NovaGold employed 14 residents of Telegraph Creek in various exploration related activities associated with the Galore Creek project. In addition, NovaGold contractors employed a small number of Telegraph Creek residents. In addition to NovaGold employment, another 15 Telegraph Creek residents are employed at Eskay Creek. In spite of the seasonality of some employment, income assistance rate in January 2006 was considered to be low with 25 files at Telegraph Creek.

Construction beginning in 2007 of the Galore Creek mine will be primarily undertaken by contractors and would compete with full-time employment being offered at the Red Chris mine if the mine were to be developed. Assuming that most Red Chris employment would be drawn from Iskut and that recent NovaGold and contractor employees will be available for employment during construction of the Galore Creek project, approximately 50 Telegraph Creek residents may be employed by NovaGold and its contractors during construction of the Galore Creek mine.

Operation of the Galore Creek mine in 2010 presents opportunity for year round employment for the approximately 50 Telegraph Creek employed during construction. Non-residents may be attracted back to Telegraph Creek if employees are required to be residents at the point of hire to qualify for employment.

## **Socio-Economic Impacts on the Primary Impact Area**

If the Red Chris Mine were not to proceed, approximately 70 Telegraph Creek residents could achieve employment at the Galore Creek Mine. If Red Chris were to be developed, and recognizing the appeal of the Red Chris project to Telegraph Creek residents, approximately 35 Iskut residents would be employed at Galore Creek during operations.

NovaGold anticipates employing as many local residents as possible and recognizes that this achievement will address five issues - awareness of employment opportunities, access to employment, skills training, apprenticeships, and career advancement - which may be described as components of the Employment and Education Valued Ecosystem Components (VEC). Other employment related issues such as substance abuse are more properly associated with the Employment Incomes impacts VEC.

Galore Creek employment of Telegraph Creek residents may be restrained somewhat if the Red Chris Mine is developed. Overall impact on employment will be positive until mine closure when termination of employment will create an adverse impact on individuals and the community. Because of the number of employees involved, employment will have a major impact on individuals and a major impact on the community.

Employment issues and impacts described below (Table 12.4-1) are components of the Employment and Education and Training VECs. Each of these is further described in terms of mitigation measures, residual impact and cumulative impact in Part IV.

**Table 12.4-1  
VEC, Employment Impacts, Telegraph Creek**

<b>Component</b>	<b>Timing</b>	<b>Duration</b>	<b>Direction</b>	<b>Probability</b>	<b>Magnitude of Impact</b>
<b>Employment</b>					
Jobs	Construction	Short Term	Positive	High	High
	Operation	Medium Term	Positive	High	High
	Closure	Long Term	Adverse	High	High
	Post Closure	Far Future	Positive	High	Low
<b>Awareness of Opportunity</b>					
Notification;	Construction	Short Term	Positive	High	High
Posting;	Operation	Medium Term	Positive	High	High
First Choice	Closure	Long Term	Adverse	High	Negligible
<b>Access to Employment</b>					
Qualifications;	Construction	Short Term	Positive	Moderate	Moderate
Essential Skills	Operation	Medium Term	Positive	High	High
Evaluation;	Closure	Long Term	Adverse	High	High
Preferential Hiring;					
Pre-Employment					
Training					

(continued)

## **Socio-Economic Impacts on the Primary Impact Area**

**Table 12.4-1  
VEC, Employment Impacts, Telegraph Creek (completed)**

<b>Component</b>	<b>Timing</b>	<b>Duration</b>	<b>Direction</b>	<b>Probability</b>	<b>Magnitude of Impact</b>
<b>Skills Training</b>					
On-the-Job Training	Construction	Short Term	Positive	High	Moderate
	Operation	Medium Term	Positive	High	High
	Closure	Long Term	Adverse	High	Low
<b>Apprenticeships</b>					
Apprenticeship Qualification, Training; Papers; Transferability and Mobility	Construction	Short Term	Positive	Low	Negligible
	Operation	Medium Term	Positive	High	Moderate
	Closure	Long Term	Adverse	High	Negligible
<b>Career Advancement</b>					
Skills Training and Enhancement; Career Pathing	Construction	Short Term	Positive	Low	Negligible
	Operation	Medium Term	Positive	High	High
	Closure	Long Term	Adverse	High	Negligible

### **12.4.2 Income Impacts, Telegraph Creek<sup>357</sup>**

Employment, both during construction and operations, offers the prospect of long-term sustainable employment for employees. Incomes to persons will be substantial and in many cases tax free.

As much as these incomes will permit employees to acquire a range of goods and services, some employees will spend their incomes inappropriately. Substance abuse is a broadly-based concern and increased employment generating good and reliable incomes may worsen the problem. Family violence is a related concern. Family stress arises from the amount of money spent on drugs and alcohol at the expense of rent and mortgage payments, utilities, vehicles and other goods and services. There is an often mentioned concern that too many employees will not have the skills to manage their incomes successfully.

#### **12.4.2.1 Without Red Chris**

If the Red Chris Mine were not to proceed, a larger number of residents of Telegraph Creek will be available for employment at Galore Creek, The discussion below describes potential Galore Creek employment and income impacts if Galore Creek were the only mine to be developed.

#### ***Incomes from Construction***

The annual income impact of construction through the year-round employment of 50 Telegraph Creek residents by contractors from 2007 through 2010 at an assumed 2005 average annual wage of \$80,000 approximates:

<sup>357</sup> All income data are based on and held constant to 2006 dollars. Projections do not account for inflation.

## ***Socio-Economic Impacts on the Primary Impact Area***

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$$50 \text{ persons} \times \$80,000 = \$4,000,000$$

Direct incomes from construction are based on 2005 data and may approximate \$4,000,000 for each of three years. Wages paid for construction labour between 2007 and 2010 will likely increase because of the demand for construction labour created by numerous large construction programs in BC over the 2006-2010 period.

Indirect impacts from this employment income are expected to focus on the provision of goods and services to construction personnel. Few commercial enterprises at Telegraph Creek suggest that few indirect employment and income impacts will be experienced by Telegraph Creek businesses. Indirect employment and incomes will likely be generated through companies such as TNDC and Spatsizi Remote Services, based at Dease Lake and employing Telegraph Creek residents. Using BC Stats employment multipliers for the Stikine Region, indirect employment from construction may amount to

$$\text{(Multiplier)} 50 \times .25 = 13 \text{ persons}$$

Spatzisi, for example, may provide camp and catering services. Contractors such as Spatzisi and TNDC who provide goods and services to Galore Creek may be expected to earn incomes, measured in 2005 dollars, from \$25,000 (Spatzisi Remote Services employees) to \$80,000 (equipment operators) or a median of approximately \$50,000. In accordance with BC Stats multipliers, indirect local incomes generated by construction of Galore Creek may approximate additional income to Telegraph Creek residents of:

$$\text{(Multiplier)} 13 \text{ persons} \times \$50,000 = \$630,000$$

NovaGold's use of local businesses, such as Spatsizi Remote Services, suggests that indirect employment at Galore Creek may be greater than what the multiplier suggests. With Spatsizi Remote Services employing 108 persons in 2005, it is possible that indirect employment of Telegraph Creek residents could reach 35 persons by Spatsizi Remote Services alone with the remaining employees coming from Iskut and Dease Lake. Added to other indirect employment, it is possible that total indirect employment could reach 48 persons.

Under these circumstances, total indirect employment incomes could reach:

$$48 \text{ persons} \times \$50,000 = \$2,400,000$$

Spatzizi Remote Services experience suggests that approximately 60% of employees will be women.

Induced employment impacts: While employment incomes will be more stable than under seasonal employment conditions, employees will be drawn from the existing population, market size will not change, and total local incomes from construction may not be sufficient to generate further downstream impacts on employment and incomes. Induced employment at a multiplier of 1.31 may be expected to generate four additional jobs elsewhere in the community. In Telegraph

## ***Socio-Economic Impacts on the Primary Impact Area***

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Creek, these positions are likely to be in the service sector where total employment revenues may approximate \$200,000.

### ***Incomes from Operational Employment***

The annual direct income impact of operating mine employment through the full time employment of 70 Telegraph Creek residents by NovaGold from 2010 through 2030 at an assumed average annual wage of \$80,000 approximates:

$$70 \text{ persons} \times \$80,000 = \$5,600,000$$

Indirect employment and incomes from contractors such as Spatsizi and TNDC who provide goods and services to Galore Creek may be expected to earn incomes, measured in 2005 dollars, from \$25,000 to \$80,000 or a median of \$50,000. In accordance with BC Stats multipliers, indirect local incomes generated by construction of Galore Creek may approximate additional income to Telegraph Creek residents of:

$$(\text{Multiplier}) 70 \times .25 = 18 \text{ persons}$$

Incomes generated indirectly through contractor employment may then approximate:

$$(\text{Multiplier}) 18 \text{ persons} \times \$50,000 = \$900,000$$

NovaGold's use of local businesses, such as Spatsizi Remote Services, suggests that indirect employment at Galore Creek may be greater than what the multiplier suggests. With Spatsizi Remote Services employing 108 persons in 2005, it is possible that indirect employment of Telegraph Creek residents could reach 35 persons by Spatsizi Remote Services alone with the remaining employees coming from Iskut and Dease Lake. Added to other indirect employment, it is possible that total indirect employment of Telegraph Creek residents could reach 53 persons.

Under these circumstances, total indirect employment incomes at Telegraph Creek could reach:

$$53 \text{ persons} \times \$50,000 = \$2,650,000$$

Spatsizi Remote Services experience suggests that approximately 60% of employees will be women.

Incomes are based on 2005 data. Wages paid for contractor employment after 2010 may increase to new base levels because of the demand for construction labour created by numerous large construction programs in BC over the 2006-2010 period.

Induced employment impacts: While employment incomes will be more stable than under seasonal employment conditions, employees will be drawn from the existing population, market size will not change, and total local incomes from operations may not be sufficient to generate further downstream impacts on employment and incomes. Induced employment at a multiplier of 1.31 may be expected to generate 4.2 additional jobs elsewhere in the community. These

## **Socio-Economic Impacts on the Primary Impact Area**

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positions are likely to be in the service sector where total employment revenues may approximate \$200,000.

$$70 \text{ persons} \times 1.31 - 1.25 = 4 \text{ persons}$$

Induced incomes are expected to average \$50,000 for a total of \$200,000 in annual induced employment income.

### ***Incomes Upon Closure***

Closure of the Galore Creek mine will involve the termination of employment and the cessation of incomes to most of the 123 direct and indirect employees. Cessation of employment will lead to the termination of \$6,800,000 of direct and indirect employment income to Telegraph Creek residents.

Environmental monitoring of the closed mine will involve the continued seasonal part-time employment of 1 - 5 local residents who will be reimbursed at 2030 wage levels. The incomes generated from such employment may range from \$50,000 to \$100,000 per year if all employees resided in Telegraph Creek. Assuming one of these persons lived in Telegraph Creek, annual income may approximate \$25,000.

In the absence of alternative sources of employment, closure of the mine will involve major dislocation of local employees.

### ***Summary of Impacts Without Red Chris Mine***

Employment and income impacts of the Galore Creek project proceeding without the concurrent development of the Red Chris mine are presented below (Table 12.4-2).

**Table 12.4-2  
Telegraph Creek, Employment and Income: Galore Creek Proceeding  
without Red Chris Mine**

<b>Construction</b>	<b>Employment</b>	<b>Incomes</b>
Direct	50	\$4,000,000
Indirect	48	\$2,400,000
Induced	4	\$200,000
<b>Operations</b>		
Direct	70	\$5,600,000
Indirect	53	\$2,650,000
Induced	4	\$200,000
<b>Closure</b>	1-5 part time, seasonal	\$25,000

### **12.4.2.2 With Red Chris**

If the Red Chris mine proceeds according to plan, two mines in the primary study area will offer employment. Recognizing the sizes of the communities in the primary study area, two mines will introduce labour force competition such that fewer residents will be available for employment at

## **Socio-Economic Impacts on the Primary Impact Area**

Galore Creek. Assuming that the Red Chris Mine employs a significant number of Telegraph Creek residents, it is possible that the number of residents employed directly at Galore Creek may approximate 35. The discussion below describes potential Galore Creek employment and income impacts if both the Red Chris and Galore Creek mines were developed (Tables 12.4-3, 12.4-4).

The same multipliers apply as if Galore Creek proceeded without Red Chris.

**Table 12.4-3  
Telegraph Creek, Employment and Income: Galore Creek Proceeding  
with Red Chris Mine**

<b>Construction</b>	<b>Employment</b>	<b>Incomes</b>
Direct	35	\$2,800,000
Indirect	25 - 30	\$1,250,000 to \$1,500,000
Induced	2	\$100,000
<b>Operations</b>		
Direct	35	\$2,800,000
Indirect	25 - 30	\$1,250,000 to \$1,500,000
Induced	2	\$100,000
<b>Closure</b>	1-5 Part time, seasonal	\$25,000

**Table 12.4-4  
VEC, Income Impacts, Telegraph Creek**

<b>Component</b>	<b>Timing</b>	<b>Duration</b>	<b>Direction</b>	<b>Probability</b>	<b>Magnitude of Impact</b>
<b>Incomes</b>					
Wages, Salaries	Construction	Short Term	Positive	High	High
	Operation	Medium Term	Positive	High	High
	Closure	Long Term	Adverse	High	High
<b>Inappropriate Spending</b>					
Substance Abuse; Money Management	Construction	Short Term	Adverse	High	Moderate
	Operation	Medium Term	Adverse	High	Moderate
	Closure	Long Term	Adverse	High	Moderate

(continued)

## **Socio-Economic Impacts on the Primary Impact Area**

**Table 12.4-4  
VEC, Income Impacts, Telegraph Creek (continued)**

<b>Component</b>	<b>Timing</b>	<b>Duration</b>	<b>Direction</b>	<b>Probability</b>	<b>Magnitude of Impact</b>
<b>Family Stress</b>					
Inappropriate Spending of Incomes; Money Management; Substance Abuse; Spousal violence	Construction	Short Term	Adverse	High	Moderate
	Operation	Medium Term	Adverse	High	Moderate
	Closure	Long Term	Adverse	High	Moderate
<b>Indirect Impact of Employment Incomes</b>					
Basic Commercial Services Only; Small Market Population	Construction	Short Term	Positive	High	Low
	Operation	Medium Term	Positive	High	Low
	Closure	Long Term	Adverse	High	High
<b>Indirect and Induced Impact of Employment Incomes</b>					
Basic Commercial Services Only; Small Market Population	Construction	Short Term	Positive	Low	Low
	Operation	Medium Term	Positive	High	Low
	Closure	Long Term	Adverse	High	High

Issues and impacts described above are components of the Employment Incomes, Substance Abuse and Family Stress VECs. Each of these is further described in terms of mitigation measures, residual impact and cumulative impact in Part IV.

### **12.4.3 Business Opportunity Impacts**

Telegraph Creek possesses no commercial or industrial enterprises which could provide goods and services to Galore Creek. The overall magnitude of business development impacts on Telegraph Creek will be negligible (Table 12.4-5) because of the lack of appropriate commercial and industrial enterprises at Telegraph Creek.

### **12.4.4 Health Impacts**

The physical, mental and social dimensions of health are inter-twined with economic issues of development, employment and incomes. Healthy individuals are a prerequisite for healthy communities and the Galore Creek project contributes to healthy individuals and community by providing economic development, employment and incomes. These provide individuals and the community with some of the components of health but also raise concerns stemming from fly-in/fly-out work schedules and employee money management.

## Socio-Economic Impacts on the Primary Impact Area

**Table 12.4-5  
VEC, Business Opportunity Impacts, Telegraph Creek**

Component	Timing	Duration	Direction	Probability	Magnitude of Impact
<b>Awareness of Contracts</b>					
Notification;	Construction	Short Term	Positive	High	Nil
Postings;	Operation	Medium Term	Positive	High	Nil
First Choice	Closure	Long Term	Adverse	High	Nil
<b>Access to Contracts</b>					
Limited Number of Enterprises;	Construction	Short Term	Positive	High	Nil
Qualifications;	Operation	Medium Term	Positive	High	Nil
Opportunity for First Refusal	Closure	Long Term	Adverse	High	Nil
<b>Capacity Building</b>					
Education;	Construction	Short Term	Positive	High	Nil
Experience;	Operation	Medium Term	Positive	High	Nil
Joint Ventures; Management Skills	Closure	Long Term	Adverse	High	Nil

Identifiable health issues existed in Telegraph Creek before NovaGold arrived and as long as individuals make unhealthy choices health issues will remain. Nevertheless, documentation of health impacts associated with the Galore Creek project gives recognition to the issues, illustrates the relationship to employment, and highlights the negative side of employment and employment incomes in an environment where incomes confront few alternative employment prospects, few recreational opportunities, peer pressure, and limited faith in the future.

From the perspective of this socio-economic impact assessment, health issues revolve around the two week in / two week out work rotations, and the resulting concerns of:

- Money management by employees, and the propensity of some employees to spend their cheques inappropriately,
- Family stress, arising from the absence of the husband/father from the household, responsibilities of the wife/mother to operate the household and raise the children, the expenditure of incomes on items other than family and household maintenance, and the lack of housing which requires those with housing to accommodate returning family members and adapt to their lifestyles, and
- Substance Abuse, including both drug and alcohol abuse arising in part from the inappropriate expenditure of incomes, and often leading to family violence and suicide.

In addition to these, the safety of employees at the mine site raises issues pertaining to occupational health and safety. Health issues are summarized in Table 12.4-6.

## **Socio-Economic Impacts on the Primary Impact Area**

**Table 12.4-6  
VEC, Health Impacts, Telegraph Creek**

<b>Component</b>	<b>Timing</b>	<b>Duration</b>	<b>Direction</b>	<b>Probability</b>	<b>Magnitude of Impact</b>
<b>Occupational Health and Safety</b>					
Workplace Accidents	Construction	Short Term	Adverse	Low	Low
	Operation	Medium Term	Adverse	Low	Low
	Closure	Long Term	Adverse	Low	Low
	Post Closure	Far Future	Adverse	Low	Low
<b>Work Schedules</b>					
Fly-in / Fly-out; Family Separation; Spousal stress; Parent Absenteeism	Construction	Short Term	Adverse	High	High
	Operation	Medium Term	Adverse	High	High
	Closure	Long Term	Adverse	High	High
<b>Substance Abuse</b>					
Drug and Alcohol Abuse; Family Violence; Inappropriate Role Models	Construction	Short Term	Adverse	Moderate	Moderate
	Operation	Medium Term	Adverse	Moderate	Moderate
	Closure	Long Term	Adverse	Moderate	Moderate
<b>Family Stress</b>					
Inappropriate Spending of Incomes; Money Management; Spousal stress	Construction	Short Term	Adverse	High	Moderate
	Operation	Medium Term	Adverse	High	Moderate
	Closure	Long Term	Adverse	High	Moderate

Overall, health may be expected to continue to be a major issue, and exacerbated by the incomes generated from mine employment.

Issues and impacts described above (Table 12.4-6) are also components of the following VECs: Substance Abuse, and Family Stress. Each of these is further described in terms of mitigation measures, residual impact and cumulative impact in Part IV.

### **12.4.5 Education Impacts**

The Galore Creek project will have an overall positive impact on the education of Telegraph Creek employees. This impact arises from NovaGold commitments relating to the preparation of potential employees for employment, on-the-job training, apprenticeship programs and opportunities for career advancement.

## **Socio-Economic Impacts on the Primary Impact Area**

Most education impacts will be experienced through mine operation rather than during the construction phase (Table 12.4-7).

Employment at Galore Creek will not require graduation from secondary school for all positions. Rather, NovaGold proposes to use the TOWES Essential Skills, or an equivalent program, to assess employee reading, document use and numeracy to determine appropriateness of employment. Continuing on-the-job training and opportunity for apprenticeships leading to trades papers and credentials represent an investment in education. This investment contributes over the long term to capacity building and the opportunity for some individuals and the community to expand the range of goods and services available from Telegraph Creek.

**Table 12.4-7  
VEC, Education Impacts, Telegraph Creek**

<b>Component</b>	<b>Timing</b>	<b>Duration</b>	<b>Direction</b>	<b>Probability</b>	<b>Magnitude of Impact</b>
<b>Pre-Employment Training</b>					
Qualification; Skills Evaluation	Construction	Short Term	Positive	Moderate	Moderate
	Operation	Medium Term	Positive	High	High
	Closure	Long Term	Adverse	High	Negligible
	Post Closure	Far Future	Positive	High	Negligible
<b>Skills Training</b>					
On-the-Job	Construction	Short Term	Positive	Moderate	Moderate
	Operation	Medium Term	Positive	High	High
	Closure	Long Term	Adverse	High	Low
	Post Closure	Far Future	Positive	High	Negligible
<b>Apprenticeships</b>					
Qualifications; Apprenticeships	Construction	Short Term	Neutral	Moderate	Low
	Operation	Medium Term	Positive	High	Moderate
	Closure	Long Term	Adverse	High	Low
	Post Closure	Far Future	Positive	High	Negligible
<b>Capacity Building</b>					
Skills Training; Continuing Education; Experience	Construction	Short, Intermediate Term	Positive	High	High
	Operation	Long Term	Positive	High	High
	Closure	Long Term	Adverse	High	Low
	Post Closure	Far Future	Positive	High	Negligible

The educational impacts of the Galore Creek operation on Telegraph Creek will be positive, and long-term but of moderate magnitude. Educational impacts arising from construction will

## **Socio-Economic Impacts on the Primary Impact Area**

generally be positive but will be available only for three years. The educational impacts of closure will be adverse to the extent that no further educational component would be available.

Issues and impacts described above are components of Employment Impacts and Education and Training VECs. Each of these is further described in terms of mitigation measures, residual impact and cumulative impact in Part IV.

### **12.4.6 Cultural**

Telegraph Creek is the cultural heart of the Tahltan Nation. The Tahltan concern about the survival of the Tahltan culture is reflected in the numbers of Telegraph Creek residents who learn and speak Tahltan. In 2001, approximately three quarters of Telegraph Creek residents spoke English only and only 12.7% speak Tahltan at home. The use of only English at work, English media, lack of recognition of Tahltan names and work schedules which prevent participation in ceremonies and traditional activities have all contributed to the decline of the Tahltan culture.

Language is but one, albeit a critically important, component of culture. Other elements include ceremonies such as funerals, uses of the land and water resource base, arts and crafts.

The importance of the relationship between culture and individual and community health is recognized in the Tahltan's holistic approach to wellness and adopted by Health Canada. Accordingly, preservation of the Tahltan culture is extremely important in giving the Tahltan pride in their heritage, in providing individuals and the community a sense of who they are, a sense of self-confidence and self-worth, and the optimism that the future may be better than the past or the present. Through these contributions, preservation of the Tahltan culture is believed to be the necessary component in addressing individual and community health issues. Cultural impacts are summarized in Table 12.4-8.

**Table 12.4-8  
VEC, Cultural Impacts, Telegraph Creek**

<b>Component</b>	<b>Timing</b>	<b>Duration</b>	<b>Direction</b>	<b>Probability</b>	<b>Magnitude of Impact</b>
<b>Tahltan Culture</b>					
Language	Construction	Short Term	Adverse	High	Unknown
	Operation	Medium Term	Adverse	High	Unknown
	Closure	Long Term	Adverse	High	Unknown
<b>Ceremonies, Events</b>					
Participation of Employees During Fly-In Work Rotations	Construction	Short Term	Adverse	High	High
	Operation	Medium Term	Adverse	High	High
	Closure	Long Term	Adverse	High	High

(continued)

## **Socio-Economic Impacts on the Primary Impact Area**

**Table 12.4-8  
VEC, Cultural Impacts, Telegraph Creek (completed)**

<b>Component</b>	<b>Timing</b>	<b>Duration</b>	<b>Direction</b>	<b>Probability</b>	<b>Magnitude of Impact</b>
<b>Trapping, Fishing and Hunting</b>					
Access by	Construction	Short Term	Adverse	High	Moderate
Non-Residents; Participation by Resident Employees	Operation	Medium Term	Adverse	High	Moderate
	Closure	Long Term	Adverse	High	Moderate
<b>Cross-Cultural Sensitivities</b>					
Cross-Cultural Conflict	Construction	Short Term	Adverse	High	Moderate
	Operation	Medium Term	Adverse	High	Moderate
	Closure	Long Term	Adverse	High	Moderate

Issues and impacts described above are also components of the recognition of Tahltan culture, traditional activities and cross-cultural sensitivities VECs. Each of these is further described in terms of mitigation measures, residual impact and cumulative impact in Part IV.

In the absence of effort to accommodate cultural considerations, the overall impact of Galore Creek on Tahltan culture is considered to be adverse and of moderate magnitude.

### **12.4.7 Communications Impacts**

The Tahltan community has highlighted the need to maintain effective communications with NovaGold in order to keep residents aware of opportunities and for the community to benefit from those opportunities.

Developing and maintaining communication channels, the provision of contact names (for example, for complaints), documentation of procedures (for example, for job applications), posting notices and requirements, and notification of employment and contract opportunities comprise part of a communication program which, depending upon implementation, could facilitate the Galore Creek project or detract from it.

The NovaGold communication program also serves to inform the public about the Galore Creek mine development and the achievements of local residents. Communication channels and media also serve to notify Telegraph Creek residents of company responses to events such as funerals and ceremonies, time off for hunting and fishing, and participation in community events.

NovaGold communication has been effective to date and bears much of the responsibility for the positive response of the Tahltan to the Galore Creek project.

NovaGold's communication program will continue throughout construction and operation of the Galore Creek project.

## **Socio-Economic Impacts on the Primary Impact Area**

Overall, communication impacts are expected to be positive, long term and of high magnitude (Table 12.4-9).

**Table 12.4-9  
VEC, Communication Impacts, Telegraph Creek**

<b>Component</b>	<b>Timing</b>	<b>Duration</b>	<b>Direction</b>	<b>Probability</b>	<b>Magnitude of Impact</b>
<b>Tahltan Communication</b>					
Tahltan Central Council	Construction	Short Term	Positive	High	High
	Operation	Medium Term	Positive	High	High
	Closure	Long Term	Positive	High	High
	Post Closure	Far Future	Positive	High	High
<b>Employment Opportunities</b>					
Notification; Postings; First Choice	Construction	Short Term	Positive	High	High
	Operation	Medium Term	Positive	High	High
	Closure	Long Term	Positive	High	High
	Post Closure	Far Future	Positive	High	Low
<b>Contract Opportunities</b>					
Notification; Postings; First Choice	Construction	Short Term	Positive	High	High
	Operation	Medium Term	Positive	High	High
	Closure	Long Term	Positive	High	High
	Post Closure	Far Future	Positive	High	Low
<b>Public Information</b>					
Newsletter; Meetings	Construction	Short Term	Positive	High	High
	Operation	Medium Term	Positive	High	High
	Closure	Long Term	Positive	High	High

### **12.5 Socio-Economic Impacts on Stewart**

Stewart concerns focus pre-eminently on economic and community development. This focus reflects Stewart's recent history as a much larger community than it is in 2006, underutilization of public infrastructure, and underutilization of industrial and port facilities.

Stewart has a history of involvement with the mining industry and port facilities have been developed to accommodate the trucked transport of ore concentrate. Concentrate from the Eskay Creek and Huckleberry mines is currently transported to Stewart, but that transport will terminate with the closure of those mines in 2007. Trucked transport of concentrate would resume with the potential opening of the Red Chris Mine in 2008 and the Galore Creek mine in 2010.

## ***Socio-Economic Impacts on the Primary Impact Area***

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As experienced with the mining industry that Stewart is, Stewart is also evolving as a summer and winter tourism centre. Tourism promotion focuses on wilderness and adventure experiences.

When Galore Creek begins operating in 2010, as many as 50 trucks in B-train formation could be making 180 round trips per day hauling concentrate from the Yukon Zinc, Red Chris and Galore Creek mines. This traffic will follow Highway 37A through downtown Stewart to port facilities. This volume of traffic will impact on hotels, restaurants and other facilities in Stewart, impair the wilderness character of the region, and create traffic hazards within Stewart.

In addition to concerns about traffic in downtown Stewart, concern also arises about the volume of industrial truck traffic along Highway 37A between Stewart and Highway 37 and traffic hazards to tourism traffic along the highway.

Valued Ecosystem Components (VECs) are derived from and represent the issues identified in Section 3 of this Socio-Economic Impact Assessment.

Major Issues relevant to Stewart are:

- Economic Development
- Business Development
- Employment
- Traffic
- Incomes

VECs addressing these issues are:

- Economic Development

Population and Housing

Municipal Infrastructure

Port Facilities

- Employment Incomes
- Business Development

Construction Contracts

Trucking Contracts

Port Facilities

- Employment Opportunities and Incomes

Construction Contracts

## **Socio-Economic Impacts on the Primary Impact Area**

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Trucking Contracts

Port Service Contracts

- Truck Traffic

Volume, Noise

Traffic Hazards

Wilderness

### **12.5.1 Economic Development**

From an economic development perspective, Stewart will benefit directly and indirectly from the Galore Creek project through construction, transportation and port service contracts. The effect of these contracts, which have long term implications, will be to create a demand for labour which cannot be satisfied locally.

Any influx of people to Stewart will generate demand for housing and infrastructural services. Municipal, education and health services are all underutilized and an increase in population will facilitate more efficient use of services, provide Stewart with an enhanced tax revenue.

It is expected that the number of new residents can be accommodated by existing retail and commercial services. The number of new residents will not so much generate new businesses or new employment as to reduce underemployment.

Economic development impacts arising from construction are likely to be limited, while economic development impacts arising from operation are likely to be positive, long term and of high magnitude (Table 12.5-1).

Issues and impacts described below are components of two VECs: Community Growth and Community Infrastructure. Each of these is further described in terms of mitigation measures, residual impact and cumulative impact in Part IV.

**Table 12.5-1  
VEC, Economic Development Impacts, Stewart**

<b>Component</b>	<b>Timing</b>	<b>Duration</b>	<b>Direction</b>	<b>Probability</b>	<b>Magnitude of Impact</b>
<b>Population and Housing</b>					
Population Growth; Housing Demand	Construction	Short Term	Positive	Low	Nil
	Operation	Medium Term	Positive	High	Low
	Closure	Long Term	Adverse	High	Unknown

(continued)

## Socio-Economic Impacts on the Primary Impact Area

**Table 12.5-1  
VEC, Economic Development Impacts, Stewart (completed)**

Component	Timing	Duration	Direction	Probability	Magnitude of Impact
<b>Municipal Infrastructure</b>					
Utilities;	Construction	Short Term	Positive	Low	Nil
Education;	Operation	Medium Term	Positive	High	Low
Health;					
Recreation	Closure	Long Term	Adverse	High	Unknown
<b>Port Facilities</b>					
Stewart Bulk Terminals	Construction	Short Term	Positive	Low	Minor
	Operation	Medium Term	Positive	High	High
	Closure	Long Term	Adverse	High	Unknown

### 12.5.2 Business Opportunity Impacts

The construction and operation of the Galore Creek project represents opportunity for Stewart businesses to acquire contracts to provide goods and services to NovaGold. Stewart possesses transportation, heavy truck repair and construction enterprises.

If truck transport, for example, were to be contracted to the historic joint venture between Arrow Transportation Services Inc. and the TNDC, the total value of truck transport would approximate \$10,000,000 per year in 2006 dollars.<sup>358</sup>

All concentrate will be hauled to Stewart Bulk Terminals which will, on the basis of truck traffic, receive in 2010 seven times as much ore concentrate as in 2005-2006.

Construction of Galore Creek may impact Stewart based construction and transportation firms with mine operation impacting on transportation and port facilities. The overall magnitude of business development impacts on Stewart will be high and long term (Table 12.5-2).

**Table 12.5-2  
VEC, Business Opportunity Impacts, Stewart**

Component	Timing	Duration	Direction	Probability	Magnitude of Impact
<b>Construction Contracts</b>					
Notification;	Construction	Short Term	Positive	High	Moderate
Posting.	Operation	Medium Term	Positive	High	High
	Closure	Long Term	Adverse	High	High

(continued)

<sup>358</sup> B. Rustad, Project Manager, Hatch, Personal Communication, March 1, 2006.

## **Socio-Economic Impacts on the Primary Impact Area**

**Table 12.5-2  
VEC, Business Opportunity Impacts, Stewart (completed)**

<b>Component</b>	<b>Timing</b>	<b>Duration</b>	<b>Direction</b>	<b>Probability</b>	<b>Magnitude of Impact</b>
<b>Operations Contracts</b>					
Notification;	Construction	Short Term	Positive	High	Moderate
Posting;	Operation	Medium Term	Positive	High	High
Joint Ventures.	Closure	Long Term	Adverse	High	High
<b>Port Facilities</b>					
Stewart Bulk Terminals	Construction	Short Term	Positive	Low	Negligible
	Operation	Medium Term	Positive	High	High
	Closure	Long Term	Adverse	High	High

Employment issues and impacts described below are components of the Employment VEC, further described in terms of mitigation measures, residual impact and cumulative impact in Part IV.

### **12.5.3 Employment Impacts**

In 2005, NovaGold employed no residents of Stewart at Galore Creek.

During operations, NovaGold expects to employ approximately 30 Stewart residents.

Stewart residents are more likely to be employed by construction, transportation and port service contractors. Construction employment will be subject to award of tenders.

Within the primary impact area, Stewart is the base of the only firms capable of transporting concentrate to port facilities. The potential use of Stewart based transportation firms may lead to the employment of 50 drivers and approximately 12 maintenance and repair personnel.<sup>359</sup>

By 2010 Stewart Bulk Terminals will employ Stewart residents to accommodate the ore storage and ship loading requirements of Yukon Zinc and the Red Chris mines. The additional shipment of Galore Creek concentrate to Stewart will involve the incremental employment of 6-7 full time personnel. It is understood these personnel will be drawn from current part-time personnel.<sup>360</sup>

Galore Creek impact on employment at Stewart will be both direct and indirect. Overall impact on employment will be positive until mine closure when termination of employment will create an adverse impact on individuals and the community (Table 12.5-3).

<sup>359</sup> J. Mather, General Manager, Business Development, Arrow Transportation Systems Inc., Personal Communication, February 28, 2006.

<sup>360</sup> A. Soucie, President, Stewart Bulk Terminals, Personal Communication, February 27, 2006.

## **Socio-Economic Impacts on the Primary Impact Area**

**Table 12.5-3  
VEC, Employment Impacts, Stewart**

<b>Component</b>	<b>Timing</b>	<b>Duration</b>	<b>Direction</b>	<b>Probability</b>	<b>Magnitude of Impact</b>
<b>Construction Contracts</b>					
Notification;	Construction	Short Term	Positive	Moderate	Moderate
Posting	Operation	Medium Term	Positive	Moderate	Moderate
	Closure	Long Term	Adverse	High	Low
<b>Operations Contracts</b>					
Notification;	Construction	Short Term	Positive	High	Low
Posting;	Operation	Medium Term	Positive	High	High
Joint Ventures	Closure	Long Term	Adverse	High	High
<b>Port Service Contracts</b>					
Stewart Bulk	Construction	Short Term	Positive	High	Negligible
Terminals	Operation	Medium Term	Positive	High	High
	Closure	Long Term	Adverse	High	High

Employment issues and impacts described above are components of the Employment VEC, further described in terms of mitigation measures, residual impact and cumulative impact in Part IV.

### **12.5.4 Income Impacts, Stewart**

Employment, both during construction and operations, offers the prospect of long-term sustainable employment for employees.

Income impacts on Stewart will be assured because of the town's transportation infrastructure and port facilities.

#### **12.5.4.1 Without Red Chris**

If the Red Chris Mine were not to proceed, a larger number of residents of Stewart will be available for employment at Galore Creek. The discussion below describes potential Galore Creek employment and income impacts if Galore Creek were the only mine to be developed.

##### ***Incomes from Construction***

The annual income impact of construction through the year-round employment of 30 Stewart residents by contractors from 2007 through 2010 at an assumed 2005 average annual wage of \$80,000 approximates:

$$30 \text{ persons} \times \$80,000 = \$2,400,000$$

Direct incomes from construction are based on 2005 data and may approximate \$2,400,000 for each of three years. Wages paid for construction labour between 2007 and 2010 will likely

## ***Socio-Economic Impacts on the Primary Impact Area***

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increase because of the demand for construction labour created by numerous large construction programs in BC over the 2006-2010 period.

Indirect impacts from this employment income are expected to focus on the provision of goods and services to construction personnel. Commercial enterprises at Stewart suggest that indirect employment and income impacts will be experienced by Stewart businesses. Indirect employment may be expected to be generated through construction and transportation enterprises. Using BC Stats employment multipliers for the Stewart area, indirect employment from construction may amount to

$$\text{(Multiplier) } 30 \times .22 = 7 \text{ persons}$$

Contractors' employees may be expected to earn incomes, measured in 2005 dollars, of approximately \$80,000. Indirect local incomes generated by construction of Galore Creek may approximate additional income to Stewart residents of:

$$\text{(Multiplier) } 7 \text{ persons} \times \$80,000 = \$560,000$$

NovaGold's use of local businesses, such as transportation and construction firms, suggests that indirect employment at Galore Creek may be greater than what the multiplier suggests. Added to other indirect employment, it is possible that total indirect employment could reach approximately 30 persons.

Under these circumstances, total indirect employment incomes to Stewart residents could reach:

$$30 \text{ persons} \times \$80,000 = \$2,400,000$$

**Induced employment impacts:** While employment incomes will be more stable than under seasonal employment conditions, employees will be drawn from the existing population, market size will not change, and total local incomes from construction may not be sufficient to generate further downstream impacts on employment and incomes. Induced employment at a multiplier of 1.27 may be expected to generate 2 additional jobs elsewhere in the community. These jobs are likely to be centred in the private sector service economy and generating employment incomes of approximately \$70,000 annually.

### ***Incomes from Operational Employment***

The annual direct income impact of operating mine employment through the full time employment of 30 Stewart residents by NovaGold from 2010 through 2030 at an assumed average annual wage of \$80,000 approximates:

$$30 \text{ persons} \times \$80,000 = \$2,400,000$$

Indirect impacts from this employment income are expected to focus on the provision of goods and services to construction, transportation and port personnel. Contractors' employees may be expected to earn incomes, measured in 2006 dollars, of approximately \$80,000. Assuming an employment multiplier of 1.22, indirect employment may amount to:

## ***Socio-Economic Impacts on the Primary Impact Area***

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(Multiplier)  $30 \times .22 = 7$  persons

Incomes generated indirectly through contractor employment may then approximate:

(Multiplier)  $7 \text{ persons} \times \$80,000 = \$540,000$

Incomes are based on 2005 data. Wages paid for contractor employment after 2010 may increase to new base levels because of the demand for construction labour created by numerous large construction programs in BC over the 2006-2010 period.

NovaGold's use of local businesses, such as transportation firms and port facilities, suggests that indirect employment at Galore Creek may be greater than what the multiplier suggests. Added to other indirect employment, it is possible that total indirect employment could exceed 60 persons.

Under these circumstances, total indirect employment incomes to Stewart residents could reach:

$60 \text{ persons} \times \$80,000 = \$4,800,000$

**Induced employment impacts:** Employees will be drawn from the existing population, market size will not change, and total local incomes from operations may not be sufficient to generate further downstream impacts on employment and incomes. Induced employment at a multiplier of 1.27 may be expected to generate 2 additional jobs elsewhere in the community.

$30 \text{ persons} \times 1.27 - 1.22 = 2$  persons

Induced incomes are expected to approximate a total of \$70,000.

### ***Incomes Upon Closure***

Closure of the Galore Creek mine will involve the termination of employment and the cessation of incomes to most of the 60 direct and indirect employees. Cessation of employment will lead to the termination of \$7,200,000 of direct and indirect employment income to Stewart residents.

In the absence of alternative sources of employment, closure of the mine will involve major dislocation of local employees.

### ***Summary of Impacts Without Red Chris Mine***

Employment and income impacts of the Galore Creek project proceeding without the concurrent development of the Red Chris Mine are presented below in Table 12.5-4.

#### **12.5.4.2 With Red Chris**

If the Red Chris Mine proceeds according to plan, two mines in the primary study area will offer employment. Recognizing the sizes of the communities in the primary study area, two mines will introduce labour force competition such that fewer residents will be available for employment at Galore Creek. Assuming that the Red Chris Mine employs a significant number of Stewart

**Table 12.5-4  
Stewart, Employment and Income: Galore Creek Proceeding without  
Red Chris Mine**

<b>Construction</b>	<b>Employment</b>	<b>Incomes</b>
Direct	30	\$2,400,000
Indirect	30	\$2,400,000
Induced	2	\$70,000
<b>Operations</b>		
Direct	30	\$2,400,000
Indirect	60	\$4,800,000
Induced	2	\$70,000
Closure	1 part time	\$25,000

residents, it is possible that the number of residents employed directly at Galore Creek may approximate 15. The discussion below describes potential Galore Creek employment and income impacts if both the Red Chris and Galore Creek mines were developed (Tables 12.5-5).

The same multipliers apply as if Galore Creek proceeded without Red Chris.

**Table 12.5-5  
Stewart, Employment and Income: Galore Creek Proceeding  
with Red Chris Mine**

<b>Construction</b>	<b>Employment</b>	<b>Incomes</b>
Direct	15	\$1,200,000
Indirect	25-30	\$1,500,000 to \$1,800,000
Induced	1	\$35,000
<b>Operations</b>		
Direct	15	\$1,200,000
Indirect	25-30	\$1,500,000 to \$1,800,000
Induced	1	\$35,000
<b>Closure</b>	0	0

While some income impacts on Stewart will arise from direct employment at the Galore Creek mine, many of the income impacts will be indirect and focus of transportation, repair and port services.

The overall magnitude of employment income impacts on Stewart will be high because of the transportation and port infrastructure at Stewart (Table 12.5-6).

## **Socio-Economic Impacts on the Primary Impact Area**

**Table 12.5-6  
VEC, Income Impacts, Stewart**

<b>Component</b>	<b>Timing</b>	<b>Duration</b>	<b>Direction</b>	<b>Probability</b>	<b>Magnitude of Impact</b>
<b>Incomes</b>					
Wages, Salaries	Construction	Short Term	Positive	High	High
	Operation	Medium Term	Positive	High	High
	Closure	Long Term	Adverse	High	High
<b>Family Stress</b>					
Spousal Absence	Construction	Short Term	Adverse	High	Moderate
	Operation	Medium Term	Adverse	High	Moderate
	Closure	Long Term	Adverse	High	Moderate
<b>Indirect Impact of Employment Incomes</b>					
Commercial and Port Facilities; Small Market Population	Construction	Short Term	Positive	High	High
	Operation	Medium Term	Positive	High	High
	Closure	Long Term	Adverse	High	High
<b>Indirect and Induced Impact of Employment Incomes</b>					
Commercial and Port Facilities; Small Market Population	Construction	Short Term	Positive	Low	Low
	Operation	Medium Term	Positive	High	Low
	Closure	Long Term	Adverse	High	Low

Issues and impacts described above are also components of the Employment Incomes VEC, described in terms of mitigation measures, residual impact and cumulative impact in Part IV.

### **12.5.5 Traffic Impacts**

When the Galore Creek project begins operation in 2010, as many as 50 B-train truck units will be making 100 round trips along Highway 37A through Stewart to the port facilities.

The volume of truck traffic will generate traffic impacts on Highway 37A both in urban Stewart and along the highway to Meziadin Junction. The volume of truck traffic will impact on residential and tourism traffic along Highway 37A within Stewart and affect access to accommodation, restaurants and other services. Night-time truck traffic will disturb people's sleep.

The volume of traffic may be expected to generate hazards to recreational vehicle and other tourist traffic because of the narrow surface of Highway 37A. The type of traffic, its frequency, volume and noise may detract from the wilderness attributes being promoted by local and regional tourism organizations.

Closure of the mine and the elimination of truck traffic becomes a positive impact from a traffic impact perspective.

## **Socio-Economic Impacts on the Primary Impact Area**

The overall impact of truck traffic, at the volumes envisaged, will be adverse and long-term (Table 12.5-7). These impacts will be experienced in both urban and rural sections of Highway 37A, although the range of impacts in urban Stewart will be broader than in rural areas.

**Table 12.5-7  
VEC, Traffic Impacts, Stewart**

<b>Component</b>	<b>Timing</b>	<b>Duration</b>	<b>Direction</b>	<b>Probability</b>	<b>Magnitude of Impact</b>
<b>Traffic Volumes, Noise</b>					
Frequency; Interference with Access to Accommodation and Other Services in Downtown Stewart	Construction	Short Term	Adverse	Low	Negligible
	Operation	Medium Term	Adverse	High	High
	Closure	Long Term	Neutral	Low	Negligible
Truck noise Impairing resident and tourist sleep patterns	Construction	Short Term	Adverse	Low	Negligible
	Operation	Medium Term	Adverse	High	High
	Closure	Long Term	Neutral	Low	Negligible
<b>Traffic Hazards</b>					
Increased opportunity for traffic accidents	Construction	Short Term	Adverse	Low	Negligible
	Operation	Medium Term	Adverse	High	High
	Closure	Long Term	Neutral	Low	Negligible
<b>Wilderness</b>					
Threat to Wilderness Perceptions and Marketing	Construction	Short Term	Adverse	Low	Negligible
	Operation	Medium Term	Adverse	High	High
	Closure	Long Term	Neutral	Low	Negligible

Issues and impacts described above are also components of Highway 37,37A Truck Traffic VEC, further described in terms of mitigation measures, residual impact and cumulative impact in Part IV.

### **12.6 Traditional Land Use Impacts**

From a socio-economic impact assessment perspective, land use impacts of traditional and other resources uses in the primary impact area focus on the provision of road access into areas heretofore inaccessible.

Traditional site-specific fishing sites will not be impacted by Galore Creek because no change in accessibility occurs because of mine development.

The creation of new road access will, however, facilitate First Nation access into traditional territory not easily or regularly accessed in the past. The construction of the access road to the

## **Socio-Economic Impacts on the Primary Impact Area**

minesite will increase the ability of Tahltan to access hunting and trapping areas heretofore inaccessible or accessible only with difficulty.

Road access will also increase the ability of Tahltan to access sites adjacent to the road to harvest mushrooms, berries, medicinal and other plants.

Impacts to Traditional Land Use are summarized in Table 12.6-1.

**Table 12.6-1  
VEC, Traditional Land Use Impacts**

<b>Component</b>	<b>Timing</b>	<b>Duration</b>	<b>Direction</b>	<b>Probability</b>	<b>Magnitude of Impact</b>
<b>Traditional Fishing Sites and Areas</b>					
Increased access to Traditional Fishing Sites, Areas	Construction	Short Term	Neutral	Nil	Negligible
	Operation	Medium Term	Neutral	Nil	Negligible
	Closure	Long Term	Neutral	Nil	Negligible
	Post Closure	Far Future	Neutral	Nil	Negligible
<b>Traditional Hunting Areas</b>					
Increased access by Non-Residents	Construction	Short Term	Adverse	Low	Low
	Operation	Medium Term	Adverse	Low	Low
	Closure	Long Term	Adverse	Low	Low
	Post Closure	Far Future	Adverse	Unknown	Unknown
<b>Traditional Trapping Areas</b>					
Increased Access by Tahltan; Noise	Construction	Short Term	Adverse	High	Moderate
	Operation	Medium Term	Adverse	High	Moderate
	Closure	Long Term	Adverse	High	Moderate
	Post Closure	Far Future	Adverse	Unknown	Unknown
<b>Commercial Fishing Sites and Areas</b>					
Increased access to Traditional Fishing Sites, Areas	Construction	Short Term	Neutral	Nil	Negligible
	Operation	Medium Term	Neutral	Nil	Negligible
	Closure	Long Term	Neutral	Nil	Negligible
	Post Closure	Far Future	Neutral	Unknown	Unknown
<b>Botanicals</b>					
Increased Access to Sites	Construction	Short Term	Positive	Moderate	Low
	Operation	Medium Term	Positive	Moderate	Low
	Closure	Long Term	Positive	Moderate	Low
	Pot Closure	Far Future	Positive	Unknown	Unknown

## ***Socio-Economic Impacts on the Primary Impact Area***

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Issues and impacts described above are also components of the Recognition of Tahltan Culture, Traditional Activities and Cross-Cultural Sensitivities VECs. Each of these is further described in terms of mitigation measures, residual impact and cumulative impact in Part IV.

### **12.7 Commercial Land Use Impacts**

Focusing on guiding and outfitting and the perceptions of the northwest as wilderness to tourism marketing agencies, the Galore Creek project will impact on two established guiding and outfitting establishments who cater primarily to out-of-country hunters and fishermen to whom wilderness is an important contributor to the experience.

Construction and operation of the access road may be expected to detract from the wilderness atmosphere marketed by local and regional guiding and outfitting establishments. One operator indicated that exploration activity itself has discouraged one repeat customer from returning. The two established guiding and outfitting businesses in the impact area are available for sale; so is Telegraph Creek based river touring operation.

While construction will generate activity and noise which will detract from hunter success in some areas, the greatest impacts on land use will be experienced by guiding and outfitters from the construction of the mine access road. The mine access road will facilitate hunter access into areas not easily accessed in the past and generate adverse and long-term impacts of major magnitude to guiding and outfitters. NovaGold will install manned gates to limit access but the Tahltan will continue to have access to the area.

Commercial land uses in Stewart will be affected by the volume and noise of truck traffic operating 24 hours per day. Increased accidents, access to tourism facilities, disturbed sleep patterns and perceptions of the northwest as wilderness will be affected by the volume and frequency of trucks transporting concentrate to Stewart port facilities.

The marketing of wilderness is a feature of Stewart based tourism promotion. This promotion focuses broadly on wilderness, touring, wildlife viewing and winter sports of snowmobiling and heliskiing. Much of the impact on wilderness and its associated connections appears to focus on truck traffic rather than the mine itself.

Issues and impacts described below (Table 12.7-1) are also components of the Guiding and Outfitting and Wilderness VECs. Each of these is further described in terms of mitigation measures, residual impact and cumulative impact in Part IV.

## **Socio-Economic Impacts on the Primary Impact Area**

**Table 12.7-1  
VEC, Commercial Land Use Impacts**

<b>Component</b>	<b>Timing</b>	<b>Duration</b>	<b>Direction</b>	<b>Probability</b>	<b>Magnitude of Impact</b>
<b>Guiding and Outfitting</b>					
Increased disturbance to perceptions of wilderness	Construction	Short Term	Adverse	High	Moderate
	Operation	Medium Term	Adverse	High	Moderate
	Closure	Long Term	Adverse	High	Low
	Post Closure	Far Future	Adverse	High	Low
Removal of wildlife resources due to increased hunter access	Construction	Short Term	Adverse	High	Moderate
	Operation	Medium Term	Adverse	High	Moderate
	Closure	Long Term	Adverse	High	Moderate
	Post Closure	Far Future	Adverse	High	Moderate
<b>Commercial Land Uses in Stewart</b>					
Truck traffic impacts on tourism facilities	Construction	Short Term	Adverse	Low	Negligible
	Operation	Medium Term	Adverse	High	High
	Closure	Long Term	Positive	Low	Negligible
	Post Closure	Far Future	Positive	Low	Negligible

## 13. SOCIO-ECONOMIC IMPACTS ON THE SECONDARY AND TERTIARY IMPACT AREAS

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# 13. Socio-Economic Impacts on the Secondary and Tertiary Impact Areas

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## 13.1 Secondary Impact Area

### 13.1.1 Socio-Economic Impacts on Smithers and Terrace

Smithers and Terrace are the two communities likely to acquire the largest array of economic benefits from the development of the Galore Creek mine. Each of these communities has direct air and road connections to Dease Lake.

Terrace, with a population of 12,565 in 2004, is closer to Dease Lake than is Smithers. Terrace has historically provided a broad range of goods and services to Tahltan communities, and residents of the primary impact area tend to go to Terrace for health (dental, chiropractic, and others), vehicle purchase and repair, shopping, construction services and a multitude of other goods and services.

Terrace also possesses a commercial and industrial infrastructure (for example, wholesale food distribution, engineering, fuels and explosives) directly relevant to the needs of the mining industry.

Smithers, with a population of 5,637 in 2004, has developed as a mine service centre offering a range of diamond drilling, industrial construction, mine supply, fuel, explosives and other goods and services to the mining industry. The Smithers Exploration Group, in collaboration with NorthWest Community College in Terrace, participated in the establishment of NWCC School of Exploration and Mining

Smithers and Terrace each have economic development strategies geared towards community growth and economic diversification. Each community possesses municipal, health, education and government infrastructure which can accommodate an increase in population and larger service roles.

For their similarities, however, there are differences between Smithers and Terrace. Terrace is more resource dependent than Smithers; Smithers is more service oriented. Terrace experienced much greater economic hardship in the late 1990s and early 2000s than did Smithers; Smithers recovery from economic hardship has proceeded much more quickly than has been the case with Terrace. Terrace is much more of an industrial centre than is Smithers. As a generalization, the Smithers population appears to be better educated, less occupationally confined and more mobile than the Terrace population. The population in January, 2006 receiving income assistance is significantly higher in Terrace than Smithers. BC Stats socio-economic indices reveal greater levels of concern with Terrace than with Smithers.

Against this background, Valued Ecosystem Components (VECs) are derived from and represent the issues identified in Section 3 of this Socio-Economic Impact Assessment.

## ***Socio-Economic Impacts on the Secondary and Tertiary Impact Areas***

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Major Issues relevant to Smithers and Terrace are:

- Economic Development
- Employment
- Business Development
- Community Health

VECs addressing these issues are:

- Economic Development

Population and Housing

Municipal Infrastructure

Community Growth

- Employment Opportunities

Direct Employment

Indirect Employment

- Employment Incomes
- Business Development Opportunities

Construction Contracts

Operations Contracts

Closure Contracts

- Community Health

Indices of Hardship

### **13.1.1.1 Economic Development**

From an economic development perspective, Smithers and Terrace will benefit directly from employment and indirectly from the Galore Creek project through construction and operating contracts. These contracts include the provision of both goods and services and may include, among others, contract drilling, construction services, vehicle maintenance and repair, explosives, fuels, engineering services, employee training services, and wholesale goods ranging from food through office supplies to safety clothing and supplies.

The effect of these contracts, which have long term implications, will be to create a demand for indirect employment.

## ***Socio-Economic Impacts on the Secondary and Tertiary Impact Areas***

Any influx of people to Smithers or Terrace will generate demand for housing and infrastructural services. Municipal, education and health infrastructure and services are sized to accommodate any anticipated population growth arising from the Galore Creek project.

Impacts of economic development on population, housing and municipal infrastructure arising from construction are likely to be limited, while economic development impacts arising from operation are likely to be positive, long term and of low magnitude (Table 13.1-1).

**Table 13.1-1**  
**VEC, Economic Development Impacts, Smithers and Terrace**

<b>Component</b>	<b>Timing</b>	<b>Duration</b>	<b>Direction</b>	<b>Probability</b>	<b>Magnitude of Impact</b>
<b>Population and Housing</b>					
Population Growth;	Construction	Short Term	Neutral	Low	Nil
Business Growth;	Operation	Medium Term	Positive	High	Low
Housing Demand	Closure	Long Term	Adverse	High	Low
<b>Municipal Infrastructure</b>					
Utilities;	Construction	Short Term	Neutral	Low	Nil
Education;	Operation	Medium Term	Positive	High	Low
Health;					
Recreation	Closure	Long Term	Adverse	High	Low

Issues and impacts described above are also components of the Community Growth and Community Infrastructure VECs. Each of these is further described in terms of mitigation measures, residual impact and cumulative impact in Part IV.

### **13.1.1.2 Business Opportunity Impacts**

The construction and operation of the Galore Creek project represents opportunity for Smithers and Terrace businesses to acquire contracts to provide goods and services to NovaGold.

These contracts include the provision of both goods and services and may include, among others, contract drilling, construction services, vehicle maintenance and repair, explosives, fuels, engineering services, employee training services, and wholesale goods ranging from food through office supplies to safety clothing and supplies.

Unlike firms in the Primary Impact Area, firms in Smithers and Terrace are knowledgeable of and experienced in contractor policies, procedures and qualifications for accessing contracts.

Construction of Galore Creek may impact Smithers and Terrace based construction, service and supply firms. The overall magnitude of business development impacts on Smithers and Terrace will be major and long term (Table 13.1-2).

## **Socio-Economic Impacts on the Secondary and Tertiary Impact Areas**

The impacts of closure on Smithers and Terrace businesses in 2030 are expected to be adverse but, because of the communities' greater economic size and diversity, impacts are expected to be of intermediate magnitude (Table 13.1-2).

**Table 13.1-2  
VEC, Business Opportunity Impacts, Smithers and Terrace**

<b>Component</b>	<b>Timing</b>	<b>Duration</b>	<b>Direction</b>	<b>Probability</b>	<b>Magnitude of Impact</b>
<b>Construction Contracts</b>					
Notification; Posting	Construction	Short Term	Positive	High	Moderate
<b>Operations Contracts</b>					
Notification; Posting	Construction	Medium Term	Positive	High	Moderate
<b>Closure Contracts</b>					
Notification; Posting	Closure	Long Term	Adverse	High	Moderate

Issues and impacts described above are also components of the Business Opportunity VEC, described in terms of mitigation measures, residual impact and cumulative impact in Part IV.

### **13.1.1.3 Employment Impacts**

Direct employment by NovaGold of residents of Smithers and Terrace will be affected, among other factors, by the demand for labour, familiarity with mining and the proximity of alternative sources of employment.

In 2005, NovaGold employed two First Nations residents of Smithers and nine First Nation residents of Terrace at Galore Creek. Eskay Creek employs approximately 10 residents of Smithers and Terrace of a total employment of approximately 140 persons. Other Smithers residents are employed at the Huckleberry and Kemess mines.

The closure of the Huckleberry and the Eskay Creek mines will have meant that by 2007, 142 persons currently employed will be available for work, and by 2008, 213 mine employees resident of Highway 16 communities between Houston and Prince Rupert will be available for work. In 2007, the largest pools of available workers will come from Smithers (74 persons) and Terrace (42 persons). In 2008, 99 of these employees live in Smithers; 72 in Houston, 10 in Terrace and 32 in other Highway 16 communities (See above, Table 5.7-2).<sup>361</sup>

Closure of the Huckleberry and Eskay Creek mines may be compensated by the opening of the Red Chris mine if that mine were to be developed. The direct employment by NovaGold of

<sup>361</sup> Adapted and Updated from BC Ministry of Small Business and Economic Development, *Northwest BC Mining Projects: Socio Economic Impact Assessment*, prepared by G.E. Bridges and Associates Inc., Consulting Economists, July 2005

## ***Socio-Economic Impacts on the Secondary and Tertiary Impact Areas***

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employees from Smithers may be restrained by potential employment at the nearby Blue Pearl molybdenum site.

Opportunities for employment between 2007 and 2010 in the Terrace/Kitimat/Prince Rupert area suggest that by 2010, there will be a smaller pool of labour in these communities to draw on for employment at Galore Creek.

During construction of the Galore Creek project, most employment will be generated from local contractors of goods and services.

During operation of the Galore Creek mine, recognizing alternative employment opportunities, it is reasonable to estimate that as many as 190 of the 213 available employees could be employed at Galore Creek (Table 13.1-3). Terrace residents, more likely than Smithers residents, employed at Eskay Creek are likely to dominate hires in 2007. Smithers and Houston residents, more likely than Terrace residents, employed at Huckleberry, are likely to dominate hires in 2008. Overall, and assuming the current distribution of mining employment, Galore Creek operations may employ 190 residents distributed accordingly:

**Table 13.1-3  
Galore Creek, Potential Hires, Highway 16 Communities**

<b>Community</b>	<b>Potential Hires (Direct)</b>	<b>Indirect Employment</b>	<b>Percentage of Total Hires, Highway 16 Communities</b>
Smithers	93	29	48.7%
Houston	42	13	22.3%
Terrace	28	8	14.7%
Other Highway 16 Community	27	8	14.3%
Total Highway 16 Communities	190	58	100.0%

Direct impacts on Highway 16 communities from NovaGold employment during construction are believed to be limited (Table 13.1-3). Most employment impacts are expected to be generated indirectly from the provision of goods and services by a spectrum of construction, service, supply, and other contractors.

Assuming the application of BC Stats multipliers for indirect employment impacts, indirect employment accruing to Highway 16 communities may approximate 58 persons. Half of all indirect employment is expected to accrue to Smithers, where mine supply and service capabilities in northwestern BC tend to be concentrated.

Assuming induced employment multipliers ranging from 1.48 (Smithers) to 1.41 (Terrace), total induced employment for Highway 16 communities may range from 24 to 28 persons. As in the case of indirect employment, about half of induced employment is expected to accrue to Smithers. Employment impacts to Smithers and Terrace are summarized in Table 13.1-4.

## ***Socio-Economic Impacts on the Secondary and Tertiary Impact Areas***

**Table 13.1-4  
VEC, Employment Impacts, Smithers and Terrace**

Component	Timing	Duration	Direction	Probability	Magnitude of Impact
<b>Galore Creek Employment (Direct)</b>					
Employment at Mine Site	Construction	Short Term	Positive	Medium	Moderate
	Operation	Medium Term	Positive	Medium	Moderate
	Closure	Long Term	Adverse	Low	Moderate
<b>Contractor Employment (Indirect)</b>					
Employment by Suppliers of Goods and Services	Construction	Short Term	Positive	High	Low
	Operation	Medium Term	Positive	High	High
	Closure	Long Term	Adverse	High	Moderate

If the recent history of mine employment holds into the future, Galore Creek will draw direct employees from across British Columbia. While residents in the primary impact communities will have the first opportunity to acquire employment at Galore Creek, a significant percentage of Galore Creek employment will be drawn from Highway 16 communities in order to address potential labour shortages. Overall impact on employment will be positive until mine closure when termination of employment will create an adverse impact on individuals and the community.

### **13.1.1.4 Income Impacts, Smithers and Terrace**

#### ***Incomes from Construction***

Incomes from employment accruing to Smithers and Terrace residents will be indirect, from contractors to NovaGold rather than from NovaGold directly.

#### ***Incomes from Operations***

During operations, the employment of approximately 190 persons with average annual earnings of \$80,000 suggests that as much as \$15,200,000 will accrue to Highway 16 employees and communities.

Indirect employment of 58 persons earning an average of \$60,000 per year will generate \$3,480,000 of income.

Induced employment may generate five jobs elsewhere in the community.

It is anticipated that approximately half of incomes will accrue to Smithers residents.

#### ***Incomes Upon Closure***

In the absence of alternatives, closure of the Galore Creek mine will involve the termination of employment and the cessation of incomes to most employees. Closure of the mine will involve major dislocation of local employees.

## ***Socio-Economic Impacts on the Secondary and Tertiary Impact Areas***

Income impacts for construction, operations and closure periods are summarized in Table 13.1-5.

**Table 13.1-5  
VEC, Income Impacts, Smithers and Terrace**

<b>Component</b>	<b>Timing</b>	<b>Duration</b>	<b>Direction</b>	<b>Probability</b>	<b>Magnitude of Impact</b>
<b>Incomes</b>					
Wages, Salaries	Construction	Short Term	Positive	High	Moderate
	Operation	Medium Term	Positive	High	High
	Closure	Long Term	Adverse	High	High
<b>Family Stress</b>					
Spousal Absence	Construction	Short Term	Adverse	High	Moderate
	Operation	Medium Term	Adverse	High	Moderate
	Closure	Long Term	Adverse	High	Low
<b>Indirect Impact of Employment Incomes</b>					
Provision of Goods and Services	Construction	Short Term	Positive	Moderate	Moderate
	Operation	Medium Term	Positive	Moderate	Moderate
	Closure	Long Term	Adverse	Moderate	Moderate
<b>Induced Impact of Employment Incomes</b>					
Provision of Goods and Services	Construction	Short Term	Positive	Moderate	Low
	Operation	Medium Term	Positive	Moderate	Low
	Closure	Long Term	Adverse	Moderate	Low

### **13.1.1.5 Health Impacts**

While more residents of Terrace, than of Smithers, are likely to be employed at Galore Creek, the number of employees will be small compared to the size of the communities.

BC Stats' Index of hardship at Smithers suggests less dependency on resources and a population base less characterized by industrial employment. Smithers' larger service role has also contributed to a population which is better educated than that of Terrace.

Major construction projects in northwestern British Columbia between 2006 and 2010 and revitalization of forest products establishments at Terrace may be expected to alleviate over both the short and long terms some of the social issues related to unemployment and income assistance at Terrace. The high index of economic hardship at Terrace may be expected to decline.

Because of the size of the communities and the small number of persons who are likely to be employed at Galore Creek, impacts of Galore Creek on community health issues in Smithers and Terrace are expected to be minor (Table 13.1-6).

**Table 13.1-6  
VEC, Health Impacts, Smithers and Terrace**

Component	Timing	Duration	Direction	Probability	Magnitude of Impact
<b>Index of Hardship</b>					
Indices of Health Problems, Crime, Economic Hardship, Education Concerns, Children and Youth at Risk	Construction	Short Term	Neutral	Low	Low
	Operations	Medium Term	Positive	Low	Low
	Closure	Long Term	Adverse	Moderate	Moderate

## 13.2 Tertiary Impact Area

### 13.2.1 British Columbia Input-Output Model

An input-output analysis was undertaken by BC Stats to assess the economic impact of a gold mining operation at Galore Creek.

The 2001 British Columbia Input-Output Model (BCIOM) was used to generate the results.

#### *Estimates generated by the BCIOM*

The economic impact of a change in the demand for a commodity or group of commodities is made up of the following three components:

The direct effect, which measures the change in domestic output required to satisfy an initial change in demand. This would include the actual expenditures and the employment directly generated in the scenario.

The indirect effect, which measures the change in domestic output generated by the activity of sectors that supply goods and services used in the direct activities.

The induced effect, which measures the overall impact of more income accruing to the household sector. It is assumed that BC residents spend 80% of their gross earned income on goods and services. The safety net estimates assume that a social safety net is in place, so that workers employed by the project had some income from EI or other safety net programs before they were hired to work on the project. In the no safety net scenario, it is assumed that workers had no source of income prior to their employment. In most cases, the safety net scenario is more realistic than the no safety net scenario.

Economic impacts take a number of forms; specifically:

- Output is the simple sum of all expenditures in the BC economy that result from the project under study. However, this to some extent exaggerates the impacts because the

## ***Socio-Economic Impacts on the Secondary and Tertiary Impact Areas***

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purchase of finished products often involves the purchase of components of those products at some earlier stage in the overall production process.

- Labour Income is the total amount of income that accrues to households because of employment generated by the activities under study.
- Gross Domestic Product (GDP)<sup>362</sup> is a measure of the value added (the unduplicated total value of goods and services) to the BC economy by current productive activities attributable to the project and taking place within the province.
- Provincial and Federal Revenues are estimates made up of the provincial and federal shares of personal income taxes and commodity taxes (PST and GST), as well as other commodity taxes such as gas taxes or air transportation tax.

### ***Input Information***

The data inputs used for this study were provided to BC Stats by Calibre Strategic

Services Inc. The client provided the breakdown of costs by commodity, and these were used as direct inputs into the model. The data was used “as is”, with the exception of communications expenditures which were allocated to telephone and telecommunications, on-line information services, and postal services. It was assumed that virtually all (90%) of this expenditure item was telephone and telecommunications services, with the remainder split evenly across the other two categories.

### **13.2.2 Impacts on British Columbia and Canada<sup>363</sup>**

#### ***Summary of Results***

The GDP (wages, salaries, benefits and profits) associated with the direct expenditures of the operating mine (\$227 million) is just over \$46 million (Table 13.2-1), and the mine will employ 553 people. Government revenues from the direct operation of the mine are estimated at \$26 million, with both the federal (\$13 million) and provincial (\$12 million) governments deriving similar revenues from personal and corporate income taxes, plus GST and PST. Property taxes will put \$1.5 million into local government coffers. The distribution of employment and expenditures across B.C., Canada and internationally is illustrated in 13.2-1.

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<sup>362</sup> It should be noted that direct GDP figures produced by the BCIOM are derived from information provided by clients. These figures are usually project-specific, but they are not always based on complete information. For example, it is often possible to get good data on wages and salaries associated with a project or activity. Labour costs are the biggest component of GDP, but other variables which ought to be included in the estimate (such as investment income, operating surplus, or depreciation) are not always known. When the GDP figures generated by the BCIOM are based on partial information, they may understate the project/activity’s direct contribution to GDP.

<sup>363</sup> L. Hallin, BC Stats, Galore Creek Gold Mine, Input-Output Analysis, February, 2006.

## **Socio-Economic Impacts on the Secondary and Tertiary Impact Areas**

**Table 13.2-1  
Galore Creek Mine, Input-Output Modelling**

Galore Creek Gold Mine	No Safety Net				Safety Net			
	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total
Output (\$M)	226.8	172.7	61.3	460.9	226.8	172.7	29.5	429.1
GDP (\$M)	46.3	71.5	33.6	151.4	46.3	71.5	16.2	134.0
Employment (#)	553	1,044	546	2,143	553	1,044	263	1,859
Household income (\$M)	45.8	48.1	21.4	115.3	45.8	48.1	10.3	104.2
Tax revenue (\$M)	26.1	12.3	11.1	49.4	23.5	10.3	5.0	38.9
Federal (\$M)	12.5	5.6	4.5	22.6	10.6	4.2	2.0	16.8
Provincial (\$M)	12.2	5.7	5.3	23.1	11.4	5.1	2.5	19.0
Municipal (\$M)	1.5	1.0	1.2	3.7	1.5	1.0	0.6	3.0

All results are presented in millions of dollars, except for the employment numbers.

The PST, GST and property tax data associated with the mine operation was supplied by the client; other tax revenue estimates were generated by the model.

Industries supplying goods and services used in mining operations will produce an additional \$173 million in output. Their contribution to GDP is estimated at \$72 million and the number of people working in these supplier industries is estimated at 1,044.

Purchases of mining-related services from contractors represent a substantial portion of total mine operating costs. The GDP and employment associated with these contracted services is considered an indirect effect of the mine operation, since the mine has not actually hired the people who are doing the contracted work. This is why the indirect GDP and employment associated with the mine operation are higher than the direct figures. Tax revenues derived from the activities of supplier industries are estimated at about \$12 million with the federal and provincial governments each receiving about \$6 million. Increased spending by workers is expected to generate an additional \$30 million of output (using the safety net scenario), and \$16 million in GDP, and provide employment for about 265 people

### ***Assumptions and Caveats***

From an IO perspective, commodities made in BC have a much bigger impact than those imported into the province. The analysis presented here is based on using default import ratios for most commodities: *i.e.*, assuming they are purchased locally, but allowing for the fact that they may have been manufactured elsewhere.

All tax data were generated using the model structure, and are based on averages for an industry or commodity.

The precision of the figures in the tables should not be taken as an indication of their accuracy. Economic modelling is an imprecise science and the estimates in this report are probably no better than +/- 10%.

## ***Socio-Economic Impacts on the Secondary and Tertiary Impact Areas***

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### ***Limitations and caveats associated with input-output analysis***

Input-output analysis is based on various assumptions about the economy and the inter-relationships between industries. These assumptions are listed below:

Input-output models are linear. They assume that a given change in the demand for a commodity or for the outputs of a given industry will translate into a proportional change in production.

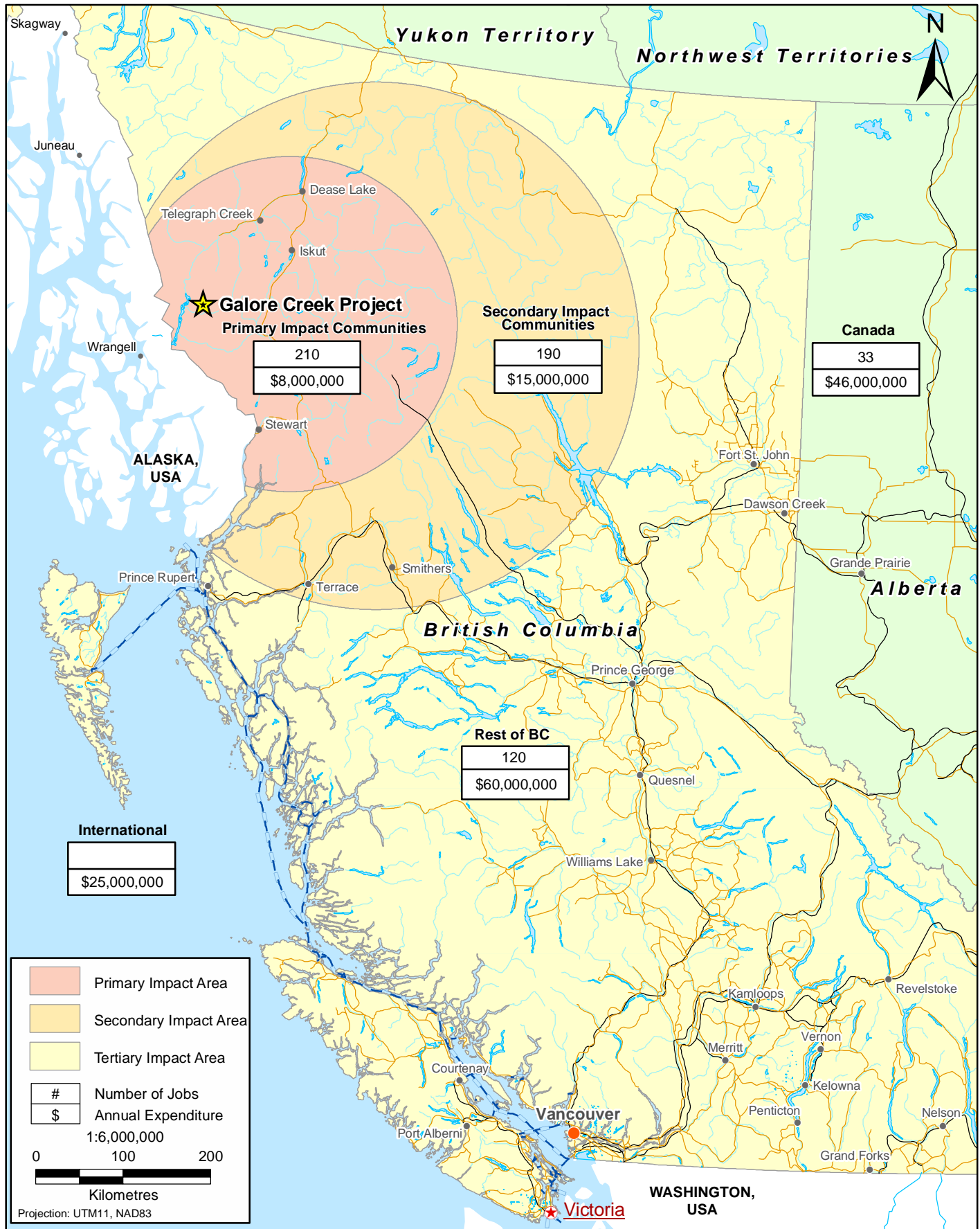
Input-output models do not take into account the amount of time required for changes to happen. Economic adjustments resulting from a change in demand are assumed to happen immediately.

It is assumed that there are no capacity constraints and that an increase in the demand for labour will result in an increase in employment (rather than simply re-deploying workers).

It is assumed that consumers spend an average of 80% of their personal income on goods and services. The remaining 20% of personal income is consumed by taxes, or goes into savings.

The BCIOM is based on a “snapshot” of the BC economy in 2001. It is assumed that relationships between industries are relatively stable over time, so that the 2001 structure of the economy continues to be applicable today. However, it should be noted that employment estimates have been adjusted to reflect wage levels for the year of the expenditures in each case.

The BCIOM does not distinguish between regional effects. It will not, for example, differentiate between the economic impact of a plant located in one region of the province and a similar plant elsewhere in BC.



# Distribution of Employment and Expenditures

FIGURE 13.2-1



Calibre Strategic Services Inc.



# 14. IMPACT MITIGATION

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# Part IV: Impact Mitigation and Residual Impacts

## 14. Impact Mitigation

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NovaGold and the Tahltan Central Council have signed a Participation Agreement to minimize potential adverse impacts from the Galore Creek project and to enhance opportunities for the Tahltan. These impact mitigation measures apply to the Tahltan communities of Dease Lake, Iskut and Telegraph Creek.

From a socio-economic impact perspective, the Participation Agreement addresses the following major issues:

- Employment
- Economic Development and Sustainability
- Workplace Environment
- Business Opportunities
- Culture
- Education
- Communications
- Land Use

These major issues include components or sub-issues. These components, many of which reflect holistic interpretations of health and wellness by both the Tahltan and Canada Health, form the basis of the mitigation program.

### 14.1 Enhancement and Mitigation of Socio-Economic Impacts on Tahltan Communities

The NovaGold – Tahltan Nation Participation Agreement for the Galore Creek mine encompasses a range of mitigation measures, described below, which address potential socio-economic impacts on the Tahltan Nation.

#### 14.1.1 Communications

NovaGold will continue a relationship with the Tahltan Central Council of joint co-operation and mutual respect that they have established in respect of the Galore Creek project. This relationship includes the participation and input of the Tahltan Nation through the Tahltan Heritage Resources and Environmental Assessment Team (or “THREAT”). The communications channel will facilitate communication from the Tahltan Nation through THREAT to identify potentially adverse effects and impacts of the project on Tahltan Nation title, rights and interests and determine how to avoid or minimize such impacts and effects.

NovaGold and the Tahltan Nation will maintain effective communications between each other, and will develop plans to ensure that Tahltan Members remain informed about:

- the rules and regulations governing Project Facilities;
- Business Opportunities;
- environmental performance by NovaGold;
- timing of Project Phases;
- use of the Access Road, and
- other issues of concern to the Parties relating to the Project.

### **14.1.2 Land Use**

NovaGold will make reasonable efforts to have the Access Road designated by the provincial government as a statutory right-of-way or private road, or to make reasonable efforts to incorporate the joint principles developed in the Road Protocol, as outlined below, into any road permit(s) issued to NovaGold.

NovaGold and the Tahltan Central Council will jointly develop procedures and protocols relating to the use of the Access Road. The Road Protocol will provide for, among other items:

- the establishment of a gate at the entrance to the Access Road, to be operated and monitored by NovaGold personnel, to oversee access;
- guidelines for NovaGold to provide surface access rights to third parties;
- a process for providing access to the Tahltan Nation and Tahltan Members who wish to use the Access Road to access traditional use areas, and for other reasonable purposes agreed to by NovaGold and the Tahltan Nation; and
- a process for advance notice to NovaGold for use of the Access Road by any such third parties.

Use of the Access Road by the Tahltan Nation and Tahltan Members will be at their own risk. NovaGold may implement reasonable safety and operational measures in order to regulate the use of the Access Road by the Tahltan Nation and Tahltan Members.

### **14.1.3 Traditional Knowledge**

After the commencement of construction, NovaGold will fully consider and use Traditional Knowledge made available by the Tahltan Nation in connection with project planning, design and implementation, including any environmental policies, environmental management plans and the Environmental Management System, and in making permit applications.

### **14.1.4 Human Resources and Employment**

NovaGold has, in collaboration with the Tahltan Central Council, agreed to:

- maximize employment, retention and advancement opportunities for Tahltan Members in all categories of employment at the project;
- reduce barriers for employment, retention and advancement of all Tahltan Members in all categories of employment at the project;
- maximize training opportunities for all Tahltan Members during the initial hiring and ongoing hiring phases so that as many willing Tahltan Members seeking employment as are possible are able to qualify for employment positions in all categories of employment at the project; and
- ensure that the above referenced objectives apply fairly and equally to all Tahltan Members.

These objectives will be achieved through:

### ***Human Resources (HR) Inventory***

NovaGold will provide funding to the Tahltan Nation for the creation of a Tahltan Nation human resources inventory or database and to hire a Tahltan Employment Coordinator, mutually agreed upon between the Tahltan Nation and NovaGold to:

- outline expected NovaGold jobs, and related qualifications, available at the project and anticipated start dates;
- develop a list of Tahltan Members available to work at the project and the desired area of employment; and
- document results of prior learning assessments to determine appropriate training needs for Tahltan Members to match with NovaGold jobs.

The HR Inventory will be established within 30 days after completion of the feasibility study and will be maintained by the Tahltan Nation. The Tahltan Nation will ensure that the HR Inventory is kept current for the employment and business needs of the project. The HR Inventory will be owned by the Tahltan Nation who has the primary management responsibility to gather, manage and maintain the HR Inventory. The Tahltan Nation will share the HR Inventory, including information in it about potential Tahltan Member candidates with NovaGold for the purposes of meeting the provisions of the agreement related to Tahltan Nation preferential hiring and the anticipated timing for recruiting.

### ***Human Resources (HR) Strategy***

NovaGold will prepare an initial Human Resources Strategy for review and discussion with the Tahltan Nation. This HR Strategy will:

- describe the process by which NovaGold will seek to maximize job opportunities for Tahltan Members related to the Project;
- discuss the use of prior learning assessments in evaluating Tahltan Members as potential job candidates for NovaGold;

- comment on ideas or strategies for ensuring that employment opportunities connected to the project are maximized for Tahltan Members;
- propose an initial fixed target of employment level for Tahltan Members;
- identify the type of training needs that NovaGold may consider to enable Tahltan Members to qualify as suitable job candidates; and
- outline an initial training program that will be designed on a reasonable and cost effective basis to deliver appropriate training to allow those Tahltan Members who have demonstrated to NovaGold a genuine commitment to securing long-term employment with the project to complete such training in time for the initial hiring process.

### ***Fixed Targets for Employment and Advancement of Tahltan Members***

As part of completing the HR Strategy, and thereafter through the establishment of a Human Resources Committee to maximize the proportion of Tahltan Members employed in NovaGold Jobs, NovaGold and the Tahltan Central Council agree to establish a fixed target for employment and advancement to be met or exceeded by NovaGold.

The fixed target will not act as a quota nor will the achievement of the fixed target be legally enforceable. However, NovaGold will take all reasonable steps, acting in good faith to meet or exceed the fixed target. This obligation to take all such reasonable steps, acting in good faith, is legally enforceable.

### ***Initial Hiring for Project Jobs: Preferential Hiring to Tahltan Members***

Prior to pursuing an open competition for, or otherwise filling, any NovaGold Jobs, NovaGold will provide preferential hiring to Tahltan Members for all initial hiring of NovaGold jobs in respect of the project. This preferential hiring will be done through the following job posting system that will provide Tahltan Members with priority consideration for all available jobs except specified management jobs that NovaGold will identify in advance to the Tahltan Nation:

- NovaGold will provide reasonable advance notice to the Tahltan Employment Coordinator of each job posting and the timeframe for filling it;
- the Tahltan Employment Coordinator will use the HR Inventory, prior learning assessments and the HR Strategy, to identify appropriate Tahltan Members who qualify as potential job candidates and fairly evaluate candidates that are significantly qualified but have minor deficiencies that could be appropriately addressed with either short-term pre-employment or on-the-job training;
- NovaGold will review the list of Tahltan Member candidates provided to it and, acting reasonably, offer jobs to such qualified candidates; and
- in circumstances where short-term training has been identified as a need to qualify a candidate, NovaGold will provide this training if it concurs, acting reasonably, with the judgment made by the Tahltan Employment Coordinator that the identified minor deficiency can be addressed with training.

### ***Ongoing Hiring for NovaGold Jobs: Preferential Hiring to Tahltan Members***

After the completion of Initial Hiring, NovaGold will provide preferential hiring to Tahltan Members of NovaGold jobs:

- NovaGold will use reasonable best efforts to notify, in advance, each of its existing employees that are Tahltan Members of a job vacancy and the timeframe for filling it.
- Concurrent with this notice to its existing employees, NovaGold will also advise the Tahltan Nation of the job vacancy and the timeframe for filling it.
- NovaGold, acting reasonably, will offer the job to the best qualified existing employee that is a Tahltan Member and, in circumstances where training has been identified as a need to qualify the candidate, NovaGold will provide training if it considers that the identified minor deficiency can be addressed with training.
- If the vacancy is not filled by an existing employee who is a Tahltan Member, NovaGold will post the job vacancy to the balance of NovaGold's existing employees.
- If the vacancy is not filled by a non-Tahltan existing employee, NovaGold will consider for employment Tahltan Member candidates, who are not currently employees provided to it by the Tahltan Nation, and provide for the training that may be required.
- If the job continues to remain vacant, NovaGold will be free to advertise the job in the public domain.

### ***The Human Resources Committee***

The Human Resources Committee (HRC), comprising representatives from NovaGold and the Tahltan Nation, will have the following mandate and responsibilities:

- to provide a collaborative forum for open and frank dialogue between NovaGold and the Tahltan Nation and to share information about the Tahltan Nation's human resource objectives as they relate to NovaGold Jobs and as provided in the Participation Agreement, including employment opportunities, workplace conditions and training needs;
- to review, from time to time as the HRC deems appropriate, the HR Strategy developed by NovaGold for the Initial Hiring of NovaGold Jobs with a view to revising the HR Strategy to continue to maximize the opportunities for NovaGold Jobs for Tahltan Members. This review may also include consideration of the general advancement of Tahltan Members within the workplace as compared to the rest of the employee base and analyze reasons for success or failure;
- to receive progress reports from NovaGold with respect to its obligations and make appropriate recommendations for improving performance;
- to make recommendations to NovaGold on human resources and workplace policies as they relate to the Tahltan Nation's concerns or interests. In particular, as an initial policy task, the HRC will develop the following policies for recommendation to NovaGold:

a bereavement policy; and

a policy for Tahltan cultural activities;

- balance the interests of NovaGold's Tahltan employees to reasonable amounts of paid and unpaid leave with NovaGold's interest in ensuring the normal day-to-day needs of the project's operations are maintained;

### **14.1.5 Workplace Commitments**

NovaGold will promote a safe and respectful workplace culture for all of its employees and contractors during all Project Phases. In particular, NovaGold agrees that it will during the Commercial Production Phase:

- provide cross-cultural training related to the Tahltan Nation culture for all employees;
- implement an anti-discrimination policy;
- provide free round-trip transportation to and from the Mine Site for Tahltan Members, on a scheduled basis, to Telegraph Creek, Dease Lake and Iskut and other designations to be determined solely by NovaGold;
- create an Occupational, Health and Safety Committee in accordance with applicable law and ensure that this committee reserves at least 2 positions for interested Tahltan Members who are NovaGold employees;
- provide work-site counselling and an employee assistance program for all employees, which will be designed to include addressing specific Tahltan Nation concerns and coordination of counselling provided off-site by the Tahltan Nation; and
- promote awareness in the workplace of the cultural significance of October 18 to Tahltan Members by holding celebratory events in the workplace as may be recommended by the Human Resources Committee so long as such events do not unreasonably interfere with the project's operational needs.

#### ***Workplace Policies Related to Bereavement and Tahltan Cultural Activities***

As soon as reasonable after the Commencement of Commercial Production, NovaGold will establish a general bereavement policy, which will entitle all employees, including Tahltan Members, to take paid bereavement leave in accordance with applicable employment legislation. In addition, NovaGold agrees that its employees that are Tahltan Members will be entitled to take unpaid bereavement leave based on a Tahltan Bereavement Policy to be developed by NovaGold with reference to recommendations made by the Human Resources Committee.

As soon as reasonable after the Commencement of Commercial Production, NovaGold will establish a general vacation policy, which will entitle all employees, including Tahltan Members, to paid vacation in accordance with applicable employment legislation. In addition, NovaGold agrees that its employees that are Tahltan Members will be entitled to take unpaid leave to pursue Tahltan cultural activities based on a Tahltan Cultural Activities Policy to be developed by NovaGold with reference to recommendations made by the Human Resources Committee.

### 14.1.6 Tahltan Business Opportunities

NovaGold and the Tahltan Central Council collaboratively seek to:

- identify business opportunities aimed at developing the delivery of long-term sustainable opportunities and benefits to Tahltan businesses;
- maximize the business opportunities available for Tahltan businesses; and
- set out processes that NovaGold will follow to facilitate the involvement of Tahltan businesses in supplying goods and service to the project.

The Tahltan Nation will establish a registry of the existing Tahltan businesses that may be interested in supplying goods or services to the project. This business registry will be updated, from time to time, by the Tahltan Nation.

#### *Advance Notice of Business Opportunities*

##### *Construction*

At least 6 months prior to the expected date for the Commencement of Construction, NovaGold will develop and provide a copy to the Tahltan Nation of a list of contracts that it anticipates seeking requests for proposals (RFPs) from interested persons with respect to the Construction Phase. This list will outline the nature of the work, the term and the estimated dollar value of each RFP based on NovaGold's evaluation of current market conditions.

##### *Operations*

After the Commencement of Commercial Production, NovaGold will develop and provide a copy to the Tahltan Nation a list of contracts for which it anticipates seeking RFPs from interested Persons for the upcoming Year. This list will outline the nature of the work, the term and the estimated dollar value of each RFP based on NovaGold's evaluation of current market conditions.

##### *Prequalification*

Tahltan Businesses that wish to supply goods or services to the Project will be encouraged to pre-qualify with NovaGold, through the pre-qualification process established by NovaGold, from time to time with respect to sufficient capacity, human resources and financial viability that is applicable to all potential contractors.

##### *Contract Opportunity Preferences for TNDC Businesses*

Subject to meeting the criteria for verification as a Tahltan Business TNDC Businesses will have a preferential right to negotiate with NovaGold for the following types of contracts in advance of any others ("TNDC Preferred Opportunity"):

##### *Construction Phase*

- long-term camp catering and camp support (other than short-term contracts where the short-term contractor provides its own catering or support needs as part of its overall service);

- road construction (other than defined exempt contracts);
- road maintenance or snow removal on any completed road(s);
- earthwork in Galore Creek (other than defined exempt contracts);
- environmental monitoring programs; and
- ground (people) transport;

### ***Commercial Production Phase***

- camp catering and camp support;
- concentrate haulage;
- road maintenance or snow removal;
- environmental monitoring programs; and
- ground (people) transport.

### ***Contract Opportunity Preferences for Tahltan Businesses***

Subject to meeting the criteria for verification as a Tahltan Business, NovaGold and the Tahltan Central Council agree that for any Tahltan Businesses the following types of Commercial Production Phase contracts will be subject to a preferential right for a Tahltan Business to engage in Open Book Negotiations with NovaGold:

- heavy equipment service;
- avalanche control;
- local food supply;
- contract mining;
- design drafting;
- power line maintenance;
- concentrate pipeline maintenance;
- logging;
- home-based manufacturing (*i.e.* clothing, gloves, etc.); and
- small business opportunities.

### **14.1.7 Addressing Tahltan Social and Cultural Objectives**

NovaGold proposes to provide financial consideration to the Tahltan to address and mitigate the potentially adverse social and cultural impacts that the project may have over time to the Tahltan Nation. NovaGold proposes that a Tahltan Heritage Trust (the Trust) be established for the management and distribution of funds in order to maximize benefits to the Tahltan Nation and Tahltan Members. Through this Trust the Tahltan Nation will establish priorities and maintain decision-making authority over the expenditure of monies.

Proposed responsibilities of the Tahltan Heritage Trust include, among others:

- priority payments from the Trust for costs incurred by the Tahltan Nation in respect of implementing, monitoring and maintaining its obligations and benefits set out in the proposed Participation Agreement, including the maintenance of the Human Resource Inventory, participation on all committees, resolving Disputes, if any, ongoing environmental monitoring and ongoing monitoring of employment, training and business opportunities;
- priority payments in respect of environmental rehabilitation and habitat enhancement;
- fair allocation of payments and benefits to the whole of the Tahltan Nation and for all Tahltan Members, including the communities of Telegraph Creek, Dease Lake and Iskut;
- a fair and clear allocation and distribution procedure for the review and prioritization of the needs of the Tahltan Nation that includes representation in such process from among the communities of Telegraph Creek, Dease Lake, Iskut and from among other Tahltan Members;
- prudent, long term investments made by the Trustee in order to protect the interests of future generations; and
- distributions from the Trust made for Tahltan Nation governance and community development purposes which will include, but not be limited to, education, training, capacity development, housing, health, health education and economic development for all Tahltan Members, residing both on and off reserve lands;

### **14.1.8 Scholarship Fund**

NovaGold will establish and maintain during the term of this Agreement an annual scholarship fund in support of students who are Tahltan Members. This scholarship fund will provide for annual academic awards for both high-school and post-secondary students who are Tahltan Members and are interested in careers in the mining industry or acquiring qualifications related to the Project. Full details of NovaGold's Development Assistance Programs can be found at Appendix 1.

## **14.2 Enhancement and Mitigation of Socio-Economic Impacts on Stewart**

While employment and business impacts of the Galore Creek project are expected to impact positively on Stewart, and while Stewart has the municipal infrastructure in place to accommodate foreseeable economic development impacts, Stewart will be impacted negatively by the volume of truck traffic routed through downtown Stewart en route to Stewart Bulk Terminals. This impact, generated by as many as 50 trucks and 100 round trips per day, may adversely impact businesses on Highway 37A through Stewart, and may adversely impact Stewart's tourism industry.

Direct employment impacts on Stewart are expected to be positive but of moderate magnitude. Employment benefits may be greater during construction and during the initial years of operation

as procedures to employ non-resident Tahltan take effect and as Tahltan communities take steps to accommodate returning non-resident Tahltan.

Stewart businesses acquiring contracts to provide goods and services to Galore Creek may lead to increases in employment which will benefit Stewart. Stewart Bulk Terminals will require additional employment. Other contractors are likely to focus on truck transportation and repair and maintenance. The employment impacts on Stewart of trucking contractors may be constrained by the development of joint venture or similar entities with Tahltan transportation firms.

Adverse impacts on Stewart are likely to focus on the volume of truck transport that may be routed along Highway 37A through downtown Stewart. After Galore Creek becomes operational in 2010, the total volume of truck traffic through Stewart will approximate 50 trucks, or 100 round trips, per day. This volume of traffic will generate noise, impact Stewart accommodations and other businesses, increase the incidence of traffic accidents along Highway 37A, and adversely impact on Stewart's tourism industry.

Stewart has recognized the truck traffic issue and has made allowance for a Highway 37A by-pass which would route truck traffic away from downtown Stewart. The location of the by-pass would re-route truck traffic away from downtown Stewart via a new road from the industrial log storage and shipment sites to the port facilities. The location for this new road has been described in the 1978 Stewart Master Plan and comprises part of Stewart's Official Community Plan.

To reduce impacts of traffic noise in Stewart, the use of air brakes will be restricted.

NovaGold will provide support to Stewart in facilitating the development of a by-pass around residential and commercial districts. The location of a by-pass is noted in Stewart's Official Community Plan. NovaGold support will focus on encouraging the BC Ministry of Transportation to develop the by-pass.

### **14.3 Potential Issues to VECs from Mine Development**

Table 10.2 presented a summary documentation of VECs associated with mine development.

In Chapters 12 and 13, impacts associated with each of the primary and secondary impact communities were described and assessed.

Chapter 14 describes the measures to be employed in enhancing positive impacts and in mitigating the effects of negative impacts.

In Tables 14.3-1 to 14.3-15, each of the VECs and the sub-issues associated with them are described in terms of the residual impact after mitigation.

**Table 14.3-1  
VSEC: Employment Opportunity**

VSEC (From Table 10.2)	Level of Impact Individual Families/ Households	Type of Impact Direct	Summary	Timing Construction	Proposed Mitigation/ Enhancement	Residual Effects (i.e. effects after mitigation or enhancement)	Direction of Residual Effect	Potential for Residual Adverse Effect to be Significant	
								Negligible	
	Communities	Induced		Operation Phase				Negligible	
	Regional		Description of effect	Closure Phase Post Closure Phase	Description of proposed mitigation or enhancement	Description of residual effect	Neutral	Considerable	
	Individual	Direct					Adverse		
Employment Opportunities	Individual	Direct	50? NovaGold Supervisory/ Managerial	Construction	Enhancement through local and preferential employment	Increased local and regional benefits	Positive	Negligible	
			553 Jobs, Full time; up to 210 local from Dease Lake, Iskut, Telegraph Creek, Stewart	Operation	Enhancement through local and preferential employment	Increased local and regional benefits	Positive	Negligible	
			Termination of Employment	Closure Phase	Employment assistance, counseling,	Dependant upon the response	Adverse	Considerable	
			1-5 part time seasonal positions	Post Closure Phase	Employment of local residents	Minimal due to seasonal and part-time character of the work	Positive	Negligible	
		Indirect	3289 contractor: permanent, part-time, other 1,044 jobs	Construction			Increased local and regional benefits	Positive	Negligible
					Operation	Enhancement through use of local contractors	Increased local and regional benefits	Positive	Negligible
				Closure Phase	Termination of Employment	Mitigation through employment assistance, counseling	Dependant upon the response	Adverse	Considerable
				Induced	637 jobs 284 jobs	Construction	None		Neutral
		Operation	None				Neutral	Negligible	
		Families/ Households	Direct	Termination of Employment	Closure Phase	None	Neutral	Negligible	
				Employment stability over life time of the mine	Operation	None	Positive	Negligible	
		Communities	Indirect	Direct	Reduced need for out- migration in search of employment	Operation	None		Positive
Potential return of expatriate Tahltan for employment	Operation				Dependant upon TCC priorities arising from Participation	Pressure on available housing stock and	Positive	Negligible	
Regional	Induced	Direct	Employment for 120 in secondary impact communities	Operation					
			Indirect	190 Indirect jobs	Operation				



**Table 14.3-3  
VSEC: Employment Income**

VSEC (From Table 10.2)	Component Description of mine component (From Table 10.2)	Level of Impact Individual Families/ Households Communities Regional	Type of Impact		Summary  Description of effect	Timing		Proposed Mitigation/ Enhancement  Description of proposed mitigation or enhancement	Residual Effects (i.e. effects after mitigation or enhancement)	Direction of Residual Effect	Potential for Residual Adverse Effect to be Significant
			Direct	Indirect Induced		Construction Phase	Operation Phase Closure Phase Post Closure Phase		Description of residual effect	Positive Neutral Adverse	Negligible Considerable
Employment Incomes	A, B, C, E and F	Individual	Direct		Incomes from employment	Construction Phase	Competitive wage and salary rates; income from operations	None	Neutral	Negligible	
					Incomes from employment	Operation Phase	Competitive wage and salary rates	None	Neutral	Negligible	
					Termination of incomes from employment	Closure Phase	Advanced notification in accordance with Labour Standards	Alternative employment with NovaGold; job placement strategy	Adverse	Considerable	
			Indirect		Incomes from employment with contractors	Construction Phase	Competitive wage and salary rates; income from operations	None	Neutral	Negligible	
					Incomes from employment with contractors	Operation Phase	Competitive wage and salary rates	None	Neutral	Negligible	
					Termination of incomes from employment with contractors	Closure Phase	Advanced notification in accordance with Labour Standards	Job placement strategy; Employee assistance	Adverse	Considerable	
					Incomes from environmental monitoring	Post Closure Phase	Competitive wage and salary rates	None	Neutral	Negligible	
					Inappropriate spending of pay cheques	Construction Phase through Closure Phase	Money management, Dependant upon TCC priorities arising from Participation Agreement	More appropriate spending of pay cheques	Positive	Negligible	
				Induced		Incomes derived from employment with contractors	Construction Phase	Competitive wage and salary rates	None	Neutral	Negligible
						Incomes derived from employment with contractors	Operation Phase	Competitive wage and salary rates	None	Neutral	Negligible
				Termination of incomes derived from employment with contractors	Closure Phase	None	Unemployment, or alternative employment	Neutral	Negligible		
				Families/ Households	Direct Indirect	Increased household incomes	Construction Phase	Incomes from transference of employment to operations	None	Neutral	Negligible

(continued)

**Table 14.3-3  
VSEC: Employment Income (completed)**

VSEC (From Table 10.2)	Component Description of mine component (From Table 10.2)	Level of Impact Individual Families/ Households Communities Regional	Type of Impact	Summary  Description of effect	Timing	Proposed Mitigation/ Enhancement  Description of proposed mitigation or enhancement	Residual Effects (i.e. effects after mitigation or enhancement)	Direction of Residual Effect	Potential for Residual Adverse Effect to be Significant
			Direct		Construction Phase		Description of residual effect	Positive Neutral Adverse	Negligible Considerable
			Indirect Induced		Operation Phase Closure Phase Post Closure Phase				
				Increased, steady household incomes	Operation Phase	None	None	Neutral	Negligible
				Family stress from non-payment on mortgage, rent, utilities, food and other bills arising from employees' inappropriate spending of pay cheques	Construction Phase through Closure Phase	Money management, Dependant upon TCC priorities arising from Participation Agreement	More appropriate spending of pay cheques	Positive	Negligible
				Elimination of household incomes	Closure Phase	Spousal notification, job placement, counseling	Unemployment, or alternative employment	Adverse	Considerable
				Reduced family incomes	Post-Closure	None	None	Neutral	Negligible
		Communities	Induced						
			Direct						
			Induced	Enhanced community incomes from increased local expenditures	Construction Phase	Dependant upon choices made by individuals at the time	Safety net; alternative employment	Neutral	Negligible
				Enhanced community incomes from increased direct and indirect expenditures	Operation Phase	Dependant upon choices made by individuals at the time	Safety net; alternative employment	Neutral	Negligible
				Decreased community incomes from decreased direct and indirect expenditures	Closure Phase	Dependant upon choices made by individuals at the time	Safety net; alternative employment	Neutral	Negligible
		Regional	Direct						
			Induced	Enhanced regional incomes from increased regional expenditures	Construction Phase	Dependant upon choices made by individuals at the time	Safety net; alternative employment	Neutral	Negligible
				Enhanced regional incomes from increased direct and indirect expenditures	Operation Phase	Dependant upon choices made by individuals at the time	Safety net; alternative employment	Neutral	Negligible
				Decreased regional incomes from decreased direct and indirect expenditures	Closure Phase	Dependant upon choices made by individuals at the time	Safety net; alternative employment	Neutral	Negligible

**Table 14.3-4  
VSEC: Community Growth**

VSEC (From Table 10.2)	Component	Level of Impact	Type of Impact	Summary	Timing	Proposed Mitigation/ Enhancement	Residual Effects (i.e. effects after mitigation or enhancement)	Direction of Residual Effect	Potential for Residual Adverse Effect to be Significant
			Direct						Indirect
Description of mine component (From Table 10.2)	Individual Families/ Households	Communities	Induced	Description of effect	Construction Phase Operation Phase Closure Phase Post Closure Phase	Description of proposed mitigation or enhancement	Description of residual effect	Positive	Considerable
			Regional					Adverse	
Community Growth	A, C, and F	Individual	Direct	Relocation of expatriate	Operation Phase	Dependant upon Tahltan priorities	Pressure on housing	Adverse	Considerable
			Indirect						
			Induced						
			Direct	Relocation of expatriate Tahltan to primary impact communities	Operation Phase	Dependant upon Tahltan priorities in Participation Agreement	Pressure on housing, family support, social support services	Adverse	Considerable
			Indirect						
Communities			Induced	Relocation of expatriate Tahltan to primary impact communities	Operation Phase	Dependant upon Tahltan priorities in Participation Agreement	Pressures on local government services including land development, recreation, fire protection	Adverse	Considerable
			Direct						
			Indirect						
Regional			Induced	Community growth derived from business growth and expansion	Operation Phase	Support for Dease Lake local governance	Greater local ability to respond to local priorities	Positive	Negligible
			Direct						
			Indirect						
			Induced						

**Table 14.3-5  
VSEC: Education Training**

VSEC (From Table 10.2)	Component Description of mine component (From Table 10.2)	Level of Impact Individual Families/ Households Communities Regional	Type of Impact Direct	Summary	Timing Construction Phase	Proposed Mitigation/ Enhancement	Residual Effects (i.e. effects after mitigation or enhancement)	Direction of Residual Effect	Potential for Residual Adverse Effect to be Significant
			Indirect Induced				Description of effect		Operation Phase Closure Phase Post Closure Phase
Truck Traffic and Noise in Stewart	C	Individual	Direct	Increased risk of accidents involving trucks in Stewart	Operation Phase	Speed limits; driver safety training	Reduced risk of vehicle accidents	Neutral	Negligible
					Operation Phase				
			Indirect	Impact of truck traffic on winter tourist use of accommodation and restaurant facilities in Stewart	Operation Phase	Speed limits; restrictions on the use of air brakes	Reduced noise levels	Adverse	Considerable
					Operation Phase	Speed limit; restrictions on the use of air brakes	Reduced noise levels	Adverse	Considerable
		Families/Households  Communities  Regional	Induced Direct Indirect	Increased industrial traffic along residential and downtown streets	Operation Phase	NovaGold support for traffic by-pass	Traffic along residential and downtown streets	Adverse	Considerable
					Induced	Operation Phase	NovaGold support for traffic by-pass	Infrastructure in place; RCMP to monitor	Neutral
			Direct Indirect Induced	Potential increase in need for appropriate medical care	Operation Phase	NovaGold support for traffic by-pass	Infrastructure in place; Health District to monitor	Neutral	Negligible

**Table 14.3-6  
Community Infrastructure**

VSEC (From Table A)	Component	Level of Impact	Type of Impact	Summary	Timing	Proposed Mitigation/ Enhancement	Residual Effects (i.e. effects after mitigation or enhancement)	Direction of Residual Effect	Potential for Residual Adverse Effect to be Significant
			Direct				Description of proposed mitigation or enhancement		Neutral
			Indirect	Description of effect	Phase	Description of proposed mitigation or enhancement	Description of residual effect	Adverse	Considerable
			Induced		Post Closure Phase				
Community Infrastructure	E and F	Individual	Direct						
			Indirect	Increased demand for housing to accommodate Tahltan returnees	Operation Phase	Dependant upon priorities of TCC arising from Participation Agreement	Opportunity for new housing stock	Positive	Negligible
				Increased demand for housing at Stewart from small number of new residents	Operations Phase	None	More use of underutilized municipal infrastructure	Neutral	Negligible
			Induced						
			Direct						
			Indirect	Increased demand for housing to accommodate Tahltan returnees, reduction of family stresses	Operation Phase	Dependant upon priorities of TCC arising from Participation Agreement	Opportunity for new housing stock	Positive	Negligible
			Induced						
			Direct						
			Indirect	Increased demand for housing will increased demand for local social services	Operation Phase	Dependant upon priorities of TCC arising from Participation Agreement	Opportunity for enhanced community and social support services	Positive	Negligible
			Induced						
				Increased demand for land and services such as piped water supply to support business investment at Dease Lake	Operation Phase	Support for local governance	Greater opportunity to respond to local issues and needs	Positive	Negligible
				Increased demand for infrastructure and services at Stewart from small number of new residents	Operations Phase	None	More use of underutilized municipal infrastructure	Neutral	Negligible
			Induced	Potentially increased demand for and need of wellness centre	Operation Phase	Dependant upon priorities of TCC arising from Participation Agreement	Abatement of individual and family issues around substance abuse	Positive	Negligible
		Regional	Direct Indirect Induced						

**Table 14.3-7  
VSEC: Occupational Health and Safety**

VSEC (From Table 10.2)	Component	Level of Impact	Type of Impact	Summary	Timing	Proposed Mitigation/ Enhancement	Residual Effects (i.e. effects after mitigation or enhancement)	Direction of Residual Effect	Potential for Residual Adverse Effect to be Significant				
			Direct				Description of residual effect		Negligible				
Occupational Health and Safety	A and D	Individual	Indirect	Description of effect	Construction Phase	Implementation of Occupational Health and Safety program	Safer physical working environment	Positive	Negligible				
			Direct		Operation Phase					Termination of employment	Greater workplace safety	Positive	Negligible
			Induced		Operation Phase					Implementation of Occupational Health and Safety program	Safer physical working environment	Positive	Negligible
			Induced		Operation Phase					Dependant upon implementation of health education program through TCC and Participation Agreement	Reduced incidence of sexually transmitted diseases	Positive	Negligible
			Induced		Operation Phase					Termination of employment	Greater workplace safety	Positive	Negligible
			Induced		Operation Phase					Dependant upon implementation of health education program through TCC and Participation Agreement	Reduced incidence of sexually transmitted diseases	Positive	Negligible
			Induced		Operation Phase					Dependant upon implementation of health education program through TCC and Participation Agreement	Reduced incidence of sexually transmitted diseases	Positive	Negligible
			Induced		Operation Phase					Dependant upon implementation of health education program through TCC and Participation Agreement	Reduced incidence of sexually transmitted diseases	Positive	Negligible
			Induced		Operation Phase					Dependant upon implementation of health education program through TCC and Participation Agreement	Reduced incidence of sexually transmitted diseases	Positive	Negligible
			Induced		Operation Phase					Dependant upon implementation of health education program through TCC and Participation Agreement	Reduced incidence of sexually transmitted diseases	Positive	Negligible

**Table 14.3-8  
Substance Abuse**

VSEC (From Table 10.2)	Component	Level of Impact	Type of Impact	Summary	Timing Construction Phase Operation Phase Closure Phase Post Closure Phase	Proposed Mitigation/ Enhancement	Residual Effects (i.e. effects after mitigation or enhancement)	Direction of Residual Effect	Potential for Residual Adverse Effect to be Significant	
			Individual Families/ Households				Direct		Description of residual effect	Positive
Description of mine component (From Table 10.2)		Communities	Indirect	Description of effect		Description of proposed mitigation or enhancement	Description of residual effect	Adverse	Considerable	
		Regional	Induced							
Substance Abuse	E	Individual	Direct							
			Indirect	Substance abuse upon returning from work rotation	Construction Phase	Opportunity for counseling and related services through TCC and Participation Agreement	Reduced substance abuse	Positive	Negligible	
			Indirect	Substance abuse upon returning from work rotation	Operation Phase	Opportunity for counseling and related services through TCC and Participation Agreement	Reduced substance abuse	Positive	Negligible	
			Indirect	Inappropriate spending of pay cheques often related to substance abuse	Construction Phase	Opportunity for counseling and related services through TCC and Participation Agreement	More appropriate money management and reduction of family stress	Positive	Negligible	
		Indirect	Inappropriate spending of pay cheques often related to substance abuse	Operation Phase	Opportunity for counseling and related services through TCC and Participation Agreement	More appropriate money management and reduction of family stress	Positive	Negligible		
		Families/ Households	Induced							
			Direct							
			Indirect	Family/spousal stresses arising from substance abuse and reflected in money management issues, family violence	Construction Phase	Opportunity for counseling and related services through TCC and Participation Agreement	Reduced family impact	Positive	Negligible	
		Communities	Induced							
			Direct							
Indirect	Family/spousal stresses arising from substance abuse and reflected in money management issues, family violence		Operation Phase	Opportunity for counseling and related services through TCC and Participation Agreement	Reduced family impact	Positive	Negligible			
Regional	Induced	Communities	Induced	Support for Wellness Centre, Dease Lake	Operation Phase	Opportunity for TCC priorities and Participation Agreement	Reduced substance abuse	Positive	Negligible	
			Direct							
			Indirect							
			Induced							

**Table 14.3-9  
VSEC: Recognition of Tahltan Culture**

VSEC (From Table A)	Component	Level of Impact	Type of Impact	Summary	Timing	Proposed Mitigation/ Enhancement	Residual Effects	Direction of Residual Effect	Potential for Residual Adverse Effect to be Significant
							(i.e. effects after mitigation or enhancement)		
	Description of mine component (From Table A)	Individual Families/ Households	Direct		Construction Phase				
		Communities	Indirect		Operation Phase			Positive	Negligible
		Regional	Induced	Description of effect	Closure Phase			Neutral	
					Post Closure Phase	Description of proposed mitigation or enhancement	Description of residual effect	Adverse	Considerable
Recognition of Tahltan Culture	D	Individual	Direct	Lack of cultural sensitivity to the Tahltan in the workplace	Operation Phase	Implementation of a cross-cultural sensitivity program in the workplace	Greater awareness of cultural differences and reduced potential for conflict	Positive	Negligible
				Lack of opportunity for Tahltan to participate in traditional activities during work rotations	Operation Phase	Opportunity to take unpaid leave to participate in traditional hunting, fishing and trapping	Greater ability to participate in traditional activities	Positive	Negligible
				Lack of opportunity for Tahltan to take part in cultural activities during work rotations	Operation Phase	Opportunity to take unpaid leave to participate in cultural events, ceremonies, funerals	Greater ability to participate in cultural activities	Positive	Negligible
		Families/ Households	Indirect Induced Direct Indirect	Lack of opportunity for family participation during work rotations in traditional and cultural activities	Operation Phase	Opportunity to take unpaid leave to participate in cultural events, ceremonies, funerals	Family participation possible with spousal ability top take unpaid leave to participate	Positive	Negligible
		Communities	Induced Direct Indirect	Concern relating to the gradual loss of the Tahltan language and culture	Operation Phase	Recognition of Tahltan place names;	Recognition of the Tahltan culture	Positive	Negligible
		Regional	Induced Direct Indirect Induced						

**Table 14.3-10  
VSEC: Traditional Activities**

VSEC (From Table 10.2)	Component	Level of Impact	Type of Impact	Summary	Timing	Proposed Mitigation/ Enhancement	Residual Effects	Direction of Residual Effect	Potential for Residual
			Direct				(i.e. effects after mitigation or enhancement)		Adverse Effect to be Significant
Traditional Activities	Description of mine component (From Table10.2) B and F	Individual	Indirect	Description of effect	Construction Phase	Description of proposed mitigation or enhancement	Description of residual effect	Positive	Negligible
		Families/ Households	Direct		Operation Phase			Neutral	Considerable
		Communities	Induced		Closure Phase			Adverse	
		Regional	Induced		Post Closure Phase				
		Individual	Direct	Lack of opportunity for Tahltan to hunt, fish and trap for food	Operation Phase	Opportunity to take unpaid leave to participate in traditional hunting, fishing and trapping	Greater ability to provide food for family and friends	Positive	Negligible
		Families/ Households	Indirect Induced Direct Indirect	Lack of opportunity for Tahltan to acquire food for family and friends	Operation Phase	Opportunity for employee to take unpaid leave to hunt, fish and trap	Greater supply of country food	Positive	Negligible
		Communities	Induced Direct Indirect Induced						
		Regional	Direct Indirect Induced						

**Table 14.3-11  
VSEC: Cross-Cultural Sensitivities**

VSEC (From Table 10.2)	Component	Level of Impact	Type of Impact	Summary Description of effect	Timing	Proposed Mitigation/ Enhancement Description of proposed mitigation or enhancement	Residual Effects	Direction of Residual Effect	Potential for Residual Adverse Effect to be Significant
	Description of mine component (From Table 10.2)	Individual	Direct				(i.e. effects after mitigation or enhancement) Description of residual effect		Negligible
		Families/ Households	Indirect						Positive
		Communities	Induced						Neutral
Regional				Adverse					
Cross-cultural Sensitivities	D	Individual	Direct	Lack of cultural sensitivity to the Tahltan in the workplace	Operation Phase	Implementation of a cross-cultural sensitivity program in the workplace	Greater awareness of cultural differences and reduced potential for conflict	Positive	Negligible
			Indirect	Lack of opportunity for Tahltan to participate in traditional activities during work rotations	Operation Phase	Opportunity to take unpaid leave to participate in traditional hunting, fishing and trapping	Greater ability to provide food for family and friends	Positive	Negligible
			Induced	Lack of opportunity for Tahltan to take part in cultural activities during work rotations	Operation Phase	Opportunity to take unpaid leave to participate in cultural events, ceremonies, funerals	Greater ability to participate in cultural activities	Positive	Negligible
		Families/ Households	Indirect						
		Communities	Direct	Concern relating to the gradual loss of the Tahltan language and culture	Operation Phase	Recognition of Tahltan place names;	Recognition of the Tahltan culture	Positive	Negligible
		Regional	Indirect						
			Induced						
			Direct						
			Indirect						
			Induced						

**Table 14.3-12  
VSEC: Wilderness**

VSEC (From Table 10.2)	Component	Level of Impact	Type of Impact	Summary	Timing	Proposed Mitigation/Enhancement	Residual Effects (i.e. effects after mitigation or enhancement)		Potential for Residual Adverse Effect to be Significant																										
							Direction of Residual Effect																												
Wilderness	B	Individual	Direct	Noise generated through construction and driving Road access will detract from wilderness atmosphere marketed by guiding and outfitting businesses and impact on business viability	Construction Phase	Compensation to guiding and outfitting businesses	Reduced appeal of wilderness tourism	Adverse	Negligible																										
			Indirect		Operation Phase					Controlled access to road; compensation to affected businesses	Reduced appeal of wilderness tourism including guiding and outfitting	Positive	Negligible																						
			Induced		Operation Phase									Compensation to owners of businesses	Transition to adjustment	Positive	Negligible																		
			Families/ Households															Direct	Reduction of income to operators of guiding and outfitting establishments	None	Truck traffic impacts on Stewart's tourism marketing	Adverse	Considerable												
			Communities															Induced						Potential impacts of mine traffic in Stewart detracting from tourism marketing of Stewart	Operation Phase	None	Truck traffic impacts on Stewart's tourism marketing	Adverse	Considerable						
																		Direct																	
			Regional															Induced												Potential impacts on marketing of wilderness to tourists by Northwest Tourism Region	Operation Phase	None	Neutral	Neutral	Negligible
																		Direct																	
																		Induced																	

**Table 14.3-13  
VSEC: Guiding, Outfitting**

VSEC (From Table 10.2)	Component  Description of mine component (From Table 10.2)	Level of Impact	Type of Impact	Summary  Description of effect	Timing Construction Phase Operation Phase Closure Phase Post Closure Phase	Proposed Mitigation/ Enhancement	Residual Effects (i.e. effects after mitigation or enhancement)	Direction of Residual Effect	Potential for Residual Adverse Effect to be Significant	
			Individual Families/ Households			Direct Indirect	Description of proposed mitigation or enhancement	Description of residual effect	Positive  Neutral  Adverse	Negligible   Considerable
Guiding and Outfitting	B	Individual	Direct	Noise generated through construction and driving wildlife away has detracted from wilderness marketing to current guiding and outfitting clients	Construction Phase	ected guiding and c	Transition to adjustment	Neutral	Negligible	
			Indirect							
			Induced							
		Regional	Families/ Households	Induced	Road access will reduce appeal of the area to current and future guiding and outfitting clients	Operation Phase	Controlled access to road; compensation to affected businesses	Transition to adjustment	Positive	Negligible
				Direct	Access to the road by the Tahltan will facilitate increased hunting in areas heretofore lightly hunted	Operation Phase	Compensation to owners of businesses	Transition to adjustment	Positive	Negligible
				Indirect	Reduced economic viability of guiding and outfitting businesses due to reduced clientele	Operation Phase	Compensation to owners of businesses	Transition to adjustment	Positive	Negligible
				Induced	Reduction of income to operators of guiding and outfitting establishments	Operation Phase	Compensation to owners of businesses	Transition to adjustment	Positive	Negligible
Communities	Regional	Induced								
		Direct								
			Indirect							
			Induced							
			Direct							
			Indirect							
			Induced							

**Table 14.3-14  
VSEC: Highway 37, 37A Truck Traffic**

VEC (From Table 10.2)	Component	Level of Impact	Type of Impact	Summary	Timing	Proposed Mitigation/Enhancement	Residual Effects (i.e. effects after mitigation or enhancement)	Direction of Residual Effect	Potential for Residual Adverse Effect to be Significant	
							Description of effect	Description of residual effect		
Highway 37, 37A Truck Traffic	C	Individual	Direct	Increased risk of accidents	Construction Phase	Driver safety training and	Reduced risk of accidents involving truck traffic	Positive	Negligible	
			Indirect	Increased risk of accidents	Operation Phase		Reduced risk of accidents involving truck traffic	Positive	Negligible	
		Families/ Households	Induced							
			Direct							
		Communities	Indirect	Potential increase in need for appropriate medical care	Operation Phase		Infrastructure in place; Health District to monitor	Neutral	Negligible	
			Induced	Potential for increased policing	Operation Phase		Infrastructure in place; RCMP to monitor	Neutral	Negligible	
		Regional	Direct							
			Indirect	Increased volume of truck traffic may require highway design improvements	Operation Phase		BC Transportation monitor	Neutral	Negligible	
				Induced						

**Table 14.3-15  
VSEC: Truck Traffic and Noise in Stewart**

VSEC (From Table 10.2)	Component	Level of Impact	Type of Impact	Summary	Timing	Proposed Mitigation/Enhancement	Residual Effects (i.e. effects after mitigation or enhancement)	Direction of Residual Effect	Potential for Residual Adverse Effect to be Significant		
										Description of mine component (From Table 10.2)	Description of effect
Truck Traffic and Noise in Stewart	C	Individual	Direct	Increased risk of accidents involving trucks in Stewart	Operation Phase	Speed limits; driver safety training	Reduced risk of vehicle accidents	Neutral	Negligible		
			Indirect	Increased risk of accidents involving pedestrians	Operation Phase	Speed limits; driver safety training	Reduced risk of pedestrian accidents	Neutral	Negligible		
			Indirect	Impact of truck traffic on winter tourist use of accommodation and restaurant facilities in Stewart	Operation Phase	Speed limits; restrictions on the use of air brakes	Reduced noise levels	Adverse	Considerable		
			Indirect	Impact of night time truck traffic and noise on sleep at Stewart accommodation facilities and residences	Operation Phase	Speed limit; restrictions on the use of air brakes	Reduced noise levels	Adverse	Considerable		
			Induced								
			Direct								
			Indirect								
			Induced								
			Direct								
			Indirect								
		Families/ Households	Induced	Increased industrial traffic along residential and downtown streets	Operation Phase	NovaGold support for traffic by-pass	Traffic along residential and downtown streets	Adverse	Considerable		
		Communities	Induced	Increased need for traffic policing in Stewart	Operation Phase	NovaGold support for traffic by-pass	Infrastructure in place; RCMP to monitor	Neutral	Negligible		
		Regional	Induced	Potential increase in need for appropriate medical care	Operation Phase	NovaGold support for traffic by-pass	Infrastructure in place; Health District to monitor	Neutral	Negligible		
			Direct								
			Indirect								
			Induced								

### **14.4 Assessment of the Significance of Residual Adverse Effects after Mitigation**

After enhancement and/or mitigation most socio-economic impacts are positive. In some instances, however, residual impacts after mitigation are adverse and the potential for them to be significant is considerable.

The significance of these adverse impacts is determined by the magnitude of the impact and the duration of the impact.

Significant residual adverse impacts are associated with the termination of employment upon mine closure, family stresses arising from the fly-in /fly-out work rotations and 24-hour truck traffic in Stewart.

While Dease Lake is more likely to experience development pressures than other Tahltan communities, adverse impacts may also accrue to Iskut should significant numbers of Tahltan return to the community.

Termination of employment, and the associated incomes, will occur when the mine is scheduled for closure in 2030. While mitigation measures will be adopted to minimize the impacts of termination, the success of such efforts will be dependant upon numerous factors including, among others, further economic development in northwestern BC, the success of the Tahltan in generating economically sustainable alternative sources of employment, improved education levels and labour mobility. The significance at mine closure of adverse employment and employment income impacts on individuals, families and communities, is based upon the questionable assumption that northwestern BC will in 2030 be in much the same situation that it is in 2006. Significance does however highlight the challenges facing northwestern BC.

Family stress associated with fly-in/fly-out work schedules may be expected to continue. Through the Participation Agreement, NovaGold will support the Tahltan Central Council in broad ranging initiatives which will address some of the manifestations of stress. These manifestations are as diverse as money management, to substance abuse, to participation in traditional activities and traditional ceremonies and events. Much as efforts may be undertaken to reduce the impacts of fly-in/fly-out work schedules, spousal absences will continue to occur.

Any return of large numbers of expatriate Tahltan to Dease Lake, Iskut or Telegraph Creek will generate housing and infrastructure pressures. The lack of services at Iskut and Telegraph Creek suggests that development pressures may focus on Dease Lake. These pressures include land availability, services such as piped water and more local governance. Iskut is however closer than Dease Lake to the proposed Galore Creek mine and the provision of free bus services to employees may encourage some Tahltan employees to locate at Iskut. Should this be the case, Iskut will face a variety of issues relating to housing, education, recreation and the provision of some retail/commercial services.

Truck traffic in Stewart will represent a significant adverse impact. Both the volume of traffic and the noise generated by it will affect residents and tourists night and day. NovaGold will

support efforts by Stewart to relocate Highway 37A as a by-pass around the community’s residential and commercial districts. Nevertheless, the planning, routing, design, budgeting and construction of a by-pass may be expected to consume a number of years. In the interim, truck traffic impacts on Stewart will be considerable.

Table 14.4-1 displays the significance of residual adverse impacts.

**Table 14.4-1  
Significance of Adverse Socio-Economic Impacts**

VEC	Residual Adverse Effect	Descriptor Criteria for Residual Adverse Effects			Significance of Residual Adverse Effect
		Magnitude	Geographic Extent	Duration	
Employment	Loss of employment upon mine closure	High	Primary Impact communities	Long Term	Significant
Employment Incomes	Loss of incomes upon mine closure	High	Primary Impact communities	Long Term	Significant
Community Growth	Individual: Return of expatriate Tahltan	Moderate	Primary to Iskut and Tahltan Reserves, to Dease Lake community	Medium Term	Not Significant
	Family: Return of expatriate Tahltan	High	Primary to Iskut and Tahltan Reserves, Dease Lake community	Medium Term	Significant
	Community: Return of expatriate Tahltan	High	Primary to Iskut and Tahltan Reserves, Dease Lake community	Medium Term	Significant
Family Stress	Spousal absence and effect of paternal (usually) absence on other spouse and children	High	Primary through Regional	Medium Term	Significant
Wilderness	Truck traffic impacts on Stewart’s tourism marketing	High	Stewart	Medium Term	Significant
Truck Traffic and Noise in Stewart	Traffic along residential and downtown streets	High	Stewart	Medium Term	Significant

## 15. CUMULATIVE SOCIO-ECONOMIC IMPACTS

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## 15. Cumulative Socio-Economic Impacts

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Subject to the receipt of all approvals and permits, the construction and operation of the Galore Creek mine will occur at the same time as the Red Chris mine if that mine were to be developed in accordance with plans. The Mt. Klappan and Kutcho Creek mines may also be developed during similar timeframes.

The cumulative effect of multiple mine developments will have socio-economic impacts in the primary and secondary impact areas as well as the province generally.

The cumulative impacts of multiple mine developments will also be influenced by broader regional and national socio-economic developments including the volume of construction activity in British Columbia and western Canada over the upcoming decade and increasing shortfalls in the supply of many professional, technical and skilled tradespeople.

The cumulative effects of these developments:

- Will provide an unsurpassed opportunity for First Nations peoples to acquire the skills, education and training to enter sustainable employment,
- Will provide an equal opportunity for First Nations to negotiate arrangements with mining companies to provide a range of socio-economic mitigation measures which address issues broader than employment and business opportunities and which extend to broader community, capacity building, health, infrastructure and other issues.
- May introduce personnel shortages which detract from the vision of the Tahltan Central Council to implement as quickly as might be desired the range of employment and business opportunities envisioned by the NovaGold – Tahltan Participation Agreement, and
- May disperse the benefits of project development across broader geographic areas as employers and contractors seek employees from ever further a field.

The potential concurrent development of both the Red Chris and Galore Creek mines introduces the first foreseeable impact of cumulative development. If the Red Chris mine development proceeds, and because it is sited near Iskut and daily commuting to the mine site is probable, Red Chris would likely emerge as a preferred employer. Should this be the case, Red Chris would employ many of the Iskut First Nation and significant numbers of residents of Telegraph Creek and Dease Lake as well. Galore Creek and its contractors will necessarily look further a field for employees. Recognizing the employment policies presented in the NovaGold – Tahltan Participation Agreement, first resident Tahltan, then non-resident Tahltan will be sought as employees before other employment prospects are advertised to the general public. The competition for employment is likely to lead to:

- Full employment of locally available Tahltan,
- Some employment switching between Red Chris, if it proceeds, and Galore Creek,

## **Cumulative Socio-Economic Impacts**

- Some abandonment of current employers in favour of permanent employment at higher wages, and potentially
- An influx of non-resident Tahltan, possibly restrained by the lack of housing infrastructure and other services to accommodate them.

Many of the cumulative effects arise if there is any substantial number of non-resident Tahltan who decide to return to their homeland. The prospect of full-time, permanent employment, high wages and a return to family and friends will appeal. Alternatively, and especially for families, the lack of housing and other services may deter return.

In the case of the Galore Creek project, cumulative effects are more likely to appear during operation rather than construction phases.

With these considerations in mind, the potential cumulative effect of Galore Creek in association with other developments on Valued Ecosystem Components is illustrated in Table 15.1-1.

**Table 15.1-1  
Summary of Potential Cumulative Effects on Valued Ecosystem  
Components (VECs)**

	<b>Galore Creek Development Effects after Mitigation/Enhancement</b>	<b>Cumulative Effects from Other Developments</b>
<b>VEC</b>		
<b>Employment</b>	Near full employment of resident Tahltan  Potential return of non-resident Tahltan	Job Competition;  Wage/salary inflation Job switching; Difficulty of existing employers in retaining personnel; In-flux of non-resident Tahltan; Pressure on Tahltan communities to provide housing, other services; Larger number of non-local employees than expected
<b>Business Opportunity</b>	Increased demand for Tahltan business providers	Job Competition;  Wage/salary inflation; Difficulty of existing employers in retaining personnel;

(continued)

**Table 15.1-1  
Summary Potential Cumulative Effects on Valued Ecosystem  
Components (VECs) (completed)**

<b>VEC</b>	<b>Galore Creek Development Effects after Mitigation/Enhancement</b>	<b>Cumulative Effects from Other Developments</b>
<b>Community Growth</b>	<p>Potential for Increased Demand for residential and commercial and industrial development opportunity in Dease Lake</p> <p>Potential increase in demand for residential development opportunity at Iskut</p>	<p>Increased potential for land development</p> <p>Increased demand for infrastructure services, including piped water</p> <p>Increased demand for housing and infrastructure if significant numbers of Tahltan return to Iskut</p>
<b>Education, Training, Skills Development</b>	<p>Enhanced opportunity for pre-employment, training, on-job training and skills development, apprenticeship training, career advancement</p>	<p>Competitive education environment</p> <p>Greater First Nation involvement in education and training</p> <p>Greater corporate involvement in education and training;</p>
<b>Individual and Community Health</b>	<p>Issues management through the Participation Agreement focusing on Tahltan populations</p>	<p>Increased number of fly-in/fly-out employees from outside;</p> <p>Potential increased demand for medical services</p> <p>Increased frequency of substance abuse</p>
<b>Truck Traffic</b>	<p>A near doubling in truck traffic along part of Highway 37, and Highway 37A into Stewart</p> <p>Severe disruption and disturbance to residential and commercial areas of Stewart</p> <p>Increased wear and tear on highways; Increased concern about highway safety;</p>	<p>Cumulative effects of increased truck traffic volumes and noise</p>

## 16. SOCIO-ECONOMIC IMPACT MONITORING

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## **16. Socio-Economic Impact Monitoring**

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### ***Employment Monitoring***

Through the Human Resources Committee NovaGold and the Tahltan Central Council will annually review progress towards the fixed target for employment and advancement of Tahltan members. The Tahltan Nation may make recommendations to NovaGold regarding the measures taken to assist in meeting or exceeding the fixed target.

The Human Resources Committee will review the HR Strategy developed by NovaGold for the initial hiring of NovaGold jobs with a view to revising the HR Strategy to continue to maximize the opportunities for NovaGold Jobs for Tahltan Members. This review may also include consideration of the general advancement of Tahltan Members within the workplace as compared to the rest of the employee base and analyze reasons for success or failure.

### ***Monitoring Tahltan Business Opportunities***

Within 30 days after each twelve month period, after the Commencement of Construction, NovaGold will prepare and deliver to the Tahltan Nation a written report describing the level of Tahltan Business providing goods and services to the Project in comparison to all goods and services provided to the Project.

NovaGold and the Tahltan Nation will, on an annual basis, meet to discuss and review the Tahltan Business Report and potential opportunities for Tahltan Businesses or Tahltan Members to participate meaningfully in providing goods and services to the Project, including the setting of non-binding targets for Tahltan participation in business opportunities for the next Year.

**APPENDIX 1 – DEVELOPMENT ASSISTANCE PROGRAMS**

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# Socio-Economic Impact Assessment

## Appendix 1 – Development Assistance Programs

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# Development Assistance Programs

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Federal and provincial programs currently (2005) available to assist NovaGold and the Tahltan Nation achieve employment commitments are described below. Whether any or all of these programs will be available or suitable to assist the attainment of NovaGold/Tahltan employment objectives will depend upon continuation of these programs well into the future. Other employment assistance programs unknown now may also be available in the future.

## *Aboriginal Business Service Network<sup>1</sup>*

This on-line guide provides a spectrum of information and links to Aboriginal business addresses.

## 1.1 Local and Regional Programs

### *16/37 Community Futures Development Corporation:*

16/37 Community Futures Development Corporation (CFDC) is a federal government initiative founded in 1988 to assist communities with their economic development by providing business and support services to entrepreneurs and small businesses. 16/37 Community Futures is involved in lending, leveraging, business counselling, community economic development planning, advising and facilitating. The CFDC partners and works with federal/provincial governments, banking communities, potential and existing entrepreneurs, band and tribal councils, municipalities, government agencies and local organizations (such as Northern BC Tourism Association, Chambers of Commerce, local colleges, and all community economic development organizations).

On the Board of Directors of the CFDC is a representative from Dease Lake and two representatives from Iskut. The CFDC has sponsored entrepreneurial training, business counselling, financial assistance and other support services to seven Dease Lake businesses. Most businesses supported by the CFDC have been retail and construction enterprises.

The CFDC works with a variety of public and private sector assistance agencies including Aboriginal Business Canada, Western Economic Diversification, the Provincial First Citizens Fund and others to provide access and leverage to financial assistance programs. Business loans through the CFDC are available for up to \$125,000.

The CFDC also administers the BC Credit Union “Growth Start” investment pool to offer financial assistance to businesses.<sup>2</sup>

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[http://www.cbcs.org/servlet/ContentServer?pagename=ABSN\\_FE/CBSC\\_WebPage/CBSC\\_WebPage\\_Temp&c=C\\_BSC\\_WebPage&cid=1077731280913&index.cfm](http://www.cbcs.org/servlet/ContentServer?pagename=ABSN_FE/CBSC_WebPage/CBSC_WebPage_Temp&c=C_BSC_WebPage&cid=1077731280913&index.cfm)

<sup>2</sup> Larry Jones, Senior Business Analyst, 16/37 Community Futures Development Corporation, Personal Communication, October 27, 2005. See also [http://www.wd.gc.ca/finance/programs/growthstart\\_e.asp](http://www.wd.gc.ca/finance/programs/growthstart_e.asp)

16/37 CFDC considers itself to be a complementary lender and through collaborative relationships with other institutions helps ensure that businesses are provided with resources that might not be available from commercial or other lending institutions. Accordingly, it works with the Tribal Resources Investment Corporation (Tricorp) and the North Coast Economic Development Corporation's Tillicum Business Development arm which provides loans up to \$175,000.<sup>3</sup>

### ***Tillicum Business Development<sup>4</sup>***

Tillicum Business Development is the operating name for the North Coast Economic Development Corporation. It is a financial services company which operates a revolving loan fund. It was created to provide funding to North Coast residents to start or expand small businesses.

Tillicum's area of operation is the North Coast of British Columbia, from Hartley Bay to Haida Gwaii, to Prince Rupert/Port Edward.

Single business projects are eligible for up to a maximum of \$150,000 or 75% of total project costs. Businesses must make a 15% equity contribution of the overall cost of project financing, a significant portion of which must be cash. Tillicum offers competitive interest rates with payback options tailored to suit individual needs.

### ***Tribal Resources Investment Corporation<sup>5</sup>***

The Tribal Resources Investment Corporation (TRICORP) provides a wide range of financial services to First Nations entrepreneurs in Northwestern British Columbia.

Tillicum Business Development provides lending services to all area residents. Its lending fund is administered by TRICORP and the two share a common Board of Directors. TRICORP administers a revolving loan fund which is operated to be self-supporting and which can provide loans up to \$300,000.

Nesika Management Ltd., a TRICORP subsidiary, is a management and consulting business which works closely with Tillicum and TRICORP to provide financial and business management services to the firm's clientele, as well as public and private individuals and organizations.

TRICORP considers itself to be an experienced North Coast commercial lender. It concentrates on developmental lending and services a niche market, specializing in lending to clients who live in First Nations communities. TRICORP's loan portfolio includes individuals, partnerships, companies and joint ventures which are 51% owned/controlled by First Nations.

It makes about 50 loans a year, totalling \$2.5-to-\$3.0 million per annum. About 85% of its loans are made to businesses situated on reserve.

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<sup>3</sup> <http://www.tricorp.ca/about.htm>

<sup>4</sup> <http://www.tricorp.ca/pages/tillicum.html>

<sup>5</sup> <http://www.tricorp.ca/>

TRICORP's loans portfolio reflects the Northwest economy; it presently has about 25% of its capital fund invested in fishing, and 40% in forestry, with other loans in the service/hospitality and tourism sectors.

### *Northern Development Initiative Trust<sup>6</sup>*

Announced in October 2005, the Northern Development Initiative Trust (the Trust) will be established with a one-time grant of \$135 million to be managed by an independent Board of Directors. The Trust is derived from the BC – CN Rail Investment Partnership and is expected to benefit communities, including Terrace and Smithers, on the CN rail line between Prince George and Prince Rupert.

This board of the Trust is mandated to make strategic investments in forestry, pine beetle recovery, transportation, tourism, mining, energy, 2010 Winter Olympic and Paralympic Games opportunities, small business and sustainable economic development.

With headquarters in Prince George, the Board of Directors comprises 13 members: two representatives from each of four regional advisory committees, as well as five members appointed by the provincial government.

The four regional advisory committees represent the Peace, Prince George, Northwest and Cariboo-Chilcotin/Lillooet regions respectively. Initial regional advisory committees will be made up of mayors and regional district chairs of municipalities in each region with populations over 500 people. MLAs from each region will round out the committee by providing broader, cross-community representation.

While no community within the primary impact area has rail service, communities including Terrace and Smithers in the secondary impact area do. Investments of the Trust in strategic economic development initiatives in the Smithers-Terrace-Prince Rupert area may have an impact on economic development proposals in the Dease Lake – Iskut- Telegraph Creek and Stewart areas.

## 1.2 Provincial Programs

### *The First Citizens Fund<sup>7</sup>*

The First Citizens Fund was created in 1969 to enhance culture, education and economic development opportunities for Aboriginal people in British Columbia.

The fund assists Aboriginal people to strengthen their economies and restore and maintain their languages and cultures.

In 2001, the Government of British Columbia committed to doubling the existing net value of the First Citizens Fund from approximately \$36 million to \$72 million. Interest earned from fund

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6 [http://www2.news.gov.bc.ca/nrm\\_news\\_releases/2004TRAN0068-000803.htm](http://www2.news.gov.bc.ca/nrm_news_releases/2004TRAN0068-000803.htm)

7 <http://www.gov.bc.ca/arr/prgs/fcfund/fcfund.htm>

investments supports programs and services for Aboriginal people. All programs and services are managed and delivered in partnership with British Columbia Aboriginal organizations.

First Citizens Fund programs assist Aboriginal people and organizations to:

- Start and expand businesses through business loans and business advisory services;
- Keep Aboriginal cultures and languages alive through language preservation and revitalization;
- Realize educational goals by providing financial assistance to post-secondary students;
- Connect Elders with each other by providing support for transportation costs to attend cultural events; and
- Support Friendship Centres to deliver a range of culturally responsive programs and services.

### ***Native Economic Development Advisory Board<sup>8</sup>***

The Native Economic Development Advisory Board (NEDAB) was established in 1988 to support sustainable Aboriginal economic development throughout British Columbia.

NEDAB provides policy, program and service advice to the BC Minister of Aboriginal Relations and Reconciliation. The board advises government regarding appropriate strategies to support Aboriginal economic development and works in partnership with government to ensure that Aboriginal economic development initiatives are achieved in an environment of mutual respect and understanding.

The board also works with the provincial government to protect the purpose and integrity of the First Citizens Fund special account established to enhance economic development, social and cultural opportunities for Aboriginal people in BC. The board provides advice on planning, development and delivery of First Citizens Fund programs and services, an annual budget of approximately \$4 million.

### ***Aboriginal Employment Partnership Initiative<sup>9</sup>***

The Aboriginal Employment Partnership Initiative (AEPI) is an agreement between the Metis Provincial Council of British Columbia and the Ministry of Community, Aboriginal and Women's Services. The Province provided \$900,000 over three years from the Economic Measures Fund to establish the partnership initiative. Other funding is provided by INAC and the BC Ministry of Aboriginal Relations and Reconciliation.

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<sup>8</sup> <http://www.gov.bc.ca/arr/prgs/nedab/nedab.htm>

<sup>9</sup> C. Engdahl, Implementation Coordinator, Aboriginal Employment Partnership Initiative, Personal Communication, December 13, 2005; [http://www.gov.bc.ca/arr/prgs/aboriginal\\_dir/ae/pi.htm#background](http://www.gov.bc.ca/arr/prgs/aboriginal_dir/ae/pi.htm#background)

The AEPI seeks to develop partnerships between employers, the Aboriginal community and all levels of government. The AEPI creates partnerships with employers to identify employment and procurement opportunities. The AEPI shares the occupational and procurement information gathered with Aboriginal Employment and Training, Educational and other Aboriginal organizations.

Selection of appropriate initiatives to finance is based upon discussions between the employer and the AEPI and the subsequent submission of proposals.

### ***BladeRunners<sup>10</sup>***

BladeRunners is an award-winning employment program for at-risk and disadvantaged women and men ages 19 - 30.

BladeRunners is an internationally recognized, award winning employment program assisting multi-barrier and disadvantaged youth in gaining on the job construction training and apprenticeships. Participants are referred by pre-employment programs, past and/or present BladeRunners and community organizations. BladeRunners is a non-partisan program that works in partnership with ACCESS, employers, trades organizations, unions, community organizations, government and the Aboriginal community to increase opportunities for youth in British Columbia.

Today, BladeRunners operates in Vancouver, Kamloops, Kelowna, Nanaimo and Victoria. More than 1000 youth have participated in the program and many BladeRunners have successfully completed on the job training and apprenticeships resulting in trades certification. In 2006, BladeRunners, supported by the province, will be establishing programs in Prince George.

BladeRunners is expanding its services across British Columbia and may be in a position to assist NovaGold and the Tahltan Nation to further develop employment enhancement programs when construction and development of the Galore Creek project occurs.

### ***Industry Training Authority<sup>11</sup>***

The Industry Training Authority (ITA) is the provincial government agency with responsibility for apprenticeships and industry training programs in B.C.

The ITA operates in collaboration with industry associations and students. Public and private training institutions are key suppliers to the industry training system, and develop curriculum to meet defined industry needs.

**Apprenticeship** is paid work-based training combined with post-secondary education. Apprentices spend about 80 per cent of their time learning skills on the job (under the direction of a highly skilled journey person) and about 20 per cent of their time learning in a classroom setting.

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10 <http://www.buildingfuturestoday.com/index2.php>

11 <http://www.itabc.ca/>

**Secondary School Apprenticeship** (SSA) is a career program that provides students with the opportunity to begin an apprenticeship while still in high school, and earn high school credits for doing so.

The **Accelerated Credit Enrolment in Industry Training** (ACE IT) program allows high school students to earn credit towards their high school graduation as well as credit towards the technical training component of an apprenticeship or industry training program.

Apprentices now have the flexibility to choose when and where they take technical training.

### 1.3 Federal Programs

#### *Aboriginal Business Canada*<sup>12</sup>

Aboriginal Business Canada (ABC) provides support to Aboriginal entrepreneurs for a range of activities including business planning, start-up, expansion and marketing. ABC is an Industry Canada program that provides eligible majority-owned Aboriginal enterprises with:

- Financial assistance;
- Business information and resource materials; and
- Referrals to other possible sources of financing or business support.

Four program emphases are specifically identified. These are:

1. Young Entrepreneurs (ages 18 to 35)

- Support for young entrepreneur projects

2. New Businesses

- For first-time entrepreneurs planning to start or purchase a business, or existing business owners proposing to carry out a commercial activity for the first time in:

Tourism; Manufacturing; Business, Professional, Scientific or Technical Services, and Business Opportunities Linked to Major Developments

3. Existing Businesses

- Financial assistance information for eligible Aboriginal individuals, 36 years of age or older, who are already operating a business. For entrepreneurs with an existing business, Aboriginal Business Canada can support projects involving:

Innovation; Expansion of Existing Markets; and Expansion into New Markets

4. Aboriginal Organizations

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<sup>12</sup> [http://strategis.ic.gc.ca/epic/internet/inabc-eac.nsf/en/h\\_ab00070e.html](http://strategis.ic.gc.ca/epic/internet/inabc-eac.nsf/en/h_ab00070e.html)

- Financial support for organizations conducting research or advocacy activities designed to improve the business climate for Aboriginal enterprise.

ABC works with a network of 54 Aboriginal Financial Institutions, including Aboriginal Capital Corporations, Aboriginal Community Futures Development Corporations and other Aboriginal-owned or controlled lending institutions. These organizations act as developmental lenders (providing loans to enterprises that are not yet ready to secure business loans successfully from banks) and offer business advisory services.

Some of these organizations have diversified their operations and act as third-party delivery agents for the Aboriginal Business Canada program, primarily in rural and remote communities.

ABC works closely with the National Aboriginal Economic Development Board (NAEDB), a private-sector body that provides advice to the Minister of Industry and the Government of Canada on matters related to Aboriginal economic and business development. The NAEDB also reviews and provides recommendations on proposals to ABC involving large investments, and guides the program in setting funding priorities.

ABC collaborates with federal partners including Indian and Northern Affairs Canada, Western Economic Diversification Canada, the Business Development Bank of Canada, and Statistics Canada. ABC also works with non-government partners on various initiatives. An example is the Canadian Executive Services Organization (CESO) to deliver personalized mentoring services to youth entrepreneur clients.

### ***Human Resources and Skills Development Canada<sup>13</sup>***

Human Resources and Skills Development Canada (HRSD) offers numerous programs, typically delivered through Service Canada, the nearest office of which is the Terrace Service Canada Centre.

A sampling of HRSD programs relevant to this project follows.

### ***Youth Employment Strategy<sup>14</sup>***

The objective of the Youth Employment Strategy (YES) is to help young people, particularly those facing barriers to employment, get the information and gain the skills, work experience and abilities they need to make a successful transition to the workplace. The Youth Employment Strategy offers the following three programs:

**Skills Link** provides funding to community organizations to help youth facing barriers to employment - such as single parents, Aboriginal youth, young persons with disabilities, recent immigrants, youth living in rural and remote areas and high school dropouts - develop the broad range of skills, knowledge and work experience they need to participate in the job market.

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13 [http://www.hrsdc.gc.ca/en/cs/comm/hrsd/about\\_us.shtml](http://www.hrsdc.gc.ca/en/cs/comm/hrsd/about_us.shtml)

14 <http://www.hrsdc.gc.ca/asp/gateway.asp?hr=en/epb/yi/yep/newprog/yesprograms.shtml&hs=eie>

**Career Focus** provides funding for employers to help post-secondary graduates obtain career-related work opportunities in Canada to support their development of advanced skills, to help them make career-related links to the job market, and to assist them in becoming leaders in their field.

**Summer Work Experience** provides wage subsidies to employers to create summer employment for secondary and post-secondary students, and support the operation of summer employment offices.

Thirteen Government of Canada departments and agencies work in partnership with business, labour, industry, not-for-profit and voluntary organizations, rural and remote communities and all levels of government to help young people get the information and develop the skills and work experience they need to prepare for and participate in the world of work.<sup>15</sup>

### ***Skills Development Program***<sup>16</sup>

The purpose of the Skills Development Program is to provide support to unemployed Employment Insurance eligible individuals without marketable skills, to find the most direct route possible to employment, resulting in savings to the Employment Insurance Account.

The objective of the Skills Development Program is to provide a negotiated level of financial assistance to individuals who require skills training in order to secure employment. Eligible individuals, who are approved under the Skills Development Program select, arrange and pay for their own training.

An application for funding under the Skills Development Program must be approved by Service Canada in advance of the applicant commencing training. Agreements are generally for up to 52 weeks, but may be approved for a period of up to three years.

### **Service Canada**

### ***Aboriginal Human Resources Development Strategy***<sup>17</sup>

The Aboriginal Human Resources Development Strategy (AHRDS) is designed to expand the employment opportunities of Aboriginal people across Canada. Under the AHRDS, Aboriginal organizations design and deliver employment programs and services best suited to meet the unique needs of their communities.

The AHRDS is designed to assist Aboriginal people to prepare for, find, and keep jobs. All Aboriginal people, regardless of status or location, may access its programs and services. These include: labour market interventions; programs for youth, urban and Aboriginal persons living with disabilities; creation and maintenance of child care spaces (First Nations and Inuit Child

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15 For further information see <http://www.hrsdc.gc.ca/en/epb/yi/yep/newprog/general.shtml>

16 [http://www.hrsdc.gc.ca/en/epb/sid/cia/grants/skills-deve/desc\\_skills.shtml](http://www.hrsdc.gc.ca/en/epb/sid/cia/grants/skills-deve/desc_skills.shtml)

17 [http://www17.hrdc-drhc.gc.ca/AHRDSInternet/general/public/HomePage1\\_e.asp](http://www17.hrdc-drhc.gc.ca/AHRDSInternet/general/public/HomePage1_e.asp)

Care), and capacity building for Agreement holders. 80 holders of Aboriginal Human Resources Development Agreements (AHRDA) deliver labour market programming in over 400 locations.

AHRDA holders closest to the Galore Creek project are:

- Prince George Nechako Aboriginal Employment & Training Association, at Prince George
- Skeena Native Development Society, at Terrace

Programs accessed through AHRDA include the following:

- **Aboriginal Skills and Employment Partnership (ASEP)** is a nationally managed program geared to providing Aboriginal people with the skills they need to participate in economic opportunities such as northern mining, oil and gas, forestry, and hydro development projects across Canada. This is a five year program ending in 2008.
- Youth programs including **Youth Initiatives: Skills for the Future**. Under the Aboriginal Human Resources Development Strategy (AHRDS), Aboriginal Human Resources Development Agreement (AHRDA) holders determine which kind of youth programs they wish to deliver based on the needs of youth in their communities. They may design, develop and deliver unique youth programs that work for their communities while supporting HRSD's objectives, or they may simply implement programs that are like HRSD's mainstream ones.
- **Disabilities:** the usual programming available from Agreement holders under the Strategy is available. And under the Strategy, extra money is available to enhance services for persons with disabilities.
- **Child Care:** Through the First Nation and Inuit Child Care (FNICC) spaces are available through local Agreement holders under the AHRDS. Each Agreement holder creates a program to best meet its community's needs.

### Indian and Northern Affairs Canada

#### *Community Economic Development Program*<sup>18</sup>

The Community Economic Development Program (CEDP) is designed to provide long-term employment and business development opportunities to First Nations and Inuit by giving them the means to effectively manage skill development programs, economic institutions and business enterprises. This is achieved by forging partnerships among Aboriginal peoples, various levels of government and the private sector.

The CEDP provides funding for the establishment and operation of 505 Community Economic Development Organizations (CEDOs). Tribal councils, First Nations and Inuit communities can utilize CEDOs services including: developing community economic strategic plans; providing advisory services; planning business or resource development projects; providing contributions,

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<sup>18</sup> [http://www.ainc-inac.gc.ca/ps/ecd/ps/cedp\\_e.html](http://www.ainc-inac.gc.ca/ps/ecd/ps/cedp_e.html)

repayable contributions or loans to community members for training, business or resource development projects; holding equity positions in private or community enterprises; providing job-related training and employment programs; and managing financial and technical services.

The CEDO program is fully devolved to First Nations and Inuit through INAC's regional offices.

### ***First Nations and Inuit Youth Employment Strategy (FNIYES)***<sup>19</sup>

The FNIYES, with a national annual budget of \$24 million, is a component of the Government of Canada's Youth Employment Strategy.

**First Nations and Inuit Youth Work Experience Program** applies to First Nations and Inuit youth aged 15 to 30 ordinarily resident on reserves or in recognized communities who are out of school, unemployed or underemployed.

#### Objectives

- Support the provision of opportunities for mentored work experience;
- Support the development and enhancement of essential employability skills, such as communication, problem solving, and working with others;
- Expose youth to a variety of career options;
- Promote the benefits of education as being key to labour market participation.

#### Activities

- Mentored work experience;
- Career planning and counseling activities, including a youth needs assessment for each participant;
- Life and work skills development for the participant.

**First Nations and Inuit Student Summer Employment Opportunities Program** applies to First Nations and Inuit secondary and post-secondary students aged 15-30 ordinarily resident on-reserve or in recognized communities who were registered as full-time students during the preceding academic year and who intend to return to school on a full-time basis in the next academic year.

#### Objectives

- Support skills acquisition through the provision of wage subsidies for short term work experience;
- Assist First Nations and Inuit secondary and post-secondary students to prepare for future entry into the labour market by facilitating access to summer employment;

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<sup>19</sup> [http://www.ainc-inac.gc.ca/ps/ys/index\\_e.html](http://www.ainc-inac.gc.ca/ps/ys/index_e.html)

- Support First Nations and Inuit students to earn wages for post-secondary financing.

### Activities

- Support work experience opportunities during the summer months for First Nations and Inuit secondary and post-secondary students.

**First Nations and Inuit Science and Technology Program** applies to First Nations and Inuit youth ordinarily resident on-reserve or in recognized communities.

### Objectives

- Promote Science and Technology as an educational and/or career choice;
- Support the development and enhancement of essential employability skills, such as communication, problem solving, and working with others;
- Expose youth to a variety of career options;
- Promote the benefits of education as being key to labour market participation;
- Encourage the enhancement of traditional knowledge (where applicable).

### Activities

- Support science and technology related activities that will provide First Nations and Inuit youth with first-hand experience in various science and technology disciplines which can include the enhancement of traditional knowledge.

**First Nations and Inuit Career Promotion and Awareness Program** applies to First Nations and Inuit youth ordinarily resident on-reserve or in recognized communities.

### Objectives

- Support the development and enhancement of essential employability skills, such as communication, problem solving, and working with others;
- Expose youth to a variety of career options;
- Promote the benefits of education as being key to labour market participation;
- Support the provision for mentored school-based work and study opportunities, where applicable.

### Activities

- Career planning and access to career development information, including awareness and support activities such as, but not limited to career fairs, leadership projects, etc.;
- Life and work skills development for the participant;
- Co-operative Education projects.

### *Industry Canada, Canada Small Business Financing Program<sup>20</sup>*

The Canada Small Business Financing Program seeks to increase the availability of loans and capital leases for establishing, expanding, modernizing and improving small businesses. It does this by encouraging financial institutions and leasing companies to make their financing available to small businesses. Under the Program, a small business must apply for a loan or lease at a financial institution (bank, credit union or caisse populaire) or a participating leasing company of its choice. If the loan or lease is granted by the financial institution or the leasing company, the federal government will reimburse 85 percent of the lender's or lessor's losses in the event of default.

### **Western Economic Diversification Canada, Small Business Financing Programs**

#### *WD Sponsored Loan Programs<sup>21</sup>*

Loan programs target industry sectors important to Western Canada and provide patient and flexible debt capital on terms especially suited to the unique needs and cash flow requirements of small businesses.

These programs are provided on commercial terms by financial institutions such as chartered banks, credit unions, trust companies, co-operatives, the Farm Credit Canada (FCC) and the Business Development Bank of Canada (BDC). Each lending institution funds its own program and makes the decision on all loan approvals.

#### *Social Economy<sup>22</sup>*

The **social economy** is an entrepreneurial, not for profit sector that seeks to enhance the social, economic and environmental conditions of communities.

Separate from the private sector and government, the social economy includes co-operatives, foundations, credit unions, non-profit organizations, the voluntary sector, charities and social economy enterprises. They operate in sectors ranging from housing to communications and in areas such as recycling, home care, forestry cooperatives, restaurants, catering and manufacturing.

Social economy enterprises are a component of the social economy that are run like businesses, producing goods and services for the market economy, but manage their operations and redirect their surpluses in pursuit of social and environmental goals. Common objectives for social economy organizations include alleviating poverty, providing affordable housing, improving employment and economic opportunities, addressing environmental concerns and providing access to services and programs that can assist individuals and groups to improve their personal circumstances.

This program is delivered under WD's Sustainable Communities initiative.

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20 <http://strategis.ic.gc.ca/epic/internet/incsbfp-pfpec.nsf/en/Home>

21 [http://www.wd.gc.ca/finance/xnetwork\\_e.asp](http://www.wd.gc.ca/finance/xnetwork_e.asp)

22 [http://www.wd.gc.ca/ced/se/default\\_e.asp](http://www.wd.gc.ca/ced/se/default_e.asp)

### ***Business Development Bank of Canada<sup>23</sup>***

The Business Development Bank of Canada (BDC) is a financial institution wholly owned by the government of Canada. BDC plays a leadership role in delivering financial, investment and consulting services to Canadian small businesses, with a particular focus on the technology and export sectors of the economy.

#### Growth Capital for Aboriginal Businesses:

Business Development Bank's (BDC) specialized financing increases access to capital for Aboriginal entrepreneurs wanting to expand an existing business or start a new one, on or off a reserve in Canada. Major points are:

- BDC's first-hand knowledge of the challenges faced by Aboriginal entrepreneurs;
- Up to \$100,000 for existing businesses and up to \$25,000 for start-ups;
- Interest rates and security requirements determined on a project-by-project basis;
- Payments of principal may be deferred for the first year; stepped and seasonal payments are available where appropriate;
- Support is available through a special alliance with CESO Aboriginal Services, which includes ongoing mentoring and business management counseling for the first two years following loan approval;
- Costs for management support can be incorporated into the financing package.

#### Consulting Services:

BDC Consulting Group can support Aboriginal businesses in all aspects of their operations: assessing their growth potential, evaluating and improving their product line, exploring export options, strategic planning, marketing, human resources, and more.

### ***Canadian Executive Service Organization<sup>24</sup>***

The Canadian Executive Service Organization (CESO) has initiated a Mentoring Pilot Project to help young Aboriginal entrepreneurs.

The two-year pilot project is a partnership between Industry Canada's ABC (Aboriginal Business Canada) program and CESO. Under this initiative, ABC will contribute \$340,000 to CESO to deliver personalized mentoring services to 60 ABC youth entrepreneur clients. The pilot project will operate in British Columbia, Saskatchewan, Manitoba and Southwestern Ontario, with ABC identifying 15 clients from each province. Those selected will receive an average of 20 days of personalized mentoring services from a CESO Mentor over the two-year period, during which they will have the opportunity to exchange ideas and find solutions to common business problems.

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23 <http://www.bdc.ca/en/home.htm?cookie%5Ftest=1>

24 [http://www.ceso-saco.com/news\\_feb05.htm](http://www.ceso-saco.com/news_feb05.htm)

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- Iskut First Nation, Social Development Coordinator, (August 24, 2005).
- Iskut Valley Health Services, Manager, (October 24, 2005).
- Jackson-Craig, S., Manager, Special Services Unit, Indian and Northern Affairs Canada, BC Region, Personal Communication (October 25, 2005).
- Jones, L., Senior Business Analyst, 16/37 Community Futures Development Corporation (October 27, 2005).
- Jones, N., Human Resources Superintendent, Eskay Creek Mine, Barrick Gold Corporation (November 15, 2005).

- Kellar, R., Manager, Dease Lake Airport Society (August 23, 2005).
- Kohuch, D., Director of Operation Services, Town of Smithers (December 1, 2005).
- Kosalko, A., Continuing Education Coordinator, Northwest Community College (December 6, 2005).
- Ladyman, P., Vice President, Environmental Affairs, Yukon Zinc Corporation (January 9, 2006).
- Lekstrom, J., Manager, Trades and Apprenticeship, Northern Lights College (November 7, 2005).
- Lewis, J., Executive Director, Terrace Tourism (November 29, 2005).
- Lewis, J., Economist, Mining Division, BC Ministry of Energy, Mines and Petroleum Resources, Personal Communication, (January 31, 2006).
- Mah, W., Chief Administration Officer, Town of Smithers (December 6, 2005).
- Maitland, W., BC Ministry of Transportation, Dease Lake (August 23, 2005).
- Mansfield, J., Manager, Labour Market Policy, BC Ministry of Economic Development.
- McKay, G., Manager, Stewart and Hyder International Chamber of Commerce.
- Mensies, B., Plumbing contractor, Dease Lake (November 8, 2005).
- Menzies, D., Executive Director, Terrace Economic Development Authority (November 14, 2005).
- Milnthorp, R., Director of Leisure Services, Terrace (December 15, 2005).
- Moore, T., Industry Liaison, School of Exploration & Mining, Northwest Community College, Terrace (December 20, 2005).
- Munzert J., NovaGold.
- Murray, D., NCO North Pacific Traffic Services, Terrace, RCMP (November 14, 2005).
- National Native Alcohol and Drug Abuse Program (NNADAP), Coordinator, Telegraph Creek (August 25, 2005).
- Nelson, G., District Area Manager, BC Ministry of Transportation, Smithers (February 9, 2006)
- Northwest Inter-Nation Family and Community Services (NIFCS), Regional Supervisor, (August 24, 2005).
- Perry, D., Director of Instruction, School District #87 (August 22, 2005).

- Petrie, K., Acting Fire Chief, Dease Lake (August 22, 2005).
- Rustad, B., Project Manager, Hatch, March 3, 2006.
- Rygaard, C., Timber Tenures Specialist, Dease Lake, BC Ministry of Forests and Range, Personal Communication, February 21, 2006.
- Soucie, A., President, Stewart Bulk Terminals Ltd (September 22, 2005).
- Spatzisi Remote Services Corporation, Manager (September 20, 2005; February 10, 2006).
- Tahltan Central Council, Chair, (August 22, 2005).
- Tahltan Nation, Administration, (January 17, 2006).
- Tahltan Nation, Housing Coordinator, (November 8, 2005).
- Tahltan Nation, Maintenance Foreman, Telegraph Creek (November 8, 2005).
- Tahltan Nation, Manager, (August 24, 2005).
- Tahltan Nation Development Corporation, President, (August 22, 2005).
- Wilson, R., BC Ministry of Children and Family Development for Dease Lake (August 23, 2005).