

NM 3: Northern Mining Communities

ERRATUM

Page 4, para 4 - revise 67.8 to 87.9
revise 92.8 to 112.9
revise 73 to 77.9

para 5 - revise 16.3 to 24.4

Page 7, Table 1- under Nanisivik revise 69.0 to 93.9
13.4 to 13.7

under Pine Point revise 101.7 to 112.9
revise 0.9 community assistance to 0.8
percent of total project

Note 3 should read "\$6.9 million or
53.5% of the community infrastructure
cost."

Northern Mineral Policy Series

NM 3: Northern Mining Communities

Northern Affairs Program

Northern Resources and Economic
Planning Branch

This report was prepared by officials of the
Mining Management and
Infrastructure Directorate

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Northern Mineral Policy Series

- NM 1: Mines and Important Mineral Deposits of the Yukon and Northwest Territories, 1982
- NM 2: Northern Mining Overview
- NM 3: Northern Mining Communities
- NM 4: The Governmental Framework for Northern Mining
- NM 5: Northern Mineral Legislation
- NM 6: Infrastructure and Mineral Development
- NM 7: The Human Dimension in Mining
- NM 8: Mineral Industry Incentive Programs and Services



Exploration and mining have traditionally played a key role in the economic development of the North. To ensure that the industry maintains this position, a northern mineral policy is now being prepared by the federal Department of Indian Affairs and Northern Development. Its successful implementation will depend to a large extent on the ongoing dialogue between those affected by such a policy and those responsible for its development. Therefore, as part of the consultative process now under way, I am pleased to present one of eight volumes in the northern mineral policy series.

The northern mineral policy will provide a framework for industry's sustained growth over the next decade. My intention is to clearly indicate what role the federal government is prepared to take in order to help the industry remain competitive and attract the necessary domestic and foreign investment. To achieve these goals, it is essential to develop a spirit of common purpose among those concerned about the future vitality of this industry. In Yukon and Northwest Territories, this includes federal, territorial and local governments; industry; labour; native groups; environmentalists; indeed, every concerned northern citizen.

I believe that to achieve consensus, all of these diverse groups must have a common understanding of the industry. The northern mineral policy series, by marshalling relevant data and presenting concise discussion of the major issues, can make a significant contribution to this information exchange.

Individual volumes were prepared by the staff of the Mining Management and Infrastructure Directorate of the Department's Northern Affairs Program. In some cases this was supplemented by work contracted to consultants.

This particular volume, entitled *Northern Mining Communities*, traces the development and decline of mining communities in the North. Prepared by R. Glass and J. Lazarovich, it outlines the problems faced by these communities when the life of the mine on which the community was based comes to an end. A discussion on how these problems can be dealt with is also presented.

A handwritten signature in cursive script, which appears to read "John C. Munro". The signature is fluid and elegant, with a large initial "J".

John C. Munro

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NORTHERN MINING COMMUNITIES

INTRODUCTION

The exploration for and development of minerals has had, and continues to have, a major influence on the size, type and location of human settlement in Canada's North.

The location, character and prominence of several northern communities have been the direct consequence of northern mining while the energy and transportation infrastructure occasioned by mineral development has contributed to the viability and quality of life of many others.

Mining, in the North as elsewhere, is an economic activity that requires, attracts and supports people. With the small, untrained indigenous labour force in the North, mineral development historically required the immigration of workers and their families from the south.

The nature of community development arising from mining in the North has been varied, responding to different circumstances such as the location, size and quality of the orebody; the availability and/or cost of infrastructure; the need to attract and maintain a skilled work force; and the need to respond to the social, political, environmental and economic aspirations of a developing northern society.

The contribution of mining to this society cannot be measured solely by reference to gross data on employment, taxes, or value of the product. Present and past mines, their work forces and related human and industrial activity have been the basis for much of the social, political and physical infrastructure in both territories. They have created not just communities but a sense of community for much of the North.

A Historical Overview

Prior to 1875 mining in Canada was sporadic and essentially local in character, dominated by the exploitation of gold, silver and coal.⁽¹⁾ The first settlements serving the mining industry were, for the most part, temporary on-site camps constructed and managed by the mining company. They were limited mainly to cookhouses and bunkhouses for male employees who had no

(1) Section based on J. Lazarovich and S. Derrick:
"Single Industry Communities and their impact on
human and natural environments" - An address at a
seminar in Yellowknife, 1975.

ties or had families living elsewhere. Mining operations were haphazard and discontinuous, and industry was generally reluctant to invest in a permanent type of community.

From 1875 to 1914 railway construction and the discovery of many new mineral deposits resulted in the establishment of several mining operations and mining villages such as Glace Bay (1901) in Nova Scotia, Kimberley (1892) in British Columbia, Thetford Mines (1892) in Quebec, and Timmins (1912) in Ontario. Initially, little apparent regard was paid to the standard of comfort and living conditions.

In the early 1900s the first evidence of government awareness of the quality of life in mining communities appeared in the reports of the Commission of Conservation, which noted the poor housing conditions in mining areas of northern Ontario and western Canada. Before it dissolved in 1921, the commission developed a concept of total resource use in the field of urban and regional planning.(2) The decline of the commission came at a time when the growth of the mineral industry began in earnest. The responsibilities for further research and development of government strategies in these fields were dispersed to newly emerging government departments and agencies.

In the 1920s, improved exploration and processing techniques along with a sharp rise in the world mineral demand accelerated mineral industry development. Mining companies were now faced with competition within the industry and with other expanding sectors in recruiting a labour force. Because of the remote locations of mining operations and communities, companies began to see the need to improve the quality of community life in order to attract and retain a stable labour force and their families. As a result, companies became more involved in community affairs. The emergence of towns financed, constructed and operated by them was the result.

(2) Thomas L. Burton, Natural Resource Policy in
Canada, McClelland and Stewart Ltd., Toronto, 1972.
p.p.31-34

During the expansion of the 1920s the tendency of the government and agencies in Canada, especially at the provincial level, was to assume the role of resource administrators and suppliers of services to industry. Governments took a relatively passive regulatory role in which no attempt was made to influence the direction and rate of mineral development and the development of related human settlements. The private sector was encouraged to pursue all development opportunities to the fullest.

During the depression years of the 1930's government intervention in resource administration focused mainly on the agricultural sector. The mineral industry was more or less left to develop as best it could in the troubled times.

In the early 1940s, as a result of World War II, the government's primary objective was industrial expansion - virtually at any cost.(3) Natural resources were exploited in the name of maximum production rather than on the basis of rational resource and human settlement management.

The greatest growth of mining in Canada has occurred since 1945. At the end of the 1950s, mining generated 4 per cent of the gross national product. The technological changes which began to take place at this time affected not only the industry but also the foundations of the mining communities. The demand for highly skilled personnel was met by recruitment mainly from large urban centres and other resource towns. These workers were different from those of previous generations in that their needs and expectations were largely shaped by urban society. Consequently, many could not be attracted to remote regions for long periods of time by high wages alone. Their demands for many of the urban amenities to which they were accustomed or made aware of by modern communications would have to be met.

Since the 1960s, government policies have increasingly reflected other changes in Canadian society. Quality of life, environmental and social issues became more important factors. Public pressure led to new legislation, regulations and processes concerning protection of the environment, conservation, affirmative

(3) Burton, op cit; p. 37

action and the improvement in working conditions. In short, government started to more directly influence the thrust of exploration and mining. Looking back, the cumulative changes are almost startling.

Up to the late 1940s, there was little or no organized system of municipal government in mining communities. Single enterprise towns were administered by the company or a provincially appointed administrator. By the early 1950s, however, the responsibility for governing mining communities was clearly moving away from the company toward elected local governments.

The last twenty years reflected yet another change in government attitude. It stemmed from a growing concern over the escalating costs of providing and maintaining necessary infrastructures, community financing and the equitable provision of services to smaller communities. Government/industry cost sharing arrangements have become prevalent.

For example, in 1964 at Pine Point, N.W.T., the government paid \$67.8 million to cover all infrastructure costs on a total project expenditure of \$92.8 million. This represents over 73 per cent and initially, there were few conditions imposed.

This agreement is quite different from one made thirteen years later with Nanisivik. There, the government paid \$16.3 million toward infrastructure development. In return, government imposed conditions concerning employment of Natives, Canadian content in shipping and 18 per cent equity participation including membership on the company's board of directors.

Although a simple comparison of these two projects cannot be pushed too far, they do illustrate the evolving relationship between the industry and governments.

From the preceding summary, it can be seen that apart from the many small native settlements, the main impetus for the development of northern communities has come from mineral development. Government participation in the development of infrastructure sometimes, but not always followed.

The two major urban areas and territorial capitals, Whitehorse and Yellowknife, were founded on gold, and in both cases, mining still plays a major role in their economic viability.

In Yukon, forty years of prospecting and small-scale placer operations culminated in the discovery of major gold deposits in the Klondike region in 1897. The ensuing rush of gold seekers created the city of Dawson which, by the turn of the century, was the largest North American city west of Winnipeg and north of San Fransisco. The North has not seen a city of its size since.

Whitehorse was established as the northern terminus of the White Pass and Yukon Railway, a narrow gauge track from Skagway which linked the Pacific Ocean through the coastal mountains to the beginning of navigable water on the Yukon River. Together, the railway and river provided the transportation corridor to and from the gold fields of the Klondike. The railway has continued to be a vital transportation link for mining in Yukon.

It was also during this period that prospectors on their way to the Klondike discovered the Whitehorse copper belt, the mining of which has provided a lengthy and significant contribution to the stable growth of Whitehorse.

Both Whitehorse and Dawson are examples of communities which developed spontaneously, without the conscious decisions of either governments or mining corporations. Instead, they represented the collective result of thousands of personal and economic decisions. They have survived because the mining base on which they were founded has survived and because moderate economic diversification was possible. In the case of Whitehorse, that diversification has been such that mining and mineral-based transportation are no longer the principal keystones of its economic existence.

Yellowknife has a slightly different history. The opening of the Con and Rycon mines in 1938 and the Negus mine in 1939 led to its establishment as the seat of the first local government in the Northwest Territories (NWT).

In recognition of its status as a "mining" town, the initial legislative control of the municipal district was exercised by a local trustee board comprising two representatives of the mining industry and three federally appointed officials. It was only in 1967 with its designation as the new capital of the NWT that Yellowknife passed from being a single industry community to what it is today, a more diversified regional economic and public administration centre.

Subsequently, other municipal or settlement models related to mining have been developed. In Yukon, the communities of Clinton Creek and Faro grew from the development of the Cassiar and Cyprus Anvil Mines. In both instances, public investment in social and transportation infrastructure were made in support of the development of a full service community. Clinton Creek disappeared after 13 years with the depletion of its reserves while Faro has the potential to develop into an important, permanent regional municipality, assuming continued viability of the three principal orebodies in the region.

In the NWT, the settlement of Cantung was created in 1962 entirely by the Canada Tungsten Mining Corporation. It has remained as a dormitory community totally dedicated to one mine with minimal government involvement or assistance.

In 1964 Pine Point was brought into production with considerable public investment, particularly in transportation infrastructure through the building of the Great Slave Lake Railway. Further government investment in housing and training was undertaken in order to encourage native employment.

Similarly, federal investment in the establishment of Nanisivik was intended to enhance the economic viability of the project in order to encourage employment of Inuit from the region. Unlike Pine Point however, initially there was no attempt to integrate the indigenous native community into the mining community. Thus the dormitory settlement of Nanisivik exists as a separate and temporary community only a few kilometers from the permanent Inuit community of Arctic Bay.

The extent of public investment in social infrastructure has varied widely. This is because assistance for mineral resource development projects has been determined on a case by case basis subject to Cabinet approval of an appropriate assistance package in each case, and negotiation with the mining company involved. Table 1 provides examples of the extent of community infrastructure assistance given to a selection of mineral development projects in relation to the overall public contribution to infrastructure and the initial private capital investment. Public investment in community infrastructure is normally the responsibility of the territorial governments.

TABLE 1

Community Infrastructure Assistance: Selected Mine Developments (\$ millions)¹

Item/Community	Clinton Creek	Cyprus Anvil	Canada Tungsten	Nanisivik	Pine Point
Total Project	35.5	96.7	9.4	69.0	101.7
Total Public Infrastructure Investment ²	4.0	27.6	5.9	24.4	87.9
Community Infrastructure Assistance: Townsites/ Services	0.9	5.0	-	12.9 ³	0.9
Community Assistance as Per cent of Total Project	2.5	5.2	-	13.4	0.9

Source: Lazarovich, Fraser, Wirth, Mineral Development, Infrastructure and the Role of Government. Northern Transportation Conference, October, 1982.

- 1 Exclusive of exploration expenditures.
- 2 Total public infrastructure investment includes roads, railways, ports or wharves, airstrips, electric power, as well as townsite and townsite services investments.
- 3 Of the \$12.9 million, \$6.0 million is recoverable and the net public sector expenditure then becomes \$6.9 million or 10% of the total project cost.

The public sector contribution to community infrastructure has varied from zero per cent in the case of Canada Tungsten (1962) to 13.4 per cent in the case of Nanisivik (1977).

The most recent model has been provided by the fly-in/fly-out dormitory operation of Polaris Mine on Little Cornwallis Island. This facility is entirely company-owned with no government investment in social infrastructure. It has been designed to be portable, so that when the orebody is mined out, the entire "community" -- consisting of three large structures -- can be moved to a new site.

Mining developments create more services and facilities of better quality in the surrounding community. For example, the opening of the Nanisivik mine on Strathcona Sound has made higher quality medical care, improved telephone communications, dock facilities, improved air transportation and other facilities available to the 387 residents of the Inuit community of Arctic Bay, 27 km. away.

The presence of the 290 employees at the mine and the Nanisivik airstrip has also made monthly visits by a doctor from Frobisher Bay possible. Local entrepreneurs of Arctic Bay make use of the Nanisivik dock which permits earlier (July) and more frequent (three times per season) delivery of materials and supplies compared to the traditional annual resupply sea-lift.

With the exceptions of Dawson, Whitehorse, Faro and Yellowknife, northern mining developments have not encouraged or permitted permanent human settlement through the acquisition of personal equity in homes or through the establishment of spin-off service industries. Thus, the agonizing dislocations and adjustments that have occurred on many permanent mining communities in southern Canada when a mine closed have not been as frequent in the North.

CURRENT CONSIDERATIONS

The above historical account leads us to conclude that the primary characteristic of a mining community is its creation by the requirements of the industry and the dominance (in most cases) of one industry over, not only the economic, but also social and cultural life of the town. Another characteristic of such communities is their frequent location in remote areas as Canadian mineral resources lie, for the most part, in sparsely populated regions of the country. However, isolation is a subjective judgement, and when it is defined in terms of distances alone, this is often misleading. Some mining communities may be within 100 miles of a main centre, yet access to it may be hindered by lack of roads or by inefficient air transportation links, while a more distant community may have efficient links. Thus, while concerns about isolation form a definite part of a larger quality of life concept, the precise characteristics of isolation are somewhat less clear.

Canadian society has evolved and the economy has diversified. With this growth has come an increasing recognition by industry, governments and local people themselves that the kind of resource community growth and development that we have come to expect may no longer be appropriate.

In the past twenty years, industry and governments have become more conscious of the need to take a carefully planned approach to community development associated with mining. At the same time, government has begun to take a more critical look at the amount and kind of public investment appropriate to each development project. This stems from a growing concern over the escalating costs of providing and maintaining necessary infrastructures, community financing and equitable services to smaller communities.

The wide range of infrastructures and services required to establish communities is summarized in Tables 2 and 3 which outline the characteristics of mining communities in the Northwest and Yukon Territories. Government/industry cost-sharing arrangements have become prevalent. Also, governments have become more involved in preventing or cushioning the effects of the decline of mines and their attendant communities.

The major problems relate to the lack of, or inadequate use of, infrastructure and services, and the difficulties in recruitment and retention of a stable labour force.

MINING COMMUNITIES - NORTHWEST TERRITORIES

TABLE 2

COMMUNITY CHARACTERISTICS	NANISIVIK	PINE POINT	PORT RADIIUM	YELLOWKNIFE	TUNGSTEN
DATE ESTABLISHED	1974	1951	1934	1939	1962
LOCATION	On the south shore of Strathcona Sound on the Borden Peninsula of North Barrin Island.	190 air km S of Yellowknife, in the Fort Smith Region Hay River Area.	On the east coast of Great Bear Lake.	966 air km N of Edmonton, on the west shore of Yellowknife Bay on the North Arm of Great Slave Lake.	209 air km N. of Watson Lake, Yukon and 700 air km W of Yellowknife, Approx. 1 km from Yukon/NWT border.
COMMUNITY STATUS	No Community Council.	Town.	No Community Council.	City.	No Community Council.
POPULATION	291 (1980)	1,662 (1980)	140 (1980)	9,731 (1980)	507 (1980)
TRANSPORTATION					
Road	27 km road connecting Arctic Bay to Nanisivik.	Mackenzie Highway System.	None	Mackenzie Highway System.	Highway from Watson Lake, Yukon.
Air	Licensed 1951 m x 46 m gravel runway. Scheduled Service.	Private/licensed 1,372 m x 46 m gravel runway. Scheduled Service.	Unlicensed 1,524 m x 30.5 m (status unknown). No scheduled service.	Landing strips 2,286 m x 46 m, and 1,524 m x 46 m, asphalt runways. Scheduled Service.	Unlicensed, 1,128 m x 30.5 m, gravel. (Status unknown). No scheduled service.
Water	Barge service; operator Transport Canada from Montreal; MV Arctic.	None	None	Barge service; operator. NTCL from Hay River Season June to October.	None
Railway	None	Great Slave Lake Railway from Roma, Alta. to Pine Point.	None	None	None
COMMUNICATION					
Telephone	Bell Telephone (Anik), local and long distance.	Northwest (microwave), local and long distance.	Northwest (microwave), local and long distance.	Northwest (microwave), local and long distance.	Northwest, local and long distance.
Radio	CBC FM feed from Toronto.	CBC (low powered relay transmitter)	CBC (Anik)	CBC broadcast centre (microwave) Private station CJCD.	CBC (microwave from Whitehorse) community radio (FM station)
Television	CBC (English and French)	CBC via Anik satellite.	None	CBC (Anik); Cable TV.	Microwave from Whitehorse.
INFRASTRUCTURE					
Water	Source, East Twin Lake, no treatment; Standby reservoir. Fully piped utilidor dist. system.	Source, Great Slave. Settling filtration, chlorination. Piped distribution, underground.	Source, Great Bear Lake.	Piped, chlorinated and fluoridated. Old Town, surface pipe in summer, trucked in winter.	Source, Flat River. Fully piped and chlorinated. Services utilize utilidor system.
Sewage	All sewage collected via piped utilidor system. Facilities for secondary sewage treatment.	Buried sewers, gravity outfalls to sewage lagoon 365 m SE of town.	No organized system	Piped, Bagged sewage, Old Town.	Central sewage system.
Power	Four 1500 kilowatt diesel generating units owned and operated by the Co. The residential system is underground.	NCPC, diesel generator, 12,650 kw capacity.	Supplied by the mine.	NCPC Diesel generator (15,115 kw), hydroelectric (23,720 kw) total Snare-Yellowknife system 38,835 kw.	Canada Tungsten Mining Corp. 1200 KVA.
HOUSING	Nanisivik Mines, 64 units. 2 privately owned.	Lots are cleared and services installed by the company and then they are turned over to the federal agency which administers the town for distribution. ** Cominco Housing: 274 three bedroom houses 24 three bedroom apts. 122 bachelor apts. 125 trailer-lot and trailers. 545 total	*2-bunkhouses of 30 rooms each - One employee to a room.	Privately owned or leased by employees of the Mines. The companies own some houses to accommodate resident employees at camps near Plant sites.	GNWT staff housing units: 2 (leased from the mine). All other residential. Cantang mine; 60 apartments, 20 row houses, 20 single houses, 20 trailers, total 120.
FIRE PROTECTION	14 person volunteer brigade; hydrants; one fire truck, fire hall, fire detectors, and alarm system.	23 person volunteer brigade; hydrant system. Vehicle: two fire trucks; fire hall; mine fire fighting equipment.	*16 person volunteer fire brigade and facilities.	12 full time; 30 volunteers, hydrant system. Vehicles: five fire trucks. One rescue unit and two ambulances.	20 person volunteer brigade; siren system, fire truck.
EDUCATION	Territorial School, grades K-8	Elementary School, grades K-6; Secondary School, grades 6-12.	(One school.	Elementary and Secondary School grades K-12, (Public and Separate) Hostel facility capacity 200.	Primary School - grades 1 to 9.
MEDICAL/SOCIAL SERVICES	8 bed hospital. Medical staff: 1 nurse. Day Care centre run by Nanisivik Mines Ltd.	Nursing Station; medical/dental clinic. Medical staff: one nurse Social Services Facilities: one person.	Social Services: Rae-Edzo.	Stanton Yellowknife Hospital: 72 beds, 12 bassinets, (1981) Registered Nurses: 85 Certified nursing aids: 20 Medical Clinic, 8; MDs, 15; Dental Clinics, 3; Dentists, 5. There are over 20 Social Service type organizations.	Medical clinic, one doctor, one nurse. No overnight facilities Patients sent out to Watson Lake or Whitehorse.
SECURITY	RCMP two man detachment.	RCMP five man detachment.	RCMP Fort Franklin.	RCMP 26 man detachment.	RCMP 2 man detachment.
RECREATION	Nanisivik Community Club: Gymn, swimming pool, covered rink.	Community hall, Arena, curling rink, softball field, golf course, ski trails, playground, seasonal pool, school gym, library.	Curling rink, tennis court.	2 arenas, private racquet club, outdoor skating oval, curling rink, year round pool, bowling alley, school gyms, softball fields, golf course, beach area, campgrounds, ski trails, tennis courts, library.	Recreation Complex: pool, bowling alley, racquet court, gym, curling rink, skating rink, campgrounds, library.
ECONOMIC BASE	This community was established to accommodate employees of Nanisivik Mines Ltd. Mining continues as the major economic activity.	Mining is the major activity of this modern planned town.	Mining was the mainstay of this former settlement.	The Capital and largest city in the NWT. The city serves as an administrative centre for both the federal and territorial governments. Mining, transportation and tourism are also of major economic importance to the city.	Mining is the major economic activity of this community.
CURRENT STATUS	The community continues to serve the Mine which has a life expectancy of 10 years.	The town continues to serve Pine Point Mines Ltd. which has a life expectancy of 10 years.	Echo Bay Mines Ltd. closed its mill at Port Radium in March 1982. The community ceased to exist in the summer of 1982.	The city continues to serve as an administrative and mining service centre. The city also accommodates employees of both Com Mine and Giant Yellowknife Mines Ltd. The mines have a life expectancy of 8 years, and 1 year respectively based on current ore reserves.	The community continues to serve Canada Tungsten Mining Corp. Ltd. which has a life expectancy of 7 years.

SOURCE: NWT DATA BOOK 1982-83

* Echo Bay Mines Ltd. personal communication with site engineer.
 ** Beverly, J. Slater, Ed./1969, Arctic and Middle North Transportation, Arctic Institute of North America; Montreal, P. 91.

MINING COMMUNITIES - YUKON

TABLE 3

COMMUNITY CHARACTERISTICS	CARMACKS	CLINTON CREEK	DAWSON	ELSA	FARO	WHITEHORSE
DATE ESTABLISHED	1896	1967	1896	1930	1970	1898
LOCATION	km 357 on the Klondike Highway at its junction with the Campbell Hwy.	104 km northeast of Dawson City	At Km 718 on the Klondike Highway	Km 96.9 on the Mayo Road.	5 km N of km 427.4 of the Campbell Hwy.	Km 1476 on the Alaska Highway.
COMMUNITY STATUS	Local Improvement District	Town	City	Unincorporated company town.	Town	City
POPULATION	277*(256)**	490 (500)	699 (1,268)	336 (274)	1,652 (1,841)	14,814 (16,463)
TRANSPORTATION						
Road	Klondike and Campbell Highways	Sixtymile Road	Klondike Highway	Mayo Road	Campbell Highway	Alaska Highway
Air	5,200 x 120 feet gravel landing strip - no scheduled flights	Unlighted gravel runway exceeding 1 mile in length, 2 flights weekly from Whitehorse	5000 x 150 feet, gravel landing strip - 5 flights weekly from Whitehorse.	No airstrips; closest is Mayo.	Gravel airstrip (3,000' x 100') Regular air service from Whitehorse.	Paved: 7,200 x 150 and 4,000 x 100 feet; gravel: 2,500 x 100 feet. Scheduled air flights.
Water	Via the Yukon River	Nil	Yukon River	Nil	Nil	Yukon River
Railway	Nil	Nil	Nil	Nil	Nil	White Pass and Yukon Railway to Skagway Alaska.
COMMUNICATION						
Telephone	Northwestel; Telex: CNCP	CN1; Telex; mobile radio telephone service - V.R.	Northwestel; Telex: CNCP	Northwestel; Telex: CNCP	Northwestel; Telex: CNCP	Northwestel; telex; CNCP
Radio	CBC from Whitehorse	CBC station 990	CBC from Whitehorse	CBC station	CBC	CKRW - CBC two FM stations from southern Canada
Television	Nil	CBC via Anik satellite	CBC via Anik satellite	CBC via Anik satellite	CBC via Anik satellite	CBC via Anik satellite Writv Cablevision channels 2, 4, 7 and 8.
INFRASTRUCTURE						
Water	Individual wells	Piped from Forty mile River	Well at jct. of Klondike and Yukon Rivers; piped water system	Piped from unamed lake near South McQuesten River.	Two infiltration wells next to the Pelly River	Piped from Sahwatha Lake
Sewage	Gravity sewage system conveying sewage to extended aeration plant.	Piped	Piped collection system.	Sewer lines are provided to buildings via outdoors.	Four cell facultative pond; disposed to Pelly River via ditch.	Piped sewage collection system.
Power	Purchased by Yukon Electric from NCPG with standby diesel. Transformer capacity: 350 kW	Supplied from Cassiar Asbestos-7500 KW, diesel.	NCPG diesel generators Capacity: 2,000 KW.	Supplied by NCPG from Mayo's hydroelectric system. Transformer capacity: 1,000 KW.	NCPG transmission from Whitehorse.	Yukon Electric Co. power distribution from NCPG's Whitehorse-Rapids hydro dam and diesel.
HOUSING	A fuel and power subsidy program is available to employees. It provides a 10% per annum cumulative reduction in fuel and power service charges so that after 10 years of employment, the employee receives fuel and power free.	49 - Co. owned houses Subsidized Rental 10 - Privately owned houses - Co. Mortgage Plan - 5 2 - Co. owned trailers Subsidized Rental - 2 2 - Privately owned trailers - Co. Mortgage Plan - 5 18 - Privately owned trailers. 81 total	Privately owned dwellings.	Rental rates for Company housing: 105 - single dwellings - \$75/mo. 15 - trailers (set up on permanent foundation) 100/mo. 2 - bunkhouses (single room) \$7.50/week 122 total The above rates include heat, power, water and sewer, garbage removal & maintenance. Heating fuel Subsidy of \$1,800/year available to employees residing in other than Co.'s houses	Rental rate for Company housing: 125 - single dwellings \$55/mo 40 - 3 bedroom duplexes 55/mo 176 - 3 bedroom townhouses 55/mo 20 - 3 bedroom double wide 55/mo 25 - 2 bedroom townhouses 55/mo 25 - 3 bedroom single wide mobile units \$45/mo 32 - 2 bedroom apts. 60/mo 16 - 1 bedroom apts. 50/mo 32 - studio apts. 50/mo. 492 total The Company has a housing subsidy program which provides for a 10% per annum cumulative reduction in rental, heat and power service charges so that after 10 years of employment, housing, heat and power are free.	There are some privately owned or leased houses by mining employees in the City. However, there are no housing facilities provided by mining companies.
FIRE PROTECTION	13 man volunteer brigade; one truck	4 man volunteer brigade; one truck	20 man volunteer brigade; 3 trucks.	10 man volunteer brigade; one truck. 20 hydrants.	23 man volunteer brigade; two trucks, 44 hydrants.	20 fire stations 20 full time members; 13 volunteers 4 trucks alarm system and hydrant system.
EDUCATION	One 6-room school with grades K to 10	4 classrooms and activity room facilities	school, grades K-12	One school, grades K-7.	One elementary and High School, Grades K-12	5 - Elementary Schools, gr. 1-7 1 - Elementary Jr. Sec. gr. 6-10 2 - Jr. Sec. gr. 7-9 1 - Sec. gr. 10-12 1 - Primary gr. K-3
HEALTH	Health Centre operated by a public health nurse	Company medical clinic staffed by 4 resident nurses and a doctor	One 3-beds hospital Hospital staffed by 5 doctors, 4 nurses	Company clinic, 1 doctor; ambulance service	4-rod Cottage Hospital 5 beds 1 doctor 6 nurses.	One - 105 beds hospital 26 doctors; 59 nurses; ambulance service.
SECURITY	RCMP - 2 man detachment	RCMP administered from Dawson City	RCMP - 5 man detachment	RCMP administered from Mayo	RCMP - 2 man detachment	RCMP - 25 man detachment
RECREATION	Curling club, community club, swimming pool, ball diamond, campground.	Curling rink, skating rink, outdoor swimming pool.	Community Centre, curling club, baseball league, swimming club, library.	Curling rink, skating rink, ball diamond, outdoor pool, ski hill, library.	Recreation Centre. (Arena, curling rink, fitness room, universal gym, arts and crafts room, indoor skating rink.	Hockey arena and curling rink, tennis golf, swimming pool, 11 playgrounds.
ECONOMIC BASE	Operates mainly as a service centre for road traffic. Highway services include stores, a post office, motels, restaurant and an Indian arts and crafts shop. The coal mine is currently closed, it has one year reserves remaining.	The town of Clinton Creek was built in 1967 to serve Cassiar Asbestos Mine. The mine closed in 1978.	Dawson is the major industry in Dawson. A number of old wooden buildings including the Palace Grande Theatre, Bonanza Hotel and Post Office are part of a \$5 million, 10 year restoration program sponsored by Historic Sites, Dawson also operates as a regional centre for highway maintenance, RCMP, forestry, and the Mining Recorder. A number of placer mines are operating on nearby creeks.	I Isa is a company town for United Keno Hill Mines Ltd.	I Faro is the second largest community in the Yukon serving Cyprus Avniel Mining Corporation. Cyprus Avniel's open pit operation is one of the largest in the world and the mainstay of the Yukon's economy.	The Capital and largest city in the Yukon. The city functions mainly as an administrative centre for both the federal and territorial governments and serves as a transportation centre for the entire Yukon. Tourism is an important industry to Whitehorse. The city also accommodates employees of Whitehorse Copper Mines Ltd.
CURRENT STATUS	The community of Carmacks continues to function as a service centre for road traffic.	Abandoned in 1978. All buildings removed and land reclaimed.	Dawson city continues to serve as a major tourist attraction.	I Isa continues to serve United Keno Hill's mine. The life expectancy of the mine is one year based on current ore reserves but is expected to continue indefinitely.	The town of Faro continues to serve Cyprus Avniel's mine. The life expectancy of the mine has not been determined but could be two decades.	The City of Whitehorse continues to function as an administrative and service centre with its growth dependent on mining and tourism.

*Census of Canada 1981.
**The number shown in brackets refers to the population estimates (October 1983) by the Yukon Government, SOURCE: Yukon Department of Economic Development and Intergovernmental Relations, January 1984. Regional Mining Numbers - Department of Indian and Northern Affairs, Official Yukon Travel Guide - 1982.

In single industry towns these problems are compounded by the constant threat of social and economic disruption associated with the cyclical nature of mining, and the eventual decline and closure of the mine.

These social and economic problems represent costs to industry which are very real, even though they are often not included on the corporate balance sheet. In 1974, for example, the Mining Association of Canada estimated that labour shortages and turnover cost the mineral industry \$350 million.

In addition, most mining companies provide generous allowances to workers in isolated areas. Housing benefits for northern miners average around \$5000 per employee per year, after a nominal rent is collected. Travel allowances range from \$750 to \$1500 per year per employee. The estimated total value of these allowances for mine employees in Canada's northern territories is in excess of \$15,000 per year per employee.

Costs such as these force industry to make extremely careful decisions on how best to attract, maintain and house the work force required to develop the orebody. Investment in employee benefits, accommodation and community amenities have to be weighed against the costs of workforce instability.

Similarly, government investment in community infrastructure to ensure stability and optimize regional economic benefits has to be measured against the projected return to the public purse.

There is no easy or automatic formula for making these decisions. Each project has to be assessed on its own merits. The appropriate type of accommodation for a mining workforce is a function of many variables. Of these, the most important are the size of the orebody, its location or degree of remoteness and the cost of infrastructure. With this in mind, four general situations which occur in Canada (including the North) can be identified:

- A. Orebodies with a relatively short life span in a remote location,
- B. Orebodies with a longer life span in an area which could support regional development,
- C. A number of orebodies located in regions with existing communities nearby,
- D. A number of orebodies, with long life expectancies in relatively remote locations.

Type A, smaller orebodies in relatively remote locations, traditionally have been the site for a dedicated town. It is these situations which have given the mining industry the "boom-bust" image, and which have given rise to the term the "company town".

This is the most common situation and these communities suffer most acutely from problems related to remoteness, small scale, duration of mine life, and vulnerability to the vagaries of the mineral market. One problem inevitably associated with life in this kind of community is the high cost of living. Another problem relates to educational facilities. While communities of this type may have public and even secondary schools, opportunities for further education are usually not available locally.

To reduce the costs of developing infrastructure, experiments with non-community alternatives are under way. The fly-in/fly-out approach at the Polaris mine appears quite successful.

This concept offers several economic and social advantages. Significant savings in infrastructure expenditures can be realized because accommodation and services, normally required for family-oriented communities, are not necessary. As well, the costs of indirect benefits, like subsidized housing, are not as great. Finally, it is generally easier to attract and retain skilled personnel.

The possible negative effects of the cyclical hours that this alternative involves (eg. health and safety, marital stress, absence from the home community) raise concerns that are not yet fully understood, but to date this does not seem to present a major problem for the majority of workers.

This concept raises some legitimate concerns in the territories because it tends to export an increased share of the economic benefit of the mine to other jurisdictions. This issue, termed "fly-over", is something which will require much attention from both levels of government, the industry and labour.

The Type B situation involves larger orebodies with life expectancies that would seem to support more "permanent" communities and a larger workforce. The critical differences between Type A and Type B situations are the scale of the resource base, its expected life and the potential for regional economic dependence. Such communities can rely on the population, taxation and

economic base of the region for support. On the other hand, if closure is premature or is necessary before the region has been able to diversify its economic base, the social and economic costs are amplified. The experience of Faro, in Yukon, is an example of the consequences such a community can face.

Although in some situations the mine's life-span can be extended by new mineral discoveries or by reclassifications of ore reserves as a result of changes in market conditions, the simple truth is that a mine's life is finite. A mineral deposit or an entire producing area will eventually become depleted.

Obviously, when mines have to close temporarily or permanently, the local residents face major adjustments. To ease this process, federal and provincial governments usually have to expend large sums of money for community and income support programs.

While advances have been made in planning for the development, management and adjustment of communities in Type B situations, dealing with their eventual decline may be one of the most serious community-related issues facing us.

The third situation, Type C, includes orebodies in a region with already established communities. In Type C situations, regional centres have evolved over time around diversified mineral activities or in areas which were already established before mining came along. Northern examples would be Whitehorse and Yellowknife. Quality of life in these situations varies, but generally, the communities provide better services and amenities for residents than those in previously described situations because of their relative permanence, size and diversity of the economic base.

Although Type C communities are subject to the effects of mineral cycles, the variety of economic activity they encompass makes them more immune to the effects of an individual mine closure. In terms of planning, the central issues are the encouragement of secondary economic activity and the integration of new mine developments into existing infrastructure.

The fourth situation, Type D, is based on large diversified orebodies with no established communities present. Forty per cent of Canada's land mass is north of the 60°. In the North, there are few established communities but indications of significant mineral

deposits, so it is most likely that the pressure for the exploitation of mineral resources will occur there. Development will in many cases be of this type.

To recap, each of the types discussed delineates a set of problems which escalate in scale and complexity as one moves across the spectrum from Type A to Type D. Their one common element is the human factor and the common issue is how to minimize the hardships of residents in existing and future mining communities.

Progress has been made in coping with this by improving the quality of life in existing communities through the introduction of new government policies and programs; the growing realization within the industry that social issues are corporate issues which directly or indirectly affect the profit picture; and by the implementation of alternatives such as the "fly-in/fly-out" concept. The question now is - what else might be considered to make further progress?

DECLINING COMMUNITIES

Technological changes in exploration and mining may prolong the life of the mine and community. However, the fact remains that eventually, a mineral deposit or an entire producing area may become depleted of economically-recoverable resources. During production, communities and services are developed to serve the needs of the mine and its employees. If these are developed solely to serve mining, serious problems are presented for the community and its residents when mining operations decline or cease. There have been many examples of mining communities in Canada that have faced precisely this problem: Cobalt in Ontario, Wabana on Bell Island, Newfoundland, and Sherridon in northern Manitoba. More recent examples are well known.

When an enterprise closes in an urban area, the employees can usually find other work in the same area, but when mines close in remote localities, alternatives may not be available. The loss of employment imposes an economic burden on workers, and through a multiplier effect threatens the jobs of other members of the community. The municipality which loses revenues will find it difficult to maintain the level of existing services. Federal and provincial governments find that they must often expend large sums of money for community and personal income support programs. For example, the Emergency Gold Mine Assistance Act, when instituted in 1948, was designed to assist the gold mines to continue in operation in the years following the second world war, and to maintain the communities dependent on gold production for their livelihood. A total of \$303 million has been expended from 1948-73 directly and indirectly affecting a total population of 120,000 people.

The social consequences that a declining community faces are also severe. Many adaptations have to be made as residents may be faced with relocating, coping with the prospect of unemployment or developing new work skills, and formulating new social relationships. Historically, given traditional interventions, there has been very limited success in communities recovering after long periods of economic depression.

Communities also become esthetically depressed as homes and commercial buildings become vacant, and the mine site, tailings and other waste products remain untended.

FUTURE DIRECTIONS

Generally speaking, the challenge facing both industry and government with respect to existing mining communities is to anticipate and plan solutions for the social and economic problems which surface as a result of a temporary or permanent mine closure.

While it is unrealistic to imagine pre-packaged policies and programs suitable to every situation, there are some actions which all involved parties can jointly undertake in order to minimize the hardships of workers and their families in mining communities.

One such action has to do with the mobility of workers. Mobility is currently restricted by the lack of portability of skills, benefits, seniority and equity.

The construction, maintenance, and service trades have a nation-wide program for standardization. But there is no current comparable program for mine-specific trades. This seriously reduces the re-employment possibilities for the worker who is thrown out of work when a temporary or permanent mine closure is necessary. Industry and labour could consider setting up a standard program aimed at producing similar, but not necessarily uniform, standards of training and certification for mine workers.

Governments, labour and industry might also consider developing options for pension portability and earlier vesting so that mineworkers do not suffer a loss in benefits when they need to relocate. This concept could also be extended to seniority and vacation provisions.

A recent report prepared by the Federal/Provincial Task Force on Mining Communities offers a number of options for dealing with problems related to mining communities (the executive summary and recommendations of the Task Force may be found in the appendix). One of the problems discussed is the loss of private wealth which has accumulated as home ownership equity. One solution lies in the concept of "shared risk" which would apply in communities where housing is already owned by workers. This could mean that all parties who benefit from mineral development contribute in due proportion to a sinking fund and share responsibility in the event of temporary or permanent closure. Accordingly, a formula could be designed for realistic indemnification against loss.

In the North, some form of housing buy-back fund as insurance against unreasonable loss of equity may become

desirable in central or regional resource based towns if more of the workforce begins to own houses.

Another alternative for governments is the establishment of a "mining community reserve fund". Manitoba has already established one to alleviate the hardships communities suffer when a mine closes.

Obviously, the ideal way to cushion the impact of the industry's cyclical nature or to prevent a mining community's demise is to diversify the economy of the vulnerable community or region. This approach, however, has real limitations dictated by the availability of other economic ore deposits, or the practicality of other unrelated development.

These are some of the alternatives for minimizing potential hardships on both individuals and already established communities.

To maximize benefits and minimize potential hardships in new mineral development projects, a more flexible approach to community can be contemplated, one which builds on the lessons of our past experience. This approach would address not only the question of what type of community to build, but also the larger issue of whether any community should be built at all.

Regional centres are an appealing solution where feasible, and governments are already discouraging the development of single industry towns. For example, in the Northwest Territories, territorial government policy calls for the construction of a townsite only when ore reserves can sustain the operation for at least twenty years. The Yukon government encourages fly-in/fly-out from existing communities within the territory.

The federal government has a special responsibility to resource community development issues north of 60°. Based upon past experience, there is a consensus emerging that dedicated townsites should be discouraged in favour of new or existing central resource towns since it is recognized that the "non-community" approach of fly-in/fly-out is not feasible for developments which are expected to continue for extended lengths of time.

The question then is: under what conditions might new community developments proceed? The factors taken into consideration in arriving at a decision of whether or not to develop a new community include location and scale of the proposed operation, expected life span, the provision of a comprehensive plan for closure, benefits to the

region or country, benefits to the native people, and some demonstration that alternatives have been considered and are not feasible.

For example, the Macmillan Pass region in Yukon has seven companies involved in various stages of exploration and planning. Each of these companies may submit a proposal for development. The timing of these proposals is unknown and is often dictated by consumer contractual agreements, capital availability, market forecasts and technological advances.

Obviously, in a system where individual companies come forward in random sequence with proposals to develop specific orebodies, effective community planning is still not feasible. A prerequisite is information on the characteristics of the orebodies in the region, the timing of developments and the implied manpower and infrastructure requirements.

Normally a mine comes into development without the complete knowledge of the orebody's characteristics. A recent survey of 100 Canadian mining companies found that, on average, a mine's lifespan is twice that initially planned in the case of base metals and over three times in the case of precious metal deposits. There are, however, cases where the opposite is true.

Faced with this uncertainty, governments must decide on their appropriate contribution to the cost of infrastructure. Notwithstanding expenditure restraint, it is reasonable to assume that governments will consider sharing or even providing up-front money for the development of initial infrastructure. The sharing schemes and/or the eventual recovery of public funds will probably be negotiated on a project by project basis.

The ultimate objective is to have more diversified, permanent regional communities and fewer dedicated single resource communities. To this end, both levels of government encourage the use of existing cities and towns like Whitehorse, Faro and Yellowknife as bases for any new developments. Where this is not possible, new regional centres which will serve a number of mines and other economic activities are preferred.

CONCLUSION

Experience from the past, both north and south of 60°, tells us that the manner in which a mining workforce is housed, and the degree to which a mine and its employees are integrated into or segregated from the northern community as a whole, can no longer be considered casual or random decisions. Far too much is at stake for the viability of the enterprise and for its contribution to the North not to plan for these decisions carefully.

The interests of the various players involved in these decisions (industry, governments, communities, labour, local business) are not identical, but through co-operative and co-ordinated planning, the optimum choice from a broad range of options available should be possible.

APPENDIX

Report of the Task Force on Mining Communities

EXECUTIVE SUMMARY

The faltering world economy in 1981-82 has prompted a downturn in the fortunes of the mineral industry in Canada. While mining operations have always closed when ore reserves were exhausted, the current recession has led to temporary closures of many mines and premature economic exhaustion of others. This report focuses on mining communities and the impacts of mine closure upon them. It suggests possible steps that could be taken to alleviate distress both in recessionary periods and in permanent closures.

While many of the suggestions offered here are potentially very costly, shared risk is a basic tenet of this study. The Task Force firmly believes that the burden of responsibility for mining industry in Canada must be shared by all involved -- industry, labour, governments and mining communities themselves.

No solution proposed in this report will guarantee a mineworker's job in times of cyclical downturn or ore exhaustion, but they may ease the strain on the communities and citizens that service the mine operations.

Short Term

The Task Force dealt with the urgent problems of the 1982 recession by appointing a sub-group to investigate and suggest modifications to existing structures. An immediate requirement was identified for more flexible use of the Unemployment Insurance Act or some similar mechanism to permit laid off mineworkers to carry out minesite job preservation projects. Additional funding is also urgently required to implement such a program. In addition, the taxation of employee allowances in northern and isolated areas following the November 1981 Budget is considered a harsh measure to impose on an already difficult situation. These allowances should remain untaxed.

Long Term

The Task Force addressed many issues relating to the long-term viability of mining communities.

Problems have been specifically identified in:

1. The community development and planning process;
2. The level of diversification in mining communities;
3. The existence of many factors limiting the ability of a worker or community member to relocate;
4. Government programs having limited relevance to the mining community.

The conclusions of the Task Force point towards the need for the establishment of regional centres. Where possible, communities should be centrally located, serve a variety of resource projects, and have diversified economic bases.

A mechanism has to be developed to preserve the economic benefits an individual has accrued in a community. In the event of community distress, it is important that all members share the burden -- company, individuals and government. To this end, various schemes need to be evaluated for the accumulation of funds against economic uncertainties. This report suggests sinking funds, reserve funds or commercial insurance.

The workforce in the community needs to have some degree of mobility ensured in the event of permanent closure. This could be accommodated by more flexible pension and benefit schemes, and by nationwide skills certification.

Finally, government programs have to be enlarged in scope to include specific reference to mining communities and their problems.

SUMMARY OF KEY CONCLUSIONS AND RECOMMENDATIONS

For Immediate Attention

1. The Task Force concluded there is a need for more flexible use of the Unemployment Insurance Act for job preservation. It urgently recommends the introduction of a program, under the Unemployment Insurance Act or some other mechanism, to permit mine workers who would otherwise be laid off to carry out job preservation projects at the mine site, such as advanced waste removal or development work, and to conduct geoscientific/mineral exploration activities in the vicinity of a mine site.
2. The Task Force concluded that an additional source of funding is necessary to make Section 38 effective, and recommends that a program to provide such funds through the Unemployment Insurance Act or some other mechanism be developed and implemented as soon as possible.
3. The Task Force recommends, on the basis of representations submitted by communities, labour and industry, that employee allowances in northern and isolated areas not be taxed.

Short-term Measures

4. The Task Force concluded that there is inadequate knowledge of available government programs for communities facing adjustment and recommends that an information system be established that would rapidly communicate details of such programs to communities to encourage an early community response. For example, Ministers may wish to authorize the preparation, distribution and maintenance of a compendium of applicable programs based on Appendix E. (Note: Appendix E is not included in this publication. For additional information, the main report of the Task Force, where this executive summary originally appeared, should be consulted.)
5. The Task Force recommends that the Canada Employment and Immigration Commission (CEIC) should continue to strongly promote its programs, including the Manpower Consultative Service, and strengthen the involvement of provincial governments in this endeavour.

6. The Task Force concluded that there are advantages to furthering the training of workers who would otherwise be unemployed during a recession, and recommends that existing mechanisms, such as Section 39 of the Unemployment Insurance Act and the National Training Act, should be better utilized for training programs during economic downturns.
7. The Task Force concluded that there is a need for increasing exploration in the vicinity of mining operations threatened by ore exhaustion and recommends that:
 - (a) Concerted federal-provincial co-operative geoscientific programs be implemented; and
 - (b) Governments review the adequacy of existing tax and other incentives for on-property exploration at existing mining operations, for example, allow underground exploration to earn depletion credits.

Long-term Measures

8. The Task Force concluded that a planning approach which encourages the development of regional centres with a diversified economic base could help to avoid the difficulties faced by single industry mining communities in times of either economic downturn or ore reserve exhaustion.
9. The Task Force supports the concepts of pension portability and early pension vesting, and recommends that options be developed to achieve these goals.
10. The Task Force supports the concept of portable seniority and leave provisions, and urges the early resolution of this issue.
11. The Task Force concluded that there is merit in having certain mining occupations (miners and mine tradesmen) certified as journeymen occupations, and recommends that provincial governments, the Canada Employment and Immigration Commission (CEIC), the industry and unions move to early implementation.

12. The Task Force concluded that industry, individuals and governments must share the risk and responsibility in the event of community distress. To that end, it recommends that there be further evaluation of certain schemes to accumulate funds to ease the transition of employees and community residents, i.e. reserve funds, sinking funds or commercial insurance schemes.
13. The Task Force concluded that examination of the potential for economic diversification should be an integral part of the community planning process. It, therefore, recommends:
 - (a) A diversification assessment be conducted as part of the planning process for all new mining communities,
 - (b) Diversification assessments be conducted for existing mining communities at the earliest opportunity by the appropriate government departments, and
 - (c) Diversification guidelines be created drawing on successful experiences.
14. The Task Force concluded that there is a need for the earliest possible identification of communities potentially in distress and that all affected parties should be involved in planning for closure, and urges corporations to communicate their outlook for their operations to affected communities on a frequent basis. Federal, provincial and territorial mines departments also have an obligation to monitor each situation and take appropriate action.
15. The Task Force recommends that an investigation be conducted into international practices with respect to single-industry communities.

NOTE: Task Force recommendations with respect to changes in the federal tax system fall within the sole jurisdiction of the Minister of Finance, and were not endorsed by the representative of the federal Department of Finance.