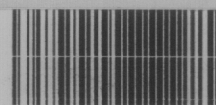


A Granular Resource Demand Forecast for the Inuvialuit Settlement Region

***Prepared for
Indian and Northern Affairs Canada***

**James C. McDougall
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Calgary, Alberta, T2T 1S3**

March, 1995



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A Granular Resource Demand Forecast for the Inuvialuit Settlement Region

Executive Summary

North of 60 Engineering Ltd. was awarded a contract in 1994 by Indian and Northern Affairs Canada to develop an updated granular forecast for the Inuvialuit Settlement Region.

The primary objectives of the study were to:

- collect, review and consolidate information from previous forecasts as a starting point for creating the new short and long-term forecasts,
- assist the Inuvialuit Land Administration to implement the "*Granular Resource Demand Forecast Model*" to capture historical usage and
- to develop both short-term (5 year) and long-term (20 year) granular demand forecasts for the Inuvialuit Settlement Region.

The review of prior forecasts indicated that they were based on extremely optimistic predictions of the pace and scope of oil and gas development in the region. In turn, this led to substantial forecast demands for granular materials.

The 1987 forecast predicted a demand of 17 million m³ of granular material for the period 1987 through 2005. The 1991 forecast predicted a demand of 26 million m³ of granular material for the period 1987 through 2015. The forecasts reflected total granular demand for

the development scenarios selected, and as such, the volume of material identified as being required included amounts that would be recovered from lands other than those owned by the Inuvialuit.

The authors of the prior forecasts indicated that the timing estimates were very speculative and would likely prove to be an unreliable basis for planning purposes. This caution was definitively confirmed when the actual volumes that have been used from 1985 to date were compared with the prior forecasts.

Staff from the Inuvialuit Land Administration utilized the "*Granular Resource Demand Forecast Model*" developed by North of 60 Engineering Ltd. to capture data of granular usage from 1985 through 1994. Information regarding permit numbers, dates, estimated and actual quantities, material classification and the nature of the project and work performed were entered into the database.

The model provided some key insights into the use of granular material on the Inuvialuit lands over the previous ten year period and was valuable in validating previous forecasts. The model now contains the necessary historical data against which future requests for gravel can be evaluated, actual usage tracked and will provide the basis for future forecasts of demand for this valuable and scarce resource. However, the continuing robustness and value of the model will depend on it being continually updated and the quality of the data validated.

The actual volumes of granular material used over the 10 year period from 1985 through 1994 was 480,000 m³ - a high percentage of which (65%) was used in the first two years of the 10 year period when oil and gas activity was extremely high. Furthermore, demand for granular material has steadily dropped over the last ten years.

This decline in demand coincides with the reduction in hydrocarbon exploration activities in the region which started to decline in 1986 when world crude oil prices collapsed to \$10 US per barrel and which have slowly recovered to the current level of about \$18 US per barrel. This clearly demonstrates the linkage between crude oil prices, exploration and development activity in the region and the demand for granular material.

A comparison of actual data to previous forecasts by region indicates that previous estimates were excessively optimistic about granular use in the period 1987 to 1994. Actual use was 2.5% of the 1987 Forecast and 5.5% of the 1991 Forecast.

Both earlier forecasts had anticipated extensive oil and gas development activity throughout the 1990's and into the early years of the next century. In hindsight, it is difficult to understand the rationale for such optimistic estimates given the crude oil and gas prices prevailing at the time and the cessation of virtually all exploration activity and development planning.

This expectation of substantial development activity also fueled an expectation of community growth in the region, the need for community expansion and the provision of additional infrastructure. Consequently, expectations for granular material for community development were also substantially higher.

The differences between the former forecasts and the actual usage suggests that future demand forecasts - including the current forecast - should more closely reflect the linkage of oil and gas activity level to the demand for granular material in both the communities and for exploration and development work.

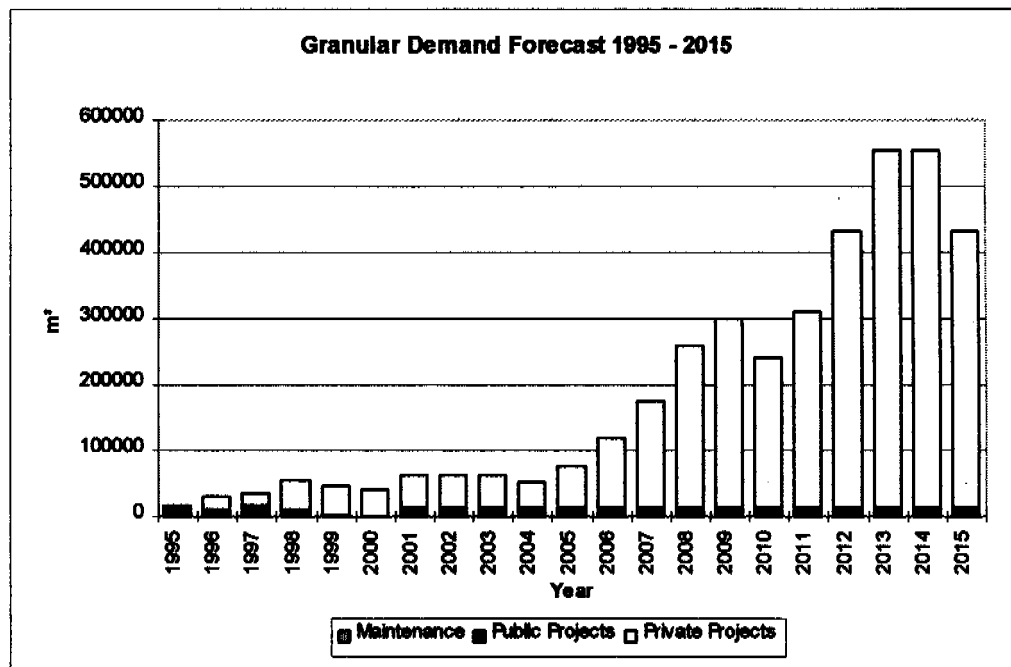


Figure 1 - Granular Demand Forecast 1995 - 2015

The 1995 granular resource forecast for the Inuvialuit Region is summarized in Figure 1. The 95/96 Capital Plan outlined the capital projects for each community for the 1995 to 2000 time period and provided the basis for the 1995 short term forecast. Total demand

identified by the communities is 56,800 (m³). This is about 50% of the actual usage over the 1985/94 period. Demand drops off rapidly after 1998 which suggests that forecasting local requirements for greater than the next two or three years is difficult.

The 1995 long term forecast was based on a re-assessment of oil and gas exploration and development activity in the region, which is currently at an all-time low. Exploration drilling has dropped to a twenty five year low and is practically non-existent at the present time. A major factor in this low activity has been the current drive within the industry to reduce costs and to only invest in projects which yield short-term returns.

The current attitude in the industry is that aggressive exploration and development will only be done if the economics are in-line with shareholders expectations. A major hurdle, even for those companies with financial strength, is to make the new Canadian supplies competitive, whether they be from the Frontiers, the Oil Sands, or from enhanced recovery.

The development scenarios considered for the long term forecast built on that knowledge base and resulted in the following scenario for forecast purposes:

- an onshore exploration program focused primarily on oil prospects initially
- the development of small onshore gas fields to provide a fuel source to meet local energy demands at Inuvik and Tuktoyaktuk
- a generic 200 million barrel onshore field, and
- the processing of onshore gas for sale to southern markets.

The timing of these developments has been phased to reflect the anticipated level of exploration, the time frame required to plan and develop the particular scenario, and the current economic outlook.

The key assumptions used in developing the forecast are:

- a modest two well per year exploration activity will commence in the 1996/97 time frame and will gradually increase
- onshore gas fields used as a fuel source to meet local energy demands at Inuvik and Tuktoyaktuk will come on stream in 1999 and 2003 respectively
- a yet to be discovered 200 MBbl oil field will come on stream in 2009
- onshore gas fields will commence production in 2015

These assumptions lead to a total granular demand forecast for the 1995 to 2015 time frame of nearly 4 million m³. This includes the volumes required for local communities. This is a major reduction in demand compared to previous forecasts but is deemed realistic given the current and projected level of oil and gas exploration and development activities in the region. The forecast may be high if crude and gas prices do not increase over the time period and opportunities to reduce the cost of developing the reserves do not materialize.

Introduction

Background

Granular resources, such as gravel, sand, and rock suitable for construction are essential to northern development. High quality granular resources are in short supply in many regions of the Territories and new sources are being sought.

Management of this valuable and finite resource is necessary to ensure that known sources are effectively used and that remaining materials are conserved for future development. Managing granular resources effectively requires detailed assessments of the existing supply, up-to-date forecasts of potential demands, management planning and appropriate legislation.

An inventory of granular resources is kept for roads and highways, artificial islands for offshore oil and gas production, and for community and other industrial needs. Past and present programs related to inventory management include the Mackenzie Highway Study Group, the Northern Oil and Gas Action Program and the Inuvialuit Final Agreement Implementation. The inventory must be updated occasionally in response to new initiatives and revised demand forecasts. In addition, the inventory must be current to provide useful information to the territorial governments and native organizations as part of transferring responsibility and implementation of land claim settlements.

It is also intended that granular resource management plans will be implemented in several priority areas in cooperation with local planning groups. These plans should ensure the resource is equitably shared between the public and private interests in an environmentally sensitive manner.

Hydrocarbon Production from the Mackenzie Delta - Beaufort Sea region has yet to occur despite the considerable investment by industry into development planning, engineering studies, as well as regulatory and environmental reviews. In fact, exploration drilling in the area has dropped to a twenty year low and there has been little interest shown in obtaining new leases.

A major factor in this low activity is the current price of oil which has fluctuated in recent years around \$20 US per barrel. The prevailing industry view is that the existing oil reserve base in the Mackenzie delta is not large enough to support a costly transportation system to southern markets. Industry's efforts will, therefore, need to be focused on identifying and discovering onshore oil prospects.

Frontier natural gas discoveries, while significant in size, are currently not competitive with the existing reserves in southern Canada, due to the costly transportation system that is required to move the gas to market. Given current low gas prices and the unexpected near term growth in those prices, it is unlikely that the discovered reserve base will be developed within the next decade, although significant changes in fuel use could alter this outlook.

The key to future development in the current economy is to find innovative ways of reducing the high costs associated with oil and gas development and transportation.

Project Authorization

This study was authorized by Supply and Services Canada through Contract No. A7134-3-0076/01-ST, awarded to NORTH OF 60 ENGINEERING LTD.. The Scientific Advisor for the project was Mr. R. J. Gowan, Geotechnical Advisor for Northern Renewable Resources Directorate of INAC.

Project Scope

The project objective, as defined Supply and Services Canada, and Indian and Northern Affairs Canada was to develop an updated granular forecast for the Inuvialuit Settlement Region.

The primary tasks of the study included the following:

- collect, review and consolidate information from previous forecasts as a starting point for creating the new short and long-term forecasts

- assist the Inuvialuit Land Administration to implement the "*Granular Resource Demand Forecast Model*" to capture historical usage and
- to review historical usage and develop both short-term (5 year) and long-term (20 year) granular demand forecasts for the Inuvialuit Settlement Region.

This final report is focused on the implementation of the "*Granular Resource Demand Forecast Model*" and the development of new forecasts.

Methodology

The first step in the process was to collect, review and consolidate information from previous forecasts as a starting point for creating the new short and long-term forecasts. A report was submitted to Indian and Northern Affairs Canada in July 1994 covering this first phase of the work.

The second step was to work with the Inuvialuit Land Administration to capture actual granular usage data and enter the data into the system developed by North of 60 Engineering Ltd. This data was compared to the previous forecasts to determine their accuracy and to provide a foundation for new forecasts. This activity took longer than anticipated and resulted in a delay in completing the final phase of the work.

The final step was to utilize the actual data and previous studies to develop short term (5 year) and long term (20) year granular demand forecasts.

Historical Forecast Assessment

Two detailed forecasts have been developed previously - one in 1987 by EBA. Engineering, and another in 1991, by Hardy BBT Limited, which built on the previous forecast. In addition, in 1988 Hardy BBT developed plans for the reservation and development of the granular reserves based on the 1987 forecasts.

Methodology Adopted for Comparing Prior Forecasts

The demand data and assumptions from each forecast have been captured and put into a common format for analysis purposes.

The various projects identified in the previous forecasts have been categorized to assist in the data analysis process. The data has been categorized by:

- Region e.g. - Tuktoyaktuk, Inuvik, Holman etc.
- Project title e.g. - airfield maintenance, road construction, onshore gas development
- Category e.g. - Public, Other
- Project classification e.g. - maintenance (M), local capital projects (LCP) and long term speculative projects (CSP)
- Project timing e.g. - 1992 through 1996
- Material classification e.g. - Class 1 through 5

Categorization provides the ability to analyze the data in various ways. It also provides the ability to compare the past forecasts to the one under current development.

Data normalization and timing assumptions

The 1991 forecasts were limited to three regions - Aklavik, Inuvik and Tuktoyaktuk. For overall completeness, therefore, this was revised to take into account the needs of the three other regions - Holman, Paulatuk and Sachs Harbour. In absence of a revised forecast for each of these regions, the 1987 forecasts were used without modification.

The timing of the various projects was typically defined within 5 year time spans in the previous forecasts. In order to develop balanced demand curves, an assumption was made that the demand for a project would be spread equally over the number of years that the project existed. As an example, airfield maintenance at Paulatuk over the 1992 through 1996 time period was identified as requiring 2000 cubic metres of Class 2 gravel. This would translate into 400 cubic metres for each of the 5 years.

The 1987 forecast is summarized in Appendix A, while the 1991 forecast is contained in Appendix B.

1991 forecast Vs 1987 forecast

The 1987 Granular Demand Forecast is shown by year for each of the six land blocks in Figure 2. The identical information for the 1991 forecast is shown in Figure 3. Total volumes by community are shown in Table 1.

Total volumes of granular material are categorized by Community land block in Table 1 and Figures 4 and 5. Total volumes by material classification are summarized in Figure 6.

Community	1987 Forecast	1991 Forecast
Aklavik	141,435	221,435
Holman	126,300	126,300
Inuvik	7,577,618	15,519,649
Paulatuk	376,110	376,110
Sachs Harbour	130,160	130,160
Tuktoyaktuk	8,935,140	10,430,362
Total	17,286,763	26,804,016

Table 1 - Community Demand

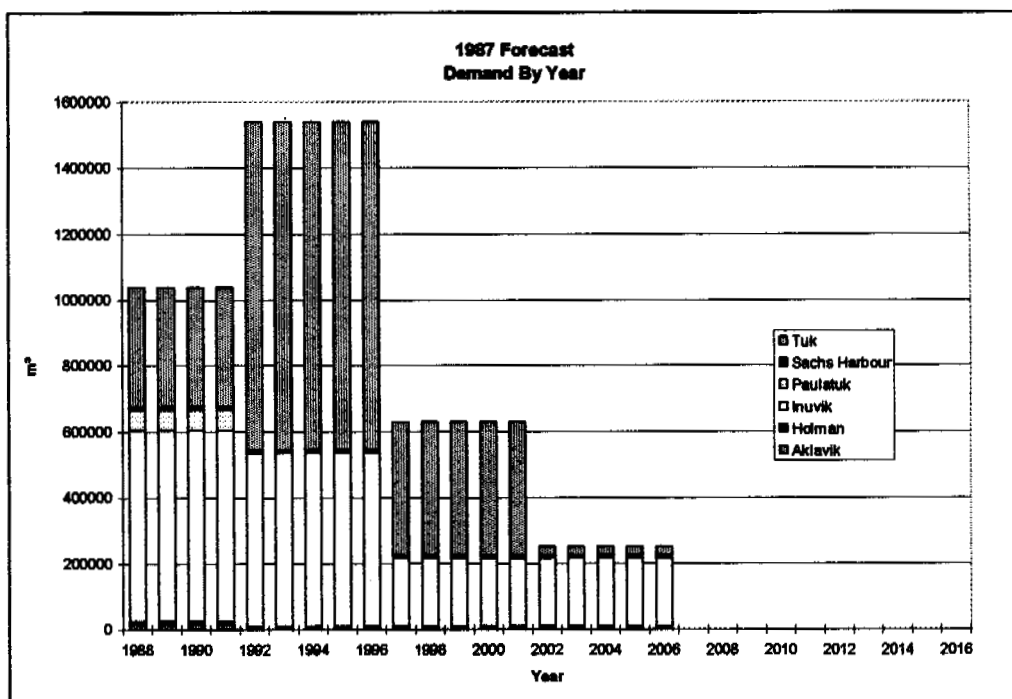


Figure 2 - 1987 Granular Forecast

INUVIALUIT SETTLEMENT REGION - GRANULAR FORECAST

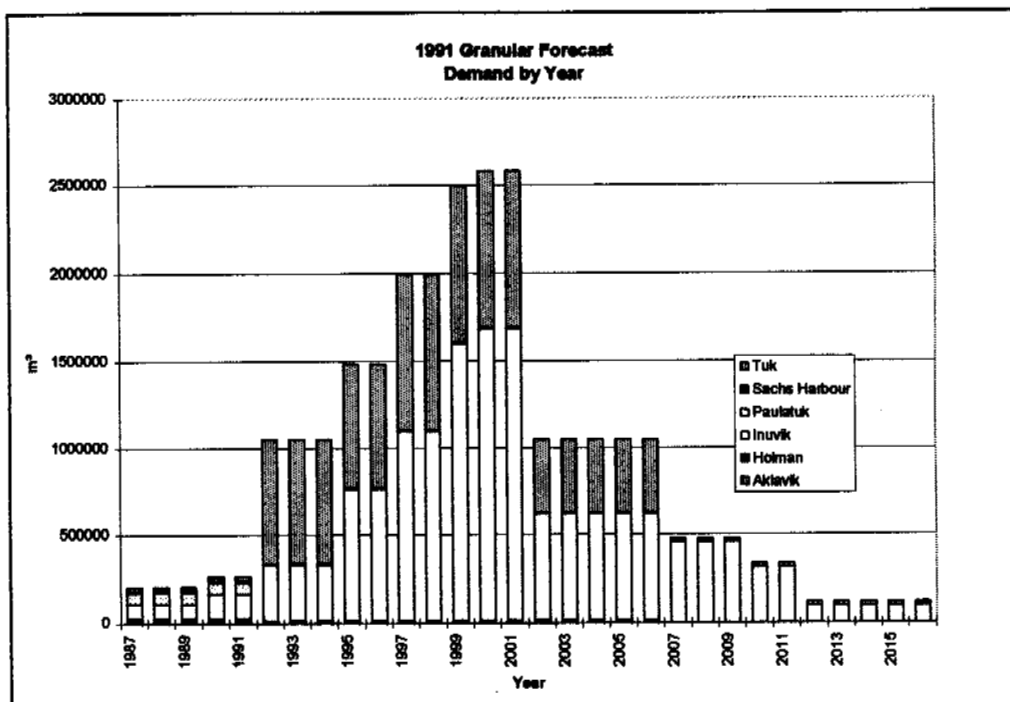


Figure 3 - 1991 Granular Forecast

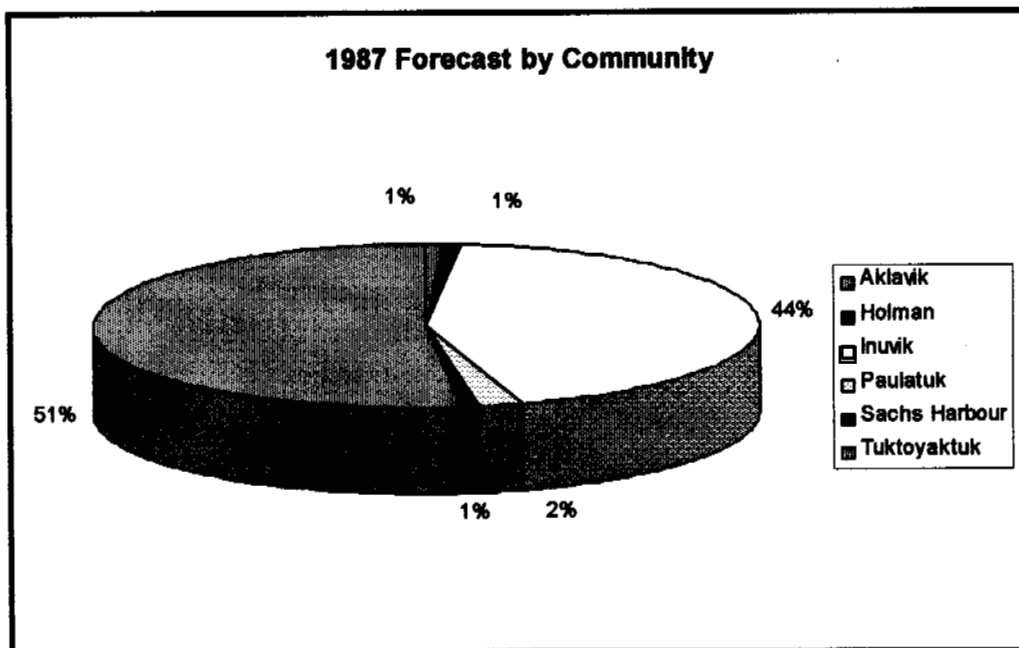


Figure 4 - 1987 Forecast by Community

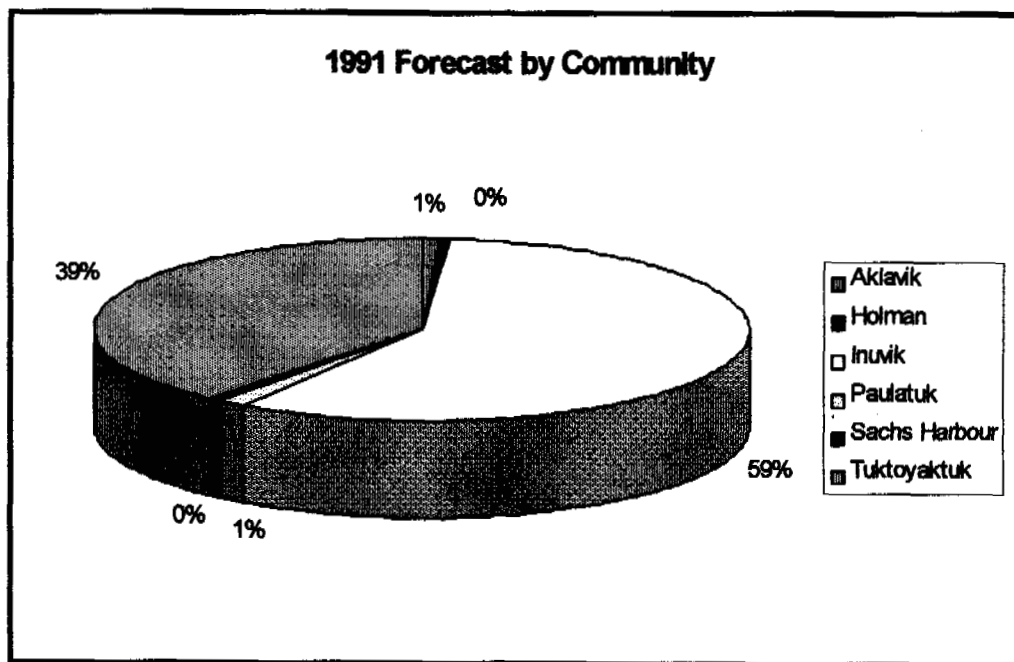


Figure 5 - 1991 Forecast by Community

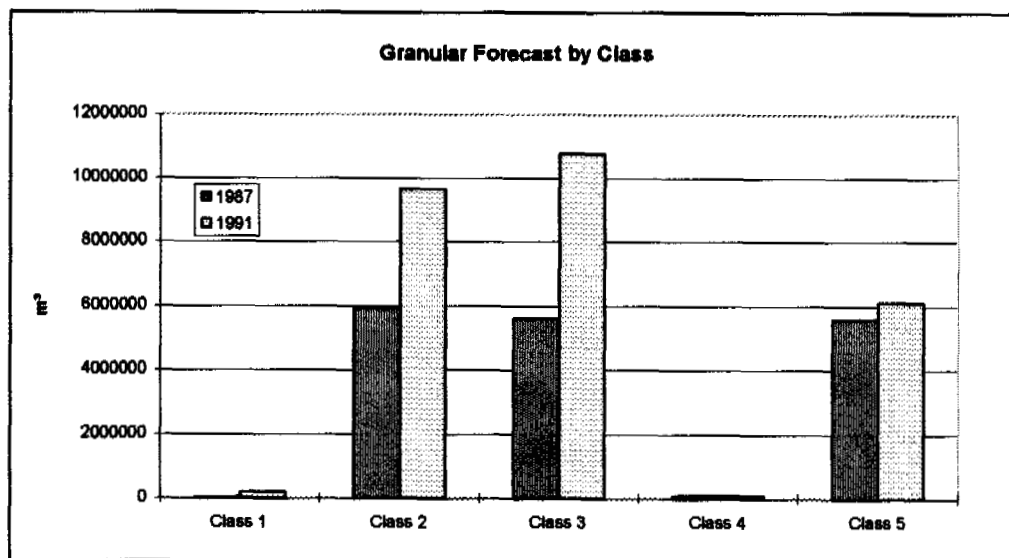


Figure 6 - Granular Forecast by Material Class

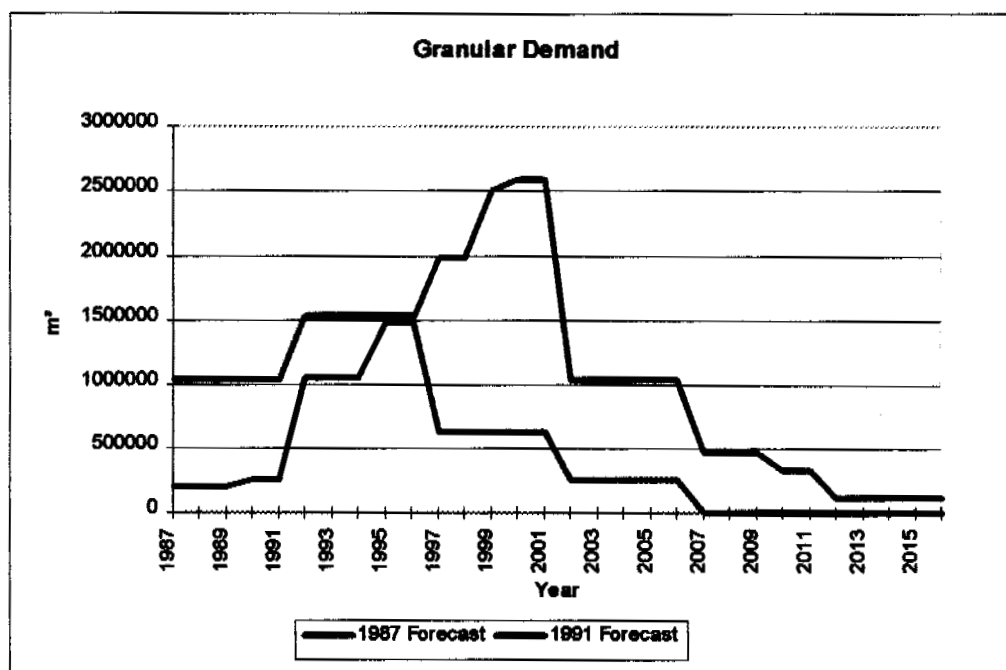


Figure 7 - 1991 vs. 1987 Forecast

Conclusions from prior Granular Demand Forecasts

A number of conclusions can be drawn from the above table and the accompanying figures regarding the prior forecasts.

- The first conclusion that can be drawn from Figures 2 and 3 is that the 1991 forecast, although limited to the three main demand regions, was more definitive than the 1987 forecast - particularly in the maintenance and local capital projects categories. However, as can be seen in Figure 7 the timing estimates were very speculative and would likely prove to be an unreliable basis for planning purposes. (This conclusion was definitively confirmed when the actual volumes that have been used from 1985 to date were compared with the former forecasts - see below.)
- The second conclusion is that the 1991 demand forecast represented an increase in demand of some 60% over the 1987 forecast. This was based on an expectation of significant hydrocarbon development activities occurring primarily in the 1990's. In hindsight, this was a considerable over-expectation given the crude oil and gas oil prices at that time.
- The third and final conclusion is that the majority of the demand is in two communities, Tuktoyaktuk and Inuvik. This is very evident in

Figures 4 and 5 which show that these two communities made up 96% of the demand in the 1987 forecast and 98% of the 1991 forecast.

Actual Usage of Granular Material

The second phase of the project was to capture historical usage data, using the *"Granular Resource Demand Forecast Model"*, in order to assess the accuracy of the prior forecast and to assist in the development of the present forecast, which is presented in the next section.

Staff from the ILA, assisted by NORTH OF 60 ENGINEERING LTD. utilized the *"Granular Resource Demand Forecast Model"* to capture granular usage data from 1985 through 1994. Information regarding permit numbers, dates, estimated and actual quantities, material classification and the nature of the project and work performed was entered into the model. The detailed usage information now resident in the *"Granular Resource Demand Forecast Model"* is summarized in Appendix C.

Actual usage was then compared with past forecasts to assess their accuracy. Historical usage and forecast data was entered for identifiable projects so that it could be used for comparative purposes. In addition, the historical usage data was used in the final phase of the project to develop the current forecast.

Actual Usage

The data base provided some key insights into the use of granular material on the Inuvialuit lands over a ten year period and was valuable in validating previous forecasts. The model now contains the necessary historical data against which future requests for gravel can be evaluated, actual usage tracked, and the basis for future forecasts of demand provided, for this valuable and scarce resource.

Table 2 indicates the volumes of granular material used each year over the 10 year period from 1985 through 1994 - a total of 480,000 cubic meters. It is evident from Table 2 and Figure 8 that a high percentage of the granular material was used in the first two years of the 10 year period. In fact, 40% of the total volume of granular material was used in the first year and 65% of the material was used in the first two years. It is also clear that demand for granular material has steadily dropped over the last ten years.

INUVIALUIT SETTLEMENT REGION - GRANULAR FORECAST

Year	Actual Usage (m ³)
1985	191,979
1986	47,476
1987	71,800
1988	31,797
1989	70,874
1990	30,515
1991	4,745
1992	12,163
1993	10,154
1994	9,166
TOTAL:	480,669

Table 2 - Actual Usage - 1985 through 1994

This decline in demand coincides with the reduction in hydrocarbon exploration activities in the region, which started to decline in 1986, when world crude oil prices collapsed to \$10 US per barrel and, which have slowly recovered to the current level of about \$18 US per barrel. This clearly demonstrates the linkage between crude oil prices, exploration and development activity in the region and the demand for granular material.

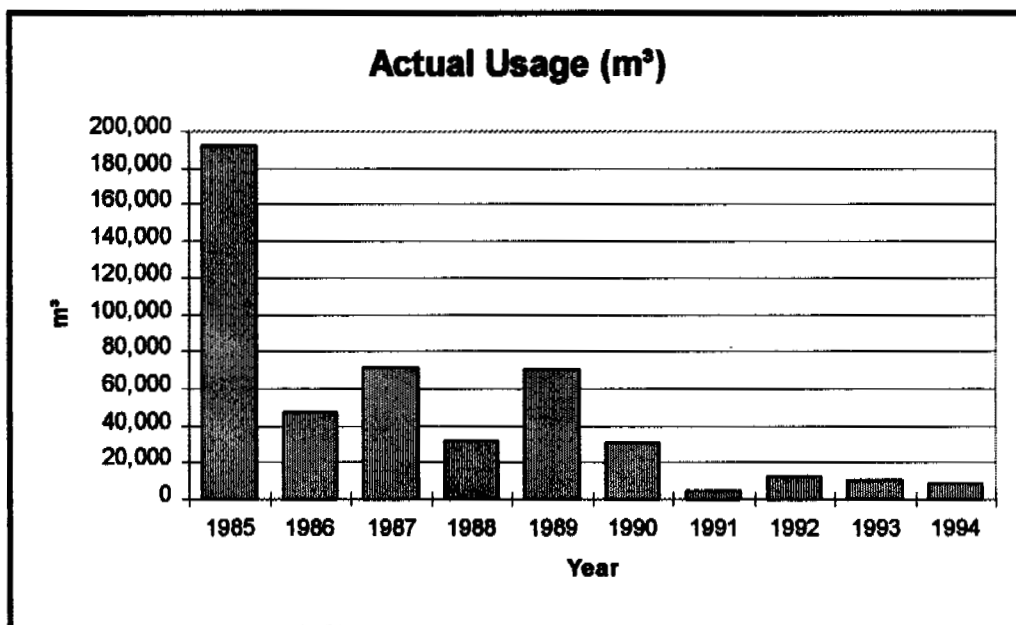


Figure 8 - Actual Usage

This suggests that future demand forecasts, including the current forecast developed under the scope of this study, should reflect these linkage of factors.

Usage by Category

Table 3 and Figure 9 below quantify the volume of granular material by user - Department of Defense, public entities (such as the community and GNWT) and by private interests - predominantly oil and gas companies engaged in exploration activities. The usage has been broken down into 3 time periods - 1985/86, 1987/1990 and 1991/1994. Overall usage by each category has dropped considerably over the last three years. Usage by each is as follows:

- The Department of Defense have accounted for about 7.5% of total usage
- Use by public entities amounts to about 32% of total usage
- Private companies have accounted for the balance of 60% of total usage

It is interesting to note that over the last three years, use by private companies has increased to 80% of the total during that period suggesting that government use (Department of Defense and public entities) has declined by a greater amount in absolute terms.

Category	1985 - 1986	1987 - 1990	1991 - 1994	TOTAL
Defense	11,941	22,516	2,545	37,002
Public	116,945	33,727	5,100	155,772
Private	182,369	76,943	28,583	287,895
Total:	311,255	133,186	36,228	480,669

Table 3 - Usage by Category and Year

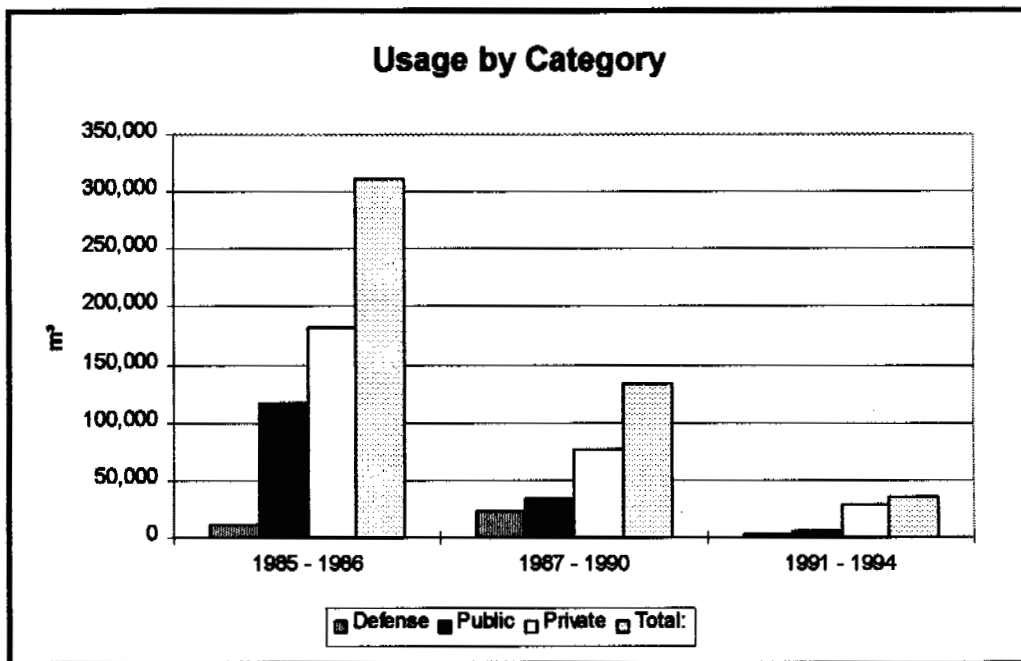


Figure 9 - Usage by Category

Usage by ILA Block

Table 4 and Figures 10 and 11 indicate usage by the six key blocks that define the ILA lands.

There are a number of conclusions that can be drawn from this data:

- There is no data indicating the use of granular material in the Holman block. This should be validated since it is likely that some activity occurred during the 1985 to 1994 period. It could be, of course, that granular material was retrieved from non-ILA lands but this should still be validated.
- The Aklavik, Holman, Paulatuk and Sachs Harbour blocks did not see any private development activities and as such have not benefited from oil and gas exploration and related activities. This should be validated.
- All communities (except Holman) did use granular material to support publicly funded activities. However, a detailed analysis of these activities (see Table 4) indicates that some normally performed activities in the region were not performed during this period. Again, as with Holman, it could be that granular material was retrieved from non-ILA lands. This is certainly true for some activities in Inuvik where material was retrieved from lands

INUVIALUIT SETTLEMENT REGION - GRANULAR FORECAST

belonging to the Crown or Gwichen. However, it does not appear feasible that this is the case in the other communities and, once again, this should still be validated.

Location	Defense	Public	Private	Total	% OF TOTAL
Aklavik	0	2,300	0	2,300	0.5%
Holman	0	0	0	0	-
Inuvik	0	21,840	223,531	245,371	51.0%
Paulatuk	1,210	12,890	0	14,100	3.0%
Sachs Harbour	0	9,837	0	9,837	2.0%
Tuktoyaktuk	35,792	108,905	64,364	209,061	43.5%
Total:	37,002	155,772	287,895	480,669	100.0%

Table 4 - Usage by Block and Category

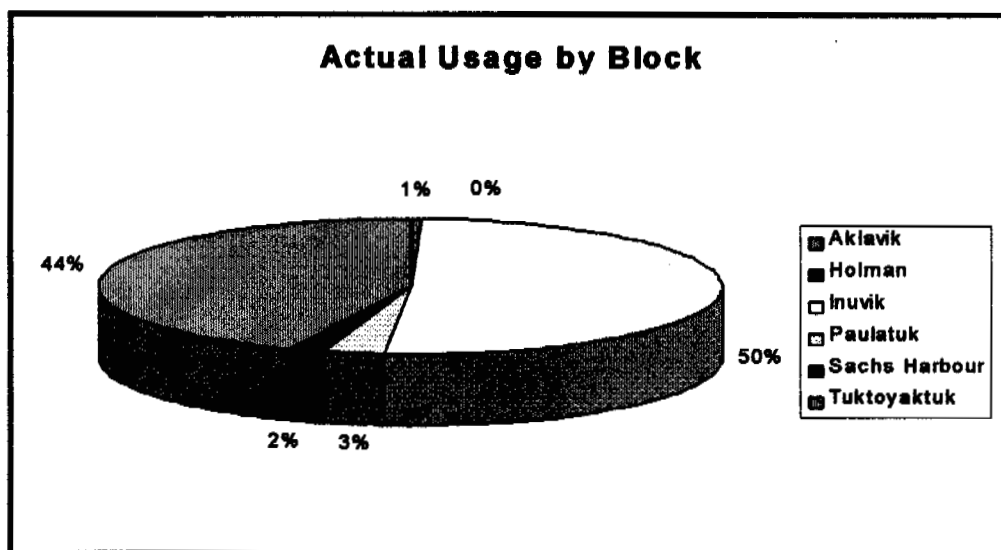


Figure 10 Usage by Block

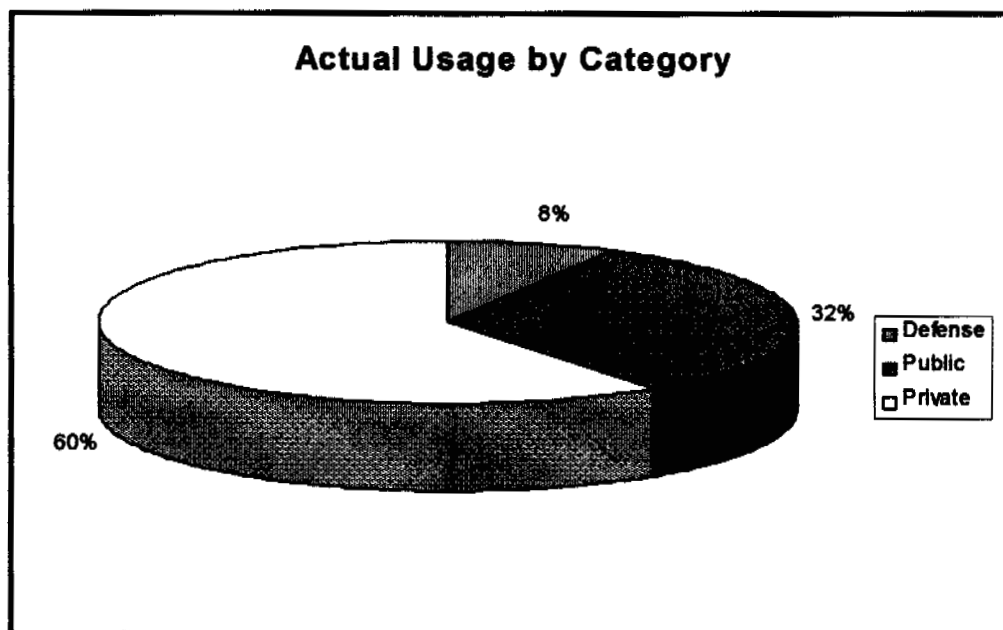


Figure 11 Usage by Category

Actual Usage Vs 1991 and 1987 Forecasts

A comparison of actual data to previous forecasts by region indicates that previous estimates were excessively optimistic about granular use in the period 1987 to 1994. Tables 5 and 6 and Figure 12 show this clearly.

Table 5 compares actual usage against the 1987 and 1991 Forecasts. Because actual usage data covers the period 1985 through 1994, two columns of data are provided for actual use. The first column indicates usage for the two years 1985 and 1986. The second column indicates usage for the period 1987 to 1994. This allows a direct comparison with the 1987 and 1991 Forecasts which both provided detailed estimates for that period.

As can be seen, both forecasts are extremely high compared to actual. The 1987 Forecast was 40 times higher than actual for the period and the 1991 Forecast was 18 times higher. Alternatively, actual use was 2.5% of the 1987 Forecast and 5.5% of the 1991 Forecast.

Both earlier forecasts had anticipated extensive oil and gas development activity throughout the 1990's and into the early years of the next century. In hindsight, it is difficult to understand the rationale for such optimistic estimates given the crude oil and gas prices prevailing at the time and the cessation of virtually all exploration activity and development planning.

INUVIALUIT SETTLEMENT REGION - GRANULAR FORECAST

The expectation of substantial development activity fueled expectation of community growth in the region and the need for community expansion and the provision of additional infrastructure. Consequently, expectations for granular material for community development were also driven higher.

It is possible that the previous forecasts included some element of granular demand from sources other than ILA lands. However, a review of the previous forecasts indicates that this was probably not the case.

Location	Actual Usage (1985/1986)	Actual Usage (1987/ 1994)	1987 Forecast (1987/ 1994)	1991 Forecast (1987/ 1994)
Aklavik	2,300	0	86,235	118,235
Holman	0	0	67,500	67,500
Inuvik	245,371	107,416	4,468,618	1,462,707
Paulatuk	14,100	11,810	323,310	323,310
Sachs Harbour	9,837	9,187	69,928	69,928
Tuktoyaktuk	209,061	112,901	4,794,140	2,252,479
Total:	480,669	241,314	9,809,731	4,294,159

Table 5 - Actual Usage Vs 1987 & 1991 Forecasts - by Community

Year	Actual	1987 Forecast	1991 Forecast
1985	191,979	N/A	N/A
1986	47,475	N/A	N/A
1987	71,800	1,038,027	204,400
1988	31,797	1,038,027	204,400
1989	70,874	1,038,027	204,400
1990	30,515	1,038,027	263,609
1991	4,745	1,038,027	263,609
1992	12,163	1,539,866	1,051,247
1993	10,154	1,539,866	1,051,247
1994	9,166	1,539,866	1,051,247
TOTAL:	480,668	9,809,733	4,294,159

Table 6 - Actual Use vs. Forecasts

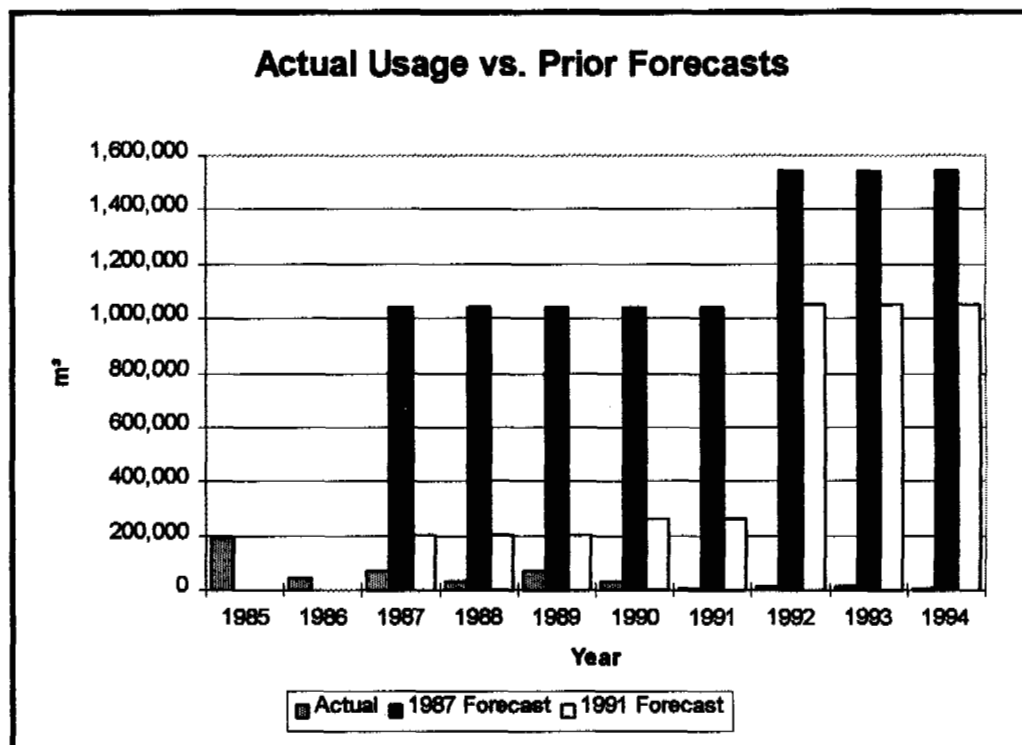


Figure 12 - Actual vs. Prior Forecasts

Future Demand Forecast

The final phase of the project was to develop an updated granular demand forecast.

The development of the 1995 Granular Demand forecast was based on information from a number of sources including:

- ILA input with feedback from the Hamlets
- The *"Granular Resource Demand Forecast Model"*
- The 95/96 Capital Plan
- Government of the Northwest Territories
- Indian and Northern Affairs Canada
- Granular Resource Requirements for Potential Hydrocarbon Development in the Western Region of the NWT prepared by NORTH OF 60 ENGINEERING LTD. in 1993.

Approach to Developing Forecasts

The current forecasts reflect the information and experience gained from reviewing the prior forecasts. They also provide a realistic assessment of the granular demand from ILA lands over the next twenty years based on a specific economic development scenario.

Forecasts Developed

Two forecasts have been developed:

- A short term (5 year) forecast covering the 1995 to 2000 period
- A long term (20 year) forecast covering the 1995 to 2015 period

Demand Categories

Three categories of demand have been considered:

- Short term demand identified by the communities - primarily granular material required for maintenance and residential expansion
- Short term demand identified by the GNWT and Federal Departments for infrastructure and Department of Defense requirements. Information on this latter category has yet to be identified.
- Short and long term demand from private companies engaged in exploration and development of oil and gas reserves

A description of the process used to develop the information is provided for each forecast and demand category.

Short Term Demand

The short term demands were derived primarily from the 95/96 Capital plan which provided details of the expected capital expenditures over the 1995 to 2000 time period for each of the six key communities. The capital expenditures were converted into equivalent granular requirements where appropriate.

Information on GNWT and Defense projects has been requested and will be added to the forecasts when they are received.

Private demand for granular material was developed from an overall evaluation of long term oil and gas exploration and development (see Long Term Demand section below) and near term demands were extracted from that analysis to create an overall estimate of demand.

Summary

Short term demand is generally low - averaging about 35,000 (m³) per year. However, this is approximately 50% higher than average usage over the previous 10 years and is driven primarily by the expectation of renewed exploration drilling activity in the 1997 to 2000 time frame. This is in response to the anticipated award of new licenses later this year.

Figure 13 shows the total demand to be relatively constant over the near term - however it can be seen that the community demand tails off quite quickly after 1998 as is discussed in the next section.

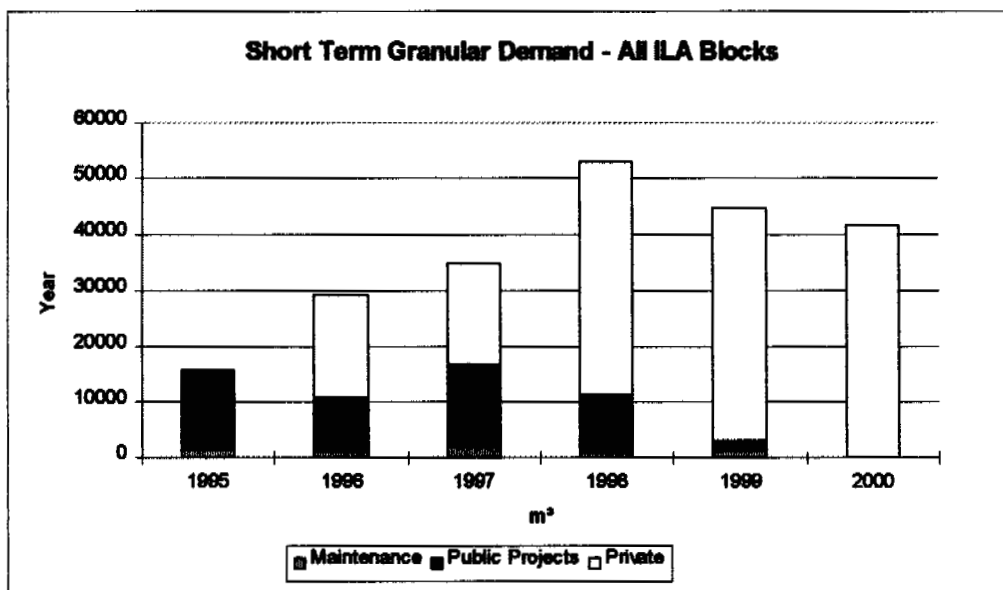


Figure 13 - Total Short Term Demand

Community Demand

The 95/96 Capital Plan outlined the capital projects for each community. Limited opportunities were identified and there appear to

be some aspects of community activities, which will likely require granular material, but which has not been identified. This is a similar problem to the actual usage data discussed previously, where it appeared that some activities that utilized granular material have not been recorded.

The total short term community demand for granular material is summarized in Figure 14. Total demand identified by the communities is 56,800 (m³). This is about 50% of the actual usage over the 1985/94 period. However, the actual usage figures included the volumes used for all public works programs and until such data is available, it is not possible to make a comparison with prior use.

Demand drops off rapidly after 1998, which suggests that forecasting local requirements for greater than the next two or three years is difficult.

Specific demands for each community are discussed in the following sections:

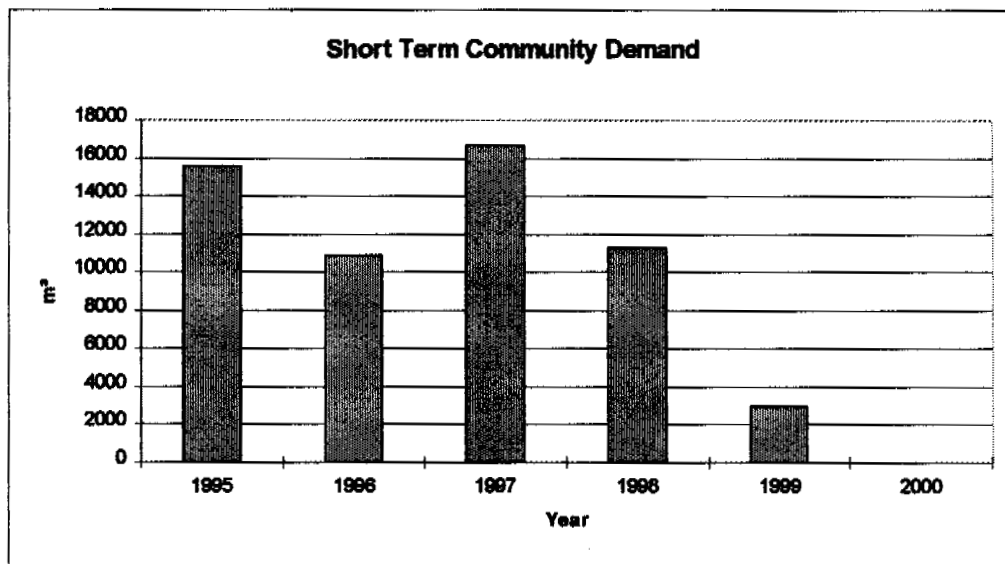


Figure 14 - Short Term Community Demand

Aklavik

Aklavik has identified a total demand of 10800 (m³) over the five year period. This covers the following activities:

Activity	Volume (m ³)
Drainage Improvement	1,800
Road Upgrading	2,400
Residential Development	6,600
Total:	10,800

Table 7 - Aklavik Community Demand

The demand is five times the actual usage over the 1985/94 time period, but does not seem excessive.

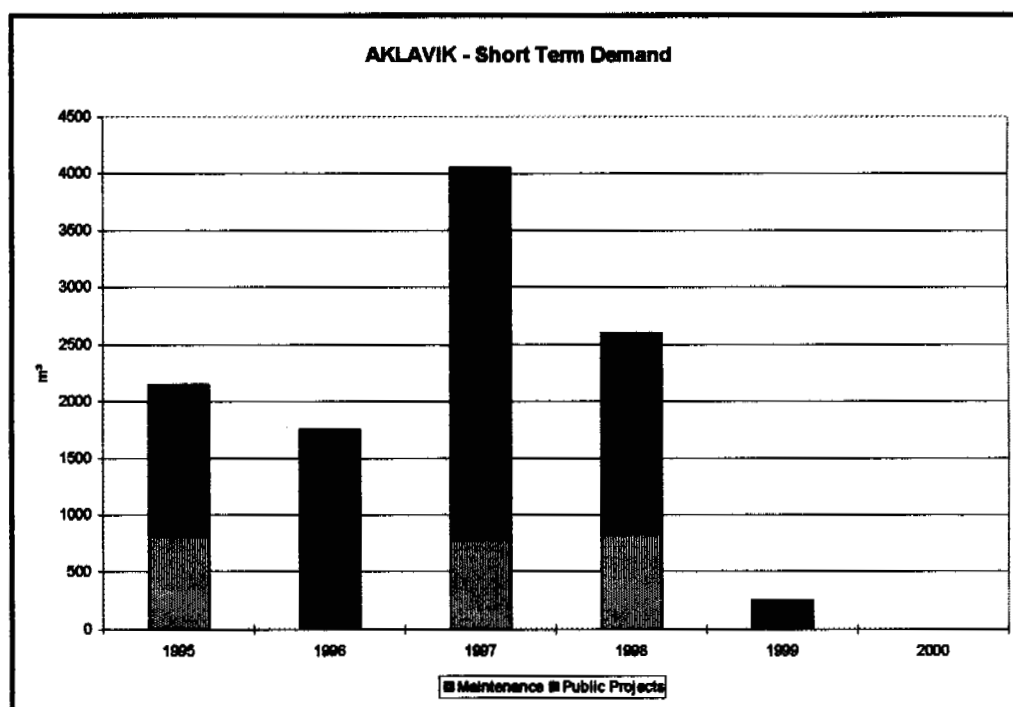


Figure 15 - Aklavik Short Term Demand

Holman

Holman has identified a total demand of 5025 (m³) over the five year period. This covers the following activities:

INUVALUIT SETTLEMENT REGION - GRANULAR FORECAST

Activity	Volume (m ³)
Community Improvement	1,000
Road Upgrading	1,875
Residential Development	2,000
Industrial Improvement	150
Total:	5,025

Table 8 - Holman Community Demand

Since actual usage data for the previous 10 years is not available at the present time, it is not possible to comment on the validity of the forecast. However, the ILA office has indicated that Holman has advised them that they require 2500 (m³) of material in 1995. This is nearly 50% above that indicated in the 95/96 Capital Plan and suggests that the plan may already be out of date so far as Holman is concerned.

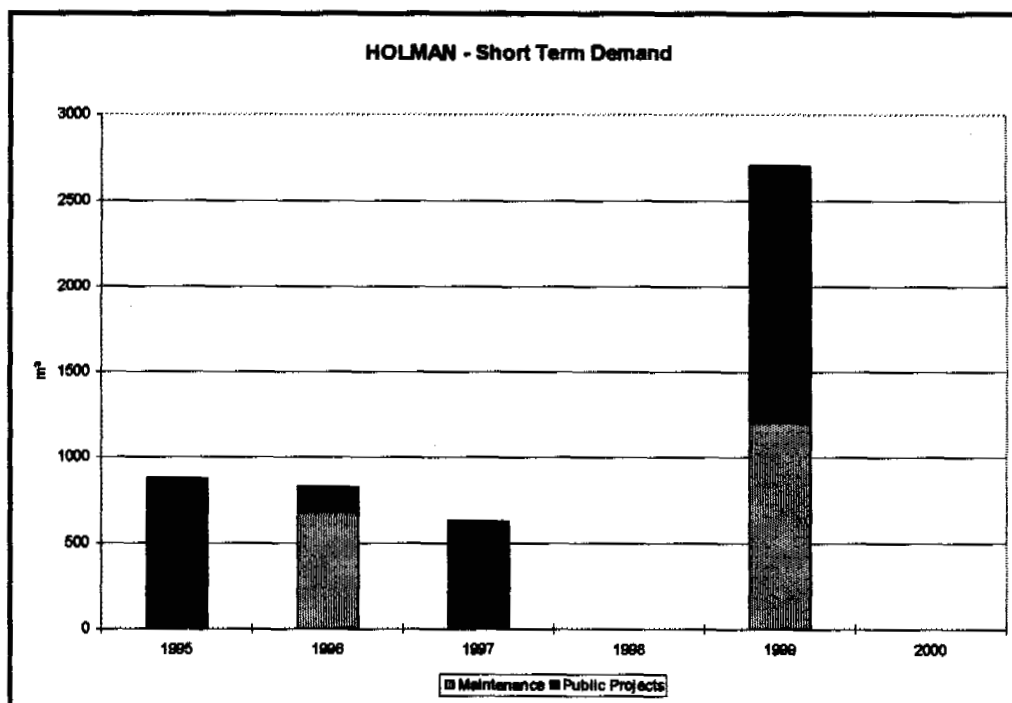


Figure 16 - Holman Short Term Demand

Inuvik

Inuvik has identified a total demand of 8,000 (m³) over the five year period. This covers the following activities:

Activity	Volume (m ³)
Community Improvement	8,000

Table 9 - Inuvik Community Demand

Demand for the Inuvik community is very low compared with the actual usage of 21,840 (m³) over the previous 10 years. However, it should be recognized that the town of Inuvik is in close proximity to gravel sources off Inuvialuit lands. Furthermore, it is an independent community with incorporation standards and as such its needs are not funded through other government agencies.

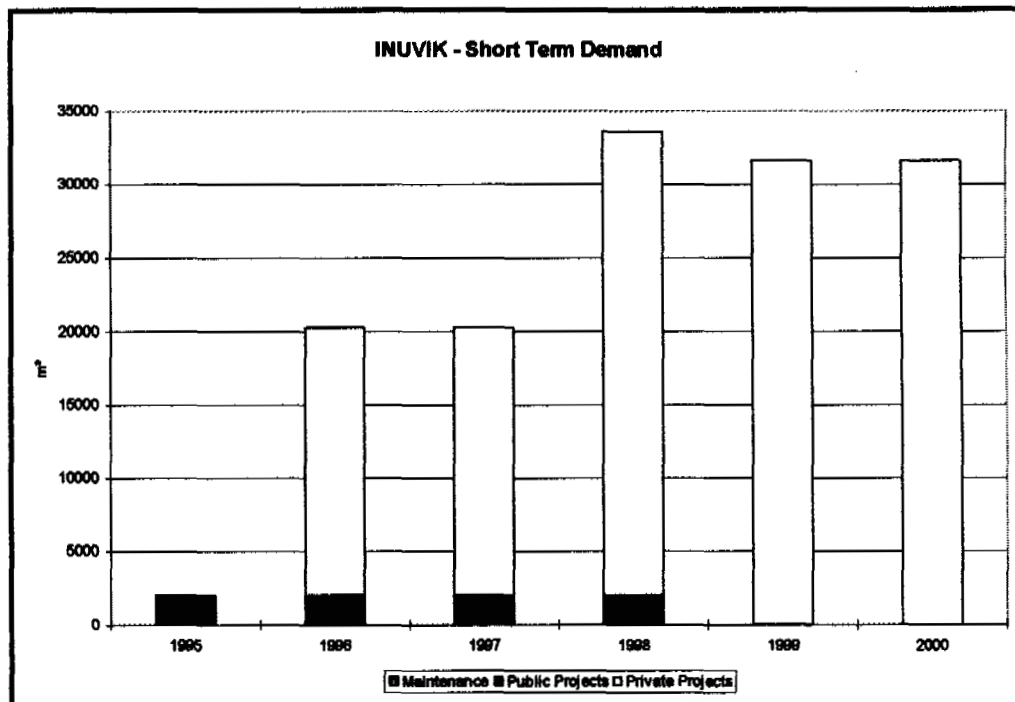


Figure 17 - Inuvik Short Term Demand

Paulatuk

Paulatuk has identified a total demand of 5,175 (m³) over the five year period. This covers the following activities:

Activity	Volume (m³)
Road Upgrading	2,325
Residential Development	2,125
Drainage Improvement	725
Total:	5175

Table 10 - Paulatuk Community Demand

Paulatuk's demand appears consistent with its reported historical usage of nearly 14,000 (m³). However, as noted in the discussion about Paulatuk's usage, the ILA indicated recently that Paulatuk applied for a total of 29,000 (m³) of material in the last three years, double the volume reported as being used. Consequently, a re-evaluation of Paulatuk's actual and near term demand is warranted.

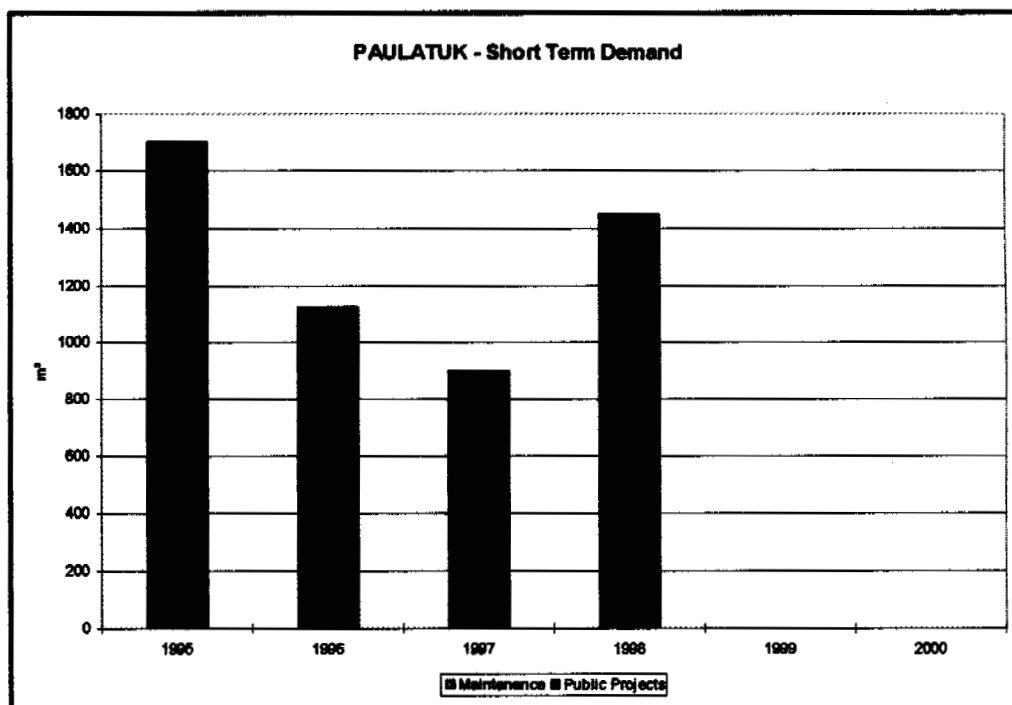


Figure 18 - Paulatuk Short Term Demand

Sachs Harbour

Sachs Harbour has identified a total demand of 15,550 (m³) over the five year period. This covers the following activities:

Activity	Volume (m ³)
Road Upgrading	2,375
Residential Development	2,250
Drainage Improvement	1,650
Industrial Expansion	3,450
Alternate Airport Access Road	5,825
Total:	15,550

Table 11 - Sachs Harbour Community Demand

Sachs Harbour's short term demand is more than 50% higher than its reported historical usage of nearly 10,000 (m³). However, most of the increase in demand can be attributed to the construction of a new access road to the airport.

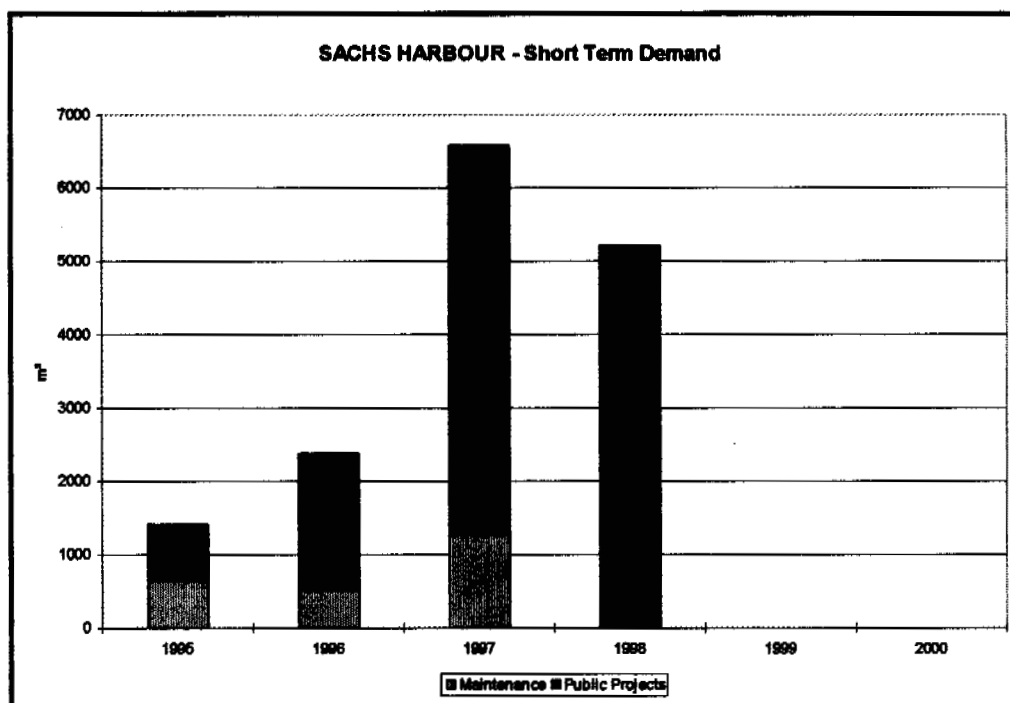


Figure 19 Sachs Harbour Short Term Demand

Tuktoyaktuk

Tuktoyaktuk has identified a total demand of 12,750 (m³) over the five year period. This covers the following activities:

Activity	Volume (m ³)
Road Upgrading	3,075
Residential Development	8,125
Drainage Improvement	1,550
Total:	12,750

Table 12 - Tuktoyaktuk Community Demand

Tuktoyaktuk's short term demand is substantially lower than its reported historical usage of nearly 109,000 (m³) for public and community activities. The previous 10 years saw a heavy investment in infrastructure improvement in Tuktoyaktuk, which may account for the slower pace predicted for the near term.

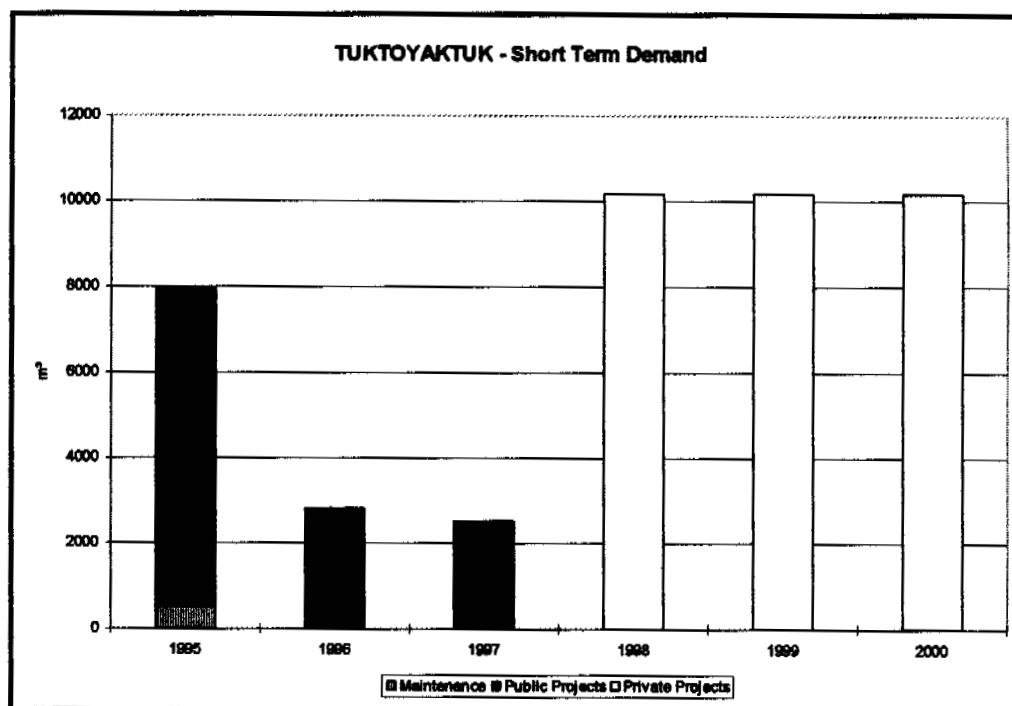


Figure 20 - Tuktoyaktuk Short Term Demand.

Long Term Demand

Current Realities and Rationale for the Forecast

Hydrocarbon exploration and development in the region has in the past, and will in the future, require granular resources. Historically, onshore granular resources have been used to construct drilling pads and temporary offshore exploration structures in the shallow waters of the Mackenzie Delta.

Development planning and exploration in the area have been influenced to a great degree by oil prices. As shown in Figure 21, the price of oil has varied considerably during the past quarter century. During the period 1973 to 1985, the price reached over \$35US/barrel, driven largely by OPEC policies. During this period, exploration activity in the region was high, based on the expected potential of the area and support from the Petroleum Incentives Program (PIP). Over 200 wells have been drilled in the region and significant discoveries have been made, but, well below initial expectations.

To compound the problem of lower than expected discoveries, the prospects for Beaufort Development have been hit by the dramatic drop in oil prices after 1985. Today, the oil price fluctuates around \$18US/barrel and the current view is that no real growth in price (other than inflation) can be counted on in the near term.

This lower oil price, together with depressed natural gas prices, led to significantly lower profits (and in some cases, losses) for the industry in the late 1980's and early 1990's. This has also reduced the appetite of the industry to get involved in high-cost Frontier activities.

These new realities have resulted in a dramatic drop in Frontier activities and plans and leads one to question what the potential granular resource needs might be for future exploration and development in the region.

Current Outlook

Hydrocarbon resource exploration and development activity in the region is at an all-time low. Exploration drilling has dropped to a twenty five year low and is practically non-existent at the present time. A major factor in this low activity has been the current drive within the industry to reduce costs and to only invest in projects which yield short-term returns.

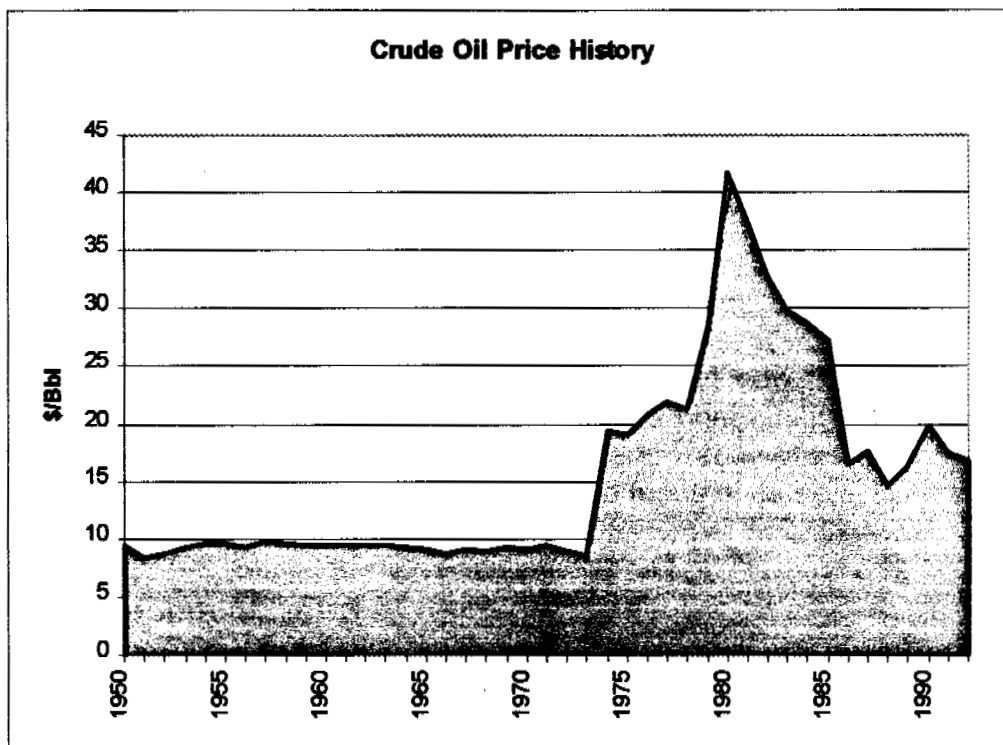


Figure 21 -Oil Price: 1950-1992 (Int. Petroleum Encyclopedia, 1994)

The current attitude in the industry is that aggressive exploration and development will only be done if the economics are in-line with shareholders expectations. A major hurdle, even for those companies with financial strength, is to make the new Canadian supplies competitive, whether they be from the Frontiers, the Oil Sands, or from enhanced recovery.

At the same time, the major oil companies in Canada do see the need to replenish their current production and reserves, which are in decline. In the Mackenzie Delta/Beaufort Region, the prevailing industry view is that there are insufficient oil reserves discovered for an economically attractive development scenario, which will support the construction of an expensive transportation system. Unless sufficient reserves can be developed economically to maintain pipeline throughput, high pipeline tariffs will deter development activities.

The current industry strategy would appear to be one of preparing for additional exploration to start, when the financial state of the industry will allow it. The major industry re-structuring and down sizing, that has occurred over the last five years, has improved the financial position. It appears that industry would start with onshore exploration first, in the hope of finding economic reserves based on lower-cost

onshore fields. In part, this has resulted in some interest in obtaining new leases in the region, which are due to be awarded in the coming months.

Frontier natural gas discoveries, while significant in size, are currently not competitive with the existing reserves in southern Canada, due to the costly transportation system that is required to move the gas to market. Given current low gas prices and the unexpected near term growth in those prices, it is unlikely that the discovered reserve base will be developed before the end of the next decade, although significant changes in fuel use could alter this outlook.

Certainly, the key to development in today's fiscal climate is to find innovative ways of reducing the high costs associated with oil and gas development and transportation.

Recent Studies

In developing the latest forecast for granular demand associated with oil and gas exploration and development, it has been necessary to review recently completed studies, determine their appropriateness and modify their findings to reflect the current realities. The study that provided the best base to work from was the 1993 study by NORTH OF 60 ENGINEERING LTD. (in association with K.R. Croasdale and Associates Ltd.).

The study identified key research and development thrusts, which, if successful, would significantly improve the potential for oil and gas development in the region. A number of generic oil and gas development scenarios were considered. The study identified the cost, economic viability, and economic sensitivities associated with each of the scenarios. In addition, it outlined a number of potential research initiatives which could reduce costs and, thus, improve the economics.

One of the important conclusions from the study was that small scale oil development, using either an extension of the Norman Wells pipeline (or seasonal tanker transportation), could be economically attractive without additional reserves, if technology advancements could achieve lower costs.

Oil and Gas Exploration Development Scenarios

The development scenarios considered for this latest forecast built on that knowledge base and included:

- an onshore exploration program focused primarily on oil prospects initially

- the development of small onshore gas fields to provide a fuel source to meet local energy demands at Inuvik and Tuktoyaktuk
- a generic 200 million barrel onshore field, and
- the processing of onshore gas for sale to southern markets.

Details of the specific exploration and development activities follows:

Exploration Activities

It has been assumed that the current interest in new licenses to be issued together with commitments by some companies to preserve their acreage positions will lead to a modest resumption in onshore exploration activities. It is assumed that the focus of these activities will be on finding oil reserves.

Local Opportunities

A number of small gas pools are located in close proximity to the towns of Inuvik and Tuktoyaktuk. The Inuvialuit Petroleum Corporation has, on a number of occasions, considered developing these reserves as a fuel source to meet local energy needs. The development scenario that has been considered in the past includes the drilling of two wells from gravel pads which would be tied into a small gas treating facility also located on a gravel pad. This process facility would remove water and any other liquids from the gas, so that it could be transported in a small buried line to the town, where it would be used as a fuel source for heat, power generation, and potential commercial development.

Beaufort Oil

The scenario for Beaufort Oil has considered only the onshore (and very shallow offshore) development. Current onshore discoveries total about 120 million barrels, but, in a number of relatively small fields. A scenario often looked at is an extension of the Norman Wells pipeline to the Mackenzie Delta to produce onshore oil at about 25,000 BPD from a yet-to-be discovered onshore field of 100 - 200 million barrels. This scenario can be economic at projected crude oil prices, if certain cost savings are achieved and the pipeline extension can be kept running full for a 20 - 25 year period. However, there are insufficient onshore reserves discovered to achieve this sustained production.

A generic case of a 200 million barrel (recoverable) oil field has been chosen based on the results of a 1993 PERD sponsored study. No such oil field has yet been discovered, but the Geological Survey of

Canada report suggests that fields of this size (and larger) are a possibility onshore. Clearly, future onshore drilling will be aimed at such targets.

Beaufort Gas

The usual development scenario for Beaufort Gas has focused on the currently discovered large reserve base onshore, with additional reserves offshore being developed to maintain contracted volumes. Based on the results of the study, a gas scenario to produce only the onshore reserves at a rate of 800 Mcf/day through a 30 inch pipeline, constructed from Taglu to northern Alberta was adopted.

Development Timing Assumptions

The timing of these developments has been phased to reflect the anticipated level of exploration, the time frame required to plan and develop the particular scenario, and the current economic outlook.

The initial development scenario is shown in Figure 22. The assumptions are:

- Development of local energy sources to supply the towns of Inuvik and Tuktoyaktuk occur towards the end of the 1990's and the early years of the next century respectively.
- A 200 million barrel oil discovery in the Richards Island area by the year 2002, and its subsequent development in the 2005 to 2010 time frame. Production from the field would be transported to southern markets through a 12 inch extension of the pipeline that currently runs from Zama, Alberta to Norman Wells. Adequate capacity will exist in the line by that time.
- Sufficient demand and growth in gas prices will occur by the year 2010 to justify development of the three major onshore fields (Taglu, Parsons Lake and Niglingtak). This would trigger the construction of a gas pipeline, development drilling and production facilities which would come on stream in the year 2015. A possible development scenario for the year 2015 is presented in Figure 23.
- As initial production starts to decline, additional onshore oil and gas fields would be brought on stream. The timing of these additional developments would depend on available pipeline capacity and the actual timing of gas development.

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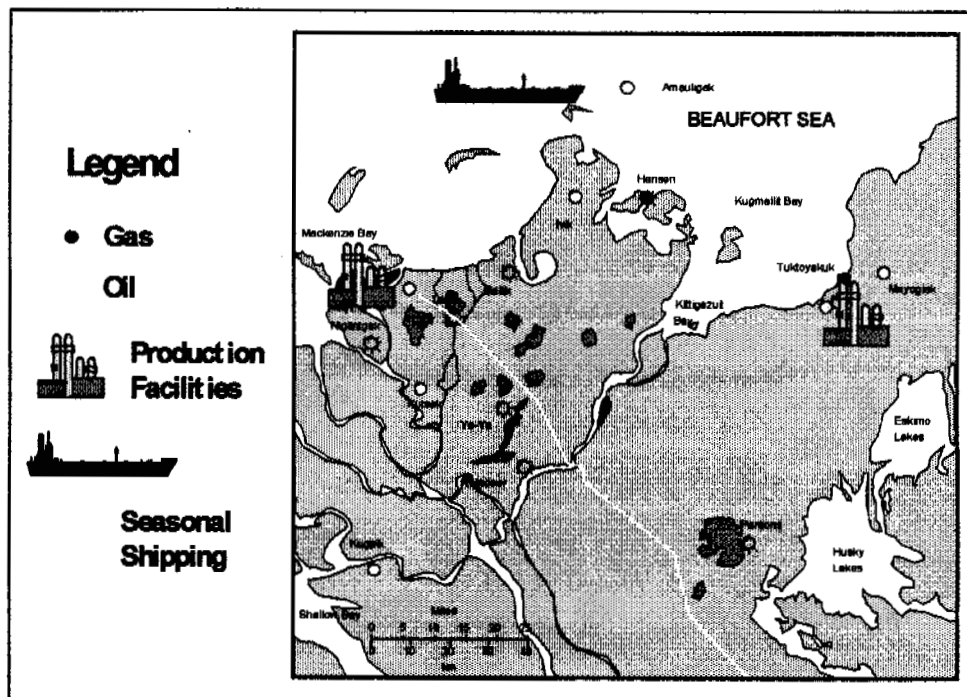


Figure 22 - Oil Development Scenario in the Year 2010

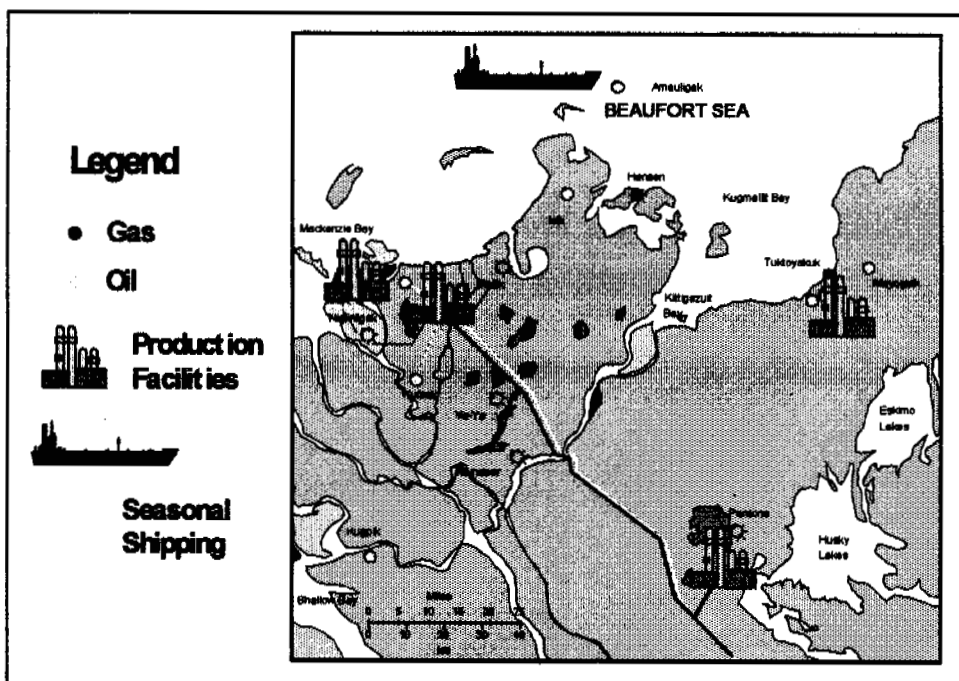


Figure 23 Oil & Gas Development Scenario in the year 2015

Future Granular Requirements by Scenario

Local Opportunities

A number of small gas pools are located in close proximity to the towns of Inuvik and Tuktoyaktuk. The Inuvialuit Petroleum Corporation has, on a number of occasions, considered developing these reserves as a fuel source to meet local energy needs. The development scenario, that has been considered in the past, includes the drilling of two wells from gravel pads which would be tied into a small gas treating facility also located on a gravel pad. This process facility would remove water and any other liquids from the gas, so that it could be transported in a small buried line to the town of Tuktoyaktuk, where it would be used as a fuel source for heat, power generation, and potential commercial development. Based on previous engineering studies, the IPC has estimated that approximately 40,000 m³ of granular material would be required for each of these developments.

Onshore Oil Development

The development plan for this scenario was generated using the NORCOST model developed by NORTH OF 60 ENGINEERING LTD. In summary, the field would produce at a rate of approximately 36 kBbl/day into a 12" extension of the Interprovincial Pipeline to Norman Wells. The development would require 90 wells (60 producers) drilled from 2 pads, based on an assumed aerial size of 15 sq. miles and a reservoir depth of 8000 ft. Granular resource requirements for the field development, as estimated by the model, are summarized in Table 13. These volumes are based on 6 miles of road, a dock and staging area, drilling and plant pads.

Norman Wells to Mackenzie Delta Oil Pipeline

A 12 inch extension from Norman Wells to the Mackenzie Delta would be roughly 350 miles in length requiring 3 to 4 pump stations.

According to Interprovincial Pipeline Inc. approximately 50,000 m³ of granular resource material would be required for construction of the extension north of Norman Wells. This small volume (when compared to the gas pipeline requirements discussed below) can likely be attributed to the small diameter of the line.

Since only 20% of the length of line would pass through ILA lands, the granular demand estimate has been assessed at 10,000 (m³).

Project Component	Class 2 Volume m ³	Class 3 Volume m ³	Total Volume m ³
Roads	15,000	282,109	297,110
Runway & Helipads	1,954	0	1,954
Plant & Staging Area	12,000	67,428	79,428
Drill Sites	0	160,704	160,704
Pipelines	0	10,000	10,000
Total	28,954	520,241	549,196

Table 13 - Granular Requirements for a 200 Million Barrel Onshore Pool and Portion of Pipeline

Onshore Gas Development

In the Mackenzie Delta - Beaufort Sea region, natural gas discoveries total about 12 Tcf of which 4.5 Tcf is located offshore. The largest onshore gas field is Taglu with 3 Tcf, followed by Parsons Lake field with 1.9 Tcf and Niglintgak field with 1 Tcf.

The development plan assumed for this study is based on a 36 inch pipeline up the Mackenzie Valley to Caroline, Alberta. Initially, only the three major onshore reserves would be produced at an estimated initial capital investment of about \$2 billion for facilities and over \$5 billion for the pipeline. The gas would be produced at 1.2 billion cu. ft./day. Production facilities at Taglu and Parsons Lake would dehydrate the gas, remove hydrocarbon liquids and, then, chill the gas to avoid permafrost thawing and subsequent subsidence.

Ultimately, the development scenario would require additional onshore reserves to maintain the 1.2 billion cu. ft./day rate. For the basis of this study, it has been assumed that existing discoveries in the Mallik and Tuktoyaktuk areas would be developed and tied into the system to maintain production.

Development plans for Taglu, Parsons Lake, and Niglingtak were prepared using the NORCOST model. A summary of these plans can be found in the 1993 study report. The granular resource requirements for each field are summarized in Table 14.

Development plans for the Mallik and Tuk fields were not prepared. Granular resource requirements for these fields were assumed based on the size of the fields, to be 250,000 yd³ and 500,000 yd³ respectively.

Field	Class 2 Volume m ³	Class 3 Volume m ³	Total Volume m ³
Taglu	105,890	953,012	1,058,902
Niglintgak	38,870	349,830	388,700
Parsons	60,138	541,247	601,385
Mallik	19,114	172,024	191,138
Tuk Cretaceous	38,228	344,047	382,275
Total	262,240	2,360,160	2,622,400

Table 14 - Granular Requirements for Onshore Gas Development

Gas Pipeline - 36" - Mackenzie Delta to Edson

A 914 mm diameter, 2,330 km long, pipeline would be required to transport the gas from the Mackenzie Delta to Edson, Alberta for distribution to markets in Southern Canada and the United States. Gas in the line would be refrigerated to prevent thawing of the permafrost.

General fill (similar to Class 3) would be required for work pads, access roads, airstrips and other associated pipeline facilities. Select fill (Class 2) would be required to improve the durability of subgrade surfaces and for bedding and packing around the pipe. Finally, a limited quantity of aggregates (Class 1) would be required for concrete pipe weights and structural foundations.

Granular resource requirements for the pipeline, by type, and construction spread, are summarized in Table 15. Operating and maintenance facilities to support the pipeline would require an additional 244,073 m³ of general and select material. However, since only half the first section of the line (Spread #1) would cross the Inuvialuit lands the total demand has been assumed as approximately 400,000 (m³).

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Spread #	Length km	General Fill m³	Pipe Protection m³	Aggregate m³	Total m³
1	210	432,840	345,585	948	794,845
2	245	674,806	331,207	1,228	1,054,443
3	250	539,338	321,863	32,780	931,002
4	260	571,607	342,556	62,025	1,020,739
5	275	278,318	318,104	47,956	662,904
6	395	262,217	216,467	44,740	566,105
7	485	237,263	184,610	35,464	495,957
Total	2,120	2,996,389	2,060,392	225,141	5,525,995

Table 15 Granular Requirements for a 36" Pipeline Source: Kaustinen

Total Granular Resource Requirements

Total granular resource requirements for assumed development scenario discussed in the previous section are summarized in Tables 16 and 17. Table 16 represents a breakdown of the requirements for oil development, while Table 17 summarizes the requirements for gas development.

Year	Exploration	Town Gas	200 Mbbl Development	Gas Development
1995-2000	91,350	0	26,960	0
2001-2005	106,575	40,000	522,237	0
2006-2010	167,475		0	122,320
2011-2015	197,925		0	2,079,447
Total	563,325	40,000	549,197	2,201,767

Table 16 Granular Material Req'd. Oil and Gas on the Inuvik Block (m³)

Table 18 summarizes the granular resource requirements for all oil and gas activities for the 1995 to 2015 period. Granular demand over this period would be approximately 3.6 million m³ of granular material. However, demand will continue beyond 2015 with the proposed development scenario and an additional 0.8 to 1.0 million m³ would be

required to complete all development over the 2016 to 2025 time period.

Year	Exploration	Town Gas
1995-2000	30,450	0
2001-2005	76,125	40,000
2006-2010	91,350	0
2011-2015	60,900	0
Total	258,825	40,000

Table 17 Granular Material Req'd. for Oil and Gas on Tuk Block (m³)

Year	Inuvik (m³)	Tuk (m³)	Total (m³)
1995-2000	118,310	30,450	148,760
2001-2005	668,812	116,125	784,937
2006-2010	289,795	91,350	381,145
2011-2015	2,277,372	60,900	2,338,272
Total	3,354,289	298,825	3,653,114

Table 18 - Granular Material Required for all Oil & Gas Exploration and Development Activities - 1995 to 2015 (m³)

Granular material requirements have been slotted into 5 year time frames based on the assumed development scenarios. A forecast of granular resource requirements vs. time is shown in Figure 24. The heavy development activity in the 2010 to 2015 time frame, when the onshore gas development is underway, accounts for the substantial increase in demand towards the end of the twenty year time frame.

While the granular resources requirements for the development scenarios considered are significant, they are lower than previous estimates because of the slower and smaller development scenarios.

The reader is cautioned that the exact timing of these requirements is very dependent on the timing of actual development and the specific project development plans.

Total granular resource requirements for the twenty year period 1995 - 2015 are summarized in Figure 25.

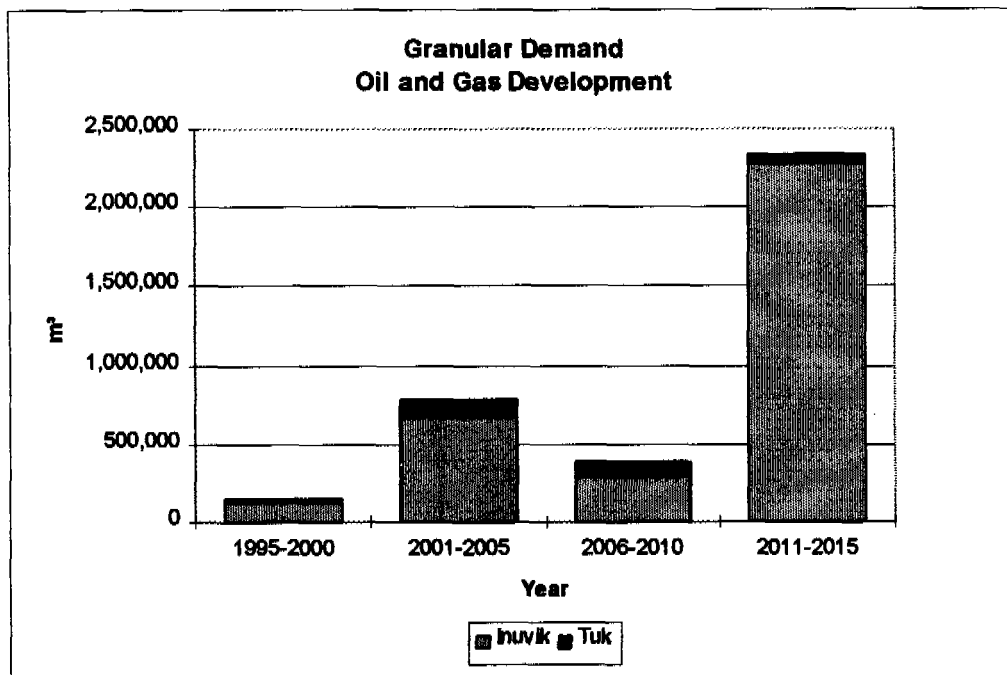


Figure 24 - 1995 Granular Demand - Oil and Gas Development

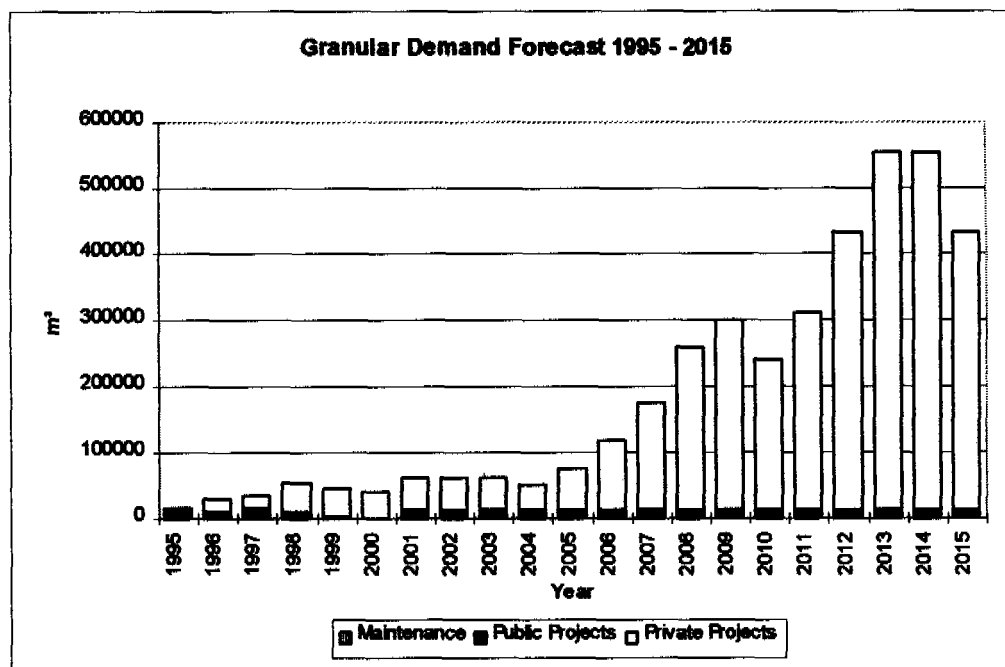


Figure 25 Granular Material Requirements vs. Time

Comparison with Previous Forecasts

Figure 26 shows the three demand curves and highlights the substantial reduction in demand anticipated at the present time.

When all three forecasts are compared, it is clear that the latest forecast represents a substantial reduction in granular demand from both previous estimates. In addition, the demand curve is much flatter with increased demand occurring beyond the year 2005. This is 15 to 20 years later than contemplated by the previous demand forecasts. Additionally, demand at less than 4 million (m³) is only 25% of the 1987 forecast and 15% of the 1991 forecast.

Both earlier forecasts had anticipated extensive oil and gas development activity throughout the 1990's and into the early years of the next century. In hindsight, it is difficult to understand the rationale for such optimistic estimates, given the crude oil and gas prices prevailing at the time and the cessation of virtually all exploration activity and development planning.

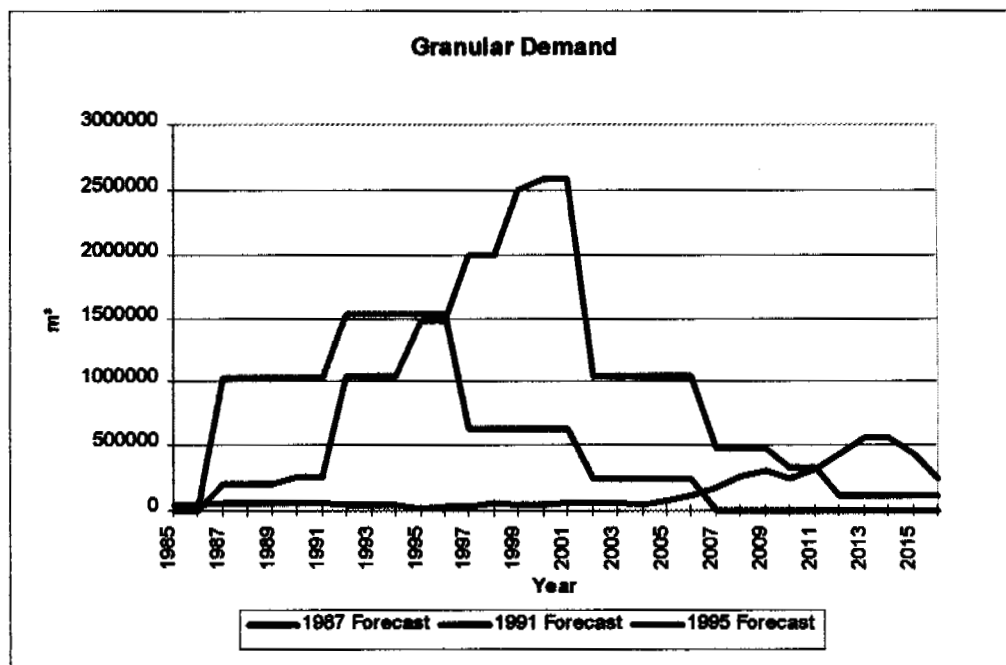


Figure 26 - Comparison with Prior Forecasts

The current forecast also includes some 750,000 (m³) for exploration activities, which were not specifically identified in the previous estimates. This was a substantial omission in an oil and gas play region, which is experiencing substantial development activity. It is

usual to experience some exploration activity, since the construction of infrastructure and pipelines provides a powerful incentive for others to drill in the region.

Conclusions / Recommendations

Conclusions

A comparison of actual data to previous forecasts by region indicates that previous estimates were excessively optimistic about granular use in the period 1987 to 1994. Actual use was 2.5% of the 1987 Forecast and 5.5% of the 1991 Forecast.

This expectation of substantial development activity also fueled expectation of community growth in the region, the need for community expansion, and the provision of additional infrastructure. Consequently, expectations for granular material for community development were also substantially higher.

The differences between the former forecasts and the actual usage suggest, that future demand forecasts should more closely reflect the linkage of oil and gas activity level to the demand for granular material, in both the communities and for exploration and development work.

Generally speaking, granular requirements for onshore oil and gas development on Inuvialuit lands will be much less than previously anticipated, but still represent a substantial quantity of a scarce resource. Consequently, usage of granular material in the North will have to be continually monitored.

However, demand for the foreseeable future is such that it does not appear to be prudent to expend significant quantities of money, at the present time, identifying potentially new sources of material.

Recommendations

A number of recommendations arise out of the work performed to develop this review.

The Model

It is most important that the data base that has now been created for usage of material over the previous 10 years be maintained and updated on a regular basis, and that it be used to report on a regular

basis the level of requests for material, the purpose for which it is required and how much has actually been used.

On average, there were 6 licenses issued for material each year. Since the forecast demand in the near future is not significantly different from the prior years, the amount of effort to maintain the data base should not be high.

The data in the model should be as complete and accurate as possible. Efforts should be made to ensure that all communities, public groups such as the GNWT and the Department of Transportation participate fully in the process.

Future Forecasts

The comparison of the three forecasts and the actual usage figures suggest that there is an opportunity to improve the forecasting process. Oil and gas exploration and development activity should be tracked carefully, so that early trends of an upswing in demand can be detected.

Activities that should be monitored in particular include:

- the level of exploration activity in the region
- significant oil discoveries which will lead to a discovered reserve base sufficient to support an extension of the Norman Wells pipeline
- initiation of development planning activities for specific discoveries all of which could lead to development and associated granular demand. A lack of these activities will probably suggest that the current forecast may also be optimistic.
- A further forecast should be developed in about five years time when crude and gas prices should reflect where they will be heading over the next ten to twenty years.

Acknowledgments

The granular usage data and the forecasts summarized in this report were developed in association with the Inuvialuit Land Administration. Completion of this project would not have been possible without the help of the dedicated employees of the ILA. They are:

William Gruben	Land Administrator
Veryl Gruben	Assistant Land Administrator
Paul Voudrak	Assistant Land Administrator

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Appendix A

1987 Granular Demand Forecast

Granular Resource Requirements - Inuvialuit Lands

1987 FORECAST

REGION	Project	Update	Cat.	Type	Year 1	Year 2	Class 1	Class 2	Class 3	Class 4	Class 5	Total
AKLAVIK	Airfield maintenance			M	1987	2006					12000	12000
AKLAVIK	Road & gen maintenance			M	1987	2006			80000			80000
				M Total			0	0	80000	0	12000	

Granular Resource Requirements - Inuvialuit Lands

1987 FORECAST												
REGION	Project	Update	Cat.	Type	Year 1	Year 2	Class 1	Class 2	Class 3	Class 4	Class 5	Total
AKLAVIK	Airfield rehabilitation			LCP	1987	1991					15000	15000
AKLAVIK	Arena/community hall			LCP	1987	1991		325	1350			1675
AKLAVIK	Shoreline protection			LCP	1987	1991					16300	16300
AKLAVIK	Sewage/solid waste improvement			LCP	1987	1991				1000		1000
AKLAVIK	Miscellaneous			LCP	1987	1991	260	700	1100			2060
AKLAVIK	Land development			LCP	1987	1991		3800		9500	100	13400
				LCP Total			260	4825	2450	10500	31400	
AKLAVIK Total							260	4825	82450	10500	43400	

Granular Resource Requirements - Inuvialuit Lands

1987 FORECAST												
REGION	Project	Update	Cat.	Type	Year 1	Year 2	Class 1	Class 2	Class 3	Class 4	Class 5	Total
HOLMAN	Airfield maintenance			M	1987	2006		18000				18000
HOLMAN	Road & gen maintenance			M	1987	2006			80000			80000
HOLMAN	Sewage/solid waste improvement			M	1987	1991		5800		14000	200	20000
				M Total			0	23800	80000	14000	200	

Granular Resource Requirements - Inuvialuit Lands

1987 FORECAST												
<i>REGION</i>	<i>Project</i>	<i>Update</i>	<i>Cat.</i>	<i>Type</i>	<i>Year 1</i>	<i>Year 2</i>	<i>Class 1</i>	<i>Class 2</i>	<i>Class 3</i>	<i>Class 4</i>	<i>Class 5</i>	<i>Total</i>
HOLMAN	Road construction			LCP	1987	1991			2000			2000
HOLMAN	Office/warehouse complex			LCP	1987	1991		500	900			1400
HOLMAN	Staff housing			LCP	1987	1991	50	475	1100			1625
HOLMAN	Arena/curling rink			LCP	1987	1991	100	275	1000			1375
HOLMAN	Miscellaneous			LCP	1987	1991		500	1000		400	1900
				LCP Total			150	1750	6000	0	400	
HOLMAN Total							150	25550	86000	14000	600	

Granular Resource Requirements - Inuvialuit Lands

1987 FORECAST												
REGION	Project	Update	Cat.	Type	Year 1	Year 2	Class 1	Class 2	Class 3	Class 4	Class 5	Total
INUVIK	Airfield maintenance			M	1992	2006					24000	24000
INUVIK	Road & gen maintenance			M	1987	2006			80000			80000
INUVIK	Yard maintenance			M	1987	2006			3000			3000
INUVIK	Private business, home owners			M	1987	1991		5000	40000		10000	55000
				M Total			0	5000	123000	0	34000	

Granular Resource Requirements - Inuvialuit Lands

1987 FORECAST												
<i>REGION</i>	<i>Project</i>	<i>Update</i>	<i>Cat.</i>	<i>Type</i>	<i>Year 1</i>	<i>Year 2</i>	<i>Class 1</i>	<i>Class 2</i>	<i>Class 3</i>	<i>Class 4</i>	<i>Class 5</i>	<i>Total</i>
INUVIK	Airport overlays			LCP	1987	1991					8000	8000
INUVIK	Landscaping			LCP	1987	1991				2000		2000
INUVIK	Lot development			LCP	1987	1991			2500			2500
INUVIK	Yard development			LCP	1987	1991			1530		153	1683
INUVIK	Miscellaneous			LCP	1987	1991	160	775	500			1435
				LCP Total			160	775	4530	2000	8153	

Granular Resource Requirements - Inuvialuit Lands

1987 FORECAST												
REGION	Project	Update	Cat.	Type	Year 1	Year 2	Class 1	Class 2	Class 3	Class 4	Class 5	Total
INUVIK	Inuvik-Tuk Highway			CPS	1982	1996		1700000				1700000
INUVIK	Inuvik-Tuk Highway			CPS	1987	1991					2800000	2800000
INUVIK	Inuvik-Tuk Highway			CPS	1997	2001		100000				100000
INUVIK	Inuvik-Tuk Highway			CPS	2002	2006		100000				100000
INUVIK	Offshore oil			CPS	1992	2006					2700000	2700000
				CPS Total			0	1900000	0	0	5500000	
INUVIK Total							160	1905775	127530	2000	5542153	

Granular Resource Requirements - Inuvialuit Lands

1987 FORECAST												
REGION	Project	Update	Cat.	Type	Year 1	Year 2	Class 1	Class 2	Class 3	Class 4	Class 5	Total
PAULATUK	Airfield maintenance			M	1992	2006		6000				6000
PAULATUK	Road & gen maintenance			M	1987	2006			80000			80000
				M Total			0	6000	80000	0	0	

Granular Resource Requirements - Inuvialuit Lands

1987 FORECAST												
REGION	Project	Update	Cat.	Type	Year 1	Year 2	Class 1	Class 2	Class 3	Class 4	Class 5	Total
PAULATUK	New airstrip			LCP	1987	1991		10000	250000			260000
PAULATUK	Sewage/solid waste improvement			LCP	1987	1991				9000		9000
PAULATUK	Land development			LCP	1987	1991		2400	5900		100	8400
PAULATUK	New school			LCP	1987	1991	700	600	100			1400
PAULATUK	Water supply improvement			LCP	1987	1991		4000		6000		10000
PAULATUK	Miscellaneous			LCP	1987	1991	10	300	1000			1310
				LCP Total			710	17300	257000	15000	100	
PAULATUK Total							710	23300	337000	15000	100	

Granular Resource Requirements - Inuvialuit Lands

1987 FORECAST												
REGION	Project	Update	Cat.	Type	Year 1	Year 2	Class 1	Class 2	Class 3	Class 4	Class 5	Total
SACHS HARBOU	Airfield maintenance			M	1987	2006		20000				20000
SACHS HARBOU	Road & gen maintenance			M	1987	2006			80000			80000
				M Total			0	20000	80000	0	0	

Granular Resource Requirements - Inuvialuit Lands

1987 FORECAST												
REGION	Project	Update	Cat.	Type	Year 1	Year 2	Class 1	Class 2	Class 3	Class 4	Class 5	Total
SACHS HARBOU	Sewage/solid waste improvement			LCP	1987	1991				9000		9000
SACHS HARBOU	Tank farm expansion			LCP	1987	1991		10000	6500			16500
SACHS HARBOU	Office/warehouse complex			LCP	1987	1991		500	900			1400
SACHS HARBOU	Community gym expansion			LCP	1987	1991		500	800			1300
SACHS HARBOU	Arena (1987 construction)			LCP	1987	1991		200	600			800
SACHS HARBOU	Miscellaneous			LCP	1987	1996	60	200	550	350		1160
				LCP Total			60	11400	9350	9350	0	
SACHS HARBOUR	Total						60	31400	89350	9350	0	

Granular Resource Requirements - Inuvialuit Lands

1987 FORECAST												
REGION	Project	Update	Cat.	Type	Year 1	Year 2	Class 1	Class 2	Class 3	Class 4	Class 5	Total
TUKTOYAKTUK	Airfield maintenance			M	1992	2006		15000				15000
TUKTOYAKTUK	Road & gen maintenance			M	1987	2006	20000		80000			100000
TUKTOYAKTUK	Yard maintenance			M	1987	2006			1600			1600
				M Total			20000	15000	81600	0	0	

Granular Resource Requirements - Inuvialuit Lands

1987 FORECAST												
REGION	Project	Update	Cat.	Type	Year 1	Year 2	Class 1	Class 2	Class 3	Class 4	Class 5	Total
TUKTOYAKTUK	Shoreline protection			LCP	1987	1991		60000				60000
TUKTOYAKTUK	Erosion control			LCP	1992	1996					20000	20000
TUKTOYAKTUK	Land development			LCP	1992	1996	5000			20000		25000
TUKTOYAKTUK	Road construction			LCP	1992	1996	5000	60000				65000
TUKTOYAKTUK	Solid waste site			LCP	1992	1996				20000		20000
TUKTOYAKTUK	Staff housing			LCP	1987	1991	50	1350	2800			4200
TUKTOYAKTUK	Yard development			LCP	1987	1991		500	1000			1500
TUKTOYAKTUK	Curling rink			LCP	1987	1991	100	100	1000			1200
TUKTOYAKTUK	Primary school			LCP	1987	1991	200	100	400			700
TUKTOYAKTUK	Miscellaneous			LCP	1987	1991	50	250	1440			1740
				LCP Total			10400	122300	6640	40000	20000	

Granular Resource Requirements - Inuvialuit Lands

1987 FORECAST												
REGION	Project	Update	Cat.	Type	Year 1	Year 2	Class 1	Class 2	Class 3	Class 4	Class 5	Total
TUKTOYAKTUK	Inuvik-Tuk Highway			CPS	1987	1991			1700000			1700000
TUKTOYAKTUK	Inuvik-Tuk Highway			CPS	1992	1996			1400000			1400000
TUKTOYAKTUK	Inuvik-Tuk Highway			CPS	1997	2001			100000			100000
TUKTOYAKTUK	Inuvik-Tuk Highway			CPS	2002	2006			100000			100000
TUKTOYAKTUK	ILA Gas gathering			CPS	1987	1991			14100			14100
TUKTOYAKTUK	Tuk airport expansion			CPS	1992	1996		58100	1491000			1549100
TUKTOYAKTUK	Onshore gas			CPS	1992	2001		1380000				1380000
TUKTOYAKTUK	Pads & roads			CPS	1992	1996		1176000				1176000
TUKTOYAKTUK	Onshore oil			CPS	1997	2001		1200000				1200000
CPS Total							0	3814100	4805100	0	0	
TUKTOYAKTUK Total							30400	3951400	4893340	40000	20000	
Grand Total							31740	5942250	5615670	90850	5606253	

Appendix B

1991 Granular Demand Forecast

Granular Resource Requirements - Inuvialuit Lands

1991 FORECAST

REGION	Project	Update	Cat.	Type	Year 1	Year 2	Class 1	Class 2	Class 3	Class 4	Class 5	Total
AKLAVIK	Airfield Maintenance		Public	M	1987	1991					3000	3000
AKLAVIK	Airfield Maintenance		Public	M	1992	1996					3000	3000
AKLAVIK	Airfield Maintenance		Public	M	2002	2006					3000	3000
AKLAVIK	Airfield Maintenance		Public	M	1997	2001					3000	3000
AKLAVIK	Road/General Maintenance		Public	M	1987	1991			20000			20000
AKLAVIK	Road/General Maintenance		Public	M	1992	1996			20000			20000
AKLAVIK	Road/General Maintenance		Public	M	1997	2001			20000			20000
AKLAVIK	Road/General Maintenance		Public	M	2002	2006			20000			20000
M Total							0	0	80000	0	12000	92000

Granular Resource Requirements - Inuvialuit Lands

1991 FORECAST

REGION	Project	Update	Cat.	Type	Year 1	Year 2	Class 1	Class 2	Class 3	Class 4	Class 5	Total
AKLAVIK	Airfield Rehabilitation		Public	LCP	1987	1991					15000	15000
AKLAVIK	Arena/Community Hall		Public	LCP	1987	1991		325	1350			1675
AKLAVIK	Detachment Building		Public	LCP	1987	1991	10		200			210
AKLAVIK	Garage		Public	LCP	1987	1991		100	100			200
AKLAVIK	Misc. Public Projects		Public	LCP	1987	1991			20000			20000
AKLAVIK	R/S/L Land Development		Public	LCP	1987	1991		3800		9500	100	13400
AKLAVIK	R/S/L Shoreline Protection		Public	LCP	1987	1991					8300	8300
AKLAVIK	School Addition		Public	LCP	1987	1991	200	100				300
AKLAVIK	Sewage and Solid Waste Improvements		Public	LCP	1987	1991				1000		1000
AKLAVIK	Shoreline Protection		Public	LCP	1987	1991					8000	8000
AKLAVIK	Staff Housing		Public	LCP	1987	1991	50	100	300			450
AKLAVIK	Tradeshop		Public	LCP	1987	1991		400	500			900
AKLAVIK	Misc. Public Projects		Public	LCP	1992	1996			20000			20000
AKLAVIK	Misc. Public Projects		Public	LCP	1997	2001			20000			20000
AKLAVIK	Misc. Public Projects		Public	LCP	2002	2006			20000			20000
LCP Total							260	4825	82450	10500	31400	129435
AKLAVIK Total							260	4825	162450	10500	43400	221435

Granular Resource Requirements - Inuvialuit Lands

1991 FORECAST

REGION	Project	Update	Cat.	Type	Year 1	Year 2	Class 1	Class 2	Class 3	Class 4	Class 5	Total
HOLMAN	Airfield maintenance			M	1987	2006		18000				18000
HOLMAN	Road & gen maintenance			M	1987	2006			80000			80000
HOLMAN	Sewage/solid waste improvement			M	1987	1991		5800		14000	200	20000
				M Total			0	23800	80000	14000	200	118000

Granular Resource Requirements - Inuvialuit Lands

1991 FORECAST

REGION	Project	Update	Cat.	Type	Year 1	Year 2	Class 1	Class 2	Class 3	Class 4	Class 5	Total
HOLMAN	Road construction			LCP	1987	1991			2000			2000
HOLMAN	Office/warehouse complex			LCP	1987	1991		500	900			1400
HOLMAN	Staff housing			LCP	1987	1991	50	475	1100			1625
HOLMAN	Arena/curling rink			LCP	1987	1991	100	275	1000			1375
HOLMAN	Miscellaneous			LCP	1987	1991		500	1000		400	1900
LCP Total							150	1750	6000	0	400	8300
HOLMAN Total							150	25550	86000	14000	600	126300

Granular Resource Requirements - Inuvialuit Lands

1991 FORECAST

REGION	Project	Update	Cat.	Type	Year 1	Year 2	Class 1	Class 2	Class 3	Class 4	Class 5	Total
INUVIK	Airfield Maintenance	1990	Public	M	1992	1996					10000	10000
INUVIK	Airfield Maintenance	1990	Public	M	1997	2001					12000	12000
INUVIK	Airfield Maintenance	1990	Public	M	2002	2006					12000	12000
INUVIK	FOL (Forward Operating Location)	1990	PUBLIC	M	1987	1991			300000			300000
INUVIK	Road/General Maintenance	1990	Public	M	1990	1999			218000			218000
INUVIK	Road/General Maintenance		Public	M	2002	2006			20000			20000
INUVIK	Yard Maintenance		Other	M	1987	1991			750			750
INUVIK	Yard Maintenance	1990	Other	M	1992	1996			750			750
INUVIK	Yard Maintenance		Other	M	1997	2001			750			750
INUVIK	Yard Maintenance		Other	M	2002	2006			750			750
M Total							0	0	541000	0	34000	575000

Granular Resource Requirements - Inuvialuit Lands

1991 FORECAST

REGION	Project	Update	Cat.	Type	Year 1	Year 2	Class 1	Class 2	Class 3	Class 4	Class 5	Total
INUVIK	Yard Development		Other	LCP	1987	1991			1530		153	1683
INUVIK	Hangar		Public	LCP	1987	1991	100	600				700
INUVIK	Highway Inuvik to Airport	1990	Public	LCP	1987	1991					100000	100000
INUVIK	Recreation Centre	1990	Public	LCP	1990	1999			5000			5000
INUVIK	Visitor's Centre	1990	Public	LCP	1990	1999			13900			13900
INUVIK	Department Store	1990	Public	LCP	1990	1999			2350			2350
INUVIK	Microwave tower and Access Road		Public	LCP	1990	1999			56000			56000
INUVIK	Subdivision Lot Fill and Park	1990	Public	LCP	1990	1999			45000			45000
INUVIK	Navy Road Expansion	1990	Public	LCP	1990	1999		5250	6000			11250
INUVIK	Road Paving	1990	Public	LCP	1990	1999	29000	15400	40000			84400
INUVIK	Sidewalks	1990	Public	LCP	1990	1999	9400					9400
INUVIK	Lot Development	1990	Public	LCP	1990	1999			18100			18100
INUVIK	Private Business/Homeowners	1990	Other	LCP	1990	1999		105000				105000
INUVIK	Public Projects	1990	Public	LCP	2000	2009	96000	51600	1273000			1420600
LCP Total							134500	177850	1460880	0	100153	1873383

Granular Resource Requirements - Inuvialuit Lands

1991 FORECAST

REGION	Project	Update	Cat.	Type	Year 1	Year 2	Class 1	Class 2	Class 3	Class 4	Class 5	Total
INUVIK	Winter Drilling (Shell) (speculative)	1990	Other	CPS	1987	1991			500			500
INUVIK	Base Camp and Yard Development (She	1990	Other	CPS	1992	1996			3000			3000
INUVIK	Onshore Oil & Gas Exploration (Shell) (s	1990	Other	CPS	1992	1996			5000			5000
INUVIK	Onshore Oil & Gas Production (Esso) (1990	Other	CPS	1992	1996		1192706				1192706
INUVIK	Offshore Oil & Gas Production (Gulf) (sp	1990	Other	CPS	1992	1996					80000	80000
INUVIK	Polar Gas Pipeline	1990	Other	CPS	1995	1998	948		793287			794235
INUVIK	Mackenzie Valley Pipeline (Gulf) (specul	1990	Other	CPS	1995	1998	15000	53000	867000			935000
INUVIK	Onshore Oil & Gas Production (Shell) (s	1990	Other	CPS	1997	2001			25000			25000
INUVIK	Inuvik-Tuktoyaktuk Highway (speculative	1990	Public	CPS	1999	2001	5000				2800000	2805000
INUVIK	Offshore Oil: Erosion Protection (speculative)		Other	CPS	1997	2001					900000	900000
INUVIK	Parsons Lake Gas Plant (speculative)	1990	Other	CPS	1997	2001		532500	1242500			1775000
INUVIK	Niglintak Field Development (Shell) (spe	1990	Other	CPS	1997	2001		20000	230000			250000
INUVIK	Inuvik-Tuktoyaktuk Highway (speculative)		Public	CPS	2002	2006		1700000				1700000
INUVIK	Onshore Gas Production (Esso)(specula	1990	Other	CPS	2002	2006		238541			298177	536718
INUVIK	Onshore Oil & Gas Production (Shell)(sp	1990	Other	CPS	2002	2006			25000			25000
INUVIK	Inuvik-Tuktoyaktuk Highway (speculative)		Public	CPS	2007	2011		100000				100000
INUVIK	Onshore Oil & Gas Production (Esso)(sp	1990	Other	CPS	2007	2011					1467946	1467946
INUVIK	Inuvik-Tuktoyaktuk Highway (speculative)		Public	CPS	2012	2016		100000				100000
INUVIK	Onshore Oil Production (Esso) (speculati	1990	Other	CPS	2012	2016					376161	376161
CPS Total							20948	3936747	3191287	0	5922284	13071266
INUVIK Total							155448	4114597	5193167	0	6056437	15519649

Granular Resource Requirements - Inuvialuit Lands

1991 FORECAST

REGION	Project	Update	Cat.	Type	Year 1	Year 2	Class 1	Class 2	Class 3	Class 4	Class 5	Total
PAULATUK	Airfield maintenance			M	1992	2006		6000				6000
PAULATUK	Road & gen maintenance			M	1987	2006			80000			80000
M Total							0	6000	80000	0	0	86000

Granular Resource Requirements - Inuvialuit Lands

1991 FORECAST

REGION	Project	Update	Cat.	Type	Year 1	Year 2	Class 1	Class 2	Class 3	Class 4	Class 5	Total
PAULATUK	New airstrip			LCP	1987	1991		10000	250000			260000
PAULATUK	Sewage/solid waste improvement			LCP	1987	1991				9000		9000
PAULATUK	Land development			LCP	1987	1991		2400	5900		100	8400
PAULATUK	New school			LCP	1987	1991	700	600	100			1400
PAULATUK	Water supply improvement			LCP	1987	1991		4000		6000		10000
PAULATUK	Miscellaneous			LCP	1987	1991	10	300	1000			1310
LCP Total							710	17300	257000	15000	100	290110
PAULATUK Total							710	23300	337000	15000	100	376110

Granular Resource Requirements - Inuvialuit Lands

1991 FORECAST

REGION	Project	Update	Cat.	Type	Year 1	Year 2	Class 1	Class 2	Class 3	Class 4	Class 5	Total
SACHS HARBOU	Airfield maintenance			M	1987	2006		20000				20000
SACHS HARBOU	Road & gen maintenance			M	1987	2006			80000			80000
				M Total			0	20000	80000	0	0	100000

Granular Resource Requirements - Inuvialuit Lands

1991 FORECAST

REGION	Project	Update	Cat.	Type	Year 1	Year 2	Class 1	Class 2	Class 3	Class 4	Class 5	Total
SACHS HARBOU	Sewage/solid waste improvement			LCP	1987	1991				9000		9000
SACHS HARBOU	Tank farm expansion			LCP	1987	1991		10000	6500			16500
SACHS HARBOU	Office/warehouse complex			LCP	1987	1991		500	900			1400
SACHS HARBOU	Community gym expansion			LCP	1987	1991		500	800			1300
SACHS HARBOU	Arena (1987 construction)			LCP	1987	1991		200	600			800
SACHS HARBOU	Miscellaneous			LCP	1987	1996	60	200	550	350		1160
				LCP Total			60	11400	9350	9350	0	30160
SACHS HARBOUR Total							60	31400	89350	9350	0	130160

Granular Resource Requirements - Inuvialuit Lands

1991 FORECAST

REGION	Project	Update	Cat.	Type	Year 1	Year 2	Class 1	Class 2	Class 3	Class 4	Class 5	Total
TUKTOYAKTUK	Airfield Maintenance		Public	M	1992	1996		5000				5000
TUKTOYAKTUK	Airfield Maintenance		Public	M	1997	2001		5000				5000
TUKTOYAKTUK	Airfield Maintenance		Public	M	2002	2006		5000				5000
TUKTOYAKTUK	General Maintenance		Public	M	1987	1991			20000			20000
TUKTOYAKTUK	General Maintenance		Public	M	1992	1996			20000			20000
TUKTOYAKTUK	General Maintenance		Public	M	1997	2001			20000			20000
TUKTOYAKTUK	General Maintenance		Public	M	2002	2006			20000			20000
TUKTOYAKTUK	Road Maintenance		Public	M	1987	1991	5000					5000
TUKTOYAKTUK	Road Maintenance		Public	M	1992	1996	5000					5000
TUKTOYAKTUK	Road Maintenance		Public	M	1997	2001	5000					5000
TUKTOYAKTUK	Road Maintenance		Public	M	2002	2006	5000					5000
TUKTOYAKTUK	Yard Maintenance	1990	Other	M	1990	1991			4739			4739
TUKTOYAKTUK	Yard Maintenance		Other	M	1992	1996			400			400
TUKTOYAKTUK	Yard Maintenance		Other	M	1997	2001			400			400
TUKTOYAKTUK	Yard Maintenance		Other	M	2002	2006			400			400
M Total							20000	15000	85939	0	0	120939

Granular Resource Requirements - Inuvialuit Lands

1991 FORECAST

REGION	Project	Update	Cat.	Type	Year 1	Year 2	Class 1	Class 2	Class 3	Class 4	Class 5	Total
TUKTOYAKTUK	Curling Rink		Public	LCP	1987	1991	100	100	1000			1200
TUKTOYAKTUK	Garage		Public	LCP	1987	1991	50	250	600			900
TUKTOYAKTUK	Garage Workshop		Public	LCP	1987	1991			40			40
TUKTOYAKTUK	Lot Development		Public	LCP	1987	1991			500			500
TUKTOYAKTUK	Nursing Station		Public	LCP	1987	1991			300			300
TUKTOYAKTUK	Primary School		Public	LCP	1987	1991	200	100	400			700
TUKTOYAKTUK	Shore Protection		Public	LCP	1987	1991		60000				60000
TUKTOYAKTUK	Staff Housing		Public	LCP	1987	1991	50	1350	2800			4200
TUKTOYAKTUK	Yard Development		Other	LCP	1987	1991		500	1000			1500
TUKTOYAKTUK	Erosion Control		Public	LCP	1992	1996					20000	20000
TUKTOYAKTUK	Land Development		Public	LCP	1992	1996				20000		20000
TUKTOYAKTUK	Land Development		Public	LCP	1992	1996	5000					5000
TUKTOYAKTUK	Road Construction		Public	LCP	1992	1996	5000	60000				65000
TUKTOYAKTUK	Solid Waste Site		Public	LCP	1992	1996				20000		20000
LCP Total							10400	122300	6640	40000	20000	199340

Granular Resource Requirements - Inuvialuit Lands

1991 FORECAST

REGION	Project	Update	Cat.	Type	Year 1	Year 2	Class 1	Class 2	Class 3	Class 4	Class 5	Total
TUKTOYAKTUK	Gas Well/Pipeline and Site Develop. (spec.)		Inuvialuit	CPS	1987	1991			14100			14100
TUKTOYAKTUK	Airport Expansion (spec.)		Public	CPS	1992	1996		58100	1491000			1549100
TUKTOYAKTUK	Onshore Gas Production (spec.)		Other	CPS	1992	1996		680000				680000
TUKTOYAKTUK	Pads and Roads (spec.)		Other	CPS	1992	1996		1176000				1176000
TUKTOYAKTUK	Inuvik-Tuktoyaktuk Highway		Public	CPS	1997	2001			1700000			1700000
TUKTOYAKTUK	Onshore Gas Production (spec.)		Other	CPS	1997	2001		700000				700000
TUKTOYAKTUK	Onshore Oil Production (spec.)		Other	CPS	1997	2001		1200000				1200000
TUKTOYAKTUK	Onshore Oil and Gas Production (Esso)(1990	Other	CPS	1997	2001		802783				802783
TUKTOYAKTUK	Inuvik-Tuktoyaktuk Highway (spec.)		Public	CPS	2002	2006			1400000			1400000
TUKTOYAKTUK	Onshore Oil Production (Esso)(spec.)	1990	Other	CPS	2002	2006		688100				688100
TUKTOYAKTUK	Inuvik-Tuktoyaktuk Highway		Public	CPS	2007	2011			100000			100000
TUKTOYAKTUK	Inuvik-Tuktoyaktuk Highway		Public	CPS	2012	2016			100000			100000
CPS Total							0	5304983	4805100	0	0	10110083
TUKTOYAKTUK Total							30400	5442283	4897679	40000	20000	10430362
Grand Total							187028	9641955	10765646	88850	6120537	26804016

Appendix C

Granular Usage - 1985 to 1995

[illegible]

Appendix D

1995 Granular Demand Forecast

Granular Resource Requirements - Inuvialuit Lands

1995 FORECAST												
REGION	Project	Update	Cat.	Type	Year 1	Year 2	Class 1	Class 2	Class 3	Class 4	Class 5	Total
AKLAVIK	Airfield Maintenance		Public	M	1985	1994					2300	2300
AKLAVIK	Airfield Maintenance		Public	M	1995	2000					0	0
AKLAVIK	Airfield Maintenance		Public	M	2001	2015					9000	9000
AKLAVIK	Road/General Maintenance		Public	M	1985	1994			0			0
AKLAVIK	Road/General Maintenance		Public	M	1995	2000			2400			2400
AKLAVIK	Road/General Maintenance		Public	M	2001	2015			7200			7200
				M Total			0	0	9600	0	11300	20900
AKLAVIK	Misc. Public Projects		Public	LCP	1985	1994			0			0
AKLAVIK	Residential Land Development		Public	LCP	1995	2000		2000		4600	0	6600
AKLAVIK	Drainage Improvements		Public	LCP	1995	2000				1800		1800
AKLAVIK	Misc. Public Projects		Public	LCP	2001	2015			30000			30000
				LCP Total			0	2000	30000	6400	0	38400
AKLAVIK Total							0	2000	39600	6400	11300	59300

Granular Resource Requirements - Inuvialuit Lands

1995 FORECAST												
REGION	Project	Update	Cat.	Type	Year 1	Year 2	Class 1	Class 2	Class 3	Class 4	Class 5	Total
HOLMAN	Airfield maintenance			M	1985	1994					0	0
HOLMAN	Airfield maintenance			M	1995	2000					0	0
HOLMAN	Airfield maintenance			M	2001	2015					15000	15000
HOLMAN	Road & gen maintenance			M	1985	1994			0			0
HOLMAN	Road & gen maintenance			M	1995	2000			1875			1875
HOLMAN	Road & gen maintenance			M	2001	2015			7500			7500
				M Total			0	0	9375	0	15000	24375
HOLMAN	Road construction			LCP	1985	1994			0			0
HOLMAN	Residential Land Development			LCP	1995	2000		700		1300		2000
HOLMAN	Industrial Improvement			LCP	1995	2000		50		100		150
HOLMAN	Community Improvement			LCP	1995	2000		300		700		1000
HOLMAN	Misc. Public Projects			LCP	2001	2015		1000	1000	1000	2000	5000
				LCP Total			0	2050	1000	3100	2000	8150
HOLMAN Total							0	2050	10375	3100	17000	32525

Granular Resource Requirements - Inuvialuit Lands

1995 FORECAST													
REGION	Project	Update	Cat.	Type	Year 1	Year 2	Class 1	Class 2	Class 3	Class 4	Class 5	Total	
INUVIK	Airfield Maintenance	1990	Public	M	1985	1994			0			0	0
INUVIK	Airfield Maintenance	1990	Public	M	1995	2000			0			0	0
INUVIK	Airfield Maintenance	1990	Public	M	2001	2015			0			0	0
INUVIK	FOL (Forward Operating Location)	1990	Public	M	1987	1991			0			0	0
INUVIK	Road/General Maintenance	1990	Public	M	1985	1994			0			0	0
INUVIK	Road/General Maintenance		Public	M	1995	2000			0			0	0
INUVIK	Road/General Maintenance		Public	M	2001	2015			0			0	0
INUVIK	Yard Maintenance	1990	Other	M	1985	1994			0			0	0
INUVIK	Yard Maintenance		Other	M	1995	2000			0			0	0
INUVIK	Yard Maintenance		Other	M	2001	2015			0			0	0
M Total							0	0	0	0	0	0	0
INUVIK	Public Projects		Public	LCP	1985	1994			21840			21840	21840
INUVIK	Public Projects	1990	Public	LCP	1995	2000			8000			8000	8000
INUVIK	Public Projects	1990	Public	LCP	2001	2015			24000			24000	24000
LCP Total							0	0	29840	0	0	53840	53840
INUVIK	Private Projects	1990	Other	CPS	1985	1994			223531			223531	223531
INUVIK	Exploration Drilling	1990	Other	CPS	1996	2000			91350			91350	91350
INUVIK	Exploration Drilling	1990	Other	CPS	2001	2005			106575			106575	106575
INUVIK	Exploration Drilling	1990	Other	CPS	2006	2010			167475			167475	167475
INUVIK	Exploration Drilling	1990	Other	CPS	2011	2015			197925			197925	197925
INUVIK	Town Gas Supply	1990	Other	CPS	1998	2000			40000			40000	40000
INUVIK	200MBbl Pool Development	1990	Other	CPS	2005	2010			539197			539197	539197
INUVIK	Pipeline to Norman Wells	1990	Other	CPS	2007	2009			10000			10000	10000
INUVIK	Onshore Gas Development	1990	Public	CPS	2009	2016			2448409			2448409	2448409
CPS Total							0	0	3822462	0	0	3822462	3822462
INUVIK Total							0	0	3876302	0	0	3876302	3876302

Granular Resource Requirements - Inuvialuit Lands

1995 FORECAST													
REGION	Project	Update	Cat.	Type	Year 1	Year 2	Class 1	Class 2	Class 3	Class 4	Class 5	Total	
PAULATUK	Airfield maintenance			M	1985	1994					0	0	
PAULATUK	Airfield maintenance			M	1995	2000					0	0	
PAULATUK	Airfield maintenance			M	2001	2015					15000	15000	
PAULATUK	Road & gen maintenance			M	1985	1994			2290			2290	
PAULATUK	Road & gen maintenance			M	1995	2000						0	
PAULATUK	Road & gen maintenance			M	2001	2015			6900			6900	
				M Total			0	0	9190	0	15000	24190	
PAULATUK	Road Upgrading			LCP	1995	2000			2325			2325	
PAULATUK	Drainage Improvement			LCP	1995	2000			725			725	
PAULATUK	Residential Land Development			LCP	1995	2000		825	1300			2125	
PAULATUK	Department of Defense			LCP	1985	1994			1210			1210	
PAULATUK	Misc. Public Projects			LCP	1985	1994			10600			10600	
PAULATUK	Misc. Public Projects			LCP	1995	2000			0			0	
PAULATUK	Misc. Public Projects			LCP	2001	2015			15000			15000	
				LCP Total			0	825	31160	0	0	31985	
PAULATUK Total							0	825	40350	0	15000	56175	

Granular Resource Requirements - Inuvialuit Lands

1995 FORECAST												
REGION	Project	Update	Cat.	Type	Year 1	Year 2	Class 1	Class 2	Class 3	Class 4	Class 5	Total
SACHS HARBOUR	Airfield maintenance			M	1985	1994		0				0
SACHS HARBOUR	Airfield maintenance			M	1995	2000						0
SACHS HARBOUR	Airfield maintenance			M	2001	2015					15000	15000
SACHS HARBOUR	Road & gen maintenance			M	1985	1994			0			0
SACHS HARBOUR	Road & gen maintenance			M	1995	2000			2375			2375
SACHS HARBOUR	Road & gen maintenance			M	2001	2015			7500			7500
				M Total			0	0	9875	0	15000	24875
SACHS HARBOUR				LCP	1985	1994			9337	500		9837
SACHS HARBOUR	Road Construction			LCP	1995	2000			5825			5825
SACHS HARBOUR	Residential Expansion			LCP	1995	2000			2250			2250
SACHS HARBOUR	Industrial Expansion			LCP	1995	2000			3450			3450
SACHS HARBOUR	Drainage Improvement			LCP	1995	2000			1650			1650
SACHS HARBOUR	Misc. Public Projects			LCP	2001	2015			45000			45000
				LCP Total			0	0	67512	500	0	68012
SACHS HARBOUR	Total						0	0	32387	500	15000	47887

Granular Resource Requirements - Inuvialuit Lands

1995 FORECAST

REGION	Project	Update	Cat.	Type	Year 1	Year 2	Class 1	Class 2	Class 3	Class 4	Class 5	Total
TUKTOYAKTUK	Airfield maintenance		Public	M	1985	1994						0
TUKTOYAKTUK	Airfield maintenance		Public	M	1995	2000						0
TUKTOYAKTUK	Airfield maintenance		Public	M	2001	2015						0
TUKTOYAKTUK	Road & gen maintenance		Public	M	1985	1994						0
TUKTOYAKTUK	Road & gen maintenance		Public	M	1995	2000						0
TUKTOYAKTUK	Road & gen maintenance		Public	M	2001	2015						0
Tuktoyaktuk M Total				M Total			0	0	0	0	0	0
TUKTOYAKTUK	Misc. Public Projects		Public	LCP	1985	1994			108905			108905
TUKTOYAKTUK	Road Construction		Public	LCP	1995	2000			3075			3075
TUKTOYAKTUK	Residential Expansion		Public	LCP	1995	2000			8125			8125
TUKTOYAKTUK	Drainage Improvement		Public	LCP	1995	2000			1550			1550
TUKTOYAKTUK	Misc. Public Projects		Public	LCP	1987	1991			300			300
TUKTOYAKTUK	Misc. Public Projects		Public	LCP	1987	1991			38250			38250
TUKTOYAKTUK	Shore Protection		Public	LCP	1987	1991						0
TUKTOYAKTUK	Staff Housing		Public	LCP	1987	1991						0
TUKTOYAKTUK	Yard Development		Other	LCP	1987	1991						0
TUKTOYAKTUK	Erosion Control		Public	LCP	1992	1996						0
TUKTOYAKTUK	Land Development		Public	LCP	1992	1996						0
TUKTOYAKTUK	Land Development		Public	LCP	1992	1996						0
TUKTOYAKTUK	Road Construction		Public	LCP	1992	1996						0
TUKTOYAKTUK	Solid Waste Site		Public	LCP	1992	1996						0
Tuktoyaktuk LCP Total				LCP Total			0	0	160205	0	0	160205
TUKTOYAKTUK	Private Projects		Inuvial	CPS	1985	1994			64384			64384
TUKTOYAKTUK	Exploration Drilling		Public	CPS	1998	2000			30450			30450
TUKTOYAKTUK	Exploration Drilling		Other	CPS	2001	2005			78125			78125
TUKTOYAKTUK	Exploration Drilling		Other	CPS	2006	2010			91350			91350
TUKTOYAKTUK	Exploration Drilling		Public	CPS	2011	2015			60900			60900
TUKTOYAKTUK	Town Gas Supply		Other	CPS	2001	2003			40000			40000
Tuktoyaktuk CPS Total				CPS Total			0	0	363189	0	0	363189
TUKTOYAKTUK Total							0	0	523394	0	0	523394

Granular Resource Requirements - Inuvialuit Lands

1995 FORECAST												
REGION	Project	Update	Cat.	Type	Year 1	Year 2	Class 1	Class 2	Class 3	Class 4	Class 5	Total
Grand Total							0	4875	4567408	10000	58300	4640583