WORKING PAPER

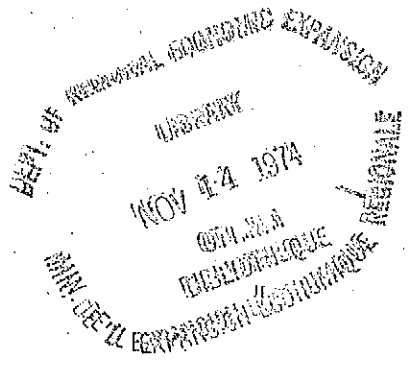
MINING INDUSTRY EMPLOYMENT FORECAST
SASKATCHEWAN
1971 - 1981

ECONOMIC ANALYSIS BRANCH
PLANNING DIVISION

REGIONAL ECONOMIC EXPANSION CANADA
EXPANSION ÉCONOMIQUE RÉGIONALE CANADA

WORKING PAPER

MINING INDUSTRY EMPLOYMENT FORECAST SASKATCHEWAN 1971 - 1981



December 1972

A. Robertson
Natural Resource Studies Section
Economic Analysis Branch

CONTENTS

TABLES

FIGURES

SASKATCHEWAN MINING INDUSTRY EMPLOYMENT FORECAST 1971 to 1981

I. FORECAST PROCEDURE

This paper contains employment forecasts for the mining industry in Saskatchewan for the period 1971-81. It is based upon employment forecasts that have been made for each company that was in production in 1970, for companies that have announced their intentions to bring mines into production and for "significant mineral deposits" that may be brought into production. Individual company forecasts are contained in a data bank that has been created in the Economic Analysis Branch. The data bank is used for continuous analysis of the Canadian mining industry.

Data are obtained from a wide range of sources. These include company reports and statements, provincial and federal government reports, personal contacts and press articles. The reliability of the information varies but it can be used with confidence because data problems generally occur in respect of the smaller and less significant companies.

The definition of the mining industry in this report corresponds to that of Statistics Canada as used in Division 4 - Mines (including Milling), Quarries and Oil Wells. Thus, the forecasts can be used in conjunction with data from Statistics Canada.

Employment forecasts are presented in three categories, namely upper, realistic and lower. These reflect a range of employment levels that may occur if different combinations of economic and marketing factors come into play. Aggregate mining industry group employment figures have been derived, and are shown in Tables 3, 4 and 5 as well as in Figure 1.

Each of the major mineral industry groups is briefly reviewed in this report. Forecasts have also been aggregated by Census Division in order to show those areas where mining industry activity is expected to change. These figures are shown in Table 6. Figure 2 shows a map of Census Divisions in Saskatchewan where mining activity occurs.

No specific method has been employed in making the employment forecasts for individual mines. However, a wide range of current historical information has been consulted and used, and those factors of greatest significance have been given their appropriate weighting. Thus, for a very large low grade open pit copper mine, the metal price will be a

critical factor concerning its viability, whereas for a small high grade underground silver mine, the maintenance of adequate ore reserves is frequently the critical factor. The man-year employment forecasts shown here provide one uniform method of presenting the expectations that result from an analysis of each mine.

Seasonal changes of employment in the mineral industry occur frequently. The fluctuations within the year can be substantial. Therefore, all employment figures shown in this report are in terms of man-years of paid employment per year. Thus, due to seasonal fluctuations of the work force, the employment shown in this report will be less than the peak employment experienced during the year.

As in all forecasts, the possiblity of unforeseen events affecting the figures increases over time. For the most part, considerable confidence can be placed in the forecast to 1976 because company intentions are generally indicated and sometimes specified for up to five years in the future. Beyond 1976, the forecasts become increasingly judgemental. Consequently, they should be viewed with caution for this latter period.

In making the forecasts a number of important assumptions have been made. These are listed below:-

(a) That both Federal and Provincial legislation concerning taxation, royalties, land tenure etc. remains constant throughout the forecast period with the exception of already announced changes. These changes have been taken into account.

(b) That the supplies of labour, capital and materials to the industry in terms of price and availability will be adequate throughout the forecast period.

(c) That the markets for minerals will not change dramatically in terms of volume, relative price and location throughout the forecast period, and

(d) That end-use substitution between different minerals or between minerals and other non-mineral products is not great throughout the forecast period.

It should be noted that all forecasts have been made by the same person, and that where possible they have been reviewed by specialists in the minerals sector. By this means, it is to be hoped that large errors have been eliminated and that any bias in the forecasts will be small and consistent.

II. SUMMARY OF MINING INDUSTRY EMPLOYMENT IN SASKATCHEWAN 1971-81

Despite a number of general weaknesses in the mineral economy of Saskatchewan, the province has experienced a sustained growth in mining employment since the early 1960's. It is anticipated that this growth will continue at a diminishing rate through the 1970's. The production of two commodities dominates the Saskatchewan mineral economy. Crude petroleum and potash are most important in terms of value, but in terms of employment, potash dominates with about 3,000 employees out of a provincial total of about 5,200 in 1970.

The employment forecasts indicate that Saskatchewan will enjoy an overall increase in mining industry employment between 1971 and 1981. This could range from only 500 in the least optimistic case to almost 2,200 in the most optimistic instance. The realistic forecast suggests an employment increase of about 1,450. Mining activity occurs in eleven of the eighteen census divisions in the province, but mining employment is significant in only five census divisions, and increased employment is forecast between 1971 and 1981 for each of these census divisions. In the remaining six census divisions, mining employment is forecast to be static through the decade.

Mining Employment in Saskatchewan rose from a total of under 3,000 in 1963 to about 5,200 in 1970, and is forecast to continue to rise to a peak of about 6,600 in 1980.

. . . 6

The increase in employment in the 1960's can be attributed almost entirely to the rapid emergence of potash mining in the province. In the 1970's, the forecast increase of an additional 1,450 jobs will come on a broader front, with only about 650 of those jobs being in the potash mining industry.

A combination of distance from large markets; a land-locked location and low unit value mineral products, has caused continual problems for the Saskatchewan mineral economy. The most readily marketable products, namely oil and natural gas, are not large employers in the mineral sector. The important mineral industry employers in Saskatchewan are potash and metal mines, with uranium mining being the single most important metallic commodity produced.

The potash industry suffers from massive overcapacity at present. Prorationing controls were imposed by the Government of Saskatchewan effective 1st January 1970. In 1970 the Saskatchewan potash industry produced at 45.5 per cent of its total capacity. This restricted production had serious implications for mining employment in Saskatchewan. In the latter part of the decade it is forecast that potash production may reach about 80 per cent of total capacity. The increase in employment that will result from higher potash production

will be proportionately far smaller than the production increase.

Uranium mining at Uranium City has been an important source of mining employment. At present, production is curtailed due to adverse market conditions, but may be expected to recover at the end of the decade. However, a new mine is to open at Rabbit Lake that will create an estimated 500 jobs by 1975. Uranium sales from this new facility have been guaranteed by German interests.

Base metal mining operations in northern Saskatchewan have contributed strongly to mining employment in the region, but the loss of the Anglo Rouyn mine through depletion and the limited future life of the Flin Flon mine will cause considerable local problems. One of the best opportunities for the employment of indigenous people in the northern part of the province lies in the metallic minerals sector. Although this sector is somewhat depressed at present, the potential for future development of the region will largely depend upon the discovery and exploitation of such minerals. To achieve such development, it is necessary to increase the level of exploration activity in the area and thus to increase the chance of discovering commercially exploitable mineral resources.

Table 7 and Figure 3 at the end of this paper have been included to indicate the names of companies involved in mining activity, and the locations of active mines and development prospects in 1970.

III. THE SASKATCHEWAN MINING INDUSTRY IN 1970

In 1970, the value of mineral production in Saskatchewan rose by 13.8 per cent to a total of $392.5 million. Of this, crude petroleum represented over 51 per cent of the value and potash almost 30 per cent. The most significant factor experienced during the year was the stabilization of the potash industry through regulation by the Saskatchewan Government. Potash mining, although contributing only 30 per cent of the value of production, was responsible for over 55 per cent of employment in the mineral sector. The most important mineral commodities produced and their values in 1968, 1969 and 1970 are shown in Table 1 on the following page.

In 1970, the fuels sector contributed 56.0 per cent of the total value of mineral production compared to 60.9 per cent in the previous year despite a small increase in the absolute value of production. The non-metallic sector - mainly comprised of potash - rose to account for 32.2 per cent of the total value of mineral production in 1970 as compared to 23.2 per cent in the previous year. Metallic minerals declined in 1970 to account for 9.5 per cent of the value of mineral production compared to 12.8 per cent in 1969, and the structural sector declined to 2.3 per cent in 1970 from 3.1 per cent of the total value of mineral production in the previous year.

TABLE 1

VALUE OF MAJOR MINERAL COMMODITIES PRODUCED

IN SASKATCHEWAN 1968 TO 1970

Commodities \ Year	1968	1969	1970 (p)
	($ million)		
Petroleum Crude	207	196	201
Potash	65	69	116
Copper	21	19	18
Uranium	13	13	10
Natural Gas	7	7	8
Zinc	8	8	7
Coal	4	4	7
Sodium Sulphate	7	8	6
Cement	7	6	4
Sand and Gravel	5	3	3
Salt	2	2	3

(p): preliminary

Source: Department of Energy, Mines and Resources

TABLE 2

MINING INDUSTRY EMPLOYMENT IN SASKATCHEWAN

1961-1981 *

Year	Past Mining Employment	Forecast Mining Employment
1961	3,667	
1962	2,942	
1963	2,841	
1964	3,162	
1965	3,634	
1966	4,029	
1967	4,498	
1968	4,724	
1969	5,201	
1970	NA	
1971		5,135
1972		5,355
1973		5,655
1974		5,860
1975		6,250
1976		6,265
1977		6,155
1978		6,445
1979		6,575
1980		6,600
1981		6,590

NA - Not Available

* All employment figures are shown in man-years of paid employment

IV. MINING INDUSTRY EMPLOYMENT FORECASTS BY COMMODITY GROUP

In this chapter, the realistic employment forecasts are analysed for each major sector of the mining industry. In Tables 3, 4 and 5, that follow, the upper, realistic and lower forecasts by commodity group are summarized. The tabulations are followed by a series of more detailed descriptions of each mineral commodity group. Table 2 on the previous page shows total past employment and the realistic total forecast of mining employment.

At the start of each commodity group summary, a sub-table is included that indicates the realistic employment forecast for that group and its relative importance as an employer in the mining sector. The sub-tables have been derived by taking the realistic commodity group forecast from Table 4.

TABLE 3

SASKATCHEWAN MINERALS EMPLOYMENT FORECAST *

1971-1981

UPPER ESTIMATE

Commodity Group	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
Metallic minerals	980	980	1,300	1,690	1,930	1,880	1,830	1,780	1,540	1,540	1,540
Non-metallic minerals	3,525	3,730	3,740	3,740	3,740	4,335	4,495	4,515	4,515	4,515	4,515
Structural materials	35	35	35	35	35	35	35	35	35	35	35
Fuels	890	915	950	985	1,010	1,040	1,075	1,105	1,135	1,175	1,200
Other services	75	75	75	100	100	100	100	120	120	120	120
Contingency	-	50	75	100	125	150	175	200	225	250	275
TOTAL	5,505	5,785	6,175	6,650	6,940	7,540	7,710	7,755	7,570	7,635	7,685

* All employment figures are shown in man-years of paid employment

TABLE 4

SASKATCHEWAN MINERALS EMPLOYMENT FORECAST *

1971-1981

REALISTIC ESTIMATE

Commodity Group	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
Metallic Minerals	920	920	1,170	1,320	1,680	1,630	1,500	1,350	1,350	1,350	1,350
Non-metallic minerals	3,310	3,510	3,510	3,515	3,515	3,555	3,555	3,980	4,110	4,140	4,140
Structural materials	30	30	30	30	30	30	30	30	30	30	30
Fuels	825	845	865	895	915	930	940	935	925	910	890
Other services	50	50	50	60	60	60	60	70	70	70	70
Contingency	-	-	30	40	50	60	70	80	90	100	110
TOTAL	5,135	5,355	5,655	5,860	6,250	6,255	6,155	6,445	6,575	6,600	6,590

* All employment figures are shown in man-years of paid employment

TABLE 5

SASKATCHEWAN MINERALS EMPLOYMENT FORECAST *

1971-1981

LOWER ESTIMATE

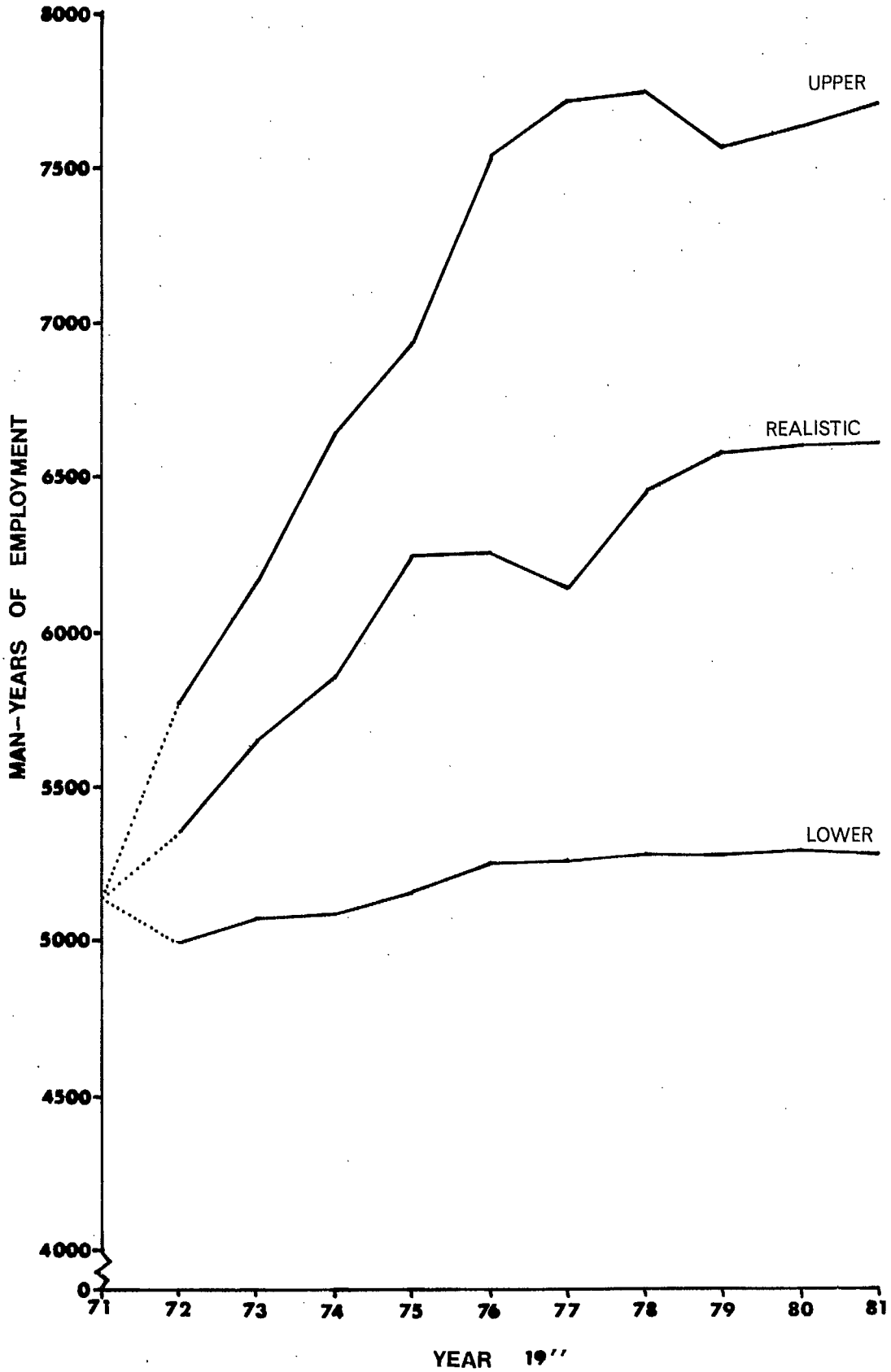
Commodity Group	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
Metallic minerals	850	850	930	910	990	1,040	1,040	1,040	1,040	1,040	1,040
Non-metallic minerals	3,115	3,315	3,315	3,315	3,315	3,325	3,325	3,325	3,325	3,325	3,325
Structural materials	30	30	30	30	30	30	30	30	30	30	30
Fuels	765	775	785	795	795	795	785	800	790	785	765
Other services	25	25	25	25	25	25	35	35	35	35	35
Contingency	-	-	-	20	30	40	50	60	70	80	90
TOTAL	4,785	4,995	5,085	5,095	5,185	5,255	5,265	5,290	5,290	5,295	5,285

* All employment figures are shown in man-years of paid employment

FIGURE 1

SASKATCHEWAN

FORECAST OF MINING INDUSTRY EMPLOYMENT 1971 to 1981



(a) Metallic Minerals

Metallic mineral mining activity in Saskatchewan will be relatively stable in the 1970's.

Realistic Forecast of Employment	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
No. of employees	920	920	1,170	1,320	1,680	1,630	1,500	1,350	1,350	1,350	1,350
% of forecast total	18	17	21	23	27	27	24	21	20	20	20

The above forecast indicates that employment in metal mining will increase to 1976 and then decline to remain stable to the end of the decade*. The metallic sector is comprised uranium mining at Uranium City and Rabbit Lake and base metal mining at La Ronge and in the vicinity of Flin Flon.

Uranium mining started at Uranium City in 1953 and has been continuous to the present time. However, the average employment in 1970 had fallen to 467 and is forecast to further decline before recovering to over 700 in the latter part of the decade. The reduction in employment at Uranium City has been the result of lagging demand for uranium in world markets. Despite this weakness that has led to production cut-backs at Uranium City, a new uranium mine is anticipated to begin production in 1974 at Rabbit Lake. The new mine is a Canadian-German joint venture in which the German interests have guaranteed uranium sales from the property. A work force of about 500 is forecast when the mine is in full production.

* Since this forecast was made, the Anglo Rouyn has closed. Therefore, employment should be produced by about 200 for each year from 1973 to 1976.

In contrast with the bright prospects for uranium mining, present indications suggest that the base metals sector will become increasingly less important for mining employment in the future because of anticipated resource depletion at existing mines. However it is also apparent that base metal mining activity could offer one of the best employment potentials in the remote northern parts of the province. At this time there are few indications that economically exploitable metallic mineral resources are actually known and available for development in northern Saskatchewan, but it is generally recognized that a potential for the discovery of such resources does exist. Therefore, it is important that exploration for base metals should be stimulated and accelerated at the earliest opportunity.

The forecast in this paper do not include any allowance for the development of iron ore mining in Saskatchewan in the seventies. Although there have been proposals to develop deep underground iron ore resources in the province, it is considered that more viable iron ore resources would be developed elsewhere that could satisfy the demands of a proposed steel complex in Saskatchewan at less cost.

. . . 19

(b) Non-Metallic Minerals

The non-metallic sector is the most important source of mineral employment in Saskatchewan, providing almost two thirds of mineral industry employment.

Realistic Forecast of Employment	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
No. of employees	3,310	3,510	3,510	3,515	3,515	3,555	3,555	3,980	4,110	4,140	4,140
% of forecast total	64	65	62	59	56	56	59	62	64	63	63

Employment in this vital sector of the Saskatchewan mineral economy will increase by over 800 between 1971 and 1981. Some 90 per cent of non-metallic mineral mining employment is in the potash industry, and this proportion is forecast to remain fairly constant through the 1970's.

Nine companies operated ten potash mines in Saskatchewan in 1970 which had a total productive capacity of 8.3 million tons of potash (K2O equivalent) but produced 3.5 million tons in the year. This represented an operating rate of 45.5 per cent of total capacity as determined under the Potash Conservation Regulations that are administered by a three-member board under the Saskatchewan Minister of Natural Resources. The quantities and selling price of potash were set by the board, and some evidence of greater stability was seen in the potash industry in 1970 - the first year of regulation. The imposition of regulations was considered necessary in view of

. . . 20

massive excess capacity in the potash industry that had led to severely depressed prices. It is estimated that the Saskatchewan potash producers could be operating at over 80 per cent of their total productive capacity by 1980. This considerable increase in production will not be matched by an equivalent increase in employment in the potash industry, because the labour diseconomies of under - capacity production that presently exist will be greatly reduced.

The potash industry will continue to face serious marketing problems through the 1970's and continued cooperation between government and industry will be necessary to ensure an orderly development of the industry to high production levels in the future. The success in achieving continued stability will be an important factor in determining future employment levels in the potash industry.

Other non-metallic minerals produced in Saskatchewan are sodium sulphate and salt. Seven of the eight sodium sulphate producers were active in 1970. In each case, production and employment is forecast to continue at the same level or above that experienced in 1970. Employment in salt production is also expected to continue at existing or increased levels.

. . . 21

(c) Structural Materials

Employment in the structural materials sector is forecast to remain at present levels during the 1970's.

Realistic Forecast of Employment	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
No. of employees	30	30	30	30	30	30	30	30	30	30	30
% of forecast total	1	1	1	1	-	-	-	-	-	-	-

Activity in this sector of the mineral industry is mainly determined by the demands of the provincial construction industry. The major commodities in this group are, sand, gravel, stone and cement. None of these operations is sufficiently large to be individually included in the company forecasts.

Sand, gravel and stone operations exist at various strategic points in the Province. The majority of employment in structural materials mining is not reported by Statistics Canada under mining activity but appears under construction industry employment. For this reason, it is estimated that perhaps 100 man-years of employment are not reported in the mining sector for Saskatchewan.

(d) Fuels

Total Employment in the fuels sector is forecast to increase during the 1970's, but in terms of relative importance in the mineral sector, it will decrease.

Realistic Forecast of Employment	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
No. of employees	825	845	865	895	915	930	940	935	925	910	890
% of forecast total	16	16	15	15	15	15	15	15	14	14	14

The fuels sector includes the crude petroleum, natural gas and coal industries, but excludes uranium which is contained in the metallic sector.

Fuels contributed 56 per cent of the total value of mineral production in Saskatchewan in 1970, but were responsible for only 15 per cent of mineral industry employment in the province. It is forecast that employment in the highly productive crude petroleum and natural gas industries will remain relatively stable through the decade. The forecast indicates that the level of employment will peak after the middle of the decade and then fall slightly as the Saskatchewan oil and gas industry begins to decline. Already, oil exploration activity has fallen off, and no important oil discoveries have been made in the province for some years. Natural gas

exploration has recently increased, but the higher level of activity may not be maintained. As a result of decreased exploration activity and therefore reduced discoveries of new reserves, the crude petroleum and natural gas industries are forecast to begin a long and gradual period of decline that will be reflected in slowly decreasing employment.

On the other hand, the coal producers in Saskatchewan are forecast to increase production in the 1970's as the demand for electricity increases. Most Saskatchewan coal is used in thermal generating stations. The increase in demand will be reflected in an employment increase of about 20 per cent above present levels.

(e) Other Mineral Industry Activity

Realistic Forecast of Employment	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
No. of employees	50	50	80	100	110	120	130	150	160	170	180
% of forecast total	1	1	1	2	2	2	2	2	2	3	3

This sector is composed of the "Other Services" and the "Contingency" groups. The other services to the mineral industry include items such as contract drilling, but this grouping is very small. The contingency grouping is intended to account for developments that cannot be specifically forecast, and yet can be anticipated to occur in the Province. Any increase in the "Other Services" group is accounted for in the "Contingency" group.

V. MINING INDUSTRY EMPLOYMENT FORECASTS BY CENSUS DIVISION

While it is useful to have employment forecasts on a provincial or on a commodity group basis, many planning functions require a more detailed disaggregation of mining industry employment in order to evaluate the impact of that employment on a specific area. Figure 2 shows the Census Divisions in Saskatchewan. A breakdown of the upper, realistic and lower employment forecasts by Census Division is shown in Table 6. Figure 2 also shows the realistic forecast of mining industry employment in diagrammatic form. It is not possible to disaggregate some of the industry sectors such as sand and gravel that are characterized by a number of small operators. These have been included in the "Other" grouping , which contains "Other Services" and the "Contingency".

It can be seen from Figure 2 that mining industry employment is forecast to increase in the five census divisions that presently experience the highest mining employment levels. Census Divisions 5, 6 and 11 are dependent upon potash mining, whilst metallic mining is centred on Census Division 18 and coal mining is in Census Division 1. Crude petroleum and natural gas based employment is not shown in Figure 2 because no acceptable distribution of employment can be made at this time. Employment in these industries occurs in Census Divisions 1, 2, 4, 8 and 13.

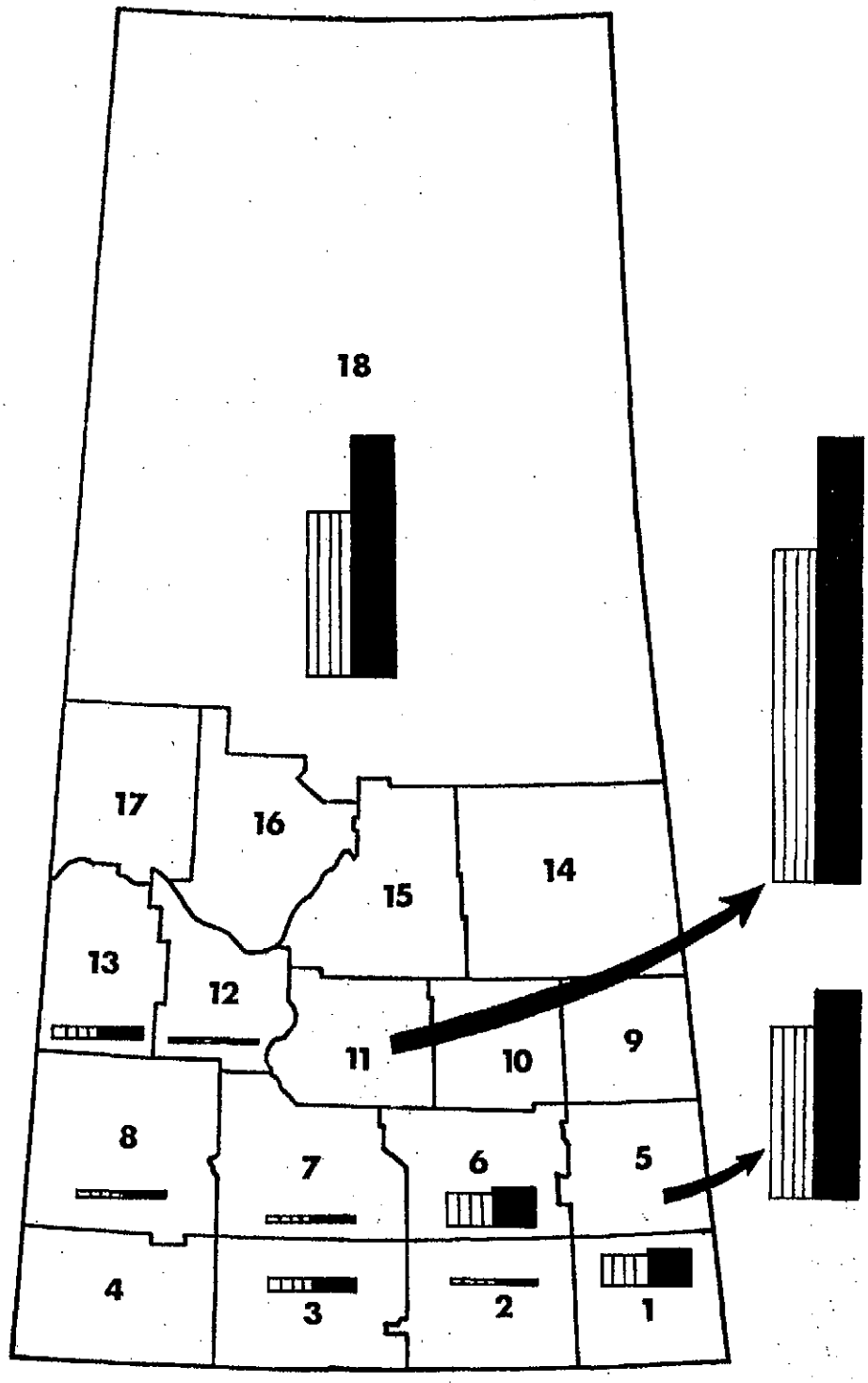
. . . 26

A most significant feature of the Saskatchewan mineral economy as projected in the employment forecasts is that mining industry employment will increase or, at worst, remain constant to 1981 in every Census Division in which activity took place in 1970. However, this outward picture of stability masks a most serious problem for the province.

Census Division 18 covers almost half of Saskatchewan. Mining employment is forecast to increase in the decade in this large region. However, with mines closing and others opening, a severe dislocation problem may occur. Also, it is in this area that the greatest need for providing employment opportunities for native peoples occurs. Therefore, it is essential that the greatest attention be given to stimulating exploration for minerals and to their orderly exploitation in a manner that will provide maximum local economic benefits.

. . . 27

FIGURE 2



SASKATCHEWAN
MINING EMPLOYMENT
1971 & 1981

TABLE 6

FORECAST PERMANENT MINING INDUSTRY EMPLOYMENT *
IN SASKATCHEWAN 1971-1981
BY CENSUS DIVISION

Census Division	Estimate Class**	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
	U	190	190	200	210	210	215	225	230	235	250	250
01	R	175	175	175	185	185	190	200	205	205	210	210
	L	165	165	165	165	165	165	165	180	180	185	185
	U	30	30	30	30	30	30	30	30	30	30	30
02	R	25	25	25	25	25	25	25	25	25	25	25
	L	20	20	20	20	20	20	20	20	20	20	20
	U	80	80	80	80	80	80	80	80	80	80	80
03	R	70	70	70	70	70	70	70	70	70	70	70
	L	60	60	60	60	60	60	60	60	60	60	60
	U	1,030	1,030	1,030	1,030	1,030	1,220	1,300	1,320	1,320	1,320	1,320
05	R	960	960	960	960	960	990	990	1,080	1,140	1,140	1,140
	L	920	920	920	920	920	920	920	920	920	920	920
	U	210	210	210	210	210	250	250	250	250	250	250
06	R	200	200	200	200	200	200	200	225	225	225	225
	L	190	190	190	190	190	190	190	190	190	190	190
	U	50	50	50	50	50	50	50	50	50	50	50
07	R	45	45	45	45	45	45	45	45	45	45	45
	L	40	40	40	40	40	40	40	40	40	40	40
	U	55	50	60	60	60	65	65	65	65	65	65
08	R	50	40	45	45	45	55	55	55	55	55	55
	L	45	35	35	35	35	45	45	45	45	45	45

(Cont'd)

TABLE 6 (Cont'd)

Census Division	Estimate Class	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
	U	1,950	2,160	2,160	2,160	2,160	2,520	2,600	2,600	2,600	2,600	2,600
11	R	1,860	2,070	2,070	2,070	2,070	2,070	2,070	2,380	2,450	2,480	2,480
	L	1,750	1,960	1,960	1,960	1,960	1,960	1,960	1,960	1,960	1,960	1,960
	U	30	30	30	30	30	30	30	30	30	30	30
12	R	25	25	25	25	25	25	25	25	25	25	25
	L	20	20	20	20	20	20	20	20	20	20	20
	U	90	90	90	90	90	90	90	90	90	90	90
13	R	75	75	75	75	75	75	75	75	75	75	75
	L	70	70	70	70	70	70	70	70	70	70	70
	U	980	980	1,300	1,690	1,930	1,880	1,830	1,780	1,540	1,540	1,540
18	R	920	920	1,170	1,320	1,680	1,630	1,500	1,350	1,350	1,350	1,350
	L	850	850	930	910	990	1,040	1,040	1,040	1,040	1,040	1,040
SUB-	U	4,695	4,900	5,240	5,640	5,880	6,430	6,550	6,525	6,290	6,305	6,305
TOTAL	R	4,405	4,605	4,855	5,020	5,380	5,375	5,255	5,535	5,665	5,700	5,700
	L	4,130	4,330	4,410	4,390	4,470	4,530	4,530	4,545	4,545	4,550	4,550
OTHER ***	U	810	885	935	1,010	1,060	1,110	1,160	1,230	1,280	1,330	1,380
(including	R	730	750	800	840	870	890	900	910	910	900	890
oil and gas)	L	655	665	675	705	715	725	735	745	745	745	735
	U	5,505	5,785	6,175	6,650	6,940	7,540	7,710	7,755	7,570	7,635	7,685
TOTAL	R	5,135	5,355	5,655	5,860	6,250	6,265	6,155	6,445	6,575	6,600	6,590
	L	4,785	4,995	5,085	5,095	5,185	5,255	5,265	5,290	5,290	5,295	5,285

* All employment figures are shown in man-years of paid employment

** The identifying letters U, R and L stand for Upper, Realistic and Lower estimates respectively.

*** The "other" classification shown here contains commodity groups that are province wide and cannot be split by census division. This also contains the "contingency" grouping.

APPENDIX A

Company Names, Locations and Commodities
Produced in Saskatchewan 1970

TABLE 7

COMPANY NAMES, LOCATIONS AND COMMODITIES MINED IN SASKATCHEWAN 1970

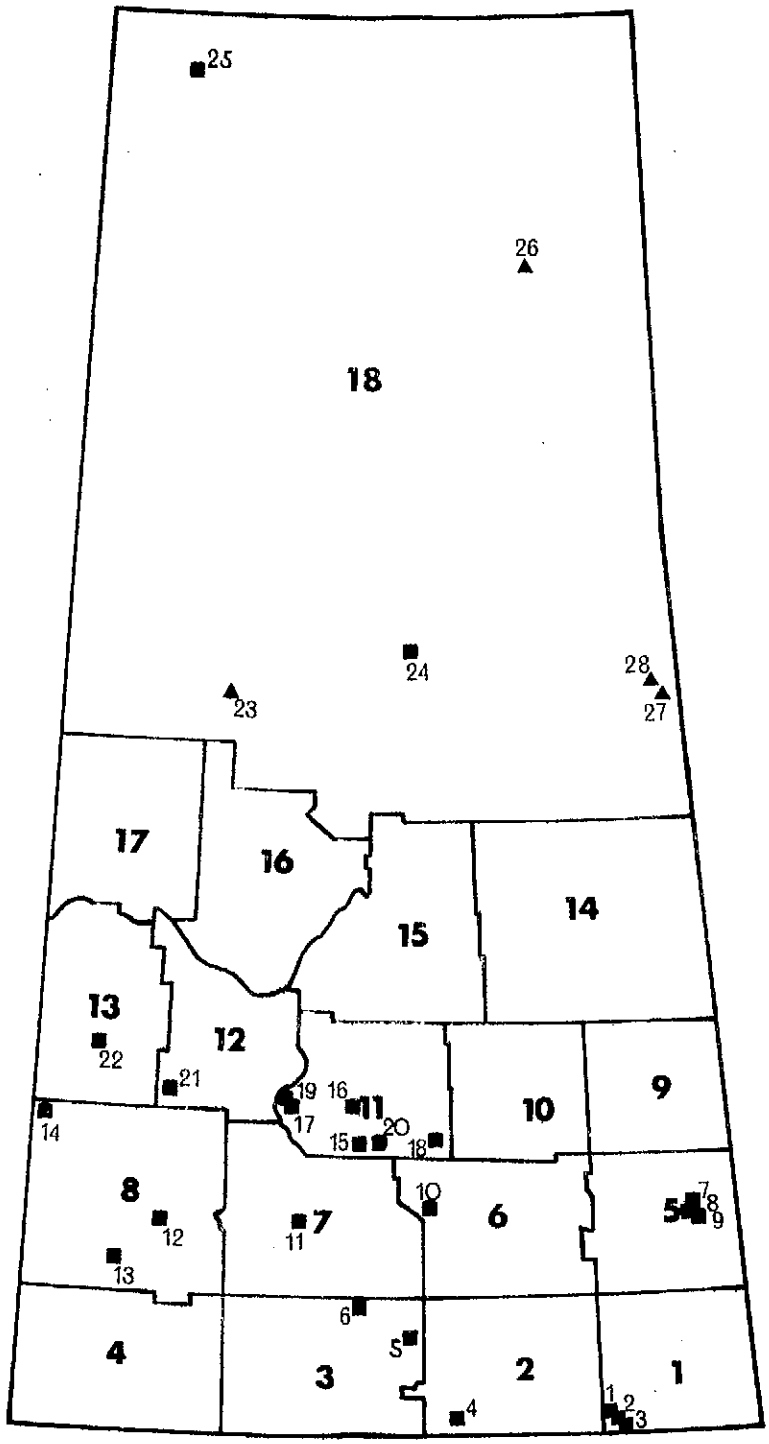
Map Reference	Company Name	Property Name	Mineral(s)	Latitude		Longitude	
				o	'	o	'
(1)	Utility Coals Ltd.	Utility Mine	Coal	49	05	102	55
(2)	Alberta Coal Ltd.	Klimax Mine	Coal	49	04	102	54
(3)	Manitoba & Saskatchewan Co. Ltd.	M and S Mine	Coal	49	07	102	45
(4)	Sybouts Sodium Sulphate Co. Ltd.	Gladmar Mine	Sodium Sulphate	49	04	104	27
(5)	Ormiston Mining & Smelting Co.Ltd.	Ormiston Mine	Sodium Sulphate	49	45	105	24
(6)	Saskatchewan Minerals	Bishopric Mine	Sodium Sulphate	50	02	105	50
(7)	I.M.C. Corp. Ltd.	K-1 Mine	Potash	50	38	102	05
(8)	I.M.C. Corp. Ltd.	K-2 Mine	Potash	50	37	102	04
(9)	Hudson Bay Mining & Smelting Co.Ltd.	Sylvite of Canada	Potash	50	36	102	03
(10)	Kalium Chemicals Ltd.	Kalium Mine	Potash	50	40	105	12
(11)	Saskatchewan Minerals	Chaplin Mine	Sodium Sulphate	50	30	106	45
(12)	Francana Minerals Ltd.	Francana Mine	Sodium Sulphate	50	35	108	25
(13)	Saskatchewan Minerals	Ingebrigt Mine	Sodium Sulphate	50	15	108	55
(14)	Sodium Sulphate Saskatchewan Ltd.	Alsask Mine	Sodium Sulphate	51	22	109	58
(15)	Allan Potash Mines	Allan Mine	Potash	51	52	106	04
(16)	Potash Company of America	P.C.A. Mine	Potash	52	08	106	18
(17)	Duval Corp. of Canada	No. 1 Mine	Potash	52	10	106	48
(18)	Alwinsal Potash of Canada Ltd.	Sarcee Mine	Potash	51	50	105	02

(Cont'd)

TABLE 8 (Cont'd)

Map Reference	Company Name	Property Name	Mineral(s)	Latitude		Longitude	
				o	'	o	'
(19)	Cominco Ltd.	Vanscoy Mine	Potash	52	00	106	58
(20)	Central Canada Potash Ltd.	C.C.P. Mine	Potash	51	56	105	50
(21)	Midwest Chemicals Ltd.	Whiteshore Mine	Sodium Sulphate	52	10	108	15
(22)	Domtar Chemicals Ltd.	Sifto Salt Mine	Salt	52	25	109	10
(23)	Share Mines and Oils Ltd.*	Quandt Property	Copper/Zinc	54	44	102	45
(24)	Anglo Rouyn Mines Ltd.	Anglo Rouyn Mine	Copper/Gold	55	18	105	01
(25)	Eldorado Nuclear Ltd.	Eldorado Mine	Uranium	59	40	108	32
(26)	Gulf Minerals (Canada) Ltd. *	Rabbit Lake Property	Uranium	58	12	103	43
(27)	Hudson Bay Mining & Smelting Co.Ltd.	Flexar Mine	Copper/Zinc	54	41	102	02
(28)	Hudson Bay Mining & Smelting Co.Ltd.	Flin Flon (Sask) Mine	Copper/Zinc	54	46	101	54

FIGURE 3



■ Producer
▲ Potential Producer
16 Mine Reference
9 Census Division

SASKATCHEWAN MINE LOCATIONS