The Meadowlark Group, 1978

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263 pages

Report to the Department of State Lands on the Economic Impact of the Big Sky Mine Expansion

THE MEADOWLARK GROUP
P.O. Box 1050
Helena, Montana
59601

September 16, 1978

Honorable Leo Berry, Jr., Esq.
Commissioner
Montana Department of State Lands
Capitol Station
Helena, MT 59601

Dear Mr. Berry:

On behalf of the Meadowlark Group, I am pleased to submit the Report to the Department of State Lands on the Economic Impact of the Big Sky Mine Expansion. I believe that you will find the report to include an exhaustive examination of the areas of analysis agreed upon in the contract negotiated initially with Mr. Dave Janis and subsequently with Ms. Sandi Johnson. The report is organized in volumes corresponding to the categories of an environmental impact statement as outlined in M.E.P.A., N.E.P.A. and our contract. We believe that this report satisfies our commitment to the Department of State Lands. According to our contract, we are available for questions regarding our analysis and the conclusions we have drawn.

The report contained herein serves to identify the potential socio-economic benefits and adverse effects of the proposed mine expansion, and should facilitate an informed permit decision by the Department of State Lands. Additionally, the report contains information of considerable value to local and state officials regarding implications of and opportunities for mitigating the effects of the proposed mine expansion. Decisions in the private sector should also benefit from the report's analysis of such topics as potential population and economic changes, probable settlement patterns and projected housing demand. The attitudinal research conducted in conjunction with this project represents quality academic research which is likely to be frequently quoted by future energy impact studies in our region. The Meadowlark Group has received numerous requests for copies of this document from local officials, other state agencies and universities. We have not responded to these requests, but have referred requests to the Lands Department. We are very willing to assist groups in interpreting the information contained herein, if you should advise us to do so.

The "Big Sky Mine Project" has been an interesting experience for the Meadowlark Team. The project has given us an opportunity to refine many of the methodologies which we previously developed in our "Pearl Study" as well as to develop some new techniques. The opportunity to do and the subsequent success of the project's attitudinal research was particularly satisfying. It is our belief that Sandi Johnson's conscientious involvement in the project contributed greatly to the project's success. Ms. Johnson has rapidly developed keen insight into the salient issues of socio-economic research. The mutual exchange of information and ideas between Ms. Johnson and the Meadowlark Group has profoundly influenced the quality of this report.

Sincerely,

James Boyer

JAMES BOYER
PROJECT MANAGER

CHAPTER I: Introduction

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I. INTRODUCTION

A. Description of Proposed Action

The Big Sky Mine, operated by the Peabody Coal Company, was opened in 1969 in Rosebud County, Montana. It is located approximately five miles south of Colstrip and ten miles north of the Northern Cheyenne Indian Reservation. Land and coal is leased from the federal government and from the Burlington Northern Railroad. Current production totals over 15 million tons of coal mined.

The Peabody Coal Company proposes to mine approximately 30.9 million tons of coal through 1985. The subbituminous coal deposits which form the Big Sky coal field are members of the Tongue River member of the Fort Union Formation. Peabody proposes to expose and mine two seams of coal, the Rosebud and the McKay, with the Rosebud being the thickest and most valuable coal in central Rosebud County. Total acreage in the permit application area is 1,257.66, and at any one time 168 acres at the mining level will be disturbed.

The new lands to be permitted will enable mining to continue for the next several years at the present rate of production, with the option to increase it in the future. Coal from the mine would be transported by unit train to electric-power generation plants in Minnesota. The present contract for the Big Sky Mine coal is with Minnesota Power and Light and totals 2,300,000 tons per year and may increase. If the proposed expansion is approved, Peabody intends to increase its production to 4,200,000 tons annually by 1981. Expansion of the mining operation would create 32 additional jobs within Rosebud County.

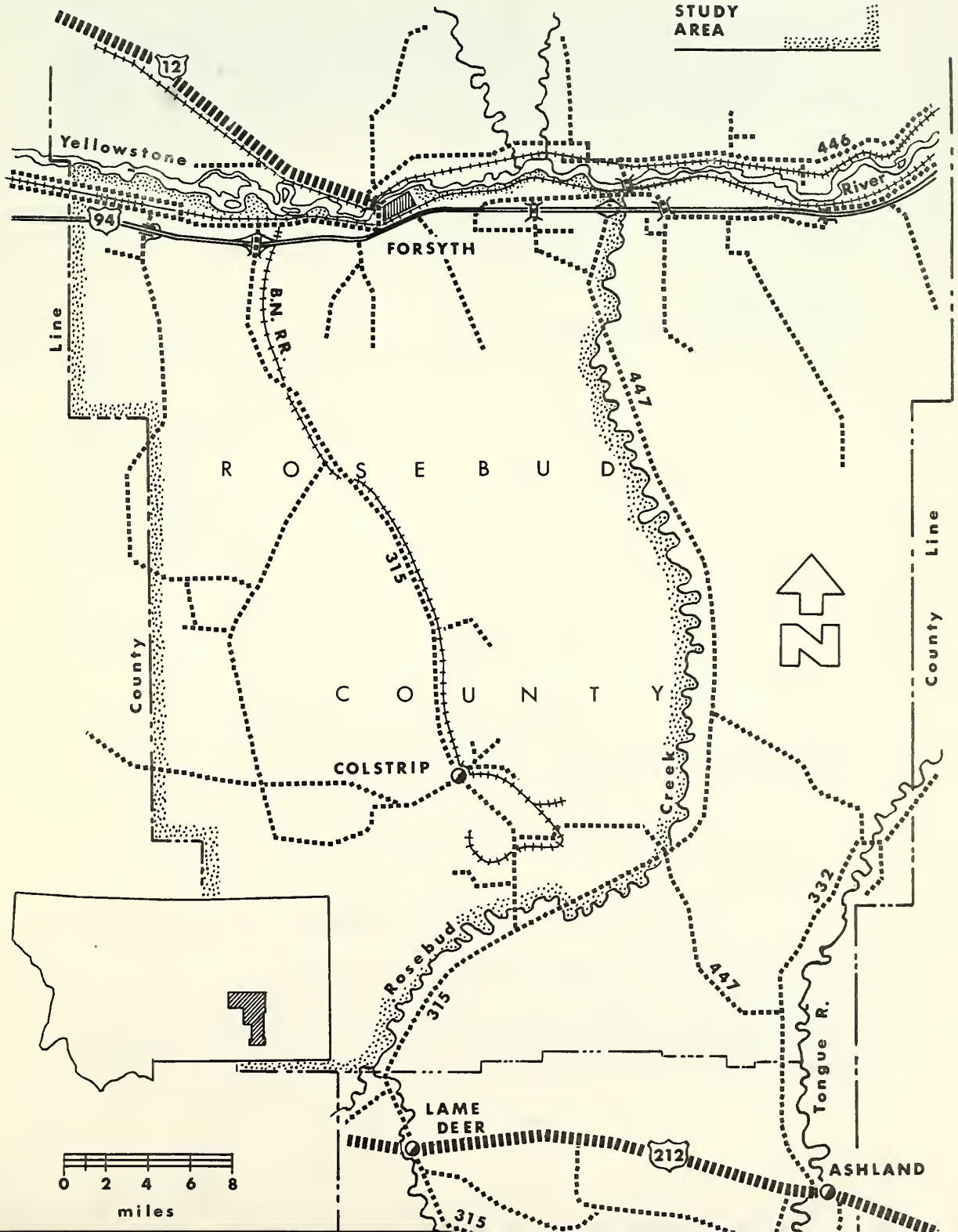
B. Study Area Defined

The socio-economic effects of an expansion of the Big Sky Mine can be expected to be similar to the patterns occurring as a result of its initial operation in Rosebud County. The one major change which has occurred since the early 1970s has been the evolution of Colstrip into a substantial community. Colstrip's development is likely to cause impactive effects nearer the mine site.

In defining the potential sphere of impact of the mine expansion, officials from Forsyth, Colstrip, Rosebud County and the Northern Cheyenne Reservation were interviewed; the settlement patterns of current Peabody employes were analyzed; current Peabody employes were surveyed as to settlement preferences; and changes in traffic patterns in the county occurring since 1970 were analyzed in order to further identify emerging patterns of settlement and human activity. The map (page 2) displays the primary impact area of the Big Sky Mine expansion. The area lies completely in Rosebud County. It is generally bounded on the north by the Yellowstone River, on the east by Rosebud Creek, on the south by the Northern Cheyenne Reservation and on the west by county's western boarder line. Some impacts are likely to occur outside of this area; however, these effects are expected to be relatively minor.

MAP OF SOCIO-ECONOMIC IMPACT AREA.

ROSEBUD CO., MONTANA.



C. Scenarios Defined

The succeeding impact analysis utilizes the Coal Town II economic impact simulation model in order to trace the effects of alternative coal mining scenarios throughout the economy of the local impact area. As with all mathematical computer models, Coal Town II requires explicit input data in order to quanitify impacts. Table I-C-1 depicts the five scenarios specified by the Department of State Lands for use in this impact evaluation.

Table I-C-1

Description of Coal Development Scenarios
Simulated with the Coal Town II
Economic Impact Simulation Model

	Run Number[1]	Peabody[2]	Western Energy[3]	Montana Power Colstrip Units
Peabody Constant Scenario	Run 1	Constant	A,B,E	1,2
Peabody Only Expansion Scenario	Run 2	Approval	A,B,E,	1,2
Peabody-WeCo. Expansion Scenario	Run 3	Approval	A,B,C,D,E	1,2
Peabody-WeCo.-MPC Expansion Scenario	Run 4	Approval	A,B,C,D,E	1,2,3,4
Base Scenario: Peabody Denial	Run 5	No Permit	A,B,E	1,2

1/ The order in which scenarios were run through the Coal Town II model and in which they appear in the Model output.

2/ Constant holds production at the current level of 2.4 million tons per year; approved would permit an expansion to 4.2 million tons per year; denial would have the mine cease all production.

3/ Letters refer to various permit areas of Western Energy's Colstrip mining operation.

Table I-C-2 expresses the five scenarios in terms of coal production and primary coal-based employment for key years from 1975 to 1990.

To simplify the exposition of impact analyses, the report concentrates on the years 1978, 1980, 1985 and 1990. The full simulations by year from the Coal Town II analysis are available in the appendix. For purposes of analysis it is essential to define the levels of development associated with each scenario, and also to specify levels of development which might be expected to occur in the absence of proposed actions. It is useful to compare

the levels of impact expected to occur both with and without approval.

Table I-C-2

Coal Production and Primary Coal-Based Employment,
Peabody Mine Development Scenarios, Key Years, 1975-1990

Scenario:	1975	1978	1980	1985	1990
1. Peabody Constant					
Tonnage	11.3	12.5	16.4	7.1	2.3
Employment	472	688	618	453	282
2. Peabody Only Expansion					
Tonnage		12.5	17.3	9.0	4.2
Employment		688	636	485	314
3. Peabody-WeCo. Expansion					
Tonnage		12.5	17.6	18.5	22.0
Employment		688	711	822	822
4. Peabody-WeCo-MPC Expansion					
Tonnage		12.5	17.6	18.5	22.0
Employment		999	2605	1072	1072
5. Base: Peabody Denial					
Tonnage		12.5	14.1	4.8	0
Employment		688	536	371	200

Coal Town II is a computer model which simulates a local area's economic base, labor requirements and supply, employment, population, migration, wages and local government expenditures and revenues, all on the basis of forecasted mining in the impact region. The model is the latest step in the evolution of more powerful tools for the economists' use in quantifying possible effects of coal development. Although the model was not developed for this particular assessment, it was deemed appropriate for this application by the Department of State Lands. The Coal Town II output has been used as a primary analytical source in this assessment, including population totals which were used to control the output of the components of population model reported in the population analysis. The research team did, however, perform substantial primary field research in the impact area, and, where deemed appropriate, developed material which clarifies, expands, or corrects Coal Town II results.

There is one weakness of the Coal Town II model which was so significant in quantifying impacts that the research team chose to adjust the output. Central to the model is its handling of the relationship between basic and ancillary employment. This surrounds the concept conventionally known as the "employment multiplier," although the model arrives at estimated ancillary employment without using a multiplier. The model expresses its estimation of ancillary employment as a stochastic equation (determined by a regression analysis) as a function of ancillary employment in the preceding year, the economic base, the economic base of the preceding year, wages,

town size and other variables relating to another trade center in the vicinity. Two things are pertinent about this method of handling ancillary employment: first, the entire response to basic employment occurs in the same time period. This rapid adjustment portrayed by the model can result in a wide fluctuation of responses to an initially sizeable change in basic employment. The analysts who developed Coal Town II were aware of this feature of the model, but were not in possession of sufficient data evidencing a different pattern of adjustment. The primary field research carried out by the Meadowlark team, however, provided direct evidence that the ancillary employment in the region was not being generated immediately in response to changes in basic employment, as the model suggests. Therefore, it was deemed necessary by the team to adjust the Coal Town II results to reflect that at the present and in the immediately foreseeable future, the local economy of Rosebud County has not in fact fully responded to the changes experienced in basic employment. Second, in the absence of any convincing evidence that the ancillary employment would not catch up at some time in the future, the team chose to use the actual Coal Town II output results for the years 1985 and 1990. The 1978 and 1980 results were adjusted to reflect the results of on-site field research.

The findings of the field research which support the adjustment of the Coal Town II results are discussed in the economy and population sections of Chapter II.

CHAPTER II: Existing Environment

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II: EXISTING ENVIRONMENT

A. Population

1. General

Although primarily an agricultural area, Rosebud County is nevertheless one of the most complex rural counties in Montana. The population is by no means homogeneous or stable. The existence of the Northern Cheyenne Reservation provides for ethnic diversity, and the recent coal related in-migration has created life-style diversity. The potential impact of projected population growth must be considered within these parameters. To this end, the following demographic description shows historical and contemporary characteristics of the county population.

2. Historical Trends

Rosebud County, like most of Montana, experienced rapid population growth between the time of statehood and the early 1920s. This growth was caused mainly by heavy in-migration of people seeking employment and opportunity in extractive industries, agriculture, mining and forest products. In Rosebud County growth was associated primarily with agriculture, although mining has held considerable promise for several decades. In-migrants were mostly white persons born in the United States though the earliest migration typically reflects the foreign origins of settlers who sought opportunities throughout the nation during the years 1870-1920. (See Table II-A-1).

TABLE II-A-1

Estimated Net Migration in Montana*

Decade	Total*	Foreign White	Native White
1880-90	+ 70,600	+ 30,900	+ 39,800
1890-1900	+ 63,500	+ 26,400	+ 37,100
1900-10	+ 86,500	+ 35,200	+ 51,000
1910-20	+ 90,100	+ 14,800	+ 75,400
1920-30	- 72,900	- 5,900	- 66,900
1930-40	- 19,300	- 4,400	- 14,800
1940-50	- 42,200	- 500	- 41,900
1950-60	- 25,300	- 1,800	- 23,500
1960-70	- 58,000	- 1,000	- 57,000

* Indicates White and Negro population

+ and - indicate net in-migration and out-migration respectively

Source: U.S. Bureau of the Census, Historical Statistics of the U.S. Colonial Time to 1970.

TABLE II-A-2

Population by Urban-Rural, Race, Sex and Age

Rosebud County, Montana

1950, 1960 and 1970

	1950	1960	1970	Per Cent Chance 1950-1970
Total Population	6,570	6,187	6,032	- 8.19
Urban	0	0	0	0.00
Rural	6,570	6,187	6.032	- 8.19
Farm	2,428	1,559	1,512	-37.73
Non-Farm	4,142	4,628	4,520	9.13
Race				
White	5,228	4,854	4,203	-19.61
Non-White	1,342	1,353	1,829	36.29
Indian	NA	1,344	1,820	----
Other	NA	9	9	----
Sex				
Male	3,560	3,201	3.051	-14.30
Female	3,010	2,986	2,981	- .96
Age				
Male	3,560	3,201	3,051	-14.30
Less 5	432	419	298	-31.02
5-17	803	904	918	-14.32
18-64	2,027	1,526	1,531	-24.47
65 plus	298	352	304	2.01
Female	3,010	2,986	2,981	- .96
Less 5	408	387	311	-23.77
5-17	724	859	864	19.34
18-64	1,660	1,449	1,496	- 9.88
65 plus	218	291	310	42.20
Total				
Less 5	840	806	609	-27.50
5-17	1,527	1,763	1,782	16.70
18-64	3,687	2,975	3,027	-17.90
65 plus	516	643	614	18.99

Source:
U.S. Bureau of the Census, 1951, 1961, 1971.

Rather rapid declines in farm prices and mining operations began around 1920, reducing opportunities in each sector. An accompanying reversal in migration trends occurred in response to these economic changes, and continued throughout that decade. These conditions worsened with the depression and a severe drought during the 1930s. Only selected urban places in eastern Montana, particularly Billings, showed any sustained growth between 1920 and the beginning of the current decade.

Changes in migration, as well as attendant changes in fertility and mortality rates, created the population characteristics of Rosebud County as they affected the existing population. By 1950, conditions had stabilized somewhat, so that the dramatic population losses of earlier decades were no longer occurring (Cumin, 1976).

Increased efficiency in agriculture, and conversion from steam to diesel power reduced the jobs in those industries from over one-half in 1950 to slightly over 40 per cent by 1960. These losses were offset somewhat by the increasing populations on the Northern Cheyenne Reservation. The natural increase among the Native American population accounted for the proportional increase in the county's population from 20 per cent in 1950 to 30 per cent in 1970.

Recent population data for the impact area illustrate two basically different patterns. The first pattern from 1950 to 1970 indicates a declining population while the second pattern (1970 to 1976) indicates an increasing population. The total population of the county decreased 8.19 per cent from 1950 to 1970 with the majority of the decrease occurring between 1950 and 1960. Additionally, there are decreases in the farm population (37.73%), the white population (19.61%), and the male population (14.30%) and a slight decrease in the female population (.96%). Population increases occurred in rural non-farm (9.13%) and non-white (36.29%).

The age distribution of the Rosebud County population changed considerably between 1950 and 1970. The largest proportional decrease in the total population is demonstrated in the less-than-5-years age category for both male and female. The second largest proportional decrease is in the 18-64 age category which is the basic age category for the working population. A rather large decrease in the proportion of the male working population occurred during this time span.

The following statistical profile is based on the 1970 census data. Of the 6,032 residents, 73.3 per cent were rural non-farm and 26.7 per cent were rural farm. There were no urban places in Rosebud County. The population was relatively stationary as 63.3 per cent were native Montanans, compared with a statewide average of 59.7 per cent. However, 27.2 per cent of children under five had not been born in Rosebud County (compared with a 23.1 Montana county average). This suggests relatively recent in-migration among young adults with children.

The educational profile suggests lower attainment for Rosebud County residents. Only 85.3 per cent of 14-17 year olds attended school, compared with 94.6 per cent statewide. The lower-than-average educational achievement

was documented further by the average years of school completed by the county's adult aged population. Rosebud County adults averaged 11.5 years of schooling; while Montana's statewide average was 12.3 years.

Although the nonworker/worker ratio for Rosebud County was near average (1.54% compared with 1.56% for Montana) rather wide differences appeared between the county and state averages on most employment characteristics. Women were over-represented in the labor force in several categories. Forty-three per cent of women over 15 years of age were working (38.6% for the state). Of married women and mothers with children under six, 44.9 and 35.9 per cent, respectively, were in the labor force (compared to 37.7 and 28.5 per cent, respectively, for Montana).

Similarly, a relatively high proportion of men were in the labor force. Eighty-five per cent of men between the ages of 18-24, and 32.6 per cent of men over 64 were employed (69.7% and 24.2%, respectively, for Montana).

In spite of high labor force participation, residents were slightly more underemployed than statewide. County residents were slightly less likely to be employed in manufacturing or white-collar occupations and slightly more likely to be government employees.

Perhaps the most important and telling figures of these relatively high work force participation rates, especially by traditionally marginal members of the work force, is the low median family income of $6,717 which was among the lowest in the state ($8,512 for Montana). This figure, along with 20.0% of the families earning incomes below the poverty level (10.4% for Montana) and the relatively small percentage (10.6%) of families in the $15,000 and over bracket (13.7% for state), completes the economic profile for the county.

Much of the explanation of the relatively depressed educational and economic figures rests with the social, and particularly ethnic, composition of Rosebud County. The Northern Cheyenne Reservation is among the largest in terms of number of Native Americans on a Montana reservation. The reservation typifies much of the disenfranchised status of Native Americans in the Rocky Mountains. That is, they are less likely to occupy social positions reflecting status valued in the larger American society.

Because of their relatively low educational, occupational and income positions, consequences affecting their lives and lifestyles occur. The life expectancies, infant mortality rates and rates of poverty-related diseases, such as tuberculosis, are among the highest of any racial or ethnic minority in the United States.

3. Current Trends

A summary of the population in 1970 compared to 1950 indicates a decrease in the total population with increases in the proportions of non-farm, non-white, female and elderly categories. Proportional decreases have occurred in the farm, white, male, young and working age categories. The population decline experienced from 1950 to 1970 (Table III-A-3). In

each year from 1970 to 1976, the county population increased with a total increase of 3,546 (58.8%). This dramatic change in the population of the impacted area is largely because of the development of coal resources and related activities.

Table II-A-3

Total Population Estimates for 1970 through 1975 with Percentage Changes for Rosebud County, Montana

	1970	1971	1972	1973	1974	1975[1/]	1976[2/]	1978[3/]
Number	6,032	6,100	6,400	6,900	7,700	8,600	9,578	8,523
% Change from 1970	---	1.1	4.9	7.8	11.6	11.7	11.4	11.0

Source: Current Population Reports, Series P-26, Nos. 19-53, U.S. Bureau of Census, U.S. Department of Commerce

1/ Bureau of Economic Analysis, Regional Economic Information System (unpublished).

2/ U.S. Department of Commerce, Rosebud County Special Census, January 10, 1976

3/ Meadowlark Housing Inventory Estimates, 1978.

Rosebud County's recent growth has caused major changes in many of the demographic characteristics of its residents. The availability of jobs in coal-related industries created an impetus for in-migration to the area. Since the propensity to migrate is greatest among certain age groups (i.e., ages 20-25), coal development stimulated the in-migration of many young adults.

Because a disproportionate number of coal-related jobs were male oriented, more men than women moved into the area. Additionally, because of regional racial composition, the limitations of Indian mobility, and their labor force participation, in-migrants were almost exclusively white. Although not as related to coal development, the unique characteristics of the Northern Cheyenne in Rosebud County have served to compound the incidence of demographic change, as the tribal population continued to grow at a very rapid rate.

The current age profile of Rosebud County is younger than its 1970 profile. The 1976 Special Census reported the median age for whites to be 27.6, which is slightly lower than state and national norms. In 1970 the opposite was true, as the white population was more agrarian which tends to be older. In the 1970-1976 period the county's white population increased by 76.8 per cent; the male population by 86 per cent and the female by 67 per cent. Differences in male-female migration patterns created a situation in which white males outnumbered females by over 600. Nearly all of

this disparity occurred in the working age cohorts, reflecting the presence of single male construction workers. In spite of the predominance of male in-migration, the in-migration of child-bearing aged females and families was significant enough to be reflected by higher birth rates and much higher school enrollments. Between 1970 and 1976 the size of the county's pre-school aged population increased by 59 per cent while the school aged population grew by 43 per cent. During this six-year period, only retirement age cohorts experienced numeric decline, a function of the economic patterns of previous decades.

Rosebud County's non-white population has continued to be composed almost entirely of Northern Cheyenne Indians. The 1970 census reported only three blacks living in the county and in 1976 the number had increased to four. Northern Cheyenne are concentrated on their reservation and in the adjoining community of Ashland. Between the two census periods the tribal population increased by 18 per cent. This growth had little to do with coal development. Tribal members did not obtain proportional participation in coal-related jobs, nor did coal development significantly affect ancillary employment around the reservation. Instead, non-white population growth in Rosebud County has largely been a function of the extraordinary rate of natural growth among the Northern Cheyenne. More specifically, the birth rate for the Indians is double the rate for whites in the county.

The sexual distribution of Northern Cheyenne is fairly normal. There are about the same number of males as females in middle age groups, slightly more males than females in younger age groups, and more females than males in older age groups. The latter phenomenon is indicative of the distinctly shorter life expectancy of Indian males.

A very unusual characteristic of Rosebud County's non-white population is its age distribution. The Special Census reported the median age for non-whites in Rosebud County was only 17.4; with over 56 per cent of the county's non-white population being under the age of 20. Having such a large proportion of the population at pre-employable ages virtually assures a very low labor force participation rate. Additionally, such a distribution implies that the future rate of natural increase among Northern Cheyenne will continue to be extremely high, as the very large population of young females will in time mature to child bearing age.

With the completion of construction of Colstrip Units 1 and 2, the county experienced the out-migration of approximately 1,000 persons (Meadowlark Housing Inventory Estimates, 1978). The demographic characteristics of very recent out-migrants would logically be in a distribution similar to the profiles of previous in-migrants. That is, out-migrants would be nearly exclusively young and white. Additionally, more males than females would probably leave the area, reflecting the disappearance of male oriented construction jobs. The net effect of out-migration has probably been to move the county's male-female distribution towards equalization.

The completion of plant construction has probably had a negligible effect upon the county's non-white population. The Northern Cheyenne employed in plant construction have probably remained in the county. The

out-migration of so many whites has had the indirect effect of increasing the proportionate share of the county's non-white population.

TABLE II-A-4

Population Comparisons by Race, Sex and Age

Rosebud County, Montana

1970 and 1976

	1970 1/	1976 2/	% Change 1970-1976
Total Population	6,032	9,578	+ 58.8
Race			
White	4,208	7,429	+ 76.5
Non-White	1,829	2,149	+ 17.5
Indian	1,820	2,145	+ 17.9
Other	9	4	- 55.6
Sex			
Male	3,051	5,121	+ 67.8
Female	2,981	4,457	+ 49.5
Age			
Male	3,051	5,121	+ 67.8
Less 5	298	483	+ 62.1
5-17	918	1,314	+ 43.1
18-64	1,513	3,062	+100.0
65 plus	304	262	- 13.8
Female	2,981	4,457	+ 49.5
Less 5	311	483	+ 55.3
5-17	864	1,228	+ 42.1
18-64	1,496	2,451	+ 63.8
65 plus	310	295	- 4.8
Total	6,032	9,578	+ 58.8
Less 5	609	966	+ 58.6
5-17	1,782	2,542	+ 42.6
18-64	3,027	5,513	+ 82.1
65 plus	614	557	- 9.3

1/ U.S. Bureau of the Census , 1971

2/ U.S. Department of Commerce , 1977

B. Economy

The basic intent of this section is to objectively present and describe the current economic environment of Rosebud County, Montana, the defined impact area of the proposed Peabody Big Sky Mine expansion. The major focus is generally on time series data from 1970 to 1976 but does differ depending upon data available. The major factors discussed are: 1) labor force and employment, 2) income, 3) agriculture, 4) buying power and sales, and 5) revenue systems, taxes and expenditures.

Initially, attention should be given to two features of the existing economic environment of the impact area. First, development activities have previously occurred and resulting economic impacts are illustrated in the data presented. Table II-B-1 portrays coal production by mine for Rosebud County from 1968 to 1977.

Table II-B-1
Rosebud County Coal Overview
Tons Produced and Consumed, 1968-1977

Year	Peabody Mine Production	Western Energy Mine Production	Colstrip 1 and 2 Consumption
1968	-	150,416	
1969	163,691	521,449	
1970	1,431,956	1,657,737	
1971	1,495,222	5,161,390	
1972	1,601,179	5,500,777	
1973	1,971,643	4,253,781	
1974	2,210,647	3,211,770	
1975	2,104,931	6,407,295	
1976	2,390,809	9,324,007	1,494,507
1977	2,312,334	9,327,326	2,337,987

Source: Montana Energy Advisory Council, Montana Energy Office, Montana Energy Division , 1978.

In addition to the effects of coal mining, the County has experienced the only major power plant construction yet to reach the State of Montana in the recent tide of such developments in the northern great plains. Table II-B-2 depicts the schedule of workers employed at Colstrip in association with the construction and subsequent operation of Units 1 and 2.

Table II-B-2 : Number of Personnel Directly Involved with the Construction and Operation of Colstrip Units I and II, Annual Peak and Annual Average, 1972-1977.

	1972	1973	1974	1975	1976	1977
Peak	150	560	1300	800	400	100
Average	80	500	1050	500	150	80

Source: Mr. Dan Regan, Assistant to the President, The Montana Power Co., Telephone Conversation, August 30, 1978.

As an interesting side, not only has the county felt the presence of energy developers, but it has also been the focus of numerous researchers attempting to better understand the physical, natural, and human effects of coal-based development.

Secondly, the traditional economic setting of the county is agricultural, largely livestock, but with important small grain production. Rosebud County's agricultural history is not at all unlike the experience of other agricultural economies in Montana and the nation. The agricultural backdrop of coal development effects, then, is heavily influenced by the two-edged sword of the weather and agricultural markets.

1. Labor Force and Employment

a. General Characteristics

The data relative to labor force, employment, unemployment and rate of unemployment from 1971 to 1977 illustrate several characteristics for Rosebud County (Table II-B-3). There has been a general increasing trend in the labor force, those employed, those unemployed and the rate of unemployment.

The labor force increased 71.5 percent when comparing 1971 to 1977 data. However, the largest labor force in Rosebud County occurred in 1975, which is larger than the 1977 labor force by 422. Additionally, the labor force data demonstrate variability in that from 1971 to 1972 there is a decrease, from 1972 to 1975 an increase, 1975 to 1976 a decrease and 1976 to 1977 an increase.

The employment data illustrate characteristics which are similar to the labor force. The number employed over time has increased generally in the 1970's. The actual number employed in 1977 exceeded 1971 levels by 1,804 (67.7).

The number unemployed increased from a minimum in 1971 to a peak in 1976 and then declined in 1977. These data also indicate a general characteristic of variability.

Table II-B-3 : Labor Force, Employment and Unemployment from 1971 through 1977 for Rosebud County, Montana

	1971	1972	1973	1974	1975	1976	1977
Labor Force	2,768	2,707	3,195	3,294	5,169	4,575	4,747
Employment	2,663	2,596	3,065	3,139	4,948	4,238	4,467
Unemployment	105	111	130	155	221	337	280
Rate of Unemployment	3.8	4.1	4.1	4.7	4.3	7.4	5.9

Source: Montana Employment and Labor Force, Monthly Report. Vol. 1-Vol. 7, No. 1-No. 12; Employment Security Division, Department of Labor and Industry; Helena, Montana.

There has been a general increase in the rate of unemployment in Rosebud County from 1971 to 1977. In 1971, the rate of unemployment was relatively low (3.8 percent), increased to 4.7 percent by 1974 and decreased to 4.3 percent in 1975. It increased to its maximum of 7.4 percent in 1976 and by 1977 decreased to 5.9 percent.

b. Employment by Type and Source

The total number employed by type and source increased 68 percent from 1968 to 1975, although there has been variability in some types of employment (Table II-3-4). Wage and salary employment experienced a relatively large increase (89.5 percent). The number of proprietors experienced a modest 7.8 percent total increase from 1968 to 1975, with non-farm proprietors, particularly from 1968 to 1969, accounting for most of the increase. Non-farm proprietors have been essentially static from 1972 to 1975, in spite of the substantial growth in wage and salary positions. During the same period farm proprietors have regularly declined from 430 in 1968 to 379 in 1975.

The two major components of wage and salary employment illustrate two different characteristics. The farm component remains relatively constant over the time period of 1968 to 1975 with some minor fluctuations during the period. The non-farm component illustrates some flexibility with a general increasing trend. In comparing 1968 to 1975, there is an increase in non-farm employment of 1,680 employees (104.1 percent) while farm employment increased by 3 employees (1.1 percent).

The major increase in non-farm wage and salary employment is primarily attributable to the private sector with 1,478 of the 1,680 jobs (88 percent) created in the private sector. This increase in private non-farm employment is primarily created by construction, mining, trade and service sectors.

Table II-B-4 : Employment By Type and Broad Industrial Sources, Full and Part Time Wage and Salary Employment, Plus the Number of Proprietors, 1968 Through 1975 For Rosebud County, Montana

Classification	1968	1969	1970	1971	1972	1973	1974	1975
Total Employment	2,544	2,506	2,550	2,792	2,984	3,229	3,513	4,279
Number of Proprietors	663	730	732	737	744	738	731	715
Farm	430	428	423	417	410	404	396	379
Non-Farm	233	302	309	320	334	334	335	336
Wage and Salary Employment	1,881	1,776	1,818	2,055	2,240	2,491	2,782	3,564
Farm	267	263	263	292	293	292	319	270
Non-Farm	1,614	1,513	1,555	1,763	1,947	2,199	2,463	3,294
Government	445	431	439	462	474	517	567	647
Total Federal	131	117	108	111	119	119	138	154
Federal Civilian	130	117	108	111	119	119	138	154
Military	1	0	0	0	0	0	0	0
State and Local	314	314	331	351	355	398	429	493
Private Non-Farm	1,169	1,082	1,116	1,301	1,473	1,682	1,896	2,647
Manufacturing	D	200	D	D	D	192	180	142
Mining	D	D	D	D	D	269	281	393
Construction	52	55	29	25	39	76	180	772
Transp, Comm, Pub Util	207	204	207	181	192	189	205	218
Trade	256	214	212	242	268	311	344	426
Finance, Insur, Real Estate	21	19	19	26	37	D	D	D
Services	454	343	387	514	562	596	651	630
Other	6	D	6	5	6	D	D	D

Source: U.S. Bureau of Economic Analysis, Regional Economic Information System (unpublished)

D: Not shown to avoid disclosure of confidential information, but totals do include data.

Table II-B-5: Personal Income by Major Sources and Earnings by Broad Industrial Sector in Thousands of Dollars, 1968 Through 1975 for Rosebud County, Montana

Classification	1968	1969	1970	1971	1972	1973	1974	1975
Total Personal Income	15,456	17,390	19,806	21,122	23,744	31,520	33,521	43,693
Total Wages and Salaries	8,286	9,239	9,155	10,539	12,126	16,564	21,384	35,484
Other Labor Income	438	525	586	686	847	1,272	1,524	2,528
Proprietors Income	3,231	3,800	4,693	4,447	6,358	9,674	5,961	4,484
Farm Proprietors Income	2,107	2,641	3,488	3,317	5,235	8,336	4,250	2,613
Non-Farm Proprietors Income	1,124	1,159	1,205	1,130	1,123	1,338	1,711	1,871
Property Income	2,233	2,515	3,796	3,629	2,590	2,152	2,589	NA
Transfer Payments	1,783	1,911	2,189	2,440	2,532	2,924	3,507	4,170
Less: Personal Contributions	515	600	613	619	709	1,066	1,444	2,543
Total Earnings	11,955	13,564	14,434	15,672	19,331	27,510	28,869	42,496
Farm Earnings	2,989	3,632	4,499	4,431	6,451	9,682	5,904	4,116
Non-Farm Earnings	8,966	9,932	9,935	11,241	12,880	17,828	22,965	38,380
Government Earnings	2,424	2,459	2,564	2,939	3,220	3,718	4,434	5,131
Total Federal	1,075	1,016	1,046	1,236	1,367	1,557	1,796	2,118
Federal Civilian	999	942	962	1,141	1,253	1,425	1,637	1,953
Military	76	74	84	95	114	132	159	165
State and Local	1,349	1,443	1,518	1,703	1,853	2,161	2,638	3,013
Private Non-Farm Earnings	6,542	7,473	7,371	8,302	9,660	14,110	18,531	33,249
Manufacturing	D	983	D	D	D	D	1,193	1,038
Mining	D	D	D	D	D	4,140	4,630	7,638
Contract Construction	358	498	329	205	439	952	3,347	13,894
Transp, Comm, and Pub Util	1,721	1,839	1,720	1,822	2,015	2,270	2,673	2,865
Wholesale and Retail Trade	1,320	1,166	1,190	1,320	1,394	1,802	2,120	2,879
Finance, Ins. Real Estate	158	156	150	194	261	D	D	D
Services	1,975	2,172	2,046	2,436	2,808	3,425	3,997	4,285
Other	104	D	198	136	129	D	D	D

Source: U.S. Bureau of Econ Analysis, Regional Economic Information System (unpublished)

D: Not shown to avoid disclosure of confidential information, but total does include data.

NA: Not available.

The government segment of non-farm employment increased 202 when comparing 1968 with 1975 data. Of this total increase, 179 jobs (89 percent) are related to state and local governments and 23 jobs (11 percent) are related to federal government employment.

In summary of employment by types, total employment has increased in Rosebud County with the increase primarily related to private wage and salary employment (construction, mining, trade and service) with farm employment (proprietors and non-proprietors) generally remaining constant except for 1975.

It may be significant to note that the 1974-75 drop of 49 wage and salary farm workers occurred in the same period that construction employment jumped 592 workers. Of the Rosebud County farmers and ranchers surveyed by the Meadowlark Group, 62 percent perceived the cost of farm labor to be a severe problem, with 86 percent believing that the problem was related to coal development.

2. Income

a. Personal Income by Source

There was a 182 percent increase in total personal income in Rosebud County from 1968 to 1975 with changes in the relative importance of certain sectors (Table II-B-5). Additionally, certain sectors demonstrate fluctuating incomes (for example, farming) while other sectors demonstrate annual increases (transfer payments) throughout the data period.

Personal income attributable to wages and salaries and other labor incomes has increased considerably in absolute and relative terms from 1968 to 1975. Proprietors income has increased during this time span but has decreased in relative importance. In 1968, proprietors income accounted for 21 percent of total personal income as compared to 10 percent in 1975. The non-farm component of proprietors income illustrates fluctuation with the 1975 income being 66.5 percent greater than in 1968. However, non-farm proprietors income is lower than any other component of total personal income in 1975. Farm proprietors income varies during the time period with a peak income of $8,336 thousand in 1973 decreasing to $2,613 thousand in 1975. The 1975 farm proprietors income is 24.0 percent greater than in 1968 but 68.6 percent less than 1973.

The total earnings for Rosebud County have increased annually from 1968 to 1975 with significant changes in the relative importance of components. In 1968, farm earnings accounted for 25 percent of the total earnings as compared to 10 percent in 1975. The farm sector earnings experienced fluctuations during this period, also peaking at 35 percent of the total in 1973. The non-farm earnings account for 75 percent of the total earnings in 1968 compared to 90 percent in 1975. Thus, there has been a relative decline in the importance of farm earnings on the economy of Rosebud County while non-farm earning has increased in its relative importance. (Table II-B-6).

Table II-B-6 : Earnings in Key Sectors as a Percentage of Total, Rosebud County, 1968-1975.

Sector	1968	1969	1970	1971	1972	1973	1974	1975
Farm	25.00	26.78	31.17	28.27	33.37	35.19	20.45	9.69
Government	20.28	18.13	17.76	18.75	16.66	13.52	15.36	12.07
Mining	D	D	D	D	D	D	D	D
Construction	2.99	3.67	2.28	1.31	2.27	3.46	11.59	32.69
Services	16.52	16.01	14.17	15.54	14.53	12.45	13.85	10.08

Source: U.S. Bureau of Economic Analysis. Regional Economic Information System (unpublished).

D: Not shown to avoid disclosure of confidential information, but total does include data.

Farm earnings are not only subject to the vagaries of the weather, but also to the effects of product prices outside of the control or even influence of the individual producer. The 1973 peak in farm earnings for example, reflects livestock prices about one third higher than both the preceding and following years.

An inspection of the total non-farm earnings from 1968 to 1975 indicates the major increases have occurred in the private sector and specifically in contract construction, mining and services. In 1968, the four most important sectors of earning were services; transportation, communications, and public utilities; state and local government; and wholesale and retail trade. Contract construction accounted for 4 percent of non-farm earnings and 3 percent of total earnings in 1968 and mining earning was not reported to avoid disclosure. For comparison purposes, in 1975 the four most important sectors are contract construction; mining; services; and state and local governments. Contract construction accounted for 36 percent of non-farm earnings and 33 percent of total earnings while mining accounted for 20 percent of non-farm earnings and 18 percent of total earnings.

b. Per Capita Personal Income

Per capita personal income has increased 110.9 percent when comparing 1967 with 1975 incomes (Table II-B-7). However, the per capita incomes have not increased annually throughout this nine year period. Per capita incomes increased from 1967 to 1973 at varying annual rates but declined in 1974 and increased again in 1975. As with previous data, these data indicate the two general characteristics of a general increasing trend but also fluctuations.

Table II-B-7 : Per Capita Personal Income, Residence Adjusted, in Dollars, 1967 Through 1975 for Rosebud County, Montana

	1967	1968	1969	1970	1971	1972	1973	1974	1975	% Change 1967-75
Per Capita Income	2,413	2,610	2,932	3,438	3,699	4,073	4,571	4,283	5,088	110.9

Source: U.S. Bureau of Economic Analysis, Reis (unpublished).

c. Median Family Income

Median family income in Rosebud County has increased from $2,524 in 1949 to $4,399 in 1959 and $6,714 in 1969 with an overall increase of 166.0 percent from 1949 to 1969 (Table II-B-8). Thus, the data indicate there has been an increasing trend in the median family income for Rosebud County.

Table II-B-8 : Median Family Income in Dollars for 1949, 1959 and 1969 for Rosebud County, Montana

	1949	1959		1969		
	Number	Number	% Change From 1949	Number	% Change From 1959	Percent Change 1949 to 1969
Median Family Income	2,524	4,399	74.3	6,714	52.6	166.0

Source: U.S. Bureau of the Census, U.S. Census of Population: 1950, Vol. II, Char. of the Pop., Pt. 26, Montana: 1960, 1970, Vol. I, Pt. 28.

d. Poverty Level

The most recent, official U.S. Census publication data indicate that 20 percent of the families in Rosebud County have incomes less than poverty levels and approximately 25 percent of the individuals have incomes less than poverty income levels (Table II-B-9). Rather large percentages of families, unrelated individuals and persons in Rosebud County have incomes which are 75 percent of poverty level incomes in 1969. As may be expected, larger percentages of families, unrelated individuals and persons have incomes which are 125 percent of poverty level. However, these data indicate that poverty, based on income, has been prevalent in Rosebud County.

Table II-B-9: Families with Income Less than Poverty Level, Less than 75 Percent of Poverty Level, and Less than 125 Percent of Poverty Level, 1969 for Rosebud County, Montana

	Income Less than Poverty Level		Income Less than 75% of Poverty Level		Income Less than 125% of Poverty Level	
	Number	% of Total	Number	% of Total	Number	% of Total
Families	301	20.0%	220	14.6%	387	25.7%
Unrelated Individuals	176	35.2%	138	27.6%	262	52.4%
Persons	1,519	25.8%	1,107	18.8%	1,943	32.9%

Source: U.S. Census of Population: 1970, Vol. I, Char. of the Pop., Pt. 28, Montana

e. Per Capita Income in Forsyth

Per capita incomes in Forsyth have been increasing from 1969 to 1974 (Table II-B-10) and incomes in this incorporated area of Rosebud County have been greater than for the county (Table II-B-7). In comparing per capita incomes in 1969 to 1974 for Forsyth, there has been an increase of $2,608 (87.1 percent) over this time period. On a comparative basis, the per capita income for Forsyth residents is $1,320 more than for Rosebud County in 1974. Although per capita incomes in Forsyth have traditionally been greater than those in the County, this difference has been increasing over time. Forsyth incomes were $63 greater in 1969, $265 greater in 1972 and $1,320 greater in 1974.

Table II-B-10: Estimated Per Capita Money Income for Town of Forsyth, Rosebud County, Montana

	1969	1972	1974
Per Capita Income ($)	2995	4368	5603

Source: U.S. Bureau of the Census, U.S. Department of Commerce, Series P. 25, No. 674, May,1977.

3. Agriculture

a. General Characteristics

Historically, agriculture has been the mainstay of the Rosebud County economy. Following the establishment of Forts Custer and Keogh in 1877, there was a great influx of cattle into the area. The sheepmen soon followed, and large company-owned flocks were brought into the area to graze. With the arrival of the railroad in 1882 and the advent of homesteading, the open range began to disappear. Dryland agriculture flourished from 1906 to about 1917 during a period of high rainfall and high prices. During the years of drought which followed came many failures, a decline in dry land farming, and the development of permanent irrigation along the valleys of the Yellowstone and Rosebud Creek. Even with the decline in cattle prices, livestock continues to be singularly important to the makeup of Rosebud County agriculture. In recent years cash receipts from livestock sales have averaged well over double the receipts from crops. Beef cattle are the basis for the livestock industry. The predominant livestock activity is a cow-calf operation, with many feeding some yearlings. There are several feedlots in the area, generally not too large, but some range up to 1000 head or more. Corn for silage, an important irrigated crop, is used to support the livestock industry.

From 1969 to 1974, there has been a decrease in the number of farms (38), an increase in land in farms (46,012 acres), an increase in the average size of farms (1,200 acres) and an increase of 1.4 percent of county land in farms (Table II-B-11). In general, these data illustrate trends which are occurring in Rosebud County and are similar to national trends relative to number and size of farms.

Table II-B-11: Number of Farms, Acres and Average Size 1969 and 1974 for Rosebud County, Montana

	Total Farms	Land in Farms	Average Size of Farms	County Area	Percent of Land In Farms
1969	390	2,963,025	7,598	3,223, 424	91.9
1974	342	3,009,037	8,798	3,223,424	93.3

Source: 1974 Census of Agriculture, Vol. 1, Part 26, Montana, State and County Data, Bureau of Census, U.S. Department of Commerce, May, 1977.

In comparing 1969 to 1974 data relative to number of farms by type of product in Rosebud County, there has been a decrease in the number of farms producing each of the products with the exception of corn (Table II-B-12). For some of these products, sheep, chickens, milk cows and horses, the relative decrease in number of farms has been rather large. For example, there has been a decrease of 42.4 percent in the number of farms reporting milk cows as a type of product from 1969 to 1974.

Table II-B-12: Number of Farms by Type of Products Reported 1969 and 1974 for Rosebud County, Montana

	Cattle and Calves	Hogs	Sheep	Chickens	Milk Cows	Horses	Corn	Wheat
1969	331	34	41	74	99	219	50	146
1974	294	32	19	49	57	136	64	123

Source: 1974 Census of Agriculture, Vol. 1, Part 26, Montana, State and County Data, Bureau of Census, U.S. Department of Commernce, May, 1977.

b. Cash Receipts

From 1970 to 1975 there has been a general increasing trend in cash receipts from the sale of farm products with a cyclic characteristic present (Table II-B-13). Cash receipts from the sale of livestock and products increased annually from 1970 to a peak in 1973 and decreased each year to 1975 sales of $12.187 million. Cash receipts from crops have also increased in general but have been subjected to low sales in 1971, peak sales in 1974 and then decreased in 1975. Total receipts from marketing also illustrate a general increase in value with peak sales in 1974 and a decreased value for 1975. The general characteristic for government payments has been a decreasing trend with the 1975 government payments being 18 percent of the 1970 payments. Government payments have also fluctuated from 1970 to 1975 which illustrates a cyclic characteristic and implied instability for the Rosebud County economy.

All cash receipts and cash receipts per farm illustrate a general increasing trend from 1970 to 1975 with the maximum value being obtained in 1974. Both of these variables have decreased in value from 1974 to 1975 with all cash receipts 14.2 percent less in 1975 and cash receipts per farm being 10.1 percent less. The annual rates of increases from 1970 to 1974 for these variables have differed considerably. For example, cash receipts per farm increased 14.6 percent from 1970 to 1971 compared to 26.9 percent from 1972 to 1973.

c. Crops Harvested and Values

The data for crop acreages, irrigated and not irrigated, and crop values illustrate the two characteristics of a general increase and fluctuation in Rosebud County from 1970 to 1975 (Table II-B-14). Value of crop production is relatively low from 1970 to 1972 and relatively high from 1973 to 1975. Acreage for irrigated crops fluctuated between 1970 to 1975 but the magnitude of these fluctuations are low relative to the fluctuations in acreages not irrigated. Additionally, these data illustrate some transfers between irrigated and non-irrigated acreages. If fewer acres are utilized for irrigated crops, an increase occurs in non-irrigated acreage and vice versa.

Table II-B-13: Cash Receipts from Sale of Principal Products and Government Payments, 1970 Through 1975 Rosebud County, Montana

Year	Livestock and Products	Crops	Receipts from Marketing	Government Payments	All Cash Receipts	Cash Receipts Per Farm
1970	8,810,800	2,279,200	11,090,000	883,000	11,973,000	28,900
1971	10,905,200	1,789,400	12,694,600	698,000	13,392,600	33,232
1972	12,664,500	2,499,500	15,164,000	847,200	16,011,200	40,123
1973	15,075,400	4,475,500	19,550,900	462,000	20,012,900	50,923
1974	13,673,900	7,588,000	21,261,900	198,400	21,460,300	60,622
1975	12,186,700	6,073,000	18,259,700	159,100	18,418,800	54,494

Source: Montana Agricultural Statistics, Vol. XIV to Vol. XVI, County Statistics 1970-71 to 1974-75, Montana Department of Agriculture and Statistical Reporting Service, USDA.

Table II-B-14 : All Crops, Irrigated and Not Irrigated, Acres Harvested and Value of Crop Production, 1970 Though 1975
Rosebud County, Montana

Year	Irrigated		Not Irrigated	
	Acres Harvested	Value of Crop Production	Acres Harvested	Value of Crop Production
1970	26,900	2,032,900	51,000	1,218,600
1971	26,860	2,009,700	52,600	1,566,400
1972	33,055	3,045,000	43,000	1,967,600
1973	36,080	6,135,000	49,000	4,367,400
1974	31,900	6,968,600	79,900	6,254,600
1975	38,780	6,975,100	61,700	4,537,200

Source: Montana Agricultural Statistics, Vol. XIV to Vol. XVI, County Statistics 1970-71 to 1974-75, Montana Department of Agriculture and Statistical Reporting Service, USDA.

4. Buying Power and Sales

Information on buying power and retail sales for Rosebud County is quite limited. An annual series of statistics on retail sales and other estimated characteristics for Rosebud County is developed by Sales and Marketing Management. This information can be found in Table II-B-15. According to this source, effective buying net income has increased from 1970 to 1976 as have population and number of households. All of these variables indicate significant increases from 1974 to 1976, with percentage increases of 56.5, 59.1 and 57.9 for population, households and effective net income, respectively.

Income per household and total retail sales, as well as some components of retail sales, illustrate considerable fluctuations during the time period from 1970 to 1976. Per household income decreased from 1970 to 1971, then increased to 1974 and then decreased in 1976. Retail sales increased from 1970 to 1973, decreased in 1974 and then increased slightly by 1976. Food sales and other components of total retail sales illustrate similar fluctuations throughout the data period.

There are differences between the "Survey of Buying Power" of Sales and Marketing Management, and U.S. Census Bureau retail sales information. The primary difference is that Census numbers are based on actual primary sampling results, while the "Survey" relies on other sources, including employment data, and then utilizes statistical techniques to estimate sales.

Table II-B-15 : Population, Households, Household Income and Retail Sales Estimates for 1970 through 1974 and 1976 for Rosebud County, Montana

Year	Population	Households	Effective Buying Income		Total Retail Sales	Food Sales	General Mdse. Sales	Furniture and Applicances	Automotive Sales	Drug Sales
			Net	per Household						
	(000)	(000)	($000)	($)	($000)	($000)	($000)	($000)	($000)	($000)
1970	6.1	1.9	14,821	7,801	9,819	2,415	442	102	1,346	260
1971	6.4	2.0	16,440	6,251	11,892	2,812	571	117	1,874	310
1972	6.5	2.1	18,747	6,657	15,503	3,472	711	166	2,597	370
1973	6.7	2.2	20,900	7,356	17,620	4,352	684	214	2,439	400
1974	6.9	2.2	23,708	8,736	11,984	2,352	620	NA	2,455	172
1975[1]										
1976	10.8	3.5	37,422	8,687	12,044	2,538	605	NA	2,457	167

Source: "Survey of Buying Power, Part I," Sales Management, Vol. 12-18, No. 2, 1971 to 1977, Marketing Economics Institute, Ltd., New York, NY.

[1]Data not available for Rosebud County for 1975.

NA: Data not available

A less timely but more rigorously developed series of data is the quinquennial Census of Retail Trade, carried out by the U.S. Bureau of of the Census. Table II-B-16 summarizes the findings of this census for Rosebud County in 1972. In comparing total retail sales in the year 1972, the "Survey" estimates $15.5 million, while the Census Bureau reports $10.4 million.

Table II-B-16: Rosebud County Retail Trade Establishments and Sales, by Kind of Business, 1972.

Kind of Business	All Establishments Number	Sales ($1,000)
Building Materials, Hardware, Garden Supply, and Mobile Home Dealers	6	1,410
General Merchandise Group Stores	2	(D)
Food Stores	9	2,217
Automotive Dealers	5	(D)
Gasoline Service Stations	12	1,365
Apparel and Accessory Stores	3	(D)
Furniture, Home Furnishings, and Equipment Stores	0	0
Eating and Drinking Places	22	1,539
Drug Stores and Proprietary Stores	1	(D)
Miscellaneous Retail Stores	14	846
Total	74	10,411

(D) Withheld to avoid disclosure

Source: U.S. Bureau of the Census, Census of Retail Trade, 1972: Area Series, Montana, RC72-A-27, as reported in Department of Community Affairs, Rosebud County Profile, March 1978.

Service Industries are important in Rosebud County. Table II-B-17 reports the number and receipts of selected service industries in Rosebud County in 1972.

Table II-B-17 : Selected Service Industries and Receipts by Kind of Business, Rosebud County, 1972.

Selected Kind-of-Business Groups	All Establishments Number	Receipts ($1,000)
Hotels, Motels, Trailering Parks, Camps	12	355
Personal Services	NA	NA
Business Services	NA	NA
Automotive Repair, Services, and Garages	3	(D)
Miscellaneous Repair Service	6	98
Amusement and Recreation Services, Including Motion Pictures	8	
Legal Services	2	___
Total	56	988

NA: Not Available

(D): Information withheld to Avoid Disclosure

Source: U.S. Bureau of the Census, "Census of Selected Service Industries, 1972: Area Series, Montana,"SC72-A-27, as reported in Department of Community Affairs, Rosebud County Profile, March,1978.

In response to a survey questionnaire, the current work force of the Big Sky Mine identified the location of services they receive. In all cases, the greatest number reported obtaining the service in Forsyth. In the case of dental care, 37 percent reported obtaining this service in Forsyth, with a close 36 percent going to Miles City. Furniture purchases were similar, with 41 percent reporting Forsyth and a close 39 percent purchasing furniture in Billings. (Table II-B-18).

This reflects that a majority of the Big Sky Mine workers reside in Forsyth, that a full range of basic services is available there, and that Colstrip, although much closer to their place of employment and nearly as large in population as Forsyth, has not developed a matrix of support services to compare with that available in Forsyth.

Table II-B-18 : Location of Services Received by Current Big Sky Mine Workers

	Colstrip	Forsyth	Miles City	Billings	Other
Doctor	-	75%	2%	14%	7%
Dentist	2%	37%	36%	10%	6%
Church	5%	63%	-	2%	15%
Grocery	6%	70%	-	5%	10%
Vehicles	-	66%	5%	15%	5%
Vehicle Maintenance	2%	56%	3%	5%	27%
Furniture	-	41%	7%	39%	7%
Clothes	-	63%	-	19%	15%

Source: The Meadowlark Group , 1978.

5. Revenue System, Taxes and Expenditures

a. Montana Revenue System

The general tax and revenue systems of the proposed impacted area of Rosebud County are governed by the various statutes of the State of Montana. An overview of the various types of taxes and tax revenues for Montana indicates that property tax is the single most important revenue source (Table II-B-20). In 1974, property tax accounted for 54.3 percent of the total revenues and in 1976 it accounted for 52.3 percent of the total revenues. Second in importance is individual income tax followed by motor fuel tax in 1974 and 1976. In 1974 corporate license accounted for 3.7 precent of total revenues which is the fourth most important source of revenue. In 1976 corporate license is fifth in importance as the natural resource tax had increased in amount as well as relative importance. A special revenue policy exists for educational financing in Montana which focuses on general school budget, the foundation program, permissive district levy and other budget items. For purposes of financing highways, roads and streets, Montana relies on motor fuel taxes, property taxes, special improvement taxes, vehicle registration, gross vehicle weight tax, road severance tax and federal funds.

Montana tax laws establish mill limits for specific purposes in most cases relative to property taxes at state and county levels of jurisdiction. Some mill rates are not specifically established but are based on annual revenue needs at the state and county levels. In addition to these levies, the State requires each county to levy 40 mills (25

Table II-B-19: State and Local Tax Revenues, Montana, 1974 and 1976 Fiscal Years

Kind of Tax	Fiscal year 1974		1976	
	Thousand dollars	Percent	Thousand dollars	Percent
Taxes, total	427,560	100.0	536,399	100.0
Property	232,310	54.3	280,419	52.3
Individual income	78,758	18.4	97,520	18.2
Motor fuel, total	35,451	8.3	41,246	7.7
Gasoline licenses & tax	28,406		32,939	
Diesel fuel	6,635		7,915	
Aviation fuel	363		356	
Liquified petroleum license & tax	47		36	
Corporate license	15,638	3.7	23,020	4.3
Natural resource, total	11,530	2.7	33,923	6.3
Oil producers license & tax	4,256		6,564	
Coal license & tax	3,315		22,924	
Metalliferous mines	2,240		1,845	
Resource indemnity trust	1,138		1,981	
Natural gas distributors	407		446	
Cement & gypsum	143		151	
Micaceous mines	11		12	
Motor vehicle a/	10,891	2.6	12,064	2.2
Cigarette & tobacco	10,459	2.5	11,155	2.1
Alcholoic beverages, total b/	9,462	2.2	10,297	1.9
Wines & Spirits	5,730		5,900	
Beer licens & tax	2,214		2,250	
County license	1,202		1,778	
Liquor license	316		369	
Insurance	7,367	1.7	9,483	1.8
Inheritance	5,563	1.3	5,902	1.1
Motor vehicle registration	5,331 c/	1.3	5,748	1.1
Utility & other service license	2,383	0.6	2,705	.5
Micellaneous business & consumer license	1,283	0.3	1,663	.3
Drivers & chauffeur licenses	1,154	0.3	1,254	.2

a/Includes GVW, motor carrier fees, and miscellaneous.
b/Does not include profits from liquor stores of $7,274,480.
c/Figure is for 1975.

Source: Biennial Reports of the Department of Revenue.
Information booklets of the Montana Department of Highways.
Commerce Clearing House, State Tax Handbooks.
Letters and telephone conversations with Departments of the State Government.

mills for elementary schools and 15 mills for high schools) for purposes of supporting the foundation portion of the educational program. Additionally, permissive levies, upper limits of 9 mills for elementary and 6 mills for high schools, may be enacted by trustees of a school district and voted levies may also contribute to school financing.

b. Rosebud County

The assessed values and taxable values of property in Rosebud County have increased rather significantly from 1970 to 1976 (Table II-B-19). As may be expected with development activities occurring during this time span, property values have been increasing. The assessed value has increased 427.5 percent from 1970 to 1976 with the majority of the increase occurring after 1974. The taxable value has also increased each successive year throughout this period with an overall increase of 464.9 percent from 1970 to 1976.

The assessed value of land from 1970 to 1976 has increased 16.7 percent but there has also been an increase, 25.4 percent, in acres of land assessed. Thus, only a small portion of the increase in assessed and taxable value may be attributable to land and the increase in assessed land value is related to the increase in acres assessed. Assessed value of improvements has increased 282.8 percent which is a significantly larger increase than assessed land value from 1970 to 1976.

In considering 1975 and 1976 data relative to real property assessed values, the total assessed value has increased $82,645, and taxable value has increased $27,870,738, or 68.6 percent and 65.1 percent, respectively (Table II-B-19).

During this two year period, assessed agricultural acres and other acres decreased as did the assessed values. Improvements did increase in assessed value with the majority of the increase occurring in agricultural land and actual decreases in suburban, industrial sites and city and town lots assessed value.

The majority of increased assessed value (96 percent) is borne by locally assessed utilities ($43,984,099 or 53 percent), gross proceeds ($26,117,109 or 32 percent), net proceeds and royalties ($5,536,322 or 7 percent) and mining machinery ($3,503,350 or 4 percent).

The property tax mill levies by school district have decreased for most districts from 1969-70 to 1977-78. In general, the county levy, state levy and total levy have decreased with increases in the school levy and city levy. As may be expected, there are various differences among districts within the county. Additionally, with the increased assessed value and increased taxable values in Rosebud County, reduced mill levies have occurred to yield revenues to support public services.

Receipts in Rosebud County have increased, as may be expected with the development activities' increased assessed and taxable values from 1970 to 1976. Although the mill rates have in general

Table II-B-20 : Assessed and Taxable Property Valuation, 1970 to 1976 for Rosebud County, Montana

	1970	1971	1972	1973	1974	1975	1976
Assessed Value	38,491,349	40,860,597	46,536,352	51,698,140	72,282,308	120,406,958	203,052,134
Taxable Value	12,515,430	13,709,670	18,121,757	19,612,993	25,666,296	42,833,620	70,704,358

Source: Report of the Montana Department of Revenue, 1970 to 1976.

decreased, receipts have increased due to the combination of the above mentioned factors: Rosebud County's total receipts increased approximately $10,055 thousand in comparing 1970 to 1976 receipts with increases in almost all components. The large increases in receipts in absolute terms were in gifts and grants, education, licenses and permits and tax deeds and taxes. Additionally, new receipt sources have evolved over the time period, for example gifts and grants, which has contributed significantly to the receipt increase.

Expenditures in Rosebud County have in general increased from 1970 to 1976 with an overall increase of approximately $6,979 thousand. Each component of expenditures has increased with large increases in the areas of general government (sheriff and district court primarily), transportation capital outlays (transportation primarily) and educational. Some new expenditure categories have arisen during this time period such as state brand inspection, social security, senior citizens and county planning. The rate of increase in expenditures has varied over this time period indicating instability.

Although revenues and expenditures have increased, there is an apparent time adjustment problem when comparing these variables with other variables. For purposes of illustration, the labor force and employment obtained maximum values in 1975 while government expenditures obtained a maximum value in 1976.

c. Forsyth

The Town of Forsyth has experienced increases in taxable valuations and mill levies from 1969-70 to 1977-78. The taxable valuations have increased annually with the exception of 1975-76 to 1976-77 with an overall increase of 72.1 percent from 1969-70 to 1977-78. The total mill levy has increased 55.8 percent during this time period with identifiable increases due to general levy, streets and alleys, parks and playgrounds and improvement district levies.

Receipts obtained by Forsyth have increased approximately $939,000 in comparing 1970 to 1976 with each component illustrating an increase. Large increases have occurred in special improvement districts, water, sewerage, garbage and fees, rental and collections. Although the general trend has been an increasing one, the receipts have increased from 1970 to 1974, decreased in 1975 and increased in 1976. Some of this fluctuation is attributable to grants, loans and revenue sharing programs which tend to be annual type receipts. Additionally, some new revenue sources have arisen during this time period such as golf club fees and revenue sharing.

In general, expenditures have increased in Forsyth with an approximate increase of $812,700 when comparing 1970 to 1976 expenditures. Large expenditure increases have occurred in special improvement districts, water, sewage, police, street, recreation and garbage. Although there has been a general increase in expenditures, there have been fluctuations with an increase from 1970 to 1975, decrease in 1975 and an increase in 1976. Much of this fluctuation is related to grants, loans and revenue sharing programs. As may be anticipated, some

new expenditure categories have arisen over the time period such as golf course and revenue sharing.

As was characteristic of the County, Forsyth has apparent time adjustment problems relative to revenues, expenditures and related variables. Fire department expenditure reached a maximum in 1974, sewer department maximum was obtained in 1975 and water department in 1976 while the population of Forsyth illustrated an increasing population through this time period. These characteristics illustrate one of the problems related to development activities where the demand for services precedes the financing and provision of services.

6. Summary

The current economic environment of Rosebud County and Town of Forsyth reflects changes which have occurred in recent years, particularly since 1970, relative to certain economic variables. The data indicate two basic characteristics of the economic environment which are: 1) an increasing trend in most of the economic variables inspected and 2) a general instability and variable nature of these economic characteristics.

The population has been increasing since 1970 which is a reversal of the population trend from 1950 to 1970. The factors of labor force, employment, unemployment and rate of unemployment, have increased in general from 1971 to 1977 with cycles present. Employment by type has illustrated an increase which is primarily due to wage and salary employment and specifically to private non-farm categories of mining, construction, trade and services.

Personal income by sources indicated an increase from 1968 to 1975 with the majority of this increase attributable to the categories of wage and salaries. The relative importance of proprietors income decreased during this time period. Total earnings increased, with non-farm earnings, specifically construction, mining and services, contributing the major portion of the increase. Farm earnings declined from 25 percent of total earnings to 10 percent of total earnings from 1968 to 1975. Per capita income and median family incomes illustrate general increases although 20 percent of the families had incomes less than poverty level in 1969.

Total number of farms has decreased since 1969. Although farm size has increased, cash receipts have illustrated instability and a cyclic nature. Each component of cash receipts illustrates similar increasing characteristics except government payments, which have decreased. Crop land, irrigated and non-irrigated, has varied from 1970 to 1975 as has value of crop production. Fluctuating agricultural prices, particularly for livestock, have been the major factor in the recent decline in farm incomes.

There has been a general increase in number of households, net income, income per household, total retail sales as well as increases in components of retail sales from 1970 to 1976, but annual fluctuations have been present.

The revenue system for the State of Montana and impacted area relies on property taxes as the basic source of revenue. Individual income tax (18.2 percent), motor fuel tax (7.7 percent), natural resource tax (6.3 percent) coupled with property tax (52.3 percent) accounted for 84.5 percent of the tax revenue of Montana in 1976. Montana tax laws establish mill limits relative to state and county property taxes.

The assessed and taxable values in Rosebud County have increased considerably from 1970 to 1976. Assessed value of land has increased less than $1 million during this period while improvements assessed value has increased approximately $7.6 million. Real property assessed value increased $83 million from 1975 to 1976 with the majority of this increase attributable to locally assessed utilities, gross proceeds; net proceeds and royalties; and mining machinery. The total taxable value increased $27.9 million from 1975 to 1976.

Property tax mill levies by school district and by types of levy have decreased from most districts within Rosebud County from 1969-70 to 1977-78. Receipts and expenditures have increased considerably for the County Commission with increases due to transportation, education and general government activities primarily.

The mill levies, total mill levy as well as the taxable valuation in the Town of Forsyth, have increased. Additionally, the receipts and expenditures have increased due to added and improved public services such as water, sewer, garbage, police and recreation. There is a time adjustment problem at the county as well as town level in that demand for services precedes the revenue to provide such services. Undoubtedly the grants and loans provided at both levels of government provide the essential revenue which allows the financial aspects for each governmental unit to continue operating on a sound basis.

The general increases in most economic variables, general instability characterized by the variables and time adjustment problems of services demanded relative to the provision of such services, are present in Rosebud County and the Town of Forsyth. The implications of such characteristics are that: 1) periods of shortages occur followed by periods of surpluses followed by periods of shortages, etc., 2) planning and staging of development activities is critical and difficult, and 3) the provision of needed public services is likely to be at a disequilibrium with actual demand for such services.

C. Land Use

1. Land Use and Settlement

a. Introduction and Overview: Rosebud County

Once part of Yellowstone County to the west, Rosebud County was partitioned off during the county splitting era of early Montana statehood. It is the fourth largest county in Montana, containing 5,037 square miles in a shape approximating an upside-down "L". Most of the county land is rangeland interrupted intermittently with coniferous forests and patches of baren, "badland" terrain.

For a variety of reasons, Rosebud County has remained primarily agricultural, with only a few scattered pockets of concentrated settlement. The alluvium deposited along the banks of Rosebud County water courses (the Yellowstone, Tongue and Musselshell rivers and Rosebud and Armells Creeks) has helped to create one of Montana's most fertile agricultural areas. The natural productive potential of the land is further enhanced by the area's long growing season and the land's capacity for being irrigated.

The principal form of agricultural activity is cattle ranching. Over 3,000,000 acres of land in Rosebud County are devoted to farming or ranching use and 86 per cent of this is rangeland used for grazing cattle (U.S. Census of Agriculture 1974). Urban and industrial land uses comprise less than two per cent of the total use of land within the county. The city of Forsyth encompasses approximately 1,000 acres and the existing Colstrip townsite, including industrial uses, about 500 acres. The three other significant townsites in the county are the unincorporated communities of Rosebud, Ashland and Lame Deer, the latter located on the Northern Cheyenne Reservation. Population density in 1970 was 1.69 persons per square mile, compared with the Montana average of 4.77.

The presence of the Northern Cheyenne Indian Reservation creates an unusual landownership pattern within the county. Of the reservation's 433,600 total acres, 235,825 are located in Rosebud County; the remainder lies in Big Horn County. Only 9,248 acres of reservation land is fee land (held in private ownership). Almost all Northern Cheyenne land is either tribal land or held in a trust status by the federal government on behalf of the tribe. The federal government's reservation holdings, combined with its other holdings, account for 11 per cent of Rosebud County's total land area. State lands within the county constitute 5.5 per cent of the total area; 83 per cent of the county is in private ownership. The small percentage of local government land in the county is road right-of-way and a few public facility sites.

Significant for the purpose of this study is the fact that about four per cent of the county's total area was leased for coal as of July, 1974 (U.S. Dept. of Agriculture, 1975 Situation Statement).

The population of Rosebud County has reflected its predominantly agricultural base. In 1920, the county census recorded over 8,000 persons, living mainly in rural areas and on small farms and ranches. Forsyth

contained the only significant concentration of people, serving as a rail center for the Northern Pacific Railroad. For reasons common to most isolated agricultural areas in the United States, Rosebud County began to lose population in the 1920s, a trend that generally continued into the 1970s. For this reason, many of the land use patterns that were established early in the county's history have remained unchanged. A declining economy and population failed to provide incentives to alter traditional land use patterns.

Several things have served to influence and stabilize the pattern of land use and settlement, including geographical, political, sociological and market factors. The Yellowstone River has played an important role in shaping the pattern of settlement in the county. As the river flows through the county it achieves a width of several hundred yards and effectively bisects the county into northern and southern sectors. Only two bridges (at Forsyth and Rosebud) provide access across the river. By denying convenient access from the south, the river has severely inhibited urbanization on the northern side.

Another constraint created by the Yellowstone River is its potential for flooding. To a lesser degree this is also true of several other smaller drainages within the impacted area. The lowland along the Yellowstone's southern shore is the type of land which is frequently developed for residential land uses. However, the massive flooding of this lowland in May, 1978 provides a graphic example of the risk involved in residential development of the river's flood plain.

Depth to groundwater, soil permeability and slope are other factors which have constrained the spatial arrangement of the area's growth. In lowland areas along drainages, shallow water tables and rapid seepage (often caused by gravelly soil content) restrict the use of septic tanks. From most lowland areas the topography rises quickly, transforming itself into rolling hills. In these areas the steepness of terrain restricts development or makes site preparation prohibitively expensive.

In contrast to lowlands, the unavailability of water is a factor restricting development of upland areas. On the hillsides overlooking the Yellowstone River, the depth to potable water may be in excess of 250 feet. The high cost of drilling a deep well discourages development (Rice, 1978).

The simplicity of the county's road system has also restricted land development alternatives within the county. Outside the townsite areas, the southern section of the county has only five paved roadways. The most prominent of these are Interstate 94, U.S. Highway 212 and the Colstrip Road (FAS 315). Access from these roads into more rural areas is infrequently provided. When access off a main roadway is available, it is via rough, gravel-based and indirectly routed county roads, frequently impassible during severe conditions.

A notable political feature of the county which has limited development is the eastern half of the Northern Cheyenne Reservation. As noted earlier, only about two per cent of land on the reservation is fee land. The limited availability of land for purchase and the cultural differences

between Indians and non-Indians have constrained non-Indian land development on the reservation. Northern Cheyenne, who have obtained jobs from Peabody and at Colstrip, have had a minimal effect on altering reservation land use patterns.

The attitude of many ranchers toward rural subdivisions is a sociological factor which has profoundly influenced the nature of land use changes. In other heavily impacted areas of the Northern Great Plains, considerable amounts of agricultural land have been removed from production by rural subdivisions. Fertile alluvial valley land has proven to be the most frequent target of random rural development. Typically its slope, access to water and to roadways - most rural roadways follow drainages - make this land the easiest to develop. This is highly productive land which allows ranchers to grow winter feed for their cattle. Most of the ranchers in the impacted area have made a conscious decision not to subdivide portions of their land. This decision has preserved prime agricultural land and has prevented urban-agricultural land use conflicts like those which have occurred elsewhere.

Rancher attitudes have influenced local government policies regarding rural subdivisions. The Rosebud County Planning Board reviews subdivision proposals and advises county commissioners with regard to their approval or denial. The planning board has generally attempted to discourage rural development, although exceptions do exist. Recently, a small subdivision was proposed along the southern portion of Rosebud Creek. The proposal received sizeable negative testimony from adjacent ranch owners at the public hearing held on its behalf. In lieu of probable denial, the subdivider withdrew the proposal.

Between 1970 and the special census in 1976, Rosebud County's population increased from 6,032 to 9,578. The population crested at almost 11,000 at the peak of construction employment for Colstrip Plants I and II (Rice, 1978). Many land uses were expanded and new uses were created within the impact area. However, the Rosebud County experience has in many ways been much different than similarly impacted areas. Most population growth has occurred in two existing townsites, avoiding problems associated with random sprawl. This is not to imply that the area's settlement pattern has negated all of the adverse affects of its population boom. In many instances, rural-oriented problems have been traded for urban-oriented problems and, certainly, adverse effects on agriculture and rural lifestyles have not been entirely avoided.

Over 80 per cent of new settlement in Rosebud County since 1970 occurred in Forsyth or Colstrip. Between 1970 and 1976, Forsyth's population rose from 1,873 to 2,449. Most growth, however, took place in Colstrip, which grew from an isolated community of 200 people to 2,682.

The remaining new settlement in the county was distributed among small communities. The town of Rosebud grew by approximately 60 people and the Ashland-Decker-Birney area by 277. Most population growth in the latter area is explained by natural increases in the Northern Cheyenne population rather than in-migration resulting from expanded mining. Only about four per cent of the county's 1970-1976 population growth settled outside the aforementioned areas. Most of these households located in one of three

mobile home parks west of Forsyth or in the park south of Colstrip. The instance of individual ranches subdividing small parcels of land was extremely rare.

Since the completion of construction on Colstrip Plants I and II there has been some out-migration from the impacted area. This exodus has been felt mainly in Colstrip and Forsyth. The temporary mobile home park in Colstrip that once contained 550 mobile homes now accommodates less than 250 and the construction worker barracks is now empty. The current population of Colstrip is estimated to be 1,741, a loss of 941 inhabitants. Forsyth's current population is estimated to be 2,167, reflecting the out-migration of 282 persons. Only a small number of rural residents have relocated as a result of the completion of power plant construction. The current population of Rosebud County is estimated to be 8,523 (population estimates were calculated from a housing inventory conducted by the Meadowlark Group in April of 1978).

The settlement patterns of Peabody Mining Company employes have differed from the aggregate settlement patterns within the county (Table II-C-1). Because of its close proximity to the Big Sky Mine, Colstrip would seem to be the logical location of Peabody households. However, three factors contributed to the current distribution of households: 1) The operation of the Big Sky Mine began prior to the Colstrip townsite expansion. Colstrip was not a settlement option for initial Peabody employes; 2) Peabody hired many local people. Many of these people already lived in Forsyth and chose to commute rather than relocate; 3) Until recently, Montana Power and Western Energy did not rent or sell property to households not employed by themselves or directly involved in the provision of services within Colstrip.

Forsyth is 49 miles from the site of the Big Sky Mine, yet it houses over 70 per cent of Peabody households. Most of the ten households listed as being located in Colstrip are actually located in the mobile home park south of the townsite. A recent change in Colstrip management policies has allowed Peabody personnel to purchase lots in Colstrip; settlement patterns have begun to change accordingly. Of the ten households listed as residing in Lame Deer, most are actually located outside the townsite. For instance, the Muddy Creek drainage is the site of some Peabody settlement.

TABLE II-C-1
Household Location of Peabody Employes
March 1978

Forsyth	56
Colstrip	10
Lame Deer	10
Ashland	4
Ashton, S.D.	1

Source: Larry Fox, Peabody Coal Company, 1978

b. Forsyth

Forsyth, known as the City of Trees, is the only incorporated community in Rosebud County. Located on the southern bank of the Yellowstone

River, the townsite was originally acquired in 1882 by the Northern Pacific Railroad. Forsyth became an early divisional center for the expanding railroad, which greatly influenced the townsite's physical development. The city's street design is the grid from characteristic "rail towns" built in the period of early western settlement. More prominent reminders are the broad rail yard that runs the breadth of the town and the orientation of Main Street storefronts to the tracks.

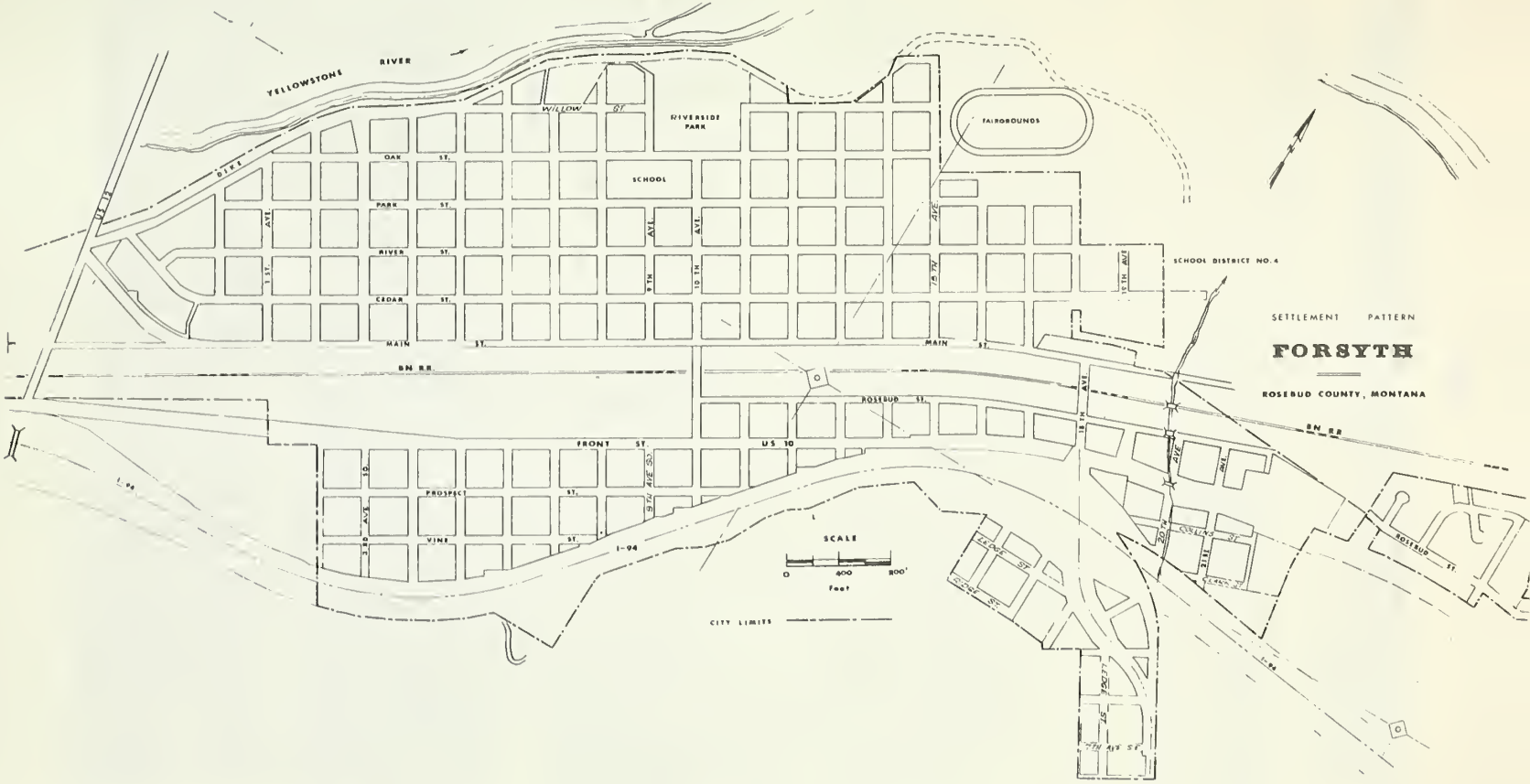
The physical evolution of Forsyth has been linear. The Yellowstone River to the north and sharply rising sandstone cliffs to the south provide natural barriers to urban development and have forced the town to expand east-west, roughly paralleling the river. The western boundary of the city has been established by U.S. Highway 12, which bridges the Yellowstone before intersecting with Forsyth and Interstate 94. To the west of Highway 12 are lowlands which are subject to periodic flooding. To the east, terrain rises gradually in elevation from the Forsyth valley, providing only minor constraints to the city's growth. The eastern and southeastern boundaries of Forsyth are irregular, reflecting land annexations by the city.

The broad expanse of the rail yard and the frequency with which coal and other trains travel this rail corridor to the midwest create two distinct sections of city. The north side of Forsyth is much larger than the south side and contains the bulk of the community's urban land uses. (At one time the railroad caused a more equal bisection of the city; however, construction of Interstate 94 displaced many structures on the city's southern fringe.)

The rail yard creates two distinct commercial areas. Southside commercial uses extend along U.S. Highway 10 (Front Street). Businesses along this old highway reflect a traveler orientation. Restaurants, motels and gas stations, mixed with a few locally oriented businesses are arranged in a commercial strip pattern. Highway 10 once served as the major east-west route through Montana, but its function was displaced with the construction of Interstate 94. The re-routing of non-local traffic reduced the prosperity of south side businesses, but an economic resurgence caused by coal and energy development has improved this situation. Some recent reinvestment has been made in older structures and a few new buildings have been constructed along the old highway, reflecting recent economic prosperity. To survive, the south side businesses have re-directed their marketing to local and regional consumers. In competing for this market, south side merchants enjoy the advantage of convenient access from both interstate exits. A large amount of land is available on the old highway for future commercial expansion.

The majority of the commercial uses on the north side of Forsyth are located on Main Street, which parallels the route of the railroad. Businesses are clustered in older buildings on narrow, deep lots on the north side of the street facing the rail yard. Commercial uses also extend northward for two blocks on 9th and 10th Avenues. The former street serves as a major shopping corridor and houses public land uses, such as the city hall, the jail and the library.

The businesses in the central business district are predominantly locally owned and operated and are oriented to local and county markets. There has been no pattern of outside corporate investment or chain store


YELLOWSTONE RIVER
DIKE
WILLOW ST.
RIVERSIDE PARK
FAIRGROUNDS
SCHOOL
OAK ST.
PARK ST.
RIVER ST.
CEDAR ST.
MAIN ST.
BN RR
ROSEBUD ST.
FRONT ST.
US 10
PROSPECT ST.
VINE ST.
I-94
SCHOOL DISTRICT NO. 4
SETTLEMENT PATTERN
FORSYTH
ROSEBUD COUNTY, MONTANA
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CITY LIMITS

marketing, although a few businesses have opted for franchise arrangements with national firms. Local businesses appear to have internalized many economic benefits accruing as a result of an expanded economy.

Since 1970, 46 businesses in Forsyth have opened or expanded (Rice 1978). There are only a few vacant storefronts in the city, another indication of recent prosperity. Some small commercial land is located in residential areas of the city's north side. These nonconforming uses are primarily home-occupation businesses and cause little disruption of adjoining residential uses.

The out-migration of Colstrip construction crews has caused a decrease in economic activity in Forsyth. Currently, some elements of the town's commercial sector are slightly overbuilt in relation to the size of local and regional markets. This condition could worsen, should the Colstrip community succeed in expanding locally provided retail services. Colstrip residents now rely heavily on Forsyth for many types of goods and services. The viability of a half-dozen businesses in Forsyth may be contingent upon construction of Colstrip Plants III and IV or expanded mining (Thiesen, 1978). It is also probable that certain new business types could operate successfully in Forsyth as the current market seems capable of supporting a more diverse complement of locally provided goods and services.

South side residential units are a mixture of older single-family homes and mobile homes. Prior to the growth period, the south side had many vacant lots. Zoning did not prohibit the placement of mobile homes in this section of town and, as a result, mobile homes now occupy many lots in the area. Mobile homes in this section of town are located on single-family sized lots rather than in mobile home parks. There are approximately 70 vacant lots in the south side of Forsyth (Rice,1978).

Residential land uses are more segregated on the north side of Forsyth. Nearly all of the homes in established sections are older, single-family, wooden-frame structures. Lot sizes are fairly uniform and typical of small Montana towns, ranging from 8,000 to 10,000 square feet. There are a few new apartment buildings on the east side of town, as well as some new modular and conventional single-family homes. A small mobile home park has also been developed on the east end. The apartments in this area appear to be randomly located, in that there is no one area where multi-family structures are concentrated. Public uses on the eastern fringe include the new hospital, a county office building, fair grounds and a new elementary school under construction.

The central residential area of the north side contains almost exclusively older, single-family homes. This area's land use patterns appear to have been minimally affected by the recent population growth. Two non-residential uses in this area are the existing elementary and high school complexes, and Riverside Park, which encompasses more than four city blocks.

Houses on the west side of town are generally smaller (of less value) than houses elsewhere in the city. A few small, older apartment buildings are located on the fringe of the commercial area, and some rooms in the old hotels on Main Street are rented on a long-term basis.

Large mobile home subdivisions have been constructed on Forsyth's western side, causing this area to be the most heavily impacted by population growth. Because lot sizes in mobile home parks are small relative to single-family home lots, the population density of the west side has increased substantially. There are approximately 150 vacant lots on the north side.

Forsyth has been expanding its boundaries to the east and southeast. Four subdivisions have been developed in these areas: The Quincer subdivision is designed for single-family homes; the other three subdivisions accommodate mobile homes. There are about ten lots still available in the Quincer subdivision and roughly one hundred total lots available in the mobile home parks (Rice,1978).

Major industrial uses in Forsyth are located along the railroad. The land uses connected with industrial activities have not changed in recent years, although railroad activity has increased exponentially.

At this time there are over 300 vacant subdivided lots within the city, implying that Forsyth has land to accommodate another 1,000 persons. A constraint on this capacity is the ability of the city to provide services to the lots. The city now requires that special improvement districts be formed for street paving and city water and sewer systems as a condition of approval and annexation of an adjoining subdivision.

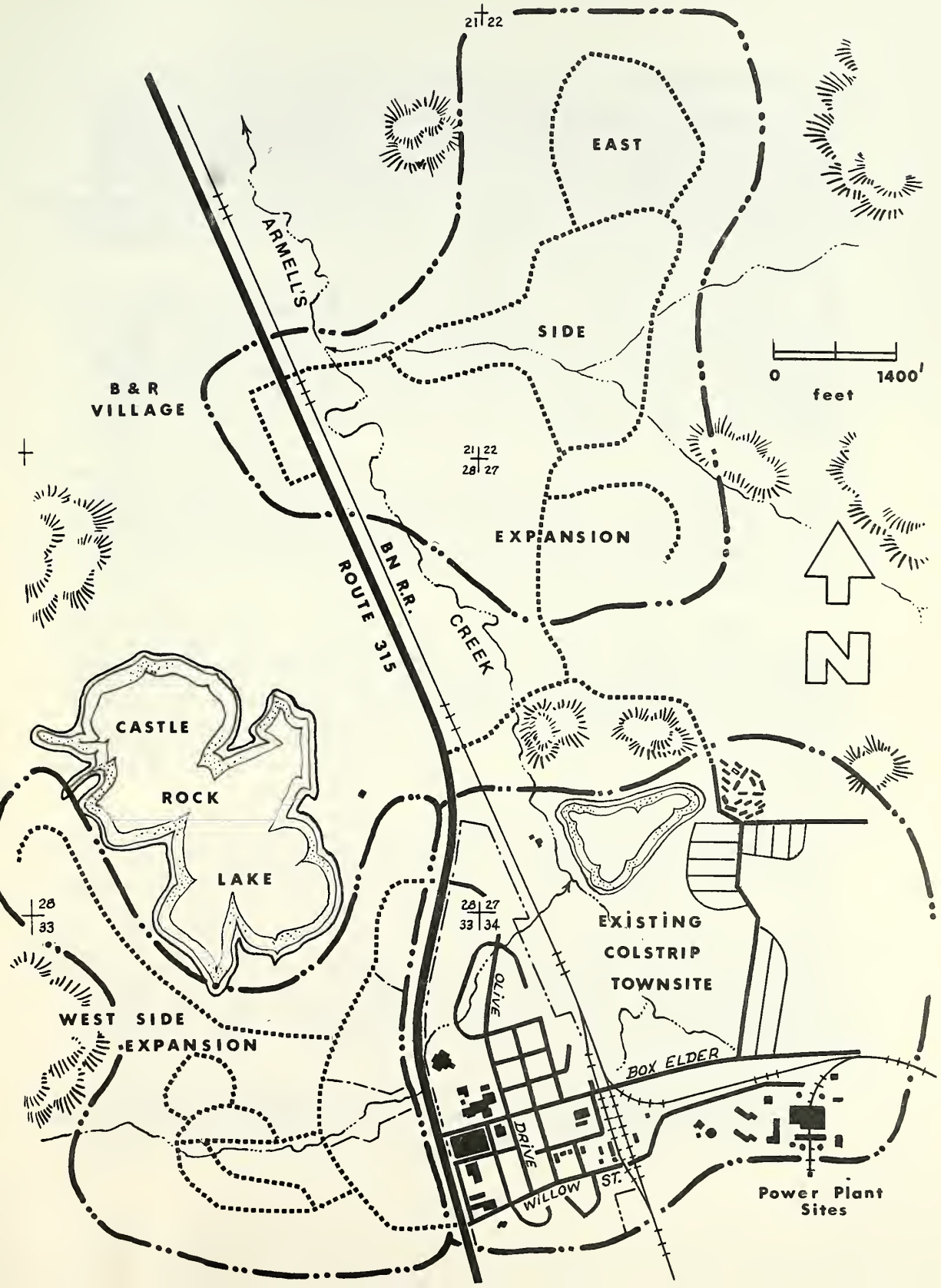
Forsyth's response to coal-related population growth between 1970 and 1976 deserves mention. Forsyth played a role in the accommodation of new settlement, particularly concerning Peabody households. The city provided in-migrants with services and conveniences which are inherent in an established community. These amenities served to overcome the disincentive of being a long distance from new employment centers. Forsyth would not have been able to accommodate the growth it experienced were it not for the financial assistance it received from the federal government and the Montana Coal Board. Local taxes in Forsyth were increased to their maximum, but revenues generated were still insufficient to meet the cost of improving local services. Coal Board grants were particularly important in that the program's flexibility allowed it to be responsive to unique local needs.

c. Colstrip

Colstrip was founded in 1924 when the Northern Pacific Railroad began mining coal from the area to fuel its steam locomotives. From its inception, the townsite was a "company town". The Northern Pacific was responsible for the construction of houses, schools, churches, roads and other services within the townsite and maintained ownership until 1958. In 1958, Colstrip was sold to the Montana Power Company, which formed the Western Energy Company as its mining subsidiary. During the early years of power company ownership, little was changed.

In 1968, Montana Power opened a coal-fired electrical generating plant in Billings. The plant, known as the Corrette Plant, was fueled by coal from the Western Energy Mine. This renewed mining in Colstrip and improved the dying community's economy slightly, but in 1970, its estimated population

SETTLEMENT PATTERN - COLSTRIP, MT.



was only 200 people.

The national energy crisis in the early 1970s precipitated major changes in Colstrip's evolution. When Montana Power and Western Energy decided to construct Colstrip Generating Plants I and II and to expand their mining operation, they also committed themselves to what was essentially the construction of a new town. The latter decision was unprecedented in recent western energy development, and is the primary reason the spatial arrangement of expanding land uses in Rosebud County has differed from similarly impacted areas of the Northern Great Plains.

Access to Colstrip is provided by Montana Highway 315, commonly referred to as the Colstrip Road. The highway connects Interstate 94 (30 miles north of Colstrip) with Lame Deer and U.S. Highway 212 (22 miles south of Colstrip). Two exits off the Colstrip Road provide access into the north-south oriented townsite. Olive Drive intersects with the highway north of town and Willow Street, the primary access road, enters the town from west near its midpoint.

The historic character of Colstrip was altered radically by new development. In 1970, the townsite consisted of 67 older wooden homes on small lots, two churches, a school, a grain elevator and a few railroad buildings. Most of these buildings remain functional and have benefited from growth-induced reinvestment. Original structures are arranged in a grid now occupying the center of the expanded townsite.

Commercial land uses in Colstrip are located in new structures. When Willow Street enters the townsite, it is flanked by a gas station, a fast-food restaurant and a motel. To the north are a small shopping mall owned by Western Energy Company, a grocery store and a bank. Across the Colstrip Road are two bar/restaurants. Other commercial land uses are the Montana Power and Western Energy offices located to the east on opposite sides of the Burlington Northern tracks. Colstrip has had difficulty in attracting investors in retail businesses. The best indicator of this is the shopping mall where only half of the available space is occupied.

New residential uses to the north and east of the original townsite are single-family homes located on winding loops and cul-de-sacs. There are 135 lots in this area and all but a few have been developed. Homes in this area are wood-framed modular homes. Residential land uses are also located south of the original townsite, containing apartments and mobile homes. Sixty-four apartments are located in four-plexes south of the Willow Street commercial area. To the east and farther south are 165 permanent mobile home lots, of which 163 are occupied. Mobile homes on lots close to Willow Street are staggered along looping streets, but farther south they are aligned perpendicularly to numerous cul-de-sacs. The latter arrangement affords much higher density. Mobile home and multi-family land uses are buffered from each other through the use of open space.

Recreational land uses are located in conjunction with the school site north of the commercial area and in central park, which is in the southeast corner of the original townsite.

The community managers of Colstrip consider the eastern boundary of the townsite to be the Burlington Northern tracks, but there is considerable development on the opposite side of this boundary. Willow Street crosses the tracks and terminates at the base of Colstrip Generating Plants I and II. These huge structures are visible and audible from anywhere in the community and their 500-foot stacks are observable from ranches for miles in any direction. The plants, railroad corridor and Western Energy's Rosebud Mine are the only industrial land uses within or in close proximity to Colstrip.

Approximately 550 mobile home lots and a 32-man mobile barracks are also located on the east side of the tracks. There are 72 permanent lots located in the northwest corner of this area. This mobile home park is filled to near capacity and some landscaping has occurred. The remaining mobile home lots are located in a broad area referred to as the Burtco Trailer Park. These lots, some of which are within 1,000 feet of the power plants, are temporary lots, although they have been occupied for several years. In addition to being subject to intense plant noise, the temporary courts are poorly laid out. Sometimes it is uncertain whether an area is a roadway or yard space. Roads in this area are not dedicated to the county. With few exceptions, mobile homes in the temporary park are located on raw gravel beds. There has been little landscaping of yards, resulting in a swirling dust problem. More than half of these lots are unoccupied, as are the rooms in the mobile barracks. A renovation of a 73-space mobile home area adjacent to the permanent area was recently begun. When completed this renovation will improve the aesthetic qualities of the individual area immensely.

There are currently few vacant lots available for permanent residential development in Colstrip. In April of 1978, there were only 45 unoccupied subdivided lots with services available for single-family and mobile homes (Fandrich 1978). For a short-term population influx there are over 300 lots available in the Burtco area, but it is uncertain how long this area will be in use.

There is considerable land available for townsite expansion. A 1977 study identified over 700 acres in close proximity to Colstrip which would be conducive to development (Cummin and Associates 1977). The constraints on townsite expansion are the difficulties related to the extension of a full complement of urban services into an unserviced area.

2. Land Values

Land values in Rosebud County have risen steadily since 1970. National inflationary factors have contributed to these increases, but the area's population influx was a larger contributing factor. The land available for residential uses is limited to urban areas and a few rural mobile home sites. In 1970, a 50-foot by 140-foot lot (one-sixth acre) in Forsyth sold for less than $1,000 (Storm 1978). At the present time, the same sized lot would sell for between $3,500 and $8,000 depending on location. The median cost of a vacant, developable lot in Forsyth is $5,000 (Rice, 1978). Slightly larger single-family lots in the new Quincer Subdivision are selling for $8,000 (Rice, 1978 and Mellville, 1978).

In Colstrip, lots sell for slightly more, ranging between $6,000 and $8,000 (Fandrich,1978 and Mellville 1978). Until recently, the policy of the companies was to retain ownership of the townsite. The policy was changed and about 60 lots (most with houses) have been sold to individuals. Few of these lots have been resold, so there is no measurement of how the land is holding its value.

Residential lot costs in Forsyth and Colstrip are considerably higher than in other small eastern Montana communities, which have not been affected by coal or energy development, and higher than in many of the state's metropolitan areas. Without coal development, urban land in Rosebud County would be less expensive.

The few rural lots available for residential development are selling in the area of $1,000 an acre. Montana Health Department regulations prohibit septic tank usage at a density of greater than one unit per acre, establishing a minimum rural lot size of one acre. Site preparation costs (water well, septic tank, roads and miscellaneous utilities) negate much of the cost differential between rural and urban lots. The potential sale value of rural land has enabled ranchers to borrow money based on the potential subdivided value of their land, ranging from $800 to $1,000 an acre (Rice, 1978). This practice has not led to the premature subdivision of the land, but it could if economic conditions for ranching were to worsen.

Vacant commercial land in Forsyth is available along U.S. Highway 10. Land in this area is selling for in excess of $10,000 a lot. Rents for storefronts on Main Street vary but are generally very reasonable. Rents on the Colstrip Mall are higher, at $5.75 a square foot (Mellville,1978), and were established through comparisons with Billings rates (Fandrich, 1978). Developable commercial property is also more expensive; the large parcel occupied by the grocery store was sold for around $40,000. Lower commercial property costs and rents give Forsyth merchants an advantage over Colstrip merchants.

3. Planning

a. Forsyth

Forsyth's early land use patterns were determined by the early railroad grid. The integrity of the basic grid has been maintained throughout the evolution of the original townsite. This phenomenon was primarily a function of the city's history of early growth followed by population stability. Recent development within the original townsite has been orderly and compatible with the townsite's original layout, although densities have changed because of the prevalence of mobile homes. Recent peripheral subdivisions have not concurred with the grid because of topographic constraints. Inasmuch as these subdivisions appear to be precursors of further development, the city would be wise to examine the inter-relationship of future subdivision proposals with the present subdivisions, roads and other community services.

In addition to having the services of the Rosebud County Planning Board staff and a consultant retained by the planning board, Forsyth has a retainer arrangement with a consulting engineering firm. A comprehensive plan for the city has not been developed, although much of the prerequisite data has been compiled. Because nearly all of the land within the incorporated boundaries is already platted, it would seem that the spatial arrangement of future internal development within the city would be predetermined. Forsyth adopted subdivision regulations in 1974. A subdivision which physically would alter existing plats is defined as a resubdivision by Montana law and requires approval by the Forsyth City Commission (R.C.M. 11-3861(12).

Forsyth has also adopted building codes and a zoning ordinance, but both are dated. The building codes were adopted in 1960 and zoning regulation dates back to 1952. The zoning differentiates between various residential and commercial uses, but is not based on a land use plan. Forsyth zoning is based instead on fire insurance classifications. Zoning not based on a land use plan is fairly common in Montana, but its validity has not undergone a recent court test. Such zoning is often criticized as being defensive, undynamic and unrelated to implementation of a comprehensive plan, which is its theoretical function. Enforcement of zoning in Forsyth has been only partially effective, as there are numerous instances where nonconforming uses have been developed.

If Forsyth were to grow significantly in the near future, the two major planning issues to emerge would be the management of peripheral subdivisions and expanded commercial development. Local notables generally agree that most future subdivisions will be to the east and southeast of the existing townsite. If leap-frog development takes place eastward along Highway 10 or southeastward along Slaughterhouse Creek, it will adversely affect agriculture land uses as well as the long-term fiscal soundness of the city.

The potential for enlarging the commercial strip along Highway 10 is great. Historically, highway businesses have been primarily oriented to serve a different market than central business district (CBD) merchants. Now these areas are competing. The strip enjoys locational advantages to probable areas of residential development because of its proximity to interstate exits. If the city wants to stimulate reinvestment and improve the viability of its CBD, it should control the development of competitive commercial areas. Recently, the planning board developed commercial regulations to deal with this situation, but the regulations were not adopted.

b. Colstrip

The decision by the Montana Power and Western Energy Companies to undertake the construction of what was in effect a new town at Colstrip was the crucial determinant of the spatial arrangement of the area's recent growth. The evolution of Colstrip explains why settlement in Rosebud County has not resembled the chaotic patterns occurring in similarly impacted areas. Colstrip provided a favorable settlement alternative to in-migrants, offering convenient access to jobs and the promise of forthcoming amenities.

The land use changes that have occurred in Colstrip since 1970 were planned. In 1973, a Denver-based consultant was hired to do an economic

feasibility study of the possible project. Thereafter, various consulting firms were hired to develop land use and service plans for the community. Normally, master plans are implemented through the use of land use controls and the discriminating provision of public services. In the instance of Colstrip, Montana Power and its subsidiary Western Energy controlled all land within and in proximity to the townsite. As long as the companies supported the concepts of the master plan, implementation was assured. Colstrip's development has closely coincided with its preconceived plan.

A project the size of Colstrip is a massive undertaking. Because the Colstrip community was initially to be wholly owned by private companies, the community has not benefited from the myriad of federal assistance programs designed to assist local governments in the procurement of capital equipment and facilities. Furthermore, the Montana Coal Board has been reluctant to provide financial assistance to the community because the assistance might be interpreted as a subsidy to a private company. Only Rosebud County, through its cooperation in the establishment of special districts and in the bonding of capital facilities, has made a significant governmental contribution for the success of the undertaking. Essentially, the companies developed Colstrip on their own initiative and expense.

As a planned community, Colstrip enjoys certain advantages over more randomly developed communities. Economies have occurred because land use patterns and public service extensions have been coordinated. Open space has often been used effectively to buffer the transition from one land use to another. Public amenities are centrally located to provide convenient access from most areas of the community. There has not been a proliferation of sprawling development in the areas surrounding the townsite, nor has a commercial strip emerged.

Planning has also played an important role in mitigating potential adverse effects of the community's recent population decline. Planners anticipated that construction of the generating plants would cause the influx of a very large work force which would remain in the community only during the period of plant construction. By concentrating this non-permanent population on the temporary mobile home area, the disruptive effects of massive out-migration did not affect the permanent townsite. Thus, the permanent population of this area was virtually unaffected by the conclusion of plant construction. The phenomenon served to maintain neighborhood stability and to preserve property values.

The design of Colstrip has also created certain problems. Paramount of these is the proximity of the generating plants to residential areas. An industrial use of the magnitude of Colstrip Plants I and II should have been a greater distance from residential areas. Instead, the plants are the dominant visual feature in the community and subject town residents to the constant whine caused by their operation.

The Colstrip road system also has deficiencies. Non-residential traffic (including industrial trucks) is routed through residential areas. In addition, there are only singular access routes to the power plants and temporary mobile home parks. These routes are frequently blocked by passing coal trains, creating an inconvenience and a potentially dangerous situation.

The southern portion of the permanent mobile home area could have been more aesthetically designed. Open space and variable lot designs could have been better used to break up the monotony of the area, and would have offered residents greater opportunity for expression of individual creativity.

As an unincorporated urban area, the Colstrip community has no statutory authorities related to planning. The planning power related to the community must be derived indirectly through the Rosebud County Planning Board and the Rosebud County Commission. Currently, the town manager of Colstrip serves on the County Planning Board, which provides the community with input into county planning decisions. The town manager is an employee of the Western Energy Company.

Although the developing companies could use the staff and resources of the Rosebud County Planning Board as technical advisers for ongoing planning decisions within the community, they continue to use their own staff and consultants. In 1977, a master plan was adopted for the area by the Rosebud County Commission. In 1978, the plan was revised, but has not yet been adopted. A zoning ordinance has also been developed for the area, but all procedures required for its implementation have not been complied with. The site plan for the original Colstrip expansion contained numerous covenants intended to restrict certain land uses and building options. Any new subdivision or resubdivision proposed in the area will be reviewed relative to the county's subdivision regulations adopted in 1974. The county has not adopted building codes.

The need for zoning will increase as the companies continue to sell properties to private individuals. Covenants are difficult to enforce in Montana and do not work effectively as a mechanism for implementing a master plan. The community should have little difficulty creating special zoning districts, as the master plan which is a prerequisite for such zoning has already been prepared for the area (R.C.M. 16-4701).

The future of Colstrip will be greatly influenced by whether Colstrip Generating Plants III and IV are built. A plan for a major expansion of the townsite has been developed and has received preliminary approval by the Rosebud County Commission. The town expansion would occur on the west side of the Colstrip Road and north of the townsite. It would allow the community to accommodate a much larger population. The construction of Plants III and IV would also eliminate the temporary mobile home park, as this area would be occupied by industrial uses.

c. Residents' Attitudes

Land use planning is one of Rosebud County's least visible local services. Thirty-four per cent of Forsyth respondents and 37 per cent of Colstrip respondents were satisfied with the quality of local planning, while 28 and 25 per cent respectively were dissatisfied with the service. In both urban areas 37 per cent of respondents were uncertain as to the quality of the service. More respondents were uncertain regarding planning than any other local service. Several interviewees inquired as to what land use planning is before they responded to the survey question. This lack of familiarity with planning explains why few respondents were willing to pay

higher taxes for the purpose of improving local planning. In Forsyth only 25 per cent and in Colstrip 22 per cent of respondents supported higher taxes for planning.

In spite of a general unfamiliarity with the quality of local planning and an unwillingness of urban residents to pay higher taxes for improved service, there appears to be a strong support for the concept of planning. Another question inquired as to whether land use controls should be used to regulate new settlement within the county. Seventy-six per cent of Forsyth respondents, 60 per cent of Colstrip respondents and 83 per cent of rancher respondents favored the regulation of growth-induced land uses. There was little opposition to the use of such controls in any of the subpopulations. However, strong rancher support should not be interpreted as a mandate for rural zoning, but more likely an endorsement of vigorous enforcement of the county's subdivision regulations.

Perceptions of the possible effects of future growth differ among urban and rural residents. Most Colstrip and a majority of Forsyth respondents are confident that the county could handle a sizable population influx. Seventy-five per cent of Colstrip interviewees and 55 per cent of Forsyth interviewees felt that Rosebud County could easily handle a population several times larger than its current level. Ranchers disagreed; 74 per cent felt Rosebud County would have difficulty accommodating such growth. The divergence of opinion between urban and rural residents reflects perceptions of benefit and liability. Economic benefits resulting from coal development have accrued to urban areas (more jobs, higher wages and expanded business). Conversely, the ranching enterprise has become more difficult (higher labor costs, more trespassing, open gates, poaching, etc.).

D. Transportation

1. General

A transportation network greatly influences a population's mobility. Settlement, employment, purchasing and recreational patterns are partly determined by the convenience of access. A transportation network must be analyzed therefore in terms of model diversity, carrying capacity and system organization.

By national standards, Rosebud County is sparsely populated (1.69 person/square mile) and its economy non-diversified. Consequently, the transportation network is not elaborate. The county is serviced by a commercial bus carrier and by Amtrak, and has a recently renovated and enlarged airport (no scheduled commercial flights); however, roadway travel in individual vehicles accounts for nearly all personal transportation in the county. Since 1970, motor vehicle use in Rosebud County has risen sharply. In spite of changes in system use, the routing and capacities of county roads have remained essentially the same. The road system has encouraged new development in existing communities and its limitations have restricted development in many rural areas.

2. Roadways

Outside of the townsite areas, there are only five paved roads in the southern half of the county. These are Interstate 94, U.S. Highway 212, old U.S. Highway 312, the Colstrip Road (FAS 315) and the Rosebud Creek Road (FAS 447). Interstate 94, following a course paralleling the Yellowstone River, is the most heavily traveled roadway in the county. Interstate use averaged over 3,200 vehicle trips daily in 1977. Since 1970, vehicle use of I-94 has increased by more than 30 per cent (Montana Department of Highways, Planning Division). The interstate is the major east-west corridor through Montana. Greatest traffic volumes are occurring at check stations west of Forsyth, implying that much of the recent traffic increases are attributable to commuter, shopping and entertainment trips between Forsyth and Colstrip. A higher level of use has not caused the interstate to approach its carrying capacity, estimated to be over 3,000 vehicle trips an hour (Memmoth and Guinn). Interstate 94 could handle several times its existing traffic volume without experiencing adverse effects on its performance.

The Colstrip Road connects I-94 with Lame Deer. In so doing, the roadway passes by the Colstrip community and the Rosebud and Big Sky Mines. The Colstrip Road is the weakest part of Rosebud County's existing road system. Prior to recent developments, the roadway's primary function was farm-to-market trips (mainly to Forsyth) and a small volume of trips between Lame Deer and Forsyth. In 1970, the roadway averaged less than 300 vehicle trips a day. With the growth in Colstrip and development of mining operations, daily trips increased to 1,750 north of Colstrip and 1,050 south of the townsite in 1975. Traffic volumes on the roadway have since declined slightly reflecting out-migration of generator plant construction workers. The main functions of the road have become work-oriented trips from Forsyth to Colstrip and shopping and entertainment trips from Colstrip to Forsyth.

The Colstrip Road is poorly designed relative to its current use and has become one of the most hazardous roads in Montana. It is narrow, with numerous hills, sharp curves and steep banks. From the interstate intersection vehicles must travel 30 miles to reach Colstrip and 35 miles more to reach the Big Sky Mine entrance. The road can be patrolled only occassionally by sheriffs' deputies and its speed limit is frequently violated. Since the initiation of coal development, the route has been the scene of numerous vehicle accidents involving several fatalities.

Until recently, the Colstrip road was a county road, which limited the finances available for needed improvements. In 1976, the state accepted the road as a state highway. Plans have been made since to improve the safety of the road, including reconstruction of its more dangerous stretches. These improvements are scheduled for completion in the early 1980s.

Other paved roadways in the southern portion of the county have been affected to a lesser degree by coal development. Connecting with the Colstrip Road at Lame Deer, U.S. Highway 212 provides an east-west route from Lame Deer to Ashland to the east and to the Crow Agency and Billings to the west. The highway now handles over 1,000 vehicle trips a day. A few of these are related to jobs at Colstrip and the Big Sky Mine and others are Colstrip-originated shopping trips to Billings. However, natural population increases in the Northern Cheyenne population and tribal member travel patterns between Lame Deer and Ashland and elsewhere on the reservation explain a much greater portion of the highway's use. The highway also services a considerable volume of non-local traffic.

The function of old U.S. Highway 10 was displaced by the completion of I-94. The roadway is now a frontage road carrying only local traffic (approximately 200 vehicle trips daily). The old highway provides an access route to three rural subdivisions that have been developed since 1970. Rosebud Creek Road intersects with I-94 ten miles east of Forsyth, but only the seven miles of road adjoining the interstate are paved. There has been no significant change in traffic volumes on this portion of the road, implying that recent developments have minimally affected this area of the county.

Numerous rugged gravel-based roadways, most of which follow drainages, finger off from the Colstrip Road. The southern end of Rosebud Creek Road is the most heavily traveled and best maintained of these roads. Other country roads are either dead-end roads or a part of an indirect routing pattern designed to service a few existing ranches. Maintenance of rural roads is difficult in a county as large and sparsely populated as Rosebud County, particularly in winter months. Poor rural road conditions make travel inconvenient and sometimes dangerous. The limitations of the rural road system and the county's reluctance to accept new roads or improve existing roads into unpopulated areas have played important roles in funneling settlement into townsites.

a. Forsyth

Forsyth's compact size and grid road pattern facilitate fairly convenient access into and out of the city. Front and Main Streets are major

east-west corridors through the city. Primary north-south routes are less clearly defined, which has caused a minor problem of residential streets being used by through traffic. Because Forsyth is still a small town, traffic congestion has not become a problem. The construction of the overpass over the railyard at the west end of the city has partially resolved what could have been a major problem concerning train/road vehicle conflict. Daily coal-train traffic frequently blocks motor traffic at the central and eastern access routes into the city's north side. The overpass has created an unencumbered route for emergency and other vehicles.

The most serious road-related problem in Forsyth is road maintenance. Between 1970 and 1978, the city's road expenditures increased exponentially. However, increased expenditures have not reconciled the fundamental problem of Forsyth streets, which is topographic. Located on a flat floodplain, the city's streets do not drain properly and water and ice remain on street surfaces. Montana winters and springs, combined with heavier road use, have broken the roads, creating potholes and ruts. Forsyth needs a system of curbs, gutters and storm sewers to resolve this problem.

b. Colstrip

Greater traffic volume, land use changes (different trip origins and destinations) and new and altered roadways have changed internal travel patterns within Colstrip. The community's expanded road system deviates from the townsite's original grid pattern. Willow and Box Elder Avenues are the major east-west routes through the permanent townsite. These streets are old and continue to conform to the original street patterns, whereas Olive and Currant Drives are curving north-south corridors through the townsite. New residential areas are located on looping streets and cul de sacs, rather than rectangular shaped blocks. The presence of major industrial land uses (generating plants and expanded mines) and a commercial complex have changed the purpose and frequency of Colstrip vehicular trips.

The meshing of original Colstrip roads with new and altered roads has not been completely successful. Main routes through the townsite are not conveniently linked, causing non-residential traffic to be routed through residential areas. Because Colstrip has few sidewalks, pedestrians must walk on the shoulders of roadways, creating conflicts between pedestrian and vehicular traffic. Unpopular speed bumps have been installed to reduce the possibility of accidents.

Another problem with the existing road system is that some key roads are not linked to other roads, preventing alternative access to and from adjacent areas. Dual access reduces traffic congestion and ensures access for emergency vehicles. Mobile homes on southern cul-de-sacs connected to Currant Drive are not provided with an alternative access route, should the main corridor become blocked or congested.

A similar but more serious problem is the singular access routes provided via Willow and Box Elder Avenues to the generating plants and temporary mobile home area. The roads have to cross the Burlington Northern tracks on the east side of the permanent townsite. The tracks are heavily used by

coal-carrying trains, which block vehicle traffic for several minutes each time they pass. Vehicles tend to build up on both sides of the tracks which provides the only chronic instance of traffic congestion in Colstrip.

The temporary mobile home area in Colstrip is still privately owned. Roads are gravel/scoria-based and have not been constructed to meet county standards. Road routing in this area is confusing and some open areas have become de facto roads through frequent use. Poor road design and maintenance contributes to the unattractiveness of the area and is the major cause of its dust problem.

3. Road Maintenance and Finance

Increases in traffic volume have caused corresponding increases in the need for road maintenance. In Forsyth, the deterioration of the city's streets has intensified because of greater road use. Much of the city's road construction and maintenance equipment has become obsolete in recent years and has required replacement. The city's expenditures for roads and streets increased from $20,440 in 1970 to $214,859 in 1977-1978. Much of the additional expenditures has been directed to the procurement of capital equipment. The city has received Montana Coal Board grants for road and street projects and acquisition of related equipment.

County road maintenance requirements have also increased. Until the Colstrip road became a state highway, its maintenance required heavy use of county road funds and manpower. More intense maintenance of the county's many gravel-based roads has also been required, as greater use has intensified rutting and dust problems. Despite increased road-related expenditures from $151,350 in 1970 to $372,400 in 1977, the county has reduced its road levy from 11.9 to 8.7 mills. This is explained by the exponential increase in the assessed value of the county. Like the city, the county has used additional revenue to replace obsolete equipment (e.g. construction of a new county garage). However, nearly half the county's recent expenditures has been for salaries. The Western Energy Company continues to maintain roads in the Colstrip townsite, even though roads have been accepted as county roads.

A portion of the Montana Coal Severence Tax is designated for improvement of the road system in coal-impacted areas. The Montana Highway Department has acquired several million dollars from the tax but has not expended the funds. Instead, the Department has been attempting, to date unsuccessfully, to use this money as match money for federal highway funds. Unfortunately, this money could have been used several years ago to resolve situations such as the need for improvement of the Colstrip Road. When and if this money becomes available in the impact area, it should facilitate the eradication of many of the road-related problems.

4. Residents' Attitudes

The majority of residents in Colstrip and Forsyth are unhappy with the quality of their roads and streets. In Colstrip, 50 per cent of the survey respondents were either dissatisfied or very dissatisfied with the

quality of roads. In Forsyth, 67 per cent of the respondents expressed negative views about the quality of roads and streets. In Colstrip, speed bumps, congestion at railroad crossings and general maintenance appear to be the principal reasons for discontent. In Forsyth, heavily rutted streets and general maintenance are the greatest source of annoyance. The condition of the Colstrip Road also contributes to vexation regarding the quality of road services. In both Colstrip and Forsyth, a majority of respondents indicated a willingness to pay higher taxes to improve the quality of roads and streets.

In the survey of Peabody Miners, an open-ended question asked respondents what they liked least about where they live. The recurring response by Forsyth residents was, "Driving the terrible Colstrip Road to work." In the rancher's questionnaire, the respondents cited road maintenance and dust as problems, both related to coal development.

5. Coal Transport

Coal mined in Rosebud County is ultimately converted to electrical energy by coal-fired generating plants. (These plants are located both in Montana and in the Great Lakes Region.) The coal is transported by haul trucks from the mine sites to primary and secondary crushers. The crushers reduce coal chunks to smaller sized particles, whereupon a conveyor loads the coal into 100-ton capacity railroad cars. Unit trains, composed of 100 to 105 cars and extending for a mile in length then transport the coal to ultimate destinations. At current production levels, Rosebud County mines will account for 2,500 one-way unit train trips in 1978, or about 50 trips a week. Some of Western Energy's coal (10 train trips a week) is shipped from its Rosebud Mine to the Colstrip Generating Plants. The remainder of Western Energy's and Peabody's coal is exported from the study area. A 7.5 mile rail spur connects the Big Sky Mine with the Burlington Northern tracks near Colstrip. From Colstrip, the coal is transported 30 miles northward along a Burlington connector route to the Yellowstone River. At the river the connector tracks intersect with the railroad's main east-west line. With the exception of Western Energy shipments to Montana Power's Corrette Plant in Billings, the coal becomes a part of the regional flow of coal to the midwest. Western Energy's coal is shipped to Wisconsin, Peabody's to Minnesota. At current output, Peabody generates nine one-way unit train trips each week.

Where a rail route carrying unit trains intersects with a roadway, coal transport can interfere with the normal flow of roadway traffic. This situation is inconvenient and potentially dangerous. Trains block traffic in Colstrip and Forsyth and at numerous rural intersections. Some grade separations have been built to isolate the two modes and most other roadway/railway intersections are clearly marked; however, accidents involving rail and roadway vehicles have occurred. The Colstrip Road has been the scene of a multiple death accident involving a car and a unit train.

Western Energy coal converted at Colstrip must cross the Colstrip Road only once, south of the townsite. In Colstrip the Burlington Northern connector line separates the Burtco Trailer/Colstrip Units I and II areas from the permanent townsite area. Roadways connecting the two areas are singular

access routes and the slow-moving unit trains frequently impede road-vehicle access between the areas for extended periods (in excess of five minutes). As export coal is shipped from Colstrip it passes through pasture land, creating another problem in that cattle cannot be easily moved from one side of the tracks to the other, and cattle can wander on to tracks and be struck by trains.

In Forsyth, Rosebud County coal contributes incrementally to a unit train problem. Burlington Northern's main rail line also carries unit trains from the Decker area and from Wyoming. This coal is looped northward via Huntley to Burlington's east-west route. Each day, dozens of unit trains travel this corridor, interfering with the north-south flow of traffic along the Yellowstone River. Because of Forsyth's function as a rail center, the disruptive effects of increasing volumes of coal shipments have been particularly acute. Switching activities in the city's railyard compound the obstructive effects of train traffic, blocking the central access road to the city's central business district and subjecting the city residents to almost constant noise. The overpass at the west end of Forsyth assures access for emergency vehicles.

The mainline of the Milwaukee Road Railroad travels a similar east-west route on the north bank of the Yellowstone, but little coal is shipped along this line. The tracks of this financially troubled railroad are in poor condition.

E. Housing

1. Housing Stock and Availability

Rapid population growth tends to alter the housing characteristics of a rural area. This results from the fact that newcomers may prefer or be willing to live in a different type of accommodation than predominates. In boom areas, this often means temporary or mobile housing. Between 1970 and 1978, the nature of housing in Rosebud County did change dramatically.

Prior to 1970, Rosebud County contained 2,032 houses, mainly older, wooden, single-family homes in fair to poor condition. There was a vacancy rate of only 1.9 per cent, indicating a housing shortage prior to the boom period (the construction of Interstate 94 had displaced about 40 homes in 1970, Thiesen, 1978). Before natural economic forces could cause the supply and demand for housing to reach a more desirable equilibrium (five per cent vacancy rate), the coal and energy-induced population boom began. In the space of a few years, over 3,000 persons migrated into the area. Every vacant house, apartment, boarding house and motel in the vicinity of Forsyth and Colstrip was filled. In 1975, the county-wide vacancy rate was estimated to be a minuscule 1.3 per cent; this rate was probably even lower within the impacted area (Rosebud County Housing Assistance Plan, 1976).

It proved impossible for conventional housing contractors in Rosebud County to alleviate the shortage. The three small contractors operating in the Forsyth area are able to construct only about a dozen homes a year (Rice 1978). There are no contractors operating in Colstrip. Nonetheless, between 1970 and 1976, an estimated net of 1,139 homes was added to the area's housing stock (Table II-E-1).

Table II-E-1

Housing Inventory
1970 - 1978
Rosebud County, Montana

1970(1)	1975(2)	1976(3)	1978(4)
2032	3121	3271	3005

(1) U.S. Census of Housing, 1970
(2) Rosebud County Housing Assistance Plan, 1976
(3) Special Census Rosebud County, 1976
(4) Meadowlark Group Estimate, 1978

Not surprisingly, the vast majority were mobile homes (Table II-E-2). This phenomenon has been the norm in coal-energy development areas of the Northern Great Plains. However, because of the rural nature of Rosebud County prior to development, the relative magnitude of change in area housing characteristics has been greater than in most other areas. In 1976, Rosebud County had the highest percentage (36.6%) of mobile homes of any county in Montana (John Short and Associates, 1977). This constitutes a significant change in the structural profile of the housing stock.

Table II-E-2

Licensed Mobile Homes and Trailers
Rosebud County, Montana
1970 - 1977

	Mobile Homes	House Trailers	Total
1970	185	32	217
1971	206	39	245
1972	291	80	371
1973	375	159	534
1974	609	515	1114
1975	931	267	1360
1976	1130	266	1396
1977	973	240	1213

Source: Bob Mogan, Rosebud County Assessor, 1978.

The acquisition of housing became more difficult between 1970 and 1976, even though the housing stock grew at a faster rate than the population. This phenomenon is explained by changes in the demographic characteristics of the area's residents, which resulted in smaller household sizes. In 1970, the average density per occupied dwelling unit in Rosebud County was 3.22 persons. In 1976, this density was reduced to 2.99 persons per unit. This represents a 10 per cent reduction in density in just 6 years. Household sizes in impacted townsites were smaller than in outlying areas of the county. In 1976, Forsyth averaged 2.42 persons per dwelling unit and Colstrip 2.62 persons per unit. (John Short and Associates, 1977).

Most new settlement in Rosebud County has occurred in Forsyth and Colstrip. Table II-E-3 illustrates the total housing stock and structural diversity existing within the two communities. The difference in the structural profile reflects the larger size of the pre-1970 housing stock in Forsyth.

Table II-E-3

Estimated Housing by Structural Type
Forsyth and Colstrip, Montana
April 1978

	Forsyth	Colstrip*
Single-Family	594	207
Apartments	62	64
Mobile Homes	256	393
Total	912	664

*Includes houses under construction

Source: Meadowlark Group Housing Inventory, 1978

With the out-migration of the Colstrip Plant construction forces, the area's housing shortage has eased slightly. The number of licensed mobile

homes in the county has recently been declining (Table II-E-2) which means the area's population loss is not necessarily opening up a proportionate number of housing units. A 1976 housing inventory estimated that the county-wide vacancy rate had risen to a very acceptable 5.2 per cent, with the rate being higher in Forsyth than in Colstrip (John Short and Associates, 1977). Verbal comments from 1978 survey respondents reinforce the contention that the housing scarcity has eased in the impact area.

2. Housing Condition

Much of the Rosebud County housing stock built prior to the energy boom is quite old. The 1970 census reported that 61.7 per cent of the area's housing units were in excess of 30 years old. Structure age is often indicative of the physical condition of housing, in that older housing often deteriorates because of aging. This premise holds true for Rosebud County. In 1975, the county planning office collected housing information for a Rosebud County Situation Statement (Table II-E-4). Overall, the physical condition of 90 per cent of the county's single-family dwellings (including 438 homes in Forsyth and 66 homes in Colstrip) was rated as below average or worse. In another study, the Rosebud County Housing Assistance Plan reported that 1,225 of its 3,121 housing units were substandard.

Table II-E-4

Survey of Housing Conditions
Rosebud County
1975

	All Units		Owner		Renter	
	Total	Subtotal Suitable for Rehab-ilitation	Total	Suitable for Rehab-ilitation	Total	Suitable for Rehab-ilitation
Occupied Units	3081	1225	2126	845	955	380
Substandard	1225	232	845	160	380	72
Substandard & Other	1856	993	1281	685	575	308
Vacant Available Units	40	16	9	7	31	9
Substandard	16	3	4	1	12	2
Standard	24	13	5	6	19	7
	3121	1241	2135	852	986	389

Source: Rosebud County Housing Assistance Plan, 1976

These studies delineate what has to be considered a serious problem relative to current and future conditions of the area's housing. While some of the units which are cited as being deficient are not salvageable through reinvestment, the Housing Assistance Plan suggests that the condition and life expectancy of a great number of homes (1,241) within the county could be enhanced through rehabilitation. Current difficulties in accomplishing rehabilitation include the non-participation of local governments in federal

rehabilitation loan programs, a shortage of local contractors to accomplish the work, and considerable uncertainty regarding the community's economic future. The local banks do loan money for housing repairs.

Another consideration pertaining to the deterioration of Rosebud County housing concerns mobile home obsolescence. While stick-built modular homes have a life expectancy of about 75 years, many models of mobile homes are expected to last only 20 years. Unless these units are replaced with more permanent housing, the 1990s might see structural obsolescence negate roughly one-third of the county's existing stock. This phenomenon not only has the potential of creating mini-slums, but mobile home depreciation would adversely affect local tax bases.

3. Ownership and Costs

On a county-wide basis, approximately 60 per cent of dwelling units are owner occupied, but ownership characteristics differ in Colstrip and Forsyth (Rosebud County Housing Assistance Plan). Colstrip is, for all practical purposes, a company-owned town. In March, 1977, 93 per cent of single-family homes in Colstrip were company-owned (Fandrich,1977). This figure does not include the 166 mobile homes located on permanent lots and the 220 mobile homes on temporary lots. Most of the townsite's almost 400 mobile homes are owned by individuals, but lot ownership within the community has been retained by the companies. Current home ownership statistics for Colstrip and Forsyth are not available. However, the survey conducted in connection with this study found that, in Colstrip, 54 per cent of the respondents were home owners; in Forsyth, 69 per cent of the respondents owned their own homes. These percentages include households owning mobile homes sited on rented lots.

A housing issue unique to Colstrip is the process by which housing is made available for sale. Many people expressed unhappiness with the waiting list system by which a home becomes available for purchase. When a house is put up for sale by the company, the person whose name appears on the top of the list must buy the home or their name is returned to the bottom of the list. Not only does this procedure inhibit selectivity options for potential home buyers; it also prohibits competitive bidding for homes, as a firm price is set by an independent appraiser. It is probable that the latter process deflates rather than inflates the cost of housing.

The expense of housing has risen sharply in the impact area. While the area was experiencing a very low vacancy rate prior to coal and energy development, it was also experiencing little population change. The price of housing was not affected as it might otherwise have been if the area's population was growing. The 1970 Census of Housing reported the median value of an owner-occupied home in Rosebud County to be $7,700. Eight years later, the same homes are selling for between $30,000 and $40,000. Most older homes in Forsyth belong to long-time residents and have not been available for purchase by in-migrants. To have a new three-bedroom, single-family dwelling unit constructed by local contractors is estimated to cost in excess of $50,000 (Mellville, 1978). The cost of a locally constructed home in Colstrip is reportedly slightly higher, but the average price of an older home in Colstrip is only $18,000 (Fandrich).

The unavailability of older housing and the costs and production limitations of constructing conventional homes locally have caused in-migrants to purchase modular and mobile homes from outside the area, particularly from Billings and Miles City. The heavy reliance on non-locally constructed housing has caused local housing costs to be more profoundly influenced by statewide trends than might otherwise have been the case. The median cost of a stick-built modular home in Montana is estimated to be $40,000, the median cost of a mobile home between $20,000 and $25,000 (Mollohan, 1978). Neither of these cost estimates includes transportation or site preparation costs. The proliferation of mobile homes has had some adverse effects upon the area's tax base. Per structure taxable valuation is much lower for mobile homes than conventional housing and they depreciate rather than appreciate in value.

Financing a home can be a problem for younger people moving into the community. Banks in Forsyth and Colstrip have readily financed homes for households with established credit and employment histories in the area, but are understandably reluctant to finance housing for young families without such backgrounds. While the area is eligible for the Farmers' Home Administration home loan program, this program cannot loan money on homes selling for over $33,000. This ceiling severely limits the number of homes that can be financed through the program.

Prior to the energy boom, the market values of housing in Rosebud County were lower than the state and national norms. Population growth in the 1970s has played a major role in causing Rosebud County housing costs to more closely reflect state and national prices. While housing costs in isolated rural areas of Montana have been increasing, they have not done so to the degree they have in Rosebud County (Mollohan). Had the impact area not experienced industrialization and urbanization, its current housing costs would be much lower.

Rapid increases in the demand for rental units created a windfall profit situation for many motel, hotel, apartment and mobile home park owners in the area, inasmuch as they received rents and experienced occupancy rates much higher than they had experienced prior to 1972. Increases in housing prices have affected all population elements within the area, but most adversely affected have been low-income households, particularly those requiring rental housing. The shortage of low-cost rental units has also constrained the normal filtration of homes from older households to younger households.

The tightness of the area's housing situation has eased somewhat with the out-migration of the Colstrip power plant construction forces. While there are now units available for rent, there is still an apparent shortage of single-family homes for purchase. Housing costs and rents have remained high, as many property owners are anticipating another windfall situation with the construction of Colstrip units III and IV.

4. Low Income Housing

Wage levels paid by the mining and power companies are much higher than wages paid by ranchers and other traditional employers of Rosebud

County. Greater purchasing power gives mine and power plant employes an advantage when competing for a finite supply of housing. Table II-E-5 identifies the number of low-income households in Rosebud County as determined by the formula used by the U.S. Department of Housing and Urban Development. Minority households cited by the table are primarily Northern Cheyenne households located off the reservation. Low-income households on the reser-

Table II-E-5

Low Income Households
Rosebud County, Montana
1976

	All Households				Minority Households			
	Elderly or Handicapped	Family (4 or less)	Large Family (More than 4)	Total	Elderly or Handicapped	Family (4 or less)	Large Family (More than 4)	Total
Owner	114	172	39	325	4	19	12	35
Renter	51	77	17	145	2	8	5	15
Total	165	249	56	470	6	27	17	50

Source:
Rosebud County Housing Assistance Plan Table II, 1976.

vation are not recorded on this table.

Owner-occupied low-income households have been less vulnerable to housing displacement because of increases in the cost of housing. Many of these people purchased their homes prior to 1970 and were therefore minimally affected by the higher costs. Conversely, low-income households that rent have been extremely vulnerable to increasing competition for rental units. Neither the city of Forsyth nor Rosebud County is participating in HUD programs designed to provide low-income housing; however, the area has been allocated three "Section 8" housing units, resulting from a statewide application made through the Montana Department of Community Affairs (Pederson, June, 1977).

A new, 24-unit apartment complex, sponsored by the Farmers' Home Administration, is the only off-reservation public housing operating in the county. Rent subsidies based on income are available to older people living in these Forsyth apartments.

The unavailability of low-cost housing prevents older residents of the area from selling homes which have become too large and difficult to manage. This problem has encumbered the normal filtration of single-family homes from older households to younger households. Surprisingly, the escalation of housing costs has not yet significantly changed the traditional retirement pattern of rural residents moving to the city of Forsyth (Rice, 1978). The continuation of this pattern would insure a growing demand for low-cost housing in the area.

5. Residents' Attitudes

The present housing situation is an issue of dissatisfaction among many residents of both Forsyth and Colstrip but more so in the latter community (Table II-E-6). Survey results and resident interviews revealed unhappiness with: the general availability of housing; the type of housing that is available; and the cost of housing. A higher percentage of mobile home dwellers than single-family home and apartment dwellers and a higher percentage of renters than home owners were dissatisfied with the existing

Table II-E-6

Questionnaire Responses Pertaining to the Adequacy of Housing

	Forsyth	Colstrip
Very Satisfied	3%	4%
Satisfied	53%	39%
Uncertain	14%	13%
Dissatisfied	24%	27%
Very Dissatisfied	6%	16%

housing situation. In Colstrip, many residents were unhappy with the procedure whereby housing is sold to private individuals.

Mobile homes have been the major solution to the area's increased demand for housing. Another survey question asked whether mobile home parks are the best answer to the housing shortage. Responses from the two urban areas were similar: 55 per cent of the Forsyth respondents and 51 per cent of Colstrip's respondents agreed or strongly agreed with the mobile home solution; 28 and 31 per cent, respectively, disagreed or strongly disagreed. The negative responses to this question explain at least some of the residents' dissatisfaction with the housing situation. In addition, many people who agreed that mobile homes are the best answer to the housing shortage qualified their agreement by stating that mobile homes should be considered only a short-term solution.

Although it is an issue, residents of the two communities do not believe the higher costs of housing were induced by mining or the power plants. Oral comments to Meadowlark Group interviewers repeatedly emphasized that it has not been local economic developments, but national inflationary factors which have caused increased costs. Because of this attitude, most respondents disagreed with the survey statement, "People on fixed incomes cannot keep up with the rising cost of living caused by coal development," although most respondents acknowledged that inflation has had extremely adverse effects on people with fixed incomes.

Another survey question inquired as to the perceived availability of low-income housing as it relates to the impacts of future coal development.

Of the Forsyth respondents, 62 per cent agreed or strongly agreed that there would be insufficient housing for low-income people. In Colstrip, fewer people (54 per cent) agreed. Disagreeing respondents in Colstrip frequently commented that because there are no low income people in Colstrip, there was no need for such housing.

F. Governmental Services

1. General

The purpose of this discussion is to explain the current methods of service delivery and pattern of finance used by governments, individually or jointly, in the area affected by the expansion of the Big Sky Mine. Service providers in the analysis include: the City of Forsyth, Rosebud County, School Districts #4 (Forsyth) and #19 (Colstrip), single purpose jurisdictions (i.e., fire protection - West Rosebud Fire District) and state and federal agencies whose administrative or financial involvement substantially affects service delivery at the local level. Customary service providers which are informal structures of association such as religious, charitable, ethnic, community service, cooperative or other private organizations are not treated here but are discussed in the subsequent section under social structure.

The primary geographic foci of the inquiry are the incorporated community of Forsyth and the rural area of Rosebud County south of the Yellowstone River, particularly two unincorporated areas with relatively dense populations -- Colstrip and Lame Deer.

An overview of service provision in the impact area is contained in Tables II-F-1, II-F-2 and II-F-3, which detail the proportion of local budgets expended for various services as well as level of citizen satisfaction with service quality.

From Table II-F-3 the following generalizations can be made. Forsyth residents are least satisfied with roads and streets, medical care and recreational facilities and most satisfied with library, fire protection and water quality. They would be more willing to pay taxes for increased quality of service in roads and streets and schools. There is greatest disagreement among Forsyth residents regarding the quality of recreational facilities, law enforcement and sewage disposal.

Colstrip residents are least satisfied with medical care, shopping facilities and roads and streets and most satisfied with schools, solid waste disposal, sewage disposal and recreational facilities. They would be willing to pay more taxes for increased quality of service in medical care and law enforcement. There is greatest disagreement among Colstrip residents regarding the quality of roads and streets, housing and law enforcement. In general, there is little difference in perception of overall service quality between Forsyth and Colstrip residents. The greatest disparity in assessment between Forsyth and Colstrip residents has to do with the quality of library and medical care. It deserves mention that residents seem most dissatisfied with services which traditionally are provided by the private sector, such as medical care, shopping facilities and, to a certain extent, recreation.

TABLE II-F-1

PROPORTION OF FORSYTH MUNICIPAL REVENUES
ALLOCATED TO SELECTED FUNCTIONS
FY 1978

Function	Amount	Percent
All-Purpose Fund	$ 433,945	100.0
Police Department	57,269	13.2
Police Court	2,467	.6
Fire Department	7,433	1.7
Sewer Department	773,384*	
Water Department	511,454*	
Solid Waste	227,057*	
Streets	22,963	5.3
Parks and Playgrounds	18,371	4.2
General Government	48,269	11.1

* Revenues from fees and grants and not generated by property taxation.

TABLE II-F-2

PROPORTION OF ROSEBUD COUNTY REVENUES
ALLOCATED TO SELECTED FUNCTIONS
FY 1978

Function	Amount	Percent
General Fund	$ 2,225,184	100.00
Sheriff's Office	365,411	16.4
County Attorney	74,946	3.4
Fire Protection	7,000	.3
Health	45,640	2.1
Alcohol and Drug Abuse Program	18,930	.9
Solid Waste	150,000	6.7
Rodent Control	21,000	.9
Poor Fund	163,484	100.00
Aid to Dependent Children	4,500	2.7
Non-Reimbursable Welfare Costs	15,350	9.4
State Reimbursement for Welfare Expenditures	77,104	47.2
Nursing Home	10,000	6.1
Medical and Hospitals	30,000	18.4
Library Fund	48,539	100.0

TABLE II-F-3

RESIDENT SATISFACTION WITH LOCAL SERVICES: FORSYTH AND COLSTRIP*

		Very Satisfied	Satisfied	Uncertain	Dissatisfied	Very Dissatisfied		Rank Order of Satisfaction	Willing to Pay Higher Taxes to Improve Service	Unwilling to Pay Higher Taxes to Improve Service
Schools	F	7%	56%	18%	14%	3%	2.5	4	46%	43%
	C	14%	54%	20%	10%	2%	2.3	1	53%	40%
Law Enforcement	F	5%	42%	15%	29%	8%	2.9	7(T)	38%	52%
	C	2%	42%	16%	24%	14%	3.1	9(T)	58%	37%
Housing	F	3%	53%	14%	24%	6%	2.8	6	22%	66%
	C	4%	39%	13%	27%	16%	3.1	9(T)	27%	64%
Library	F	45%	46%	5%	2%	1%	1.6	1	32%	57%
	C	7%	48%	29%	13%	2%	2.5	3(T)	48%	46%
Roads & Streets	F	2%	27%	4%	41%	25%	3.6	13	51%	41%
	C	3%	42%	4%	32%	17%	3.2	11	55%	39%
Sewage Disposal	F	3%	50%	11%	29%	7%	2.9	7(T)	45%	44%
	C	4%	63%	15%	8%	7%	2.5	3(T)	32%	60%
Medical Care	F	2%	35%	17%	33%	12%	3.2	12	36%	53%
	C	-	11%	10%	43%	36%	4.0	13	67%	25%
Fire Protection	F	11%	69%	12%	6%	1%	2.2	2	43%	46%
	C	3%	56%	20%	15%	4%	2.6	6(T)	49%	43%
Water Quality	F	7%	70%	4%	16%	3%	2.4	3	32%	58%
	C	8%	60%	6%	15%	10%	2.6	6(T)	33%	59%
Recreational Facilities	F	3%	42%	11%	26%	18%	3.1	11	34%	51%
	C	13%	57%	4%	18%	7%	2.5	3(T)	30%	60%
Shopping Facilities	F	3%	60%	10%	22%	5%	2.6	5	15%	75%
	C	4%	33%	4%	38%	20%	3.4	12	26%	65%
Land Use Planning	F	1%	33%	37%	20%	8%	3.0	10	25%	60%
	C	5%	32%	36%	21%	4%	2.9	8	22%	65%
Solid Waste Disposal	F	5%	40%	24%	21%	9%	2.9	7(T)	37%	51%
	C	8%	56%	23%	9%	3%	2.4	2	24%	65%

* Percentages may not total 100% because of rounding and/or non-responses: nonadjusted frequencies.

T Indicates a tie with another category

2. Law Enforcement

a. Forsyth and Rosebud County

Law enforcement is traditionally one of the most significant functions of local governments. This is reflected in the amount of funds allocated to crime control in local budgets. According to citizens' perceptions of importance, law enforcement is often seen as the most critical service provided by local government. The combination of high visibility of the police and public apprehension over rising crime rates helps produce this selective emphasis on local law enforcement. Apprehension is heightened during periods of transition, such as occurs when rapid population influx brings traditional community values into conflict with a more rapid pace of life. Sudden growth also accentuates problems of cooperation and coordination between the parallel law enforcement agencies traditionally found in the city and the county. For these reasons, the impact of coal development-induced population growth in Forsyth and Rosebud County requires careful assessment.

The adequacy of existing law enforcement service is a subjective determination and for that reason is difficult to measure. Several measures can be applied which, taken together, produce a fairly exhaustive picture of the law enforcement structure and crime control network. These include: 1) structure of the relationship of the law enforcement departments within local governments; 2) manpower and crime rates; 3) budget figures, including comparative statistics and trends; 4) facilities, and 5) survey data on residents' demands and satisfaction.

i. Structure

Historically, law enforcement has been a function performed by both county and municipal governments. Counties act on behalf of the state to assure that a minimum level of law enforcement is available everywhere in the state. Municipalities are usually incorporated so that an additional level of law enforcement can be provided to meet the needs of a concentrated population center.

In 1973 the City of Forsyth and Rosebud County consolidated law enforcement agencies into a single entity. Consolidation has eliminated duplication in the areas of communications and dispatching, detention facilities and administrative personnel that usually impose duplicate financial burdens on taxpayers, particularly urban taxpayers who pay both municipal and county taxes.

Since Rosebud County operates with the traditional plural executive, or county commission, form of government, there is no clear line of accountability for law enforcement. An independently elected county sheriff bears principal responsibility for the administration of the Sheriff's Office. Funding for the operation and programs of the Sheriff's Office, however, is the legal responsibility of the three-member county commission.

Conflicts between these two offices usually occur over the level of program funding. Because the members of each office are independently elected, each is responsive to different constituency demands and pressures. On the one hand, the obvious funding priority of the sheriff is law enforcement. On the other hand, county commissioners perceive law enforcement as only one of many programs whose funding priority is determined in the context of the priority assigned to other programs and the availability of financial resources.

This condition is compounded when there are differences within the county commission itself over the appropriate level of funding for law enforcement. As public demands for higher levels of law enforcement increase, the potential for budgeting conflicts similarly increases.

Effective law enforcement at the county level also relies on close cooperation between the sheriff and the county attorney. Successful prosecution tends to have a positive effect on crime rates. While the county attorney has successfully prosecuted a high percentage of cases (See Table II-F-4), some in the county responding to the community needs survey said they feel that law enforcement in general suffers because of tensions between the sheriff's and county attorney's offices.

Generally, city-county cooperation in law enforcement is difficult to achieve where separate agencies exist. Cooperation is secondary to the delivery of service to perceived constituencies: municipal forces respond to residents within the corporate limits and county forces, ironically, to residents in unincorporated areas even though all county residents are entitled to the service.

Because of this traditional division and dualism, few law enforcement consolidations have occurred. Forsyth and Rosebud County are exceptional in this respect and the merger has proved advantageous. Merger entails comprehensive jurisdictional coverage and permits a ready shifting of resources to meet temporary conditions. Jurisdictional jealousies, which often block urban-rural cooperation, are minimized. There is, however, the potential for serious conflicts over the use of urban tax dollars in unincorporated rural areas as these areas increase in population and generate permanent law enforcement demands. See Budget.

ii. Manpower and Crime Rates

The sheriff's department has a staff of 21: sheriff, 2 under sheriffs; 13 deputies; and 5 jailers. This is in sharp contrast to the pre-coal development level when the city and county employed only 9 deputies. Eight deputies are now specifically assigned to the incorporated limits of Forsyth, but departmental assignments appear sufficiently flexible to permit temporary shifts of personnel to meet varying demands.

TABLE II-F-4

COUNTY ATTORNEY CASELOAD:

PROSECUTIONS
1975-1977

Crime	No. of Cases Filed Charges	Convictions
Homicide	7	5
Burglary	11	9
Sex Crimes	5	3
Aggravated Assault	10	6
Felony - Bad Checks	7	5
Dangerous Drugs	4	4
Sale of	4	2
Criminal Mischief	2	1
Sale of Explosives	5	5
Grand Theft	8	6
Kidnapping	2	1
Misdemeanors		
1975	73	40
1976	90	62
1977	95	70 (18 Pending)

(Most frequent: bad checks and reckless driving)

Source: John Forsyth, Rosebud County Attorney, 1978.

Three deputies are specifically assigned to Colstrip, the most populous area of rural Rosebud County. As this area is impacted by population growth and an accompanying rise in crime rates, area residents will demand additional services such as patrolling. The county sheriff estimates that, if Colstrip Units #3 and 4 are constructed, two additional deputies will be needed in Colstrip (Schiffer, 1978). Department personnel estimate that 60% of their time is spent patrolling, 30% investigating, 5% on traffic and 5% on administration.

In addition to the sheriff's department personnel, Rosebud County has the services of two highway patrolmen and two Fish and Game wardens who are available in emergencies.

According to the Montana Board of Crime Control, Rosebud County had a crime rate of 3.1 crimes per 100 county inhabitants in 1976, below the state average of 4.3 crimes per 100 persons. Still, Rosebud County ranked twentieth overall and well above adjacent coal-impacted counties: Big Horn (1.2 crimes/100) and Treasure (1.4 crimes/100) (Montana Board of Crime Control, 1978).

Using the Sellin and Wolfgang measure, in which each crime is weighed according to seriousness, Rosebud County's crime level is 8.9 crimes per 100 persons -- below the state average of 10.1/100 persons. Under this measure Rosebud County ranks fourteenth among Montana's 56 counties (Montana Board of Crime Control, 1978

The data in Table II-F-5 demonstrate fluctuating crime levels, although there is a steady rise between 1972 and 1976 and a taper in 1977.

iii. Budget

Law enforcement expenditures constitute large portions of the budgets of both Rosebud County and Forsyth. $365,411, or 16.4% of the general fund, has been appropriated for FY 1978 for the sheriff's office by the county; Forsyth's share of law enforcement for the same period is $57,269, or 13.2% of the municipal all-purpose fund. The respective percentages that law enforcement constitutes of operating budgets represent an increase over FY 1976 for both Rosebud County (up from 14.4%) and Forsyth (up from 9.8%).

Coal development appears to have had a substantial effect on expenditure trends, particularly on Rosebud County. In FY 1970 the county expended $24,805 (4.6% of the general fund budget) on the sheriff's office; in FY 1972 the figure rose to $35,981 or 5.3% of general fund expenditures. In the six-year interval since FY 1972, the percentage of the general fund budget consumed by law enforcement services provided through the sheriff's

TABLE II-F-5

ROSEBUD COUNTY SELECTED CRIME STATISTICS
1970-1977

Year	VIOLENT CRIMES				PROPERTY CRIMES			
	Murder	Rape	Robbery	Assault	Burglary	Larceny Theft	Motor Vehicle Theft	Total
1970				4		12		16
1971		2	2	10	61	183	18	276
1972		1	1	7	28	51	8	96
1973								
No. Cheyenne	1	3		36	6	9	2	57
County		2		15	20	53	8	98
								155
1974								
No. Cheyenne	1	3		55	11	20	1	91
County	2	4	1	7	19	68	8	109
								200
1975								
No. Cheyenne		1		78	2		2	83
County	1	2		14	36	104	5	162
								245
1976								
No. Cheyenne		4		52	33	15	1	105
County		1		11	53	104	24	193
								298
1977								
No. Cheyenne	2	6	7	72	9	9	3	108
County	3			5	24	74	5	111
								219

Source: Criminal Justice Data Center; Montana Board of Crime Control, 1978.

office has more than tripled. If the law enforcement category is enlarged to include the county attorney and the courts, the increase becomes even larger.

The percentage of Forsyth's total expenditures represented by law enforcement actually declined from 1970 through 1976: 1970 (13.9%); 1972 (13.4%); 1974 (9.5%); and 1976 (9.8%). While total municipal expenditures fluctuated during this period, it is clear that, with adjustment for capital expenditures, law enforcement demands in Forsyth have not risen as sharply as in the whole of Rosebud County.

The allocation of law enforcement personnel also demonstrates the more rapidly expanding demand for law enforcement services in the rural areas. Prior to consolidation of law enforcement agencies in 1973, Forsyth employed a police force of five and Rosebud County employed a four-member force which concentrated on the rural portion of the county. The department currently assigns eight deputies to the Forsyth area and seven to the remainder of the county.

The spillover effect of urban-protection-to-rural-areas and vice versa makes it difficult to determine the location of expenditures, particularly because consolidation has facilitated the shifting of manpower. Forsyth's reduced percentage of expenditures can be interpreted as an advantage under consolidation, but municipal residents could be paying hidden cost increases as county taxpayers. The presumption is that all county taxpayers are entitled to a minimum level of law enforcement; in addition to those services, Forsyth residents expect an additional level of service (more frequent patrolling) for the taxes they pay as municipal residents.

As crime rates and demands for better service increase in the more populated rural areas, however, overall county expenditures rise. Municipal residents are forced to pay higher taxes than county residents so that better protection can be afforded the rural areas while there is little appreciable increase in municipal service. Under current law, counties are unable to pinpoint particular areas in need of increased law enforcement services and charge the increased expenditures for those services to the inhabitants of that area only.

Law enforcement needs are expanding in rural Rosebud County and citizens want them met. Of those responding to the survey in Colstrip, 61.2% said they would be willing to pay higher taxes to improve the quality of service. Taxes in rural Rosebud County are so low that a modest increase could be absorbed with little noticeable effect on the average property owner.

In contrast, the Forsyth survey reflected the obvious municipal perspective: 58% of the respondents said they would be unwilling to pay higher taxes for improved law enforcement.

Apparently, Forsyth respondents, who are generally satisfied with the quality of law enforcement, are unwilling to serve as a tax base for the rural areas; those dissatisfied with the quality of service possibly feel that an alternate use of existing manpower (e.g., shifting to the municipal area) would improve the quality of law enforcement.

While the county has a sufficient tax base to finance a modern law enforcement agency, Sheriff Schiffer says his county has trouble recruiting and retaining deputies. His salary and those of his deputies, set by law, are currently affixed so low that his agency can not compete with local construction and mining jobs. Force turnover is high as deputies find it difficult to live comfortably on a law enforcement salary.

iv. Facilities

Suspects and prisoners from throughout the county are incarcerated in the Rosebud County jail, built in 1904. Because of its dilapidated and unsanitary state, plans have been completed for the construction of a new facility. Construction, to be completed in the fall of 1978, will be financed in part by a $100,000 grant received from the Coal Board. The new facility will have a holding capacity of 24, more than double the existing capacity. As required by law, the facility contains separate cells for juveniles and females.

The new facility should be adequate to meet any current or future anticipated demand. During periods of high capacity, prisoners could be incarcerated in adjacent counties.

v. Residents' Perceptions

The adequacy of law enforcement services is ultimately a subjective determination made by local residents. Perceptions of "quality" may be unrelated to expenditure level. More often, they originate from casual observations and rumor.

Surprisingly, assessment of the quality of law enforcement service differed little among the subsamples in the community attitudinal survey. In Forsyth, nearly half of the respondents said they were either satisfied (42.4%) or very satisfied (4.6%) with the quality of service. Significantly, another 29.8% said they were dissatisfied and 8% were very dissatisfied. The Colstrip survey indicates general satisfaction (42.9%) but also significant amounts of dissatisfaction: 24.1% dissatisfied and 14.3% very dissatisfied.

Among thirteen local services assessed, law enforcement ranked eighth in Forsyth and tenth in Colstrip in average level of residents' satisfaction.

The survey yielded diverse perceptions of personal safety. Of the Forsyth respondents, 57% said they feel it increasingly necessary to lock their doors by night and cars by day, while 71% of the

Colstrip respondents disagreed with the same statement.

Apparently viewing in-migrants who settle in Colstrip with suspicion, Forsyth residents feel they are potential targets of crime from Colstrip inhabitants who use Forsyth as a trade and recreation center. Nearly 48% said they agreed (38.0%) or strongly agreed (9.3%) that there will be a sharp increase in crime and illegal drug use as a side effect of expanded mining activity.

The distance between Forsyth and Colstrip (35 miles) and its perceived effect on crime patterns and the law enforcement agency's ability to combat those patterns may account for the different attitudes toward crime.

Colstrip respondents for the most part are part of either the initial or successive stages of development and probably are less suspicious of in-migrants. Forty-three percent disagreed that expanded mining would be accompanied by increases in crime and illegal drug use, compared to 32% in Forsyth. Responses in Colstrip to the 'locked doors' question indicate much higher levels of confidence about security in the future than in Forsyth. Dissatisfaction with the quality of service possibly stems from the allocation and immediacy of resources to the community (3 deputies, no office, no jail) and a high amount of unreported crime and disturbances.

3. Fire Protection

Fire protection is usually identified as the most essential service provided by incorporated municipalities, because it is essentially a service to property and a protection against human and financial loss. The quality and level of fire protection is dependent upon the ratio of water supply to structures that can burn; this ratio ultimately dictates the size and capacity of equipment and the necessary levels of manpower and training.

Fire protection in the impact area currently consists of the Forsyth Municipal Volunteer Fire Department, the West Rosebud Fire District (Colstrip) and the volunteer force at Lame Deer. Large portions of Rosebud County in the impact area remain unprotected for the purpose of insurance classification and draw the highest insurance rating (Class 10 -- unprotected).

Coordination of fire protection services is absent, although informal agreements cover areas at the margins of jurisdictions. As population and community growth require more responsive fire protection, pressures for coordination will likely increase. Potential tort liability will necessitate a review of informal agreements and the negotiation of more comprehensive, formal agreements.

a. Forsyth

The fire department is a totally volunteer, 16-man company. Because of its volunteer status, the department has a minimal budget - expenditures totalled $3,428 in FY 1977, less than one percent of the

city's total expenditures. In fact, city payments to the Firemen's Relief Association have surpassed expenditures for fire protection in recent years.

The city operates two tanker-pumper trucks with 1,000-gallon and 750-gallon capacities, respectively. The city may also call on the equipment of rural Rosebud County. See 'Rural Rosebud County'.

Completion of the city's new water system in 1977 resulted in a lowering of the fire insurance rating from Class 7 to a more preferable Class 5.

The city takes great pride in its fire service. According to the Forsyth survey, residents feel that fire protection services are generally good: 11.2% indicated that they were very satisfied, while another 69.7% registered 'satisfied' ratings. Citizens repeatedly refer to a grain elevator fire that the volunteer force extinguished several years ago - a remarkable feat in any community.

b. Colstrip

Colstrip is located in the West Rosebud Fire District, which is served by an 18-man volunteer department.

The equipment is old. The primary unit is a 1959 International with a 1,000-gallon capacity. It is supported by a vintage 1938 Chevrolet pumper with a 500-gallon capacity. The district can also call on the fire protection equipment of the rural area. Due to recent improvements in its water system, Colstrip has a Class 7 fire rating, largely because of sufficient water supply and pressure.

As with most small, industrial-based communities, there is an informal agreement between the community fire service (West Rosebud Fire District) and the major industry (Western Energy). Additional assistance is available from a 3/4-ton pickup tank-pumper unit located at the power plant and from two water wagons (6,000 and 8,000 gallons) from nearby surface mines. One district fire truck is parked in a Western Energy garage.

Because of the large number of mobile and modular homes in the area, attention is shifting toward reducing fire response time. The fire susceptibility of these structures, coupled with their density, has raised concerns over the possibility of a sudden and extensive fire disaster. Population and community growth will necessitate more planning and additional capital outlay (equipment) to retain the current fire rating.

Nearly 60% of Colstrip respondents expressed satisfaction with fire protection.

c. Lame Deer

A twenty-six member volunteer force provides fire protection in Lame Deer. The equipment is old and inadequate: a 250-gallon truck and a

1,500-gallon pumper-tanker. As a result, Lame Deer has a Class 9 fire rating.

Projected growth for the area resulting from mining expansion indicates that the current fire rating can be maintained without increasing the water supply or other additional capital expenditures.

d. Rural Rosebud County

Like most rural areas, the sparsely populated portions of Rosebud County within the impact area receive irregular fire protection from a variety of sources. Informal community cooperation appears to be the rule. Forsyth and Colstrip may also draw on some of these sources for assistance.

The county weed control board makes available its three low-pressure spray trucks with 250-gallon tanks in emergencies. Obviously not designed for firefighting, the trucks are equipped with low pressure pumps (25-gallon-per-minute capacity). During the spraying season the tanks must be drained of herbicides, filled with water and the trucks driven to the fire location. Response to fires is slow and awkward, but in most cases is supplementary to the primary fire protection provider.

Two large army surplus trucks with 1,200-gallon tanks and a 50-gpm capacity are stationed in the southern portions of the county. Patrol cars, equipped with small backpack tanker-pumper units, are also available. Ranchers frequently lend equipment with tanks to firefighting efforts; a small number have small-scale firefighting units.

For the most part, fire protection in rural Rosebud County is provided in an uncoordinated fashion by untrained, ill-equipped, but well-intentioned residents. The ability of these resources to assist either Colstrip or Forsyth in major fires remains untested.

4. Water and Sewer

Water and sewer services can be considered jointly because of their integral characteristics (residences receiving one service generally receive the other) and systemic compatibility which must accompany these services. Impacts resulting from mine expansion are therefore likely to similarly affect both systems. Where only distribution and collection lines are involved, the financial impacts will be modest, but any necessary modification of water and sewer treatment plants to accommodate expanded demands will incur heavy financial liabilities.

a. Water

i. Forsyth

Administration of the water services program is the responsibility of the city's department of public works.

The Forsyth water system originates at the Yellowstone River. Water

is treated by sedimentation filtration and chlorination and stored in a three-million-gallon reservoir which was completed in 1977. The reservoir is adequate for a population of about 5,000.

The old water treatment and distribution system was constructed in 1930 and by 1970 was totally inadequate to service even a stable, let alone expanding, population. The treatment facility was unable to yield water which met more stringent health standards. Since the treatment and distribution system would have to have been replaced even in the absence of coal development, the increased mining and production in this case had a very positive effect, to the extent it tended to draw special attention to Forsyth's needs. Forsyth was able to qualify for more specialized, less competitive funding.

The Farmer's Home Administration and the Montana Coal Board provided a total of $1.35 million for reconstruction of the old water treatment facility. The new plant has a capacity of 3.5 million gallons per day (gpd), which can easily handle the existing summer average use of 1.2 million gpd and annual average of 480,000 gpd, as well as sizeable increases in demand. The new plant will be completed in 1979.

The old water distribution system, composed primarily of 8" and 12" looped mains, has been supplemented with new 10" mains.

The water treatment and distribution improvements permit Forsyth to provide a sufficient supply of water, meeting state and federal quality standards, to the existing population. The improvements have also lowered the city's fire rating from Class 7 to Class 5. The entire system appears adequate for projected growth.

The Forsyth survey indicates a high degree of satisfaction with water services. More than 70% of the respondents were satisfied with the service, while an additional 7% were very satisfied. Those registering low levels of satisfaction (total of 18%) felt the water is frequently murky, a condition which many admitted is steadily subsiding.

Apparently satisfied with the quality of service or assured that the new water treatment equipment will correct any problems, 64% of the respondents to the Forsyth survey said they were opposed to paying higher taxes for improved water quality.

As Forsyth nears the 65-mill maximum on the all-purpose property tax levy, there will be increasing pressure to finance water services from fees rather than from property tax revenues. This will have the effect of freeing tax revenues for other services. In recent years expenditures for the delivery of water services have increased steadily. In FY 1976 expenditures for water stood at $79,333, or 8.2% of the total expenditures. Expenditures for capital improvements in FY 1976 totaled $304,327.

Expansion of the water system into newly developed areas will likely raise the conventional debate over who is responsible for

TABLE II-F-6

FORSYTH WATER SYSTEM: FUTURE DOMESTIC FLOW REQUIREMENTS

YEAR	1975	1985	1995
Population	2,000	2,640	3,480
Average Day	320,000 gpd	422,400 gpd	556,800 gpd
	222 gpm	290 gpm	390 gpm
Average Day (Summer Months)	750,000 gpd	990,000 gpd	1,305,000 gpd
	520 gpm	690 gpm	910 gpm
Maximum Day	1,200,000 gpd	1,584,000 gpd	2,088,000 gpd
	835 gpm	1,100 gpm	1,450 gpm
Peak Hourly Demand	1,390 gpm	1,835 gpm	2,415 gpm

gpd - gallons per day

gpm - gallons per minute

Source: Preliminary Studies and Reports for Water System Improvements - Forsyth, Montana, Morrison-Maierle, Inc., (Helena: November, 1972), p. 13.

the debt accompanying the capital improvements - the users on the entire system or those joining the extensions.

ii. Colstrip

Like Forsyth, Colstrip draws its water from the Yellowstone River. Water is pumped approximately 30 miles via a 26" line to Castle Lake, a 160 acre-foot body of water which also stores water for Montana Power's cooling towers. This reservoir serves as the water supply for both the domestic needs at Colstrip and industrial water needs at Colstrip Units 1 and 2. Colstrip holds water rights to 700 gpm.

Although abandoned and somewhat obsolete, three water wells with a combined capacity of 150 gpm are available to Colstrip if needed. However, their availability is tempered by the costs that would be incurred in cooling and softening the hot, hard artesian water and public acceptability in using them as a source of water.

Water is stored in the 500,000-gallon reservoirs on the east side of the settlement. Plans call for the construction of another 1,000,000-gallon reservoir, which in combination with the existing reservoir would supply enough water for both the existing and projected population.

The existing filtration plant which was completed in 1975 has a total capacity of 1,000 gpm. After filtration the water is chlorinated and pumped into the distribution system.

Water produced from the existing treatment plant does not meet 1977 drinking water standards during much of the year; improvements to the facility, which include fluctuation and sedimentation, will be completed in October, 1978, and will enable the plant to meet the more stringent drinking water standards. This project will not increase the capacity beyond the existing 1,000 gpm. If Colstrip Units #3 and 4 are constructed, the required capacity of the water treatment facility will have to be increased to 3,500 (Christian, 1978) to meet projected demands. The capacity of the plant will have to be accompanied by the availability of water from Montana Power; adjustments in Montana Power's cooling equipment or water requirements could adversely affect the availability of water.

Water plant treatment expansion includes expansion in pretreatment, filtration and chlorination facilities. These improvements will be matched with existing 10" and 12" looped mains. The water treatment plant improvements are financed with a grant from the Montana Coal Board and general obligation bonds.

Once completed, the settlement will have an almost entirely new water system, adequate to meet anticipated increased demand through the construction of Colstrip Units 3 and 4.

iii. Lame Deer

Administration of water services is the responsibility of the Northern Cheyenne Utilities Commission in cooperation with the Bureau of Indian Affairs.

The Northern Cheyenne Reservation settlement draws its water from three wells with a combined capacity of 135 gpm. The water supply is currently adequate, although there are concerns that stripmining activity will disrupt the aquifer and reduce the availability of water. This condition, coupled with the expected demand from the new high school, has generated discussion for the installation of a new well and pump. Plans are still in the discussion stage.

Improvements appear necessary in the areas of water storage and storm drainage. The existing 400,000-gallon reservoir is adequate just for the current demand; increased demands will require expansion of storage facilities. The May, 1978, flooding contaminated the community water supply; better protection of the well-sites appears necessary.

b. Sewer

i. Forsyth

Forsyth is currently served by a two-cell lagoon system with a total of 7.75 surface acres. According to state and federal design standards, the system is inadequate: it can adequately service a population of only 800 or treat 80,000 gpd. The population of Forsyth is 2,167, nearly three times the population the lagoon is designed to handle. The present usage of the lagoon averages 340,000 to 408,000 gpd, well beyond the lagoon capacity. Effluent discharge currently exceeds state health standards.

Bids were opened in May, 1978, for the construction of a new sewage treatment plant. Plans call for the construction of an oxidation ditch process designed to serve a population of 5,000. Construction costs will total $930,000. Included in the design for the new mechanical sewage treatment plant are the oxidation ditch, clarifiers, chlorine contact tank, effluent ditch, aerobic digester, sludge drying beds and a control building.

In addition, plans call for the replacement of the existing lift station and the installation of an alternating pump arrangement with a capacity of three and one-half times the average flow. The outfall line to the lift station will also be replaced. Total cost of these two projects will be $230,000. Completion is expected by June, 1979.

Forsyth has budgeted $150,000 for these capital improvements and has received $290,000 from the Environmental Protection Agency (EPA) and the Montana Coal Board. Upon completion in 1979 the system will meet all EPA requirements.

In FY 1976 Forsyth expended 3.5% of its revenues on sewer service administration and maintenance. As with water, extension of the sewage collection system will incur relatively modest increases in operating costs, while capital improvements (e.g., treatment plant) will have a more pronounced effect on the local property tax burden. Since capital construction of the latter category is usually funded with general obligation bonds, the tax liability necessary to relieve the debt is in excess of the 65-mill property tax levy.

ii. Colstrip

Administration of sewer services in Colstrip is the responsibility of the Rosebud County Water and Sewer District.

Colstrip currently employs a three-cell lagoon system to treat sewage discharge. The 10 surface-acre system is capable of handling wastes from a population of 1,200 (120,000 gpd).

Construction is currently underway on an oxidation ditch treatment plant similar to the one being constructed in Forsyth. The plant is designed to serve a population of 4,000 (400,000 gpd). When completed, the plant will produce an effluent discharge that will meet EPA standards and will easily handle the wastes of expected population levels.

The original collection system serving the old townsite consisted of vitrified clay tile pipe, whose condition ranges from fair to poor. The new additions to the east and west are served by 8" to 12" PVC plastic sewer pipe. The sewage will be pumped to the treatment plant by a series of lift stations. According to one study, the completed collection and lift system will be sufficient to meet any projected population levels.

iii. Lame Deer

Lame Deer is served by a 10 surface-acre lagoon. Plans, which are in the discussion stage only, call for the construction of a new oxidation ditch treatment plant on a 25-acre parcel east of the community. Planned capacity will be sufficient to meet current and projected demands.

5. Solid Waste Collection and Disposal

Solid waste service in Rosebud County is in a period of transition. A system of unsanitary landfill sites servicing the rural portions of the county will be abandoned when the newly designed canister collection system becomes operational in the summer of 1978. Currently only the Colstrip landfill complies with state regulations (See Table II-F-7). With the new system, a series of 40 cubic-yard collection canisters will be conveniently located throughout the rural areas and waste will be collected and transported to Forsyth, thence compacted and shipped to Billings.

TABLE II-F-7

REGULATION COMPLIANCE OF SELECTED
LANDFILL SITES IN
ROSEBUD COUNTY

Regulation	Colstrip	Forsyth	Ashland	Rosebud
Burning controlled	YES	YES	YES	NO
Disposal site properly located	YES	YES	YES	NO
Dumping confined to management area	YES	NO	NO	NO
Refuse covered after each operating day	YES	NO	NO	NO
Spreading & compacting of refuse adequate	YES	NO	NO	NO
Ponding & erosion effectively controlled on finished area	YES	NO	NO	NO
Rodents and insects controlled	YES	NO	NO	NO
Salvaging controlled	YES	NO	YES	YES
Approach road properly maintained	YES	YES	YES	YES
Blowing paper controlled	YES	NO	NO	NO
Owner/Operator	WECo	City	County	County
Inspection date	1/25/77	11/14/77	1/25/77	1/25/77

Source: Landfill Inspection Report, Department of Health, Environmental Sciences Bureau, 1977.

Forsyth will continue to collect waste for its residents and deliver it to the compacting site for processing. Waste in the Colstrip area will be collected as in the past by a private contractor and dispersed in a nearby spoils bank. Ideally the waste from Colstrip would be shipped to Forsyth for compacting, but the volume of construction material waste makes it unfeasible. According to the county sanitarian (Stevens, 1978), the Colstrip site has a limited capacity. The Indian Action team and the Bureau of Indian Affairs will continue serving the solid waste needs of Lame Deer.

Planning money for the 3-county project (Rosebud, Big Horn and Treasure) was provided by the Montana Department of Health and Environmental Services. Implementation of the plan, including phase-out of current sites, acquisition of canisters and compacter and initial administrative costs are funded by a $289,000 grant from the Montana Coal Board.

The quality of current solid waste services drew a mixed but generally low rating in the Forsyth survey. Forty and four-tenth percent of the respondents were satisfied with the quality, but another 45.7% were either uncertain (24.5%) or dissatisfied (21.2%) with the quality of service. While it is difficult to pinpoint sources of dissatisfaction or ambivalence (collection frequency, disposal site cleanliness, etc.) with services, the overall rating should improve with the implementation of the canister system.

Once operational, the capacity of the canister solid waste system will be more than adequate to service projected population levels for the area.

6. Health Services

Health services in a community are delivered through a combination of public and private mechanisms. These services are grouped, for the purpose of discussion, into physicians, hospitals, nursing home and countywide public health services. Services provided within these four areas are examined: Forsyth, Colstrip, Lame Deer and the jurisdiction of Rosebud County, with emphasis on rural impact area.

a. Physicians and Hospitals

i. Forsyth

Forsyth has a modern medical facility, completed in 1973. It is equipped with the latest in major medical equipment. Properly staffed, the hospital could provide a full array of modern medical services.

Forsyth, however, like many rural communities, has been beset with difficulty in attracting new physicians. Forsyth is currently served by two physicians, a condition resulting in an underuse of the hospital facility.

In many cases potential in-patients from the area are transferred to Billings or Miles City, rather than risk a situation in which neither physician is available or unqualified to treat the affliction. A solution to the physician recruitment problem appears

problematical: young physicians interested in developing a practice desire an urban setting, while older physicians, who are perhaps interested in a slower, rural pace, generally desire a smaller, more stable practice. Conditions in Forsyth are likely to attract neither. It is the most serious problem confronting the community in the area of health services. Population growth of any dimension will magnify the problem.

A remedial solution has been achieved by assembling a consulting staff from Billings and Miles City. Three consulting physicians, a pathologist, a radiologist and a physical therapist provide assistance on a routine basis. Most are on call for emergencies, but patient transferral to Billings or Miles City is usually more expeditious.

The balance of the on-site hospital staff includes two full-time and ten part-time registered nurses and seven limited practical nurses who work on a full-time basis but divide their time between the hospital and the nursing home.

In 1977, hospital in-patient days totaled 2,913, out-patient days 2,651. The underuse of the hospital resulted in the hospital transferring eight beds to the local nursing home in March, 1977. The hospital is now certified for 18 beds.

Medical costs are escalating in Rosebud County. County expenditures in FY 1977 for medical and hospital were $13,960, or 9.7% of all poor-fund expenditures; $30,000, or 18.4% of the poor-fund budget was appropriated for FY 1978.

According to the Forsyth survey, one-third (33.1%) of the respondents indicated they were dissatisfied with the quality of medical care; another 11.9% said they were very dissatisfied. However, the same survey revealed that 59.6% of the respondents were opposed to paying higher taxes to improve the quality of medical care.

Many of the respondents registering dissatisfaction commented that the community had adequate facilities but a shortage of physicians. Direct taxpayer subsidy of physician salaries at the county level is not currently authorized by law.

ii. Colstrip

Medical facilities and attending medical assistance in Colstrip is limited. There is a first aid trailer at the Rosebud Mine and a medical clinic has been established in the community center. Formally administered by the Miles City Clinic, the Colstrip facility will have to be staffed by a doctor to make it operational.

While Forsyth has a full-service hospital and two doctors on call for emergencies, emergency patients are usually transferred to Billings (120 miles) or Miles City (80 miles) because of the

physician shortage in Forsyth. Ambulance service is, therefore, a critical link with distant medical assistance. Two ambulances -- one owned by Western Energy and the other by the Bechtel Corporation -- are available; eight volunteer drivers with varying, but generally inadequate, degrees of emergency medical training staff the ambulances.

A solution to the physician shortage in Forsyth would provide a partial answer to the inadequate condition of medical service which now exists in Colstrip. Even modest population increases in the area are certain to exacerbate the problem.

iii. Lame Deer

The Indian Health Service operates an out-patient clinic in Lame Deer. The staff consists of three nurses, two physicians and an assistant. Patients in need of hospitalization are transferred 42 miles to Crow Agency to the Indian Health Services Hospital.

The clinic at Lame Deer appears adequate to handle the current demand for out-patient services. The facility was completed in 1977 and the staff is exceptionally qualified, according to a local social worker.

b. Nursing Home

A 39-bed nursing home facility was completed in 1957 in Forsyth and has since undergone several renovations. Due to the underuse of the hospital and the persistently high occupancy ratio of the nursing home, eight beds were transferred from the hospital to the nursing home in 1975. The nursing home is now certified for 47 beds.

The nursing home appears just adequate to meet the current needs of Forsyth. It is usually occupied at capacity and occasionally operates with a waiting list. Immediate demands for service should remain relatively constant even with expansion of the Peabody Mine, because the incoming population will be young. While the native population will slowly place additional demands on the facilities, the long-range capability of the nursing home to respond to the total demands for services will be more dependent on the long-term settlement patterns of the miners. A highly mobile mining population should result in a minimal increase in demand on the nursing home.

Rosebud County financial support for the nursing home doubled from FY 1977 to FY 1978 -- $5,000 to $10,000. The FY 1978 figure represents 6.1% of the county's poor-fund budget. The increase in county support is attributed to the national trend in rising health care costs, not to an increase in the service level.

c. Countywide Health Services

Rosebud County, like all Montana counties, has a five-member county health board which is principally responsible for health services in

the county. County health services are provided by a staff which includes a health officer, a public health nurse, a sanitarian and a secretary. They also can call on the sanitarian, who serves Big Horn and Treasure counties as well.

The health officer is responsible for administering the program priorities established by the board (Statutory duties are found in Title 69, Chapter 45, R.C.M. 1947).

The one public health nurse serves a county population of 8,523. The principal types of services performed include immunizations, multi-face screenings, hearing and vision screenings, scoliosis screenings, and home visit follow-up care.

The influx of new population, coupled with the demands of the native population, has produced a heavy caseload. The schools in the county now want their own nurse, rather than having to compete with non-school demands for services. The current county nurse is new to the area and feels that after a period of adjustment, problems over demands for her time will subside.

Due to the geographical dispersion of population centers, travel time diminishes service time. The occasional availability of student and volunteer nurses helps to shift the caseload burden. Assistance, however, is spasmodic and temporary.

Additional nursing assistance appears necessary to adequately serve demands for conventional public health services and to assist in newer areas of public health, particularly family planning and prenatal care. The high birth rates which accompanied the Colstrip 1 and 2 construction workers are likely to be duplicated by a young, in-migrant mining population.

The county sanitarians divide their time between inspections of eating and lodging establishments, sanitary landfills and subdivision sanitation compliance. (Technically the State Board of Health is responsible for inspecting the adequacy of mobile home parks, but in recent years the board has delegated the responsibility.) One sanitarian was involved in the development of the multi-county solid waste project in which Rosebud County participates.

Expenditures by Rosebud County for FY 1977 for general health services totaled $29,495, or 2.5% of total general fund expenditures. $45,640, or 2.1% of total general fund budget, has been appropriated for FY 1978. This indicates that, while health service expenditures are increasing, they are not expanding as rapidly as other capital-intensive services. Development-related health service increases and new services provided to a new population (e.g., family planning) may cause future health service expenditures to represent a larger percentage of general fund expenditures.

The county also operates an ambulance service. Two fully equipped and certified ambulances are available to respond to calls anywhere in the

county. One full-time driver has emergency medical training; three volunteer drivers from the sheriff's office have first aid training.

Physician recruitment in Forsyth would significantly increase the quality of ambulance services. An increase in the number of physicians would make Forsyth the focal point of service by reducing or eliminating the long, time consuming trips to Billings and Miles City.

d. Mental Health Services

Rosebud County belongs to the Eastern Montana Region 1 Mental Health District. Headquarters for this 17-county region is in Miles City.

Mental health services provided on a daily basis by the regional office to Rosebud County include psychiatric consulting and assistance and diagnostic services for in- and out-patients. The regional office is a full-service office providing the 12 essential services required by the federal government. See Table II-F-8.

The Region has a full-time clinical psychologist located in Forsyth and is currently recruiting for a similarly qualified professional for Colstrip.

Mental health services appear sufficient to serve current and projected population levels.

e. Alcohol and Drug Abuse Programs

According to one survey, 8.5% of the state's non-Indian population and up to 50% of the Indian population are afflicted with alcoholism. (See Montana State Plan for Alcoholism and Alcohol Abuse: Fiscal Year 1977. Montana Department of Institutions, p. 6.) A combination of a young, basically migrant, non-Indian population and a large Indian population within Rosebud County presented the county with such an immense alcoholism problem that in 1974 the county became the first in the state to adopt a local drug and alcohol program. A cooperative agreement between Rosebud County and the State of Montana established the Rosebud County Alcohol and Drug Program.

Services provided include out-patient, community education and information and referral services. Emergency assistance is available 24 hours a day.

Under the terms of the initial agreement, the state funds two-thirds and the county one-third of the operating budget. In FY 1977 expenditures for alcoholism and drug abuse stood at $13,271, or 1.1% of all general fund expenditures. An amendment to the state alcohol tax rate and distribution formula provided for increased state funding of the program. $18,930, or .9% of the general fund budget have been appropriated for drug and alcohol programs for FY 1978.

In addition, the Northern Cheyenne Reservation Program provides detoxification, in-patient and information and referral services to Native

TABLE II-F-8

MINIMUM SERVICES WHICH MUST BE PROVIDED BY MENTAL HEALTH AGENCIES TO QUALIFY FOR FUNDING UNDER THE COMMUNITY HEALTH SERVICES ACT

1. In-Patient Services
2. Out-Patient Services
3. Emergency Patient Services
4. Consultation and Public Education
5. Partial Hospitalization/Day Treatment
6. Services to Elderly
7. Services to Children
8. Services to Minorities
9. Pre-care Screening for Institution-bound Patients
10. Aftercare for Patients Discharged from Institutions
11. Services for Addictive Personalities: Alcohol Abuse and Drug Abuse
12. Prevention

Americans. Although not a state approved program, the program is available to a significant portion of the county's alcoholic population.

In 1976 the Western Energy Corporation completed a program for high school age population in the Colstrip area on the potential dangers of alcohol and drug abuse.

7. Social Services

Delivery of social services to the impact area is accomplished through a variety of agencies. Social services included in the discussion include general welfare or financial assistance programs (general relief and aid to families with dependent children) and juvenile delinquency programs provided by Rosebud County and aging and youth services provided by a combination of government and semi-private agencies.

a. Financial Assistance

The Rosebud County Welfare Department consists of a staff of seven: welfare director, two social workers, three eligibility technicians and one homemaker. The main office is located in Forsyth; the county operates a sub-office in Lame Deer where one social worker and two eligibility technicians are assigned. One social worker and one eligibility technician also serve Treasure County.

The county had planned to expand facilities and personnel to Colstrip to accommodate an anticipated increase in the workload caused by the construction of Colstrip Units 3 and 4. However, with the construction of the plants in abeyance, the county feels it can adequately serve the existing and foreseeable demand for services.

In FY 1979 Rosebud County will assume administrative and financial responsibility for a child abuse and neglect program which has functioned as a federal demonstration program for three years. The program employed four social workers. The impact of the addition of their program on the caseload of social workers is difficult to assess, but no increase in staff is expected for FY 1979.

County expenditures for financial assistance programs are relatively low. FY 1977 expenditures for Aid to Dependent Children totaled $3,407, or 2.8% of poor-fund expenditures; FY 1977 expenditures for welfare were $75,654 (total of expenditures for non-reimbursable welfare administration expenditures and reimbursement to state welfare department), or 64% of all poor-fund expenditures. Budgeted for FY 1978 for aid to dependent children was $4,500, or 2.7% of the poor-fund budget and $92,454 for welfare expenditures, representing 56.6% of the budget. These figures suggest that while there has been an absolute increase in expenditures in each category, their proportion as a percentage of total expenditures has actually declined.

The federal ruling against the construction of Colstrip Units 3 and 4 could serve to actually reduce expenditures in both categories. Families

receiving assistance, whose heads of household have been unemployed awaiting employment as construction workers on the plants, may now relocate outside the county and shift the financial burden to another county or state.

b. Services Provided by Semi-private Agencies

Action for Eastern Montana (AEM), a community action agency serving 16 eastern Montana counties and the Tongue River Yellowstone Action Council (TRYAC), a human resource development organization, are both active in the county.

AEM has concentrated its assistance activities on senior citizen and low-income groups. It is currently winterizing houses for elderly and low-income individuals with a grant from the Office of Economic Opportunity. AEM is viewed as the essential catalyst in securing a commitment from county commissioners in 1972 to transportation for senior citizens, a program now regarded as one of the best in the state. Transportation is available for essential trips (i.e., medical, post office and grocery store), pleasure and educational excursions.

AEM has also spearheaded efforts to involve high school age youth in work experience programs with the Youth Employment Corps and Youth Conservation Corps.

TRYAC has focused on public education activities in cooperation with the Cooperative Extension Office.

The level and volume of social services in the impact area are adequate in the area of financial assistance. The county's poor-fund levy stands at 1.804 mills for FY 1978, permitting a possible increase of over 11.5 mills (some $1,013,458). Such financial flexibility would enable Rosebud County to absorb and to fund a dramatic welfare load increase. However, annual per capita costs for welfare expenditures in Rosebud County are already high - $14.61 per capita for FY 1976 - ranking the county among the state's highest. [See Opal Winebrenner, State Assumption of Welfare, State Commission on Local Government, (Helena: April, 1977), p. 85. Statewide per capita cost was $13.96.] Unless there is a significant increase in the county's population, per capita costs for welfare will continue to rise; any increase in expenditures will place additional burdens on the county's property taxpayers.

As social service activities within the county increase, greater cooperation and coordination between private and public service providers appear necessary to avoid duplication.

8. Schools

a. Forsyth

Forsyth School District #4 is the largest of the nine school districts

in Rosebud County. For the 1977-1978 school year (as of October 1, 1977), it had an enrollment of 658 students: 349 elementary (K-6), 90 middle (7-8), and 219 high. Some high school students from the Ingomar area attend school in Forsyth. District enrollment for the year was slightly lower than for the preceding school year.

Both the elementary and high school districts are in the midst of a building program. A new elementary school (K-5), which is being funded by Montana Coal Board grants totaling over $2.5 million, is under construction and is scheduled to open in early 1979. A new middle school (6-8) is slated for completion in the fall of 1978. Coal-related impact has had a positive effect by qualifying the district for coal-impact assistance from the Montana Coal Board.

The land and property contained in the Forsyth elementary district, which includes the middle school, are either depressed or of moderate agricultural value, leaving the district with a rather low valuation of $6,699,-323 for FY 1978, compared to $15,514,201 for the Forsyth High School District. The district has not realized the economic prosperity that has accompanied coal-related development in other school districts in the county, including the Forsyth high school district. As a result the district is currently bonded at 90% of capacity, compared to 50% for the high school district. Without financial assistance from the Coal Board, Forsyth could not have afforded new facilities.

In addition, there has been a steady rise in the elementary district mill levy, which now stands at a nine-year high of 52.61 mills. The mill levies of the other districts under examination have demonstrated a decline since 1970, indicating the increased valuation of property within those districts and the corresponding increased value of each mill levied in those districts. The levies for FY 1979 could be even higher as Puget Sound Power and Light, a large tax revenue source, is paying its taxes under protest.

The central challenge posed to the elementary district by mining and construction activities is to design curriculum standards that accommodate and assimilate the diverse levels of student achievement within the school. As the recipient of many in-migrating students, the district is confronted with students whose achievement levels are not commensurate with age. Achievement levels within classes vary dramatically.

The high school is being modified to expand the school's vocational education curriculum. Construction is being funded by a $27,000 Coal Board grant.

Forsyth's building program will provide the schools with ample capacity to accommodate a sizeable increase in enrollment. The old elementary school will serve as a facility to accommodate overflow enrollment.

In 1977-1978 the Forsyth district employed a total of 41.1 teachers: 19.5 elementary; 6.3 middle; and 15.3 high school (Kantra, 1978). The three schools all have student/teacher ratios well within the state's

accreditation standards: elementary 17.9 to 1; middle 14.3 to 1; and high school 14.3 to 1. The ratios are low enough to permit some expansion in enrollment without sacrificing the quality of instruction or endangering the schools' accreditation.

The Forsyth community survey indicated a high level of satisfaction with the quality of schools. Fifty-seven percent of the respondents said they were satisfied and 7.3% said they were very satisfied. Apparently in support of the nearly completed capital expansion and improvements to local schools which are being financed in part by the local tax revenues, a small majority (51.4 to 47.1) said they would pay higher taxes to improve the quality of schools. The figures also suggest an unwillingness of a large segment to pay higher taxes to serve a need which many perceive to have been produced by mining and construction activity.

b. Colstrip

The Colstrip elementary and high school districts are characterized by rapidly expanding tax bases and enrollments dependent upon local mining and construction activity. The principal problems facing the district according to the district superintendent (McKeown, 1978) are (1) the inability to anticipate the extent of coal-related development and its impact on the schools (i.e., enrollment demands by age) and (2) the lag time between the impact and the increased property valuation. (See Energy From the West: Draft Policy Analysis Report. Prepared by the Science and Public Policy Program, University of Oklahoma for the U.S. Environmental Protection Agency, 1978, p. 325.)

Enrollment for the 1977-1978 school year was 644 students: elementary (K-8) 435; and high school 209. The elementary enrollment distribution may be further refined: elementary (K-9) 348 and middle (7-8) 87. Enrollment figures include some Native Americans from the Northern Cheyenne Reservation and non-Indians from Ashland (District 32J).

Like Forsyth, Colstrip is in the midst of an extensive building program. A new elementary school with 19 classrooms is scheduled for completion in 1979. The Montana Coal Board is providing $450,000. Remodeling of and the addition of six classrooms to the high school, which are funded by a $317,000 Coal Board grant, are also slated for an early 1979 completion.

The high school and elementary districts have extremely high taxable valuations for the levels of enrollment: high school - $57,123,665, elementary - $55,621,325. Each district has a bonding capacity of around $14 million, but because of the availability of Coal Board monies for capital projects, neither has obligated a significant portion of its bonding capacity.

The Colstrip schools employed 20.4 teachers in the elementary (K-8) school and 17.2 teachers in the high school for the 1977-1978 school year. Here, as in Forsyth, the student/teacher ratios are low: elementary 21.3 to 1 and high school 12.2 to 1.

TABLE II-F-9

SCHOOL DISTRICT LEVIES

FY 1970-78

Fiscal Year	District Levy			
	Forsyth Elementary	Forsyth High School	Colstrip	Lame Deer
1978	52.61	14.63	13.88	7.56
1977	39.33	13.78	21.85	10.29
1976	38.55	15.27	18.15	8.94
1975	34.69	12.98	41.13	17.74
1974	35.99	13.64	20.44	8.53
1973	39.93	14.40	18.80	8.88
1972	38.78	13.90	18.60	6.73
1971	38.45	15.61	34.70	17.62
1970	36.16	17.02	32.61	16.01

Source: Property Tax Mill Levies, Montana Taxpayers Association 1970-1978.

While the districts pay competitive salaries, they have a high faculty turnover. Many teachers are displeased with the social setting and unavailability of recreational activity and leave as soon as they are able to sign contracts elsewhere.

The high school offers a complete curriculum, including special education and an adult education program. According to the principal, A.J. Maier, the major problem facing the administration and faculty is the educational assimilation of Native American students, who have difficulty with math and reading. There are no serious racial or social tensions between students.

Most of the high school graduates remain in the area upon graduation. Many have secured work on construction projects and in the mines (A.J. Maier, 1978). The high school is attempting to better prepare its graduates for employment by expanding its vocational education program in the areas of welding and mechanics.

The Colstrip attitudinal survey indicates a very high level of satisfaction with the quality of schools in the area. Sixty-eight percent of those interviewed said they were either very satisfied (14%) or satisfied (54%) with the schools. Ironically, 57% said they would be willing to pay higher taxes to improve the quality of the schools. This is probably more a reflection of a cultural tendency to support better schools or an indication of the modest tax burden carried by the average property taxpayer in Rosebud County.

9. Library

The Rosebud County Public Library, officially opened in January, 1971, is located next to City Hall in downtown Forsyth. It consists of a ground level housing a reading area, librarian's office, book and periodical collections and an audio-stereo center. In the basement are cooking facilities and two community rooms. The community rooms, with a combined maximum seating capacity of 175 persons, are regularly rented as meeting space for local organizations.

The library is 3,750 gross square feet in size and contains 20,000 volumes, with shelf space for an additional 30,000 volumes. Approximately one-third of the current collection is made up of child and adolescent titles. The library receives by subscription 37 periodicals and three daily newspapers, as well as the weekly Forsyth Independent. It is open 36 hours a week. The staff consists of two full-time librarians and part-time help when necessary. Nearly 1,800 area residents carry library cards.

The library offers a story hour for children, a summer reading program, photocopying and a film strip lending service for rural schools. Lectures and tours designed for elementary school students are also offered.

The library is a member, by contract, of the 12-county Sagebrush Library Federation. Contracted services include bi-monthly bookmobile service from Federation headquarters in Miles City and supplemental bookmobile stops at

Colstrip and eight other county locations. The library also receives access to larger collections at the Miles City Public Library and teletype service to numerous state, university and public libraries associated with the Pacific Northwest Bibliotech Center in Seattle, Washington.

The county assumes complete responsibility for library facilities and operation. The budget for fiscal year 1976 was $31,643, which represents a 26.8% or $6,692 increase over FY 1974, and a 107%, or $16,415 increase, over FY 1970. The community room rentals generally add $2,500 a year to the library budget. Monies collected from rentals go to room upkeep and utility payments.

Respondents to the attitude survey indicated that overall (92%), they were distinctly satisfied with the quality of library service. However, only 36% would be willing to pay higher taxes to improve the library.

Existing library facilities and services conform to standards as recommended and adopted by the Montana State Library Commission. However, with population expansion, budget for items such as books, personnel and contracted services may have to be increased to maintain present operation.

There is no public library facility in Colstrip, and the bookmobile would appear to be insufficient to meet the needs of the community. Only two stops are made each month in Colstrip. Library hours should be extended and the frequency of bookmobile visits increased as use intensifies.

10. Recreation

Recreation is both a public service, shared among several governments, and a discretionary activity pursued individually as a function of personal choice. Recreation is an example of the mixture of public and private sponsorship. Greater emphasis here will be placed upon the variety of recreational activities delivered as community services relying upon public funds.

The type and frequency of participation in recreational activities is a function of many different factors. Topography, climate, land ownership, population size and density, local tradition, demographic characteristics and numerous other factors peculiar to a locality influence its recreational needs. The most important of these factors involves the demographic characteristics of the people that the recreation system is intended to serve. Younger people tend to participate in active forms of recreation, while older people tend to participate in passive forms. As the population of the impact area continues to increase and to become younger, wealthier and more urban-oriented, the needs of the communities for the more active forms of recreation will similarly increase.

a. Facilities

i. Forsyth

Forsyth maintains four city parks. Riverside Park, the largest of the four, contains more than five acres. It offers a variety

of facilities: swimming pool, lighted baseball and football fields, picnic tables, barbecue facilities, horseshoe pits and swings. Alexander Park (one-half acre), located across the street from the Rosebud County Museum, includes a large grassy area and tennis courts. Marcey's Park (two acres) is bordered by trees and has picnic tables and baseball fields. Southside Park (one-half acre) serves a younger population, containing primarily playground equipment.

Forsyth appropriated $18,371 for the maintenance and operation of parks and playgrounds in FY 1978, or 4.2% of the total budget. This compares with $22,395 (2.3%) expended in FY 1977.

Additional recreational facilities located in or near Forsyth, but not owned or operated by the city, include:

1. Quincer Subdivision - six acres of undeveloped open space in the extreme eastern portion of the city.

2. VFW Park - located on the west side; playground equipment and tot lot.

3. Rosebud State Park - twenty acres with individual camping and picnic units and fishing access located adjacent to the city.

4. Rosebud County Fairgrounds.

5. Privately owned drive-in theatre and bowling alley.

6. Yellowstone River - boating and fishing.

ii. Colstrip

Perhaps recognizing its relative isolation and a steadily expanding younger population and the corresponding need to provide recreational opportunity, Colstrip area residents have demanded and received many recreational facilities. The community has a recreational center, complete with a gym, two handball courts, a weight room, meeting rooms and dance area. Outdoor facilities include a swimming pool, three tennis and two basketball courts and a softball field. There are also several baseball fields for organized Little League and Babe Ruth League play and a two-acre park.

The community is offered a diverse leisure time program which is administered by two recreational directors who also participate in planning long-range recreational needs.

b. Community Attitude Survey

i. Forsyth

While some parts of the Forsyth recreation program are in need

of attention and improvement, residents are basically satisfied with the service. Forty-five per cent of these survey respondents were either satisfied (42.1%) or very satisfied (3.3%) with the quality of recreation facilities.

The most commonly identified recreational needs are the need for suitable year-around facilities (covered pool), completion and maintenance of existing facilities and expanded recreational opportunities for teenage yough and young adults.

ii. Colstrip

Colstrip area residents exhibited high levels of satisfaction with recreational facilities. Of those responding to the survey 68 per cent were either very satisfied (8%) or satisfied (60%) with the quality of service. The most commonly identified need was the need to expand park and open space areas.

Thirty-three per cent of those surveyed said they would be unwilling to pay higher taxes to improve recreational facilities.

G. Social Structure and Values

1. General

The proposed expansion of the Big Sky Mine is of such modest proportions that it is not likely to have a noticable impact upon the social structure of Rosebud County. However, if viewed as another step in a continuing series of coal development activities, approval of the Big Sky Mine may further accentuate the value conflicts already evident between those who favor and those who oppose plans to mine the coal reserves of this area. Local farmers/ranchers who regard ranching as a way of life have the most to lose if coal development activities accelerate in the future. From their point of view, industrialization and urbanization is simply incompatible with their traditional agrarian life styles. Underlying value differences between lifestyles are likely to become sharpened and articulated with the maturation of "People of Montana for Progress," the pro-development association around Colstrip.

Gold, et. al. report, however, that even those residents who favor coal development (e.g., local businessmen) are opposed to rapid industrialization of the area because neither the Forsyth nor Colstrip communities nor Rosebud County are prepared to accommodate continued growth in the population. For example, Colstrip already suffers from a "lack of sense of community" and Forsyth does not have a currently well-integrated social structure capable of accepting large numbers of newcomers into the community. If coal development were to continue at the same pace it has over the past few years, it is likely that residents of Forsyth and Colstrip would begin to feel the same sense of alienation that currently affects area farmers/ranchers.

Some more recent evidence of expectations of Rosebud County residents regarding coal development can be ascertained from the 1978 Meadowlark survey (Table II-G-1).

The data reported here were derived from the Forsyth, Colstrip and farmer/rancher responses to the questionnaire described earlier and discussed in detail in the technical appendix to this report. As indicated earlier, a systematic sample of Forsyth and Colstrip residents was drawn for this study and farmers/ranchers in the impact area were also interviewed. A total of 331 persons responded to the questionnaire and, of these, 153 were residents of Forsyth, 136 were Colstrip residents, and 42 were living on farms or ranches in Rosebud County.

In terms of anticipated impact, Colstrip residents generally indicate the least concern over potential negative consequences of expanded mining in Rosebud County, while the farmer/rancher respondents are substantially more concerned about the possible adverse impacts additional mining activities may have upon their way of life. In general, the Forsyth respondents hold points of view more nearly similar to those of their Colstrip counterparts, although they do express slightly greater concern than the latter over the potential negative consequences of additional coal mining. In their evaluation of mining impacts and on nearly every quality of life indicator used in this study, the farmer/rancher respondents are consistently

more pessimistic than either of the other respondent groups. In the following pages this general statement will be elaborated and supported by the questionnaire data. Separate evaluation is made for the three sub-populations surveyed.

Table II-G-1

Expectations of Forsyth, Colstrip and Ranching Area Residents Toward Future Coal Development

		Much Better	Better	About The Same	Worse	Much Worse
Thinking about the future, say five years from now, do you think your life will be:	(F)	14%	35%	41%	6%	1%
	(C)	24%	44%	29%	1%	1%
	(R)	-	7%	38%	26%	29%

		Good	Uncertain	Bad
If the Big Sky Mine had to close down because permission to mine more coal is denied, the overall effect on Rosebud County would be:	(F)	2%	34%	60%
	(C)	2%	28%	68%
	(R)	21%	45%	31%

		Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
More local young people will be remaining here and getting jobs as a result of coal mining.	(F)	24%	60%	5%	10%	1%
	(C)	19%	65%	7%	6%	1%
	(R)	10%	43%	21%	21%	5%
There will be a sharp increase in crime and illegal drug use.	(F)	9%	37%	20%	29%	3%
	(C)	10%	30%	17%	37%	6%
	(R)	55%	29%	7%	10%	-
Local people will have less control over important decisions that affect their lives.	(F)	11%	33%	16%	36%	5%
	(C)	7%	19%	16%	51%	7%
	(R)	45%	41%	7%	5%	2%
Even if we need new industry and jobs, we cannot sacrifice our clean air and natural scenery to attain them.	(F)	9%	33%	19%	31%	5%
	(C)	5%	31%	16%	30%	14%
	(R)	50%	31%	12%	5%	2%
Rosebud County could easily handle a population several times as large as it is today.	(F)	7%	47%	17%	22%	6%
	(C)	13%	60%	12%	14%	2%
	(R)	7%	7%	12%	38%	36%
There won't be enough housing for low-income people living here.	(F)	14%	48%	13%	22%	6%
	(C)	13%	60%	12%	14%	2%

Table I -G-1
(Cont.)

Expectations of Forsyth, Colstrip and Ranching Area Residents Toward Future Coal Development

		Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
Agricultural economics force landowners to allow mining of coal under their land.	(R)	2%	31%	14%	36%	17%
New settlement in Rosebud County should be carefully regulated by land use controls.	(F)	13%	63%	12%	10%	-
	(C)	7%	53%	22%	15%	7%
	(R)	52%	31%	2%	10%	17%
Carpools or vanpools should be used to carry workers from communities to the mines.	(F)	20%	66%	9%	3%	-
	(C)	11%	55%	21%	10%	3%
Mining will not affect my water supply.	(R)	12%	12%	26%	19%	31%
Mobile home parks are the best answer to the housing shortage.	(F)	4%	51%	16%	20%	8%
	(C)	7%	42%	19%	25%	6%
Reclamation of mined land will be successful.	(R)	2%	26%	45%	10%	17%

*Percentages might not total 100% because of rounding and/or non-responses.

2. Forsyth

Respondents were asked four questions concerning the impact they though additional mining would have upon Rosebud County. In only one area did the majority of Forsyth residents indicate concern; namely, 62% said they believed there would not be enough housing for low income people. On the positive side, 84% of the Forsyth respondents said that "more local young people will be remaining here and getting jobs as a result of coal mining." Although not of concern to a majority of Forsyth residents, 43% of the Forsyth respondents indicated concern over increases in crime and illegal drug use and 45% said they thought local people would have less control over "important decisions that affect their lives."

In terms of additional development and population growth, most Forsyth respondents held favorable opinions and thought that steps could be taken to deal with such growth. For example, 54% agreed that Rosebud County could easily handle a population several times as large as the current population, 76% felt that growth should be carefully regulated by land use controls, 86% favored the use of carpools for workers commuting between communities and mines and 55% thought mobile home parks are the "best answer to the housing shortage." However, there was no consensus

among Forsyth residents on the issue of industry versus environment. Forty-two per cent agreed they would not be willing to sacrifice their clean air and natural scenery in exchange for additional industry and jobs, but slightly more than one-third (36%) of the Forsyth residents stated they would be willing to make this trade.

Almost one-half of the Forsyth respondents are quite optimistic about their futures. When asked to estimate what their lives will be like five years from now, 49% said they thought things would be "better" (35%) or "much better" (14%). Only 7% indicated they thought things were likely to get worse, while 41% expected little or no change. Thus, it appears that the possibility of additional coal development in Rosebud County is not translated into negative life quality impacts as far as most Forsyth residents are concerned; a more likely interpretation is that the potential for coal mining and related population growth in the area are viewed positively by Forsyth respondents and may be a factor in their generally optimistic view of the future.

The majority of the Forsyth respondents (60%) believed that closure of the Big Sky Mine would have a negative impact upon Rosebud County. Although nearly one-third (24%) had no opinion on this question, only 2% said they thought the effect would be positive. When asked if they personally favored or opposed expansion of the Big Sky Mine, only 4% indicated they were opposed, 17% had no opinion and a significant majority (76%) said they were in favor of expanding the mine. As will be seen shortly, in this respect the Forsyth and Colstrip respondents are quite similar but hold a point of view which contrasts sharply with that of the majority of the farmers/ranchers who were interviewed.

3. Colstrip

Like their Forsyth counterparts, the majority of Colstrip respondents also were concerned about the potential impact of expanded mining on the availability of low-income housing in the county. Fifty-four per cent of the Colstrip residents said they thought there would not be enough housing to accommodate area low-income people if mining activities were expanded. On the positive side, a significant 84% of the Colstrip residents believed that expansion in mining activities would result in more young people remaining in the area and finding jobs, an additional 73% agreed that Rosebud County could easily handle a population several times the size of the current population and most (58%) disagreed with the view that local people would have less control over important decisions affecting their lives. However, on the issue of crime and illegal drug use there was no consensus among the Colstrip respondents. Forty per cent said they thought that crime and illegal drug use would increase sharply as a result of expanded coal mining in the county, but an additional 43% disagreed with this viewpoint.

Colstrip residents also were divided in their opinions concerning the industry-environment trade-off. Slightly more than one-third (36%) of the Colstrip respondents agreed that their "clean air and natural scenery" should not be sacrificed to obtain new industry and jobs, but a slightly larger proportion of the Colstrip interviewees (44%) indicated they were willing to

make this trade-off. However, the majority of Colstrip residents favor efforts to mitigate potentially adverse consequences of expanded coal mining activities. For example, 60% agreed that growth in Rosebud County should be carefully regulated by land use controls and 66% favored the idea of using carpools or vanpools to transport workers from their communities to the mines.

There is lack of consensus among Colstrip residents about the "best" means of handling the housing shortage in the event of additional coal development. Almost one-half of the Colstrip respondents (49%) are in favor of mobile home parks as an answer to the housing problem, but nearly one-third (31%) are opposed to this alternative. On this point, it is important to recall that 63% of these respondents currently live in mobile homes. This may be a factor influencing their opinions on this issue as more Colstrip than Forsyth respondents live in mobile homes and, concomitantly, a larger proportion of the Colstrip residents oppose mobile home parks as a solution to the housing shortage.

As a group, Colstrip residents not only have more favorable attitudes toward the possibility of expanded mining activities but they also are the most optimistic of the three sub-samples about the future quality of their lives. When asked to evaluate the anticipated quality of their lives five years from now, 92 of the Colstrip respondents said they anticipated it would be "better" (44%) or "much better" (24%). These percentages are higher than for the Forsyth sub-sample and, as we will see, significantly higher than the farmer/rancher responses. Furthermore, only 29% of the Colstrip respondents said they thought the quality of their life would be "about the same" and only 1% indicated they believed it would get worse.

Like their Forsyth counterparts, most Colstrip residents (68%) indicated they felt closure of the Big Sky Mine would have an adverse effect upon Rosebud County; only 2% of the Colstrip respondents said they thought the impact would be favorable. Likewise, the great majority of the Colstrip interviewees (72%) were in favor of the proposed Big Sky Mine expansion, 25% had no opinion and only 1% said they opposed expansion of the mine.

4. Ranching Community

As judged by nearly every indicator used in this study, most area farmers/ranchers anticipate that expansion of mining activities in the county will result in adverse quality of life consequences. For example, a significant 84% of the farmer/rancher respondents believed there would be a sharp increase in crime and illegal drug use as a result of additional mining, 86% said that local people will have less control over important decisions affecting their lives and 50% were fearful that expanded mining activities would have an adverse effect on their water supply. Local farmers/ranchers were divided, however, in their opinions concerning the effectiveness of land reclamation efforts. Twenty-seven per cent said they thought reclamation of mined land would be unsuccessful, while 28% disagreed with this point of view and 45% were uncertain or had no opinion.

The only positive consequence of mining expansion anticipated by local farmers/ranchers was in the area of job opportunities for area young people.

The majority of the farmers/ranchers interviewed (53%) said they believed that more local young people would be remaining in the area and getting jobs as a result of coal mining expansion.

The majority of the farmers/ranchers also held negative opinions concerning the possibility of additional growth in the county and a significant majority were more concerned about protecting the natural environment of the area than with bolstering the economy. For example, 81% agreed that "we cannot sacrifice our clean air and natural scenery" to obtain new industry and jobs, and an additional 74% felt that Rosebud County could not easily handle a population several times larger than the current population. If the population were to continue growing as a result of mining expansion, however, the vast majority of the area farmer/ranchers interviewed (73%) favored regulation of new settlement by means of land use controls.

Although area farmers/ranchers appear to be a fairly homogeneous group as far as their attitudes toward expanded local coal mining are concerned, the dilemma coal mining poses for them is underlined in their differing responses to the question of whether or not they should allow mining activities on their own land. Approximately one-third (33%) of the farmer/rancher respondents agreed that the economics of agriculture force landowners to allow mining of coal on their land. In contrast, the majority of the farmers/ranchers (53%) disagreed with this point of view and 14% were uncertain.

This lack of consensus among area farmers/ranchers is reflected in their attitudes toward the Big Sky Mine. Unlike their counterparts in Colstrip and Forsyth, only 31% of the farmer/rancher respondents said they believed that closure of the Big Sky Mine would have an adverse effect on Rosebud County, while 21% stated that in their opinion the impact of closing the mine would be favorable; a significant percentage (45%) said they were uncertain what the effect of closure might be. This uncertainty is also evident in their attitude toward the proposed expansion of the Big Sky Mine. Approximately one-third (33%) said they were uncertain as to whether they opposed or favored expansion of the mine. Although more of the farmers/ranchers opposed expansion (45%), nearly one-fourth (21%) expressed a favorable attitude toward the proposed expansion.

The prospect of continued population growth and additional mining activities in the county also appears to have its effect on farmer'/ranchers' feelings about the quality of their life in the near future. More than one-half of the farmer/rancher respondents (55%) said they thought their lives would be "worse" (26%) or "much worse" (29%) five years from now. Only 7% indicated they expected their lives to be "better," while roughly one-third (38%) were uncertain. Again, uncertainty concerning the likely impacts of expanded coal mining in the county appears to be mirrored in the attitudes of many of the area farmers/ranchers concerning the future quality of their lives.

5. Summary

These data serve to highlight the potential for conflict between the traditional way of life of a small, relatively homogeneous community of farmers/ranchers on the one hand, and a more urban, industrialized life

style likely to accompany continued expansion of coal mining on the other hand. Although the proposed expansion of the Big Sky Mine is quite modest in itself, it must be viewed within the larger context of the potential for substantial additional coal development activities, given the vast coal resources of the area. The concerns of local farmers/ranchers make sense only when viewed from this perspective.

As Gold, et. al. have pointed out in their research (Institute for Social Science Research, 1974), area farmers/ranchers tend to feel like a minority, as their world is changing more quickly than they would like and in directions they oppose. The sense of anomie described by Gold, et. al. is evident in the attitudes of farmers/ranchers toward continued population growth, expansion in mining activities and their feelings about their anticipated quality of life in the near future. Most area farmers/ranchers are anomic in the sense that they feel helpless because of their lack of power to control the course of mining activity, which they fear will have profoundly negative consequences for themselves personally.

In contrast, residents of Colstrip and Forsyth believe they have much to gain from a more robust economy stimulated by current and anticipated future coal development activities in the county. In their view, more jobs will become available with a resulting positive impact on their quality of life. Although the survey data reveal some concern on the part of Colstrip and Forsyth residents over potential negative impacts of expanded mining, for the most part, these folks have very optimistic attitudes about their future life quality and a highly favorable opinion concerning mining expansion.

CHAPTER III: Impacts

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III: IMPACTS

A. Population

1. General

It is important for analysts of population to understand that changes are dynamic rather than static. Rather than specifying the precise level of population as a consequency of a proposed development, projections should indicate population sizes in conjunction with compositional and distributional characteristics for specific future time periods.

For example, the initial in-migrants arrive at one age and gradually mature to another. Thus, the needs of the young children gradually change from grade school to high school to employment. Similarly, the needs of their parents gradually change from young adulthood to old age and retirement. While they remain the same persons, the in-migrants become very different demographic units. Any generated figures, then, must be read with considerable caution and with the realization that the numbers of persons constitutes only one dimension of population figures among several important characteristics, each of which varies throughout the impact period.

Several projections and forecasts of population growth in Rosebud County have been made. None are entirely comparable with the projections presented here because of the different goals and, therefore, assumptions of the respective authors. That is, each projection had been made with more general uses in mind than that of social impact assessment of the proposed expansion of Big Sky mining activity.

For example, the Montana Department of Community Affairs projections (1977) are based on the assumption that migration characteristics existing between 1950 and 1970 are fair parameters for the future. This is a reasonable general assumption, but not one directed toward immediate mining activity impacts. Similarly, Jobes' projections (1977) for eastern Montana counties with coal development potential do not take particular developments into consideration; rather, they project the populations of those counties under the assumptions of maximum possible mining activities in each county and three different scenarios of growth. Consequently, these projections are inapplicable for the immediate purpose. Next, the OBERS projections indicate net population reductions for most eastern Montana counties (including Rosebud County). This is a function of inaccurate assumptions of economic growth potential in previously slow growth rural areas with underlaid coal. Finally, the projections made by Mountain West and Cumin and Associates reflect an understanding of the most recent population data available for Rosebud County (Cumin, 1976). In this study reliance is made upon two population projection techniques. The Coal Town II model projects the total population of the impact area. The cohort-survival model projects population in a variety of demographic categories.

Population grows in an impact area because indigenous residents are unable to fill the number of jobs available. Even in areas with underemployed populations, few jobs are filled by locals because of a lack of required skills. In-migration results, producing a new group of people with a different set of age-sex characteristics. (A small percentage of local persons who otherwise would have moved out might now remain because of increased employment opportunities; these people share similar age-sex characteristics with the in-migrants.)

The age and sex differences are demographically important because they largely determine future natural growth rates. These in turn affect the kinds of services which will need to be provided in the impact area. In-migrants also may have different socio-economic criteria. These differences may show up in occupational, educational or social categories. Thus, in the following sections, projections are provided for each of these categories as well as for the total population growth.

2. Total Population

The 1976 population of Rosebud County was 9,578 (Rosebud County Special Census, 1976). That population would be expected to increase naturally, contingent primarily upon the age-sex structure existing within that demographic area (see Table VII-C-1). When a new element is introduced, such as expanded Big Sky mining, it becomes necessary to determine how, relative to other potential development, that activity will affect the age-sex structure of the naturally changing population.

During the time of most rapid influx of in-migrants (1980-85), the Big Sky Mine expansion appears to make a relatively small contribution, totalling slightly more than one per cent. Some categories, particularly young and predominantly male adults and dependent children, show increases along this level but these still appear relatively small. Gradually, the adult population will mature and age so that by the year 2000 many will have retired or will be approaching retirement. During the same period children maturing into adulthood will be able to fill the vacated jobs. They will also begin to form families, placing additional demands upon the area for services.

The Coal Town II model implies that population impacts of previous energy-related development in Rosebud County have not yet run their course. Enlargement of ancillary employment opportunities is likely to cause an increase in the impact area's population regardless of future coal development in the area. This phenomenon is illustrated by the Base Scenario (see Table III-A-1). Each increment of development further adds to the potential significance of population growth. The Big Sky expansion would generate an additional population increase of approximately 158 persons by 1980 and 44 persons by 1990. The Big Sky expansion, coupled with enlarged Western Energy operations, would cause the area population to grow by 380 by 1980 and by 1,982 by 1990. When the mine expansions are combined with the development of Colstrip Units III and IV the changes are most dramatic. In this high scenario, the county population would grow by an additional 3,825 persons in the next two years and again by 3,705 by 1990. If the generator scenario were to transpire, only 5.8 per cent of the 1978-1990 population growth would be attributable to the Peabody expansion.

Table III-A-1

Population Projections by Scenarios of Growth
Rosebud County, Montana
1978-2000

	1975	1978	1980	1985	1990	1995	2000
Base Scenario (No Expansion)	9,568	8,523	9,227	10,986	12,400	13,355	14,383
Peabody Expansion Only Scenario	9,568	8,523	9,385	11,319	12,841	13,829	14,895
Peabody-WeCo Expansion Scenario	9,568	8,523	9,607	12,139	14,382	15,489	16,682
Peabody-WeCo-MPC Expansion Scenario	9,568	8,523	13,052	13,524	16,105	17,345	18,682

3. Educational Distribution

The level of education of household heads is among the more difficult variables to project in a rapidly growing agricultural area (Graybill, 1958). This difficulty is exacerbated by the sharp differences in the educational levels of the two main racial categories and by rapid increases in the average educational levels of each.

The simplifying assumption underlying educational projections is that the existing rate of high school graduation for 1970 will remain approximately the same through 1990. This is a conservative estimate since education levels are currently rising (U.S. Bureau of the Census). However, the object of this section is to describe the relative effects of development upon educational levels.

The population figures reported here are generated from estimates made of educational achievement levels among heads of households. The dependents within the population are aggregated with the household heads to create a configuration of the numbers of persons supported by a household head with a particular educational level (i.e. less than high school graduation or high school graduation or more).

Projections indicate a slight increase in the absolute number of less-than-high school graduates in both 1980 and 1990. This contrasts sharply with the large absolute increases in the high school graduate population for the same years. These increases become even more apparent as increasing levels of energy development are stimulated (see Table III-A-2). It is possible that the increases in development projected from each scenario are somewhat responsible for the increased educational levels, since a relationship between level of education and increased employment has been previously demonstrated (Heer, 1966). Still, such increases may in large part reflect an ambient rise in those levels following changes in social structure.

Table III-A-2

Per cent of Heads of Households Graduated from High School
Rosebud County, Montana
1975-1990

Base Scenario	52.5%	52.5%	52.5%	52.5%
Peabody Expansion Only Scenario	52.5%	53.3%	53.0%	52.7%
Peabody-WeCo Expansion Scenario	52.5%	54.9%	56.3%	55.9%
Peabody-WeCo-MPC Expansion Scenario	52.5%	60.6%	61.7%	61.6%

4. Occupational Distribution

The gradually increasing efficiency and magnitude of agricultural production reduces a sector's manpower needs (Boserup, 1965). This reduction of agricultural jobs, combined with the development of jobs in other sectors of the economy, has reduced the proportion of population supported by agriculture. This has been the case in Rosebud County, and promises to be even more prevalent in the future if coal-related activities in the county are expanded.

The Base Scenario reflects what might be expected to occur if no further coal development were to take place in the impact area. The agricultural sector is still likely to experience a decline in its relative contribution to the local economy. Again, this is reflective of the current underdevelopment of the area's ancillary sector, and the likelihood of its further development. Approval of just the Big Sky expansion will very gradually accelerate the rate at which the role of agriculture is diminished. In the Peabody-WeCo Scenario additional mining employment would cause a proportionately greater rate of change to occur, while the generator scenario would cause a significant change in the agricultural/non-agricultural relationship.

In each sector, age-sex structures remain similar to each other and should continue to mature and expand in the previously described manner. A likely possibility occurs when young persons grow up in an agricultural household but cannot maintain their adult livelihood in agriculture, and are instead able to find work in coal related occupations in Rosebud County. Such switching of employment sectors will contribute to non-agricultural employment without migration. Still, the net-demographic effect is essentially the same as if in-migration had occurred, since the out-migration of these persons would have occurred without coal development.

Table III-A-3

Agriculturally and Non-Agriculturally Supported Populations
By Scenario of Growth
Rosebud County, Montana
1975-1990

	1975		1978		1980		1985		1990	
	Agri	%	Agri		Agri	%	Agri	%	Agri	%
	Non-Agri	%	Non-Agri	%	Non-Agri	%	Non-Agri	%	Non-Agri	%
Base Scenario	2,392	25	2,520	30	2,606	28	2,821	26	3,038	24
(no expansion)	7,186	75	6,003	70	6,621	72	8,165	74	9,362	76
Peabody Expansion	2,392	25	2,520	30	2,606	28	2,821	25	3,038	24
Only Scenario	7,186	75	6,003	70	6,779	72	8,498	75	9,803	76
Peabody WeCo	2,392	25	2,520	30	2,606	27	2,821	23	3,038	29
Expansion Scenario	7,186	75	6,003	70	7,001	73	9,318	77	11,344	79
Peabody-WeCo-MPC	2,392	25	2,520	30	2,606	20	2,821	21	3,038	29
Expansion Scenario	7,186	75	6,003	70	10,446	80	10,703	79	13,067	81

5. Racial Composition

Natural growth is a phenomenon which would likely cause the population of Rosebud County to increase regardless of further economic developments, albeit at a much slower rate. The type of growth is determined by the greater incidence of births than deaths in an area. Significant for Rosebud County is the fact that fertility and mortality rates for whites and non-whites are much different, causing the two major racial groups to evolve different profiles over time. Table III-A-4 displays the projections of future racial composition of Rosebud County, categorized into white and non-white. The county's non-white population can be expected to be composed almost entirely of Northern Cheyenne Indian, as in-migration of other non-white racial groups has been negligible.

Table III-A-4

Racial Distribution,
By Scenarios of Growth
Rosebud County, Montana
1975-1990

	1975		1980		1985		1990	
	Non-White	% White	Non-White	% White	Non-White	% White	Non-White	% White
Base Scenario	2,149	22 / 7,429 78	2,357	26 / 6,870 74	2,692	25 / 8,294 75	3,071	25 / 9,329 75
Peabody Expansion Only Scenario	2,149	22 / 7,429 78	2,376	26 / 7,125 74	2,752	24 / 8,567 76	3,167	25 / 9,674 75
Peabody-WeCo Expansion Scenario	2,149	22 / 7,429 78	2,482	26 / 7,194 74	2,872	24 / 9,267 76	3,264	23 / 11,118 77
Peabody-WeCo-MPC Expansion Scenario	2,149	22 / 7,429 78	2,647	20 / 10,405 80	3,051	23 / 10,473 77	3,453	21 / 12,652 79

By itself the Big Sky Mine expansion plan would not significantly affect the size of the county's non-white population. By 1980, approximately 30 persons might be added to the Northern Cheyenne population as a result of the mine's expansion. Over the duration of the study period, the total non-white increment added to the county's population would be less than 100 persons. In the next scenario, expansion of Western Energy's operation coupled with the Big Sky expansion produces greater growth in both the non-white and white population, however scenario's net relative effect would be to cause a slight proportional increase in the area's white population. This trend is even more apparent in the generator scenario. The explanation for this phenomenon is related to the indigenous nature of the area's non-white population. The potential for growth in the Northern Cheyenne population is restrained by the limits of its capability for natural growth. This limitation establishes an upper parameter on possible increases in the area's non-white population.

Further energy developments will have the effect of stimulating white in-migration into the study area. Such developments will also serve to slow the out-migration of Northern Cheyenne from the reservation area. However, this increase in the Northern Cheyenne population does not necessarily imply that Northern Cheyenne will obtain a proportionate share of jobs in coal industries. Three factors will work against this. The reservation has no on-going training programs to provide tribal members with the skills necessary to compete successfully for coal related employment. Secondly, tribal members would have to overcome their historic pattern of non-participation in activities related to regional economic development (Northern Cheyenne Research Project). Finally, the percentage of Northern Cheyenne in non-working age cohorts is much greater than for the area's white population.

6. Age and Sex Distribution

The direct and indirect effects of coal development are likely to continue to influence the age and sexual distribution of Rosebud County's white population. Jobs in mining are primarily male oriented, although this pattern is slowly changing. The initial effect of expansion in coal related employment is likely to be the stimulating of in-migrations of white adult males. If jobs are of a permanent nature, such as in the instance of the Big Sky expansion, male in-migrants may be followed by female in-migrants, causing the male-female distribution to move toward equalization. Conversely, if jobs are temporary, as in the construction force required for Colstrip Units III and IV, a primarily male population is likely to develop for the interim period. Based on cohort-survival projections, Table III-A-5 displays a general trend toward the equalization of the white male and white female populations. The table implies that more intensive coal development will serve to retard the equalization process. Similar cohort-survival projections imply that expanded coal development will have a minimal influence on the sexual distribution of the non-white population. This is explained by the indigenous nature of the Northern Cheyenne in the study area.

The current skew of the male-female distribution in Rosebud County's white population is likely to cause the age distribution of the two sexes to evolve in a different manner. The male population is generally older than is the female population, reflecting the in-migration of single adult males. Male in-migration has caused the age group 20-39 to be proportionately higher than is the national norm. Regardless of economic scenario, cohort survival projections imply that the male age distribution will move toward normalization over time, but is unlikely to develop the normal pyramidal-shaped age profile by 1990. More intensive coal development will serve to slow this normalization process, but not check it.

The structure of the white female population is also likely to undergo an age redistribution. Previous in-migration in this decade was not as pronounced for females as for males, creating the current imbalance between the two populations. Migration differences between men and women were most noticeable in the 40-64 age groups. The 1975 female age profile indicates disproportionately large 0-19 and 20-39 aged populations. Cohort survival projections imply that Rosebud County's white-female population will remain younger than the male population. The projections also imply that the female age profile is likely to normalize itself in a shorter period of time than will the male population, and that the nature of future coal development will minimally influence this evolution.

Future coal development is likely to have a very small influence on the age distribution of the county's non-white population. Only in the generator scenario is there any noticeable deviation from the projections of the Base Scenario. Under this high development simulation, plant construction would induce a few more Northern Cheyenne adults to remain in the county. Age distribution of the Northern Cheyenne is likely to mature slightly, but its distribution will remain heavily weighted by young people. It will take several decades until the Northern Cheyenne population can assume a pyramidal age distribution.

Table III-A-5
Age Distribution by Sex
Rosebud County, Montana
1976 - 1990

WHITES

	Base Year[1/]		Base Scenario		Peabody Expansion Only Scenario		Peabody-WeCo Expansion Scenario		Peabody-WeCo-MPC Expansion Scenario	
	1976		1990		1990		1990		1990	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
0 -19	1350 (33.4)	1281 (38.3)	1566 (32.1)	1565 (34.7)	1616 (32.0)	1613 (34.8)	1850 (31.8)	1844 (34.6)	2092 (31.5)	2084 (34.7)
20-39	1362 (33.7)	1117 (33.4)	1430 (29.3)	1303 (28.9)	1485 (29.4)	7341 (29.6)	1767 (30.3)	1582 (29.7)	2026 (30.5)	1810 (30.1)
40-64	1080 (26.7)	742 (22.2)	1462 (30.0)	1167 (25.9)	1515 (30.0)	1209 (26.2)	1746 (30.0)	1410 (26.5)	2009 (30.2)	1579 (26.3)
65 +	238 (5.9) (100%)	259 (7.7) (100%)	421 (8.6) (100%)	475 (10.5) (100%)	431 (8.5) (100%)	467 (10.0) (100%)	462 (7.9) (100%)	488 (8.4) (100%)	513 (7.7) (100%)	537 (8.9) (100%)

NON-WHITES

0-19	621 (56.9)	584 (55.1)	762 (51.2)	835 (52.0)	780 (51.3)	853 (51.7)	803 (51.0)	875 (51.6)	836 (49.9)	906 (50.9)
20-39	268 (24.6)	277 (26.2)	434 (29.6)	515 (32.0)	450 (29.6)	525 (31.8)	468 (29.8)	541 (31.9)	499 (29.8)	566 (31.8)
40-64	178 (16.3)	161 (15.2)	222 (12.1)	195 (12.1)	239 (15.7)	207 (12.5)	250 (15.9	215 (12.7)	285 (17.0)	238 (13.3)
65 +	24 (2.2) (100%)	36 (3.4) (100%)	48 (3.2) (100%)	62 (3.9) (100%)	49 (3.9) (100%)	52 (3.4) (100%)	64 (3.9) (100%)	64 (3.8) (100%)	57 (3.4) (100%)	70 (3.9) (100%)

1/ U.S. Department of Commerce, Rosebud County Special Consensus

B. Economy

1. Introduction

The Coal Town II Model is a simulation model designed specifically to estimate the impact of resource development upon numerous variables within a specific geographic region. Estimates of each variable are projected annually from 1975 to 1990 for each development scenario.

The specific geographic area to be impacted in this project is Rosebud County, Montana.

The scenarios of coal development used in evaluating the economic impact of the Peabody mine were described earlier. They were developed by the Northern Powder River Basin EIS team and the Department of State Lands in consultation with the Meadowlark Group. The scenarios were then simulated using the Coal Town II economic impact simulation model by a modeling team at Montana State University. As mentioned earlier, it was necessary to adjust 1978 and 1980 results from the simulation runs to reflect current levels in the impact area.

The adjusted results of the five simulation runs for key years have been assembled and included in the appendix (Appendix Tables C-6 through C-10).

2. Employment

The levels of coal production and direct mine-related employment are necessary input data that are provided to the model. They are determined by the specification of the scenarios, not through simulation.

The Model estimates economic base employes, ancillary jobs, proprietors and total employment for Rosebud County, the defined impact area. The scenarios were formulated in order to focus on the effects of a decision with respect to the Peabody application, and to place Peabody's effects in the context of other development in the impact area. Table III-B-1 presents an employment overview of the four key scenarios.

a. Economic Base Employees

Because of a lack of detailed information on trading patterns in the county, the model utilizes an assumed definition of economic base which includes all employes in agriculture, mining, manufacturing and the federal government, plus any employes in transportation over the regional average.

Estimates of economic base employment for the base scenario indicate increase from 1975 to 1980 and then a decline to 1990, with an overall decline of 272 jobs, or 13.91 per cent (Table III-B-1). The Peabody only expansion scenario shows changes of a similar nature, but the total decline from 1975 to 1990 is smaller: 158 jobs, 8.08 per cent. In the Peabody-Western Energy expansion scenario, which does not include Colstrip Units 3 and 4, economic base employment increases slowly to a stable level. The overall increase from 1975 to 1990 is 350 workers for a 17.90 per cent increase. Looking at the scenario of expansion in Peabody, Western

Table III-B-1
Employment Overview, Rosebud County, 1975-1990;
Key Development Scenarios.

Peabody Denial Base Scenario	1975	1980	1985	1990	1975-1990 Change Number	1975-1990 Change Percent
Economic Base Empl.	1,955	2,019	1,854	1,683	-272	-13.91
Ancillary Empl.	1,950	2,091	2,901	3,287	1,337	68.56
Proprietors	332	309	444	518	186	56.02
Total Employment	4,236	4,420	5,198	5,489	1,253	29.57
Empl./Population	.4578	.4740	.4732	.4426	-.015	-3.27
Peabody Only Expansion Scenario						
Economic Base Empl.	1,955	2,119	1,968	1,797	-158	-8.08
Ancillary Empl.	1,950	2,085	2,989	3,411	1,461	74.92
Proprietors	332	309	438	512	180	54.21
Total Employment	4,236	4,523	5,395	5,721	1,485	35.05
Emp./Population	.4578	.4819	.4767	.4455	-.012	-2.62
Peabody, Western Energy Expansion Scenario						
Economic Base Empl.	1,955	2,204	2,305	2,305	350	17.90
Ancillary Empl.	1,950	2,154	3,188	3,800	1,850	94.87
Proprietors	332	319	418	484	152	45.78
Total Employment	4,236	4,661	5,911	6,589	2,353	55.54
Empl./Population	.4578	.4852	.4870	.4582	.000	0.09
Peabody, Western Energy, and Montana Power Co. Expansion Scenario						
Economic Base Empl.	1,955	4,098	2,555	2,555	600	30.69
Ancillary Empl.	1,950	2,610	3,750	4,453	2,503	128.35
Proprietors	332	387	408	475	143	43.07
Total Employment	4,236	7,096	6,712	7,483	3,247	76.65
Empl./Population	.4578	.5418	.4963	.4646	.007	1.52

III-11

Energy, and including the construction of Colstrip units 3 and 4, the economic base employment peaks in 1980 and then stabilizes at a lower level, with a net increase from 1975 to 1990 of 600 workers for a 30.69 per cent gain.

b. Ancillary Employment

The generally accepted theory of how a local economy functions holds that basic employment is the foundation which brings dollars into the economy, and which serves as the base to support ancillary activities. This is not a rigid relationship, and in recent years there has been a strong trend for ancillary employment to grow at a considerably faster rate than basic employment.

The Coal Town II model has two features which are reflected in its estimates of ancillary employment. The first is that most of the ancillary effects are assumed to be produced in the same year as growth in the basic sectors. The second is that the model projects ancillary growth even though the economic base may be declining or stable. Thus, the estimates of ancillary employment, and consequently, total employment and population, may tend to be over-estimated by the model if ancillary employment growth lags basic, or if the economy never develops the depth of support activities which the model assumes. Based on the housing inventory in the impact area and interviews with local leaders, the Meadowlark Group adjusted the Coal Town II output to reflect a slower growth in ancillary employment in the years 1978 and 1980. The Coal Town II projected levels for 1985 and 1990 were used.

Since the community of Colstrip has thus far responded to the recent coal development with a minimum of ancillary services, it is possible that it may never reach the levels projected by the Coal Town II model. This raises complex questions as to the likely effect on Forsyth and on other more distant service centers such as Billings and Miles City.

As an overview, the model projects ancillary employment to grow by over 68 per cent from 1975 to 1990 under the base scenario of denial of the Peabody application. Under Peabody only expansion, ancillary grows 75 per cent during the same period. Under the Peabody-Western Energy and Peabody-WeCo-Montana Power expansion scenarios, ancillary growth is projected at 95 per cent and 128 per cent respectively, from 1975 to 1990 (Table III-B-1).

c. Proprietors

Proprietors are individuals who, as owners of a business, are self-employed in the operation of their activities. This category does not include agricultural proprietors.

In the Peabody denial base scenario, and the two scenarios with mining expansion only, the model projects the number of proprietors to decline slightly to 1980 and then increase to 1990. In the mining and powerplant expansion scenario, proprietors increase throughout the period

of analysis. For the base scenario and Peabody only expansion scenario, the rate of increase from 1975 to 1990 is 56 and 54 per cent, respectively. For the Peabody-WeCo expansion and Peabody-WeCo-MPCo scenarios, the rates are 46 and 44 per cent, respectively.

d. Total Employment

Total employment in the impact area is estimated to increase for each scenario from 1975 to 1990, with all increasing regularly except for the scenario which includes the Colstrip 3 and 4 power plants, where a decline is estimated following the construction peak (Table III-B-1). The growth in total employment is particularly dependent upon that feature of the model which estimates ancillary growth independent of economic base employment. This feature of the model, if it is in error, would tend to minimize the existence or extent of so-called "bust" periods following temporary growth in basic employment.

In a comparison of the base denial scenario with the Peabody only expansion scenario, a difference of 232 workers exists in Rosebud County in 1990. This compares with the anticipated Peabody employment in 1990 of 114. A comparison of the Peabody only expansion scenario with the Peabody constant reference scenario yields a difference of 63 in the county total employment for 1990.

The 1990 estimates for total Rosebud County employment range from 5489 under the Peabody denial base scenario to 7483 under the Peabody-WeCo-MPCo expansion scenario. The Western Energy expansion and the introduction of construction and operation of Colstrip units 3 and 4 are clearly of a much greater magnitude in terms of employment impact than any scenario for the Peabody mine.

e. Labor Market Conditions and Employment/Population Ratio

The labor market conditions index is a measure of the relationship between labor demand and supply in the Rosebud County. A value greater than one (1) indicates that demand is greater than supply and as a result the wage rate will be bid up. Projected levels of this index can be found in Appendix Tables C-6--C-10. The simulations indicate that in general the labor market conditions are such that wages are being bid upwards after 1980 to their maximum in 1990. The wage rates in general are bid down from 1975 to 1980 but increase thereafter to 1990. In all scenarios, the 1990 labor market conditions indicate increased wages which are similar among scenarios.

In the model, employment-population ratios, also known as employment participation rates, are determine primarily by the availability of employment opportunities in the County. They are also tempered by national levels of employment participation and from year to year by limits in the numbers of local residents.

In all four key scenarios, the employment-population ratio increases and then declines during the period from 1975 to 1990. It remains under .50 for all time periods except in 1980 in the scenario which includes

the construction of Colstrip Units 3 and 4. That scenario estimates 54 per cent of all county residents in the ranks of the employed work force in 1980 (Table III-B-1).

3. Revenues

The Coal Town II model estimates revenues to the State of Montana, Rosebud County, School Districts within the County, and a town within the County for target years for each scenario. Revenues and county and school expenditures have been estimated for each scenario, using both constant 1970 dollars and using current dollars. Current dollar estimates were inflated from the constant figures using a forecast of the U.S. consumer price index. Revenues and expenditures for all five scenarios can be found in Appendix Tables C-6--C-10).The level influenced the greatest by the approval of the Peabody mine is the state of Montana. Projected state revenues in Rosebud County would be 64 per cent less in 1990, in a comparison of the Peabody only expansion scenario with the base scenario. County revenues are estimated to be 22 per cent less, and school revenues 7.2 per cent less in the same comparison. A revenue comparison of these two scenarios can be found in Table III-B-2.

Overall, the revenue estimates of the Coal Town II model are judged to be limited in their usefulness for drawing conclusions. School revenues, for example, reflect a total level of revenue for all districts. Major inequalities exist, however, between districts, with some districts getting a disproportionate share of the student load (Forsyth elementary), while others get a disproportionate share of the revenue because the tax base is located within their district (Colstrip).

Table III-B-2
State, County, and School Revenue Comparison - Peabody Denial Base Scenario with Peabody Only Expansion Scenario; 1980, 1985, 1990, Rosebud County, Millions of Constant 1970 Dollars.

	1980	1985	1990
State of Montana Revenue			
Peabody Denial Base	29.75	13.05	4.49
Peabody Only Expansion	35.73	20.92	12.42
Difference	5.98	7.87	7.93
Rosebud County Revenue			
Peabody Denial Base	0.85	0.58	0.45
Peabody Only Expansion	0.95	0.72	0.58
Difference	0.10	0.14	0.13
School Districts Revenue			
Peabody Denial Base	4.02	3.19	3.35
Peabody Only Expansion	4.49	3.43	3.61
Difference	0.47	0.24	0.26

Because the coal-related improvements are all within the County, the County is placed in a very strong fiscal position. The County is far from any mill ceilings, and with its substantial tax base can easily raise additional revenue. The governmental unit with the greatest apparent revenue difficulty is Forsyth. This modest community on the Yellowstone River has shouldered much of the impact load, while experiencing only small increases in its tax base. Forsyth is an example of a situation where the impact jurisdiction does not coincide with the jurisdiction which reaps tax gains, thus making a case for aid through the Coal Board, a state program which administers impact aid financed with coal severance tax revenues. Somewhat similar logic applies to some school district situations, particularly the elementary district in Forsyth.

Thus, one must be particularly careful in drawing conclusions from the Coal Town II revenue estimates.

C. Land Use and Settlement

1. General

A large influx of newcomers can generally be expected to generate demand for a variety of land use changes. The population of Rosebud County is expected to increase steadily, directly from coal-related employment and indirectly from growth in the local service sector. The spatial arrangement which this population growth assumes will determine the type and intensity of impact on land use and, in turn, a variety of other socioeconomic impacts. However, because of the historical constraints on land use in the county and because of the patterns of development established during the 1970-76 growth period, radical change in population distribution is unlikely.

Physical geographic constraints, roadway access limitations, the presence of the Northern Cheyenne Reservation, rancher reluctance to subdivide land, government planning policies and the attraction of urban amenities should reinforce the incidence of settlement in the Colstrip and Forsyth urban areas.

2. Colstrip

Logically, Colstrip should experience the bulk of new settlement in the impact area. Its location is closest to the sites of future basic employment and it has the greatest potential for growth in ancillary employment. Settlement distributions projected by a gravity model corroborate this prediction. The model locates probable settlement preferences of the households of basic employes, assuming that the relative attractiveness of an area is determined by the services and amenities it provides (a function of population) and its distance from the sites of basic employment (mines and generator plants). The settlement patterns of ancillary households are likely to resemble the patterns of basic households. Table III-C-1 displays the attractiveness of Colstrip relative to Forsyth. Note that Colstrip's capture rate increases over time, as the services and amenities it provides expand.

Table III-C-1

Settlement Capture Rate
Colstrip, Montana
1980, 1985, 1990

	Peabody Expansion Only Scenario	Peabody-WeCo Expansion Scenario	Peabody-WeCo-MPC Expansion Scenario
1980	87.5%	87.5%	87.5%
1985	90.1%	90.6%	94.1%
1990	93.4%	94.1%	95.5%

While analytic techniques imply that Colstrip is the logical location for most new settlement, the current capacity of the townsite to accommodate population growth is much less than its potential for growth. The townsite can handle only about 170 additional people in its permanent residential areas and between 550 and 600 people in its temporary mobile home

area.

Much of Rosebud County's projected population increase is explained by expansion in ancillary employment. This expansion is predicated on the availability of adequate space for service sector development and ancillary household settlement in Colstrip. Because the Montana Power and Western Energy Companies control all land neighboring the townsite, the companies have effectively preempted non-company sponsored development in this area. The future rate of impact area growth is as much a function of corporate land use decisions as it is a function of population growth dynamics.

The controlling companies have prepared a master plan for a major townsite expansion in Colstrip. This plan has received preliminary approval from the Rosebud County Commission. The plan establishes new areas for commercial development and permanent locations for new single-family, multi-family and mobile homes, as well as temporary mobile home spaces, bachelor quarters and camper pads. The planned expansion would provide accommodation for 5,000 additional persons on a temporary basis and nearly 3,000 permanently. The expansion is intended to provide living space for the population growth induced by expanded Western Energy Mining and construction and operation of Colstrip Generating Plants III and IV.

The Montana Power and Western Energy Companies have not made public contingency plans for townsite expansion in the event that Colstrip generator plants are not built. An adverse ruling in the summer of 1978 by the Environmental Protection Agency raises questions as to whether the plants will be constructed. Without the incentive of further power plant development, the companies may decide a further commitment of company resources is beyond their obligations to the community. A problem here is that regardless of future mining or power plant developments, Colstrip is likely to experience substantial population pressure.

If the townsite were not expanded immediately, Colstrip would still probably experience most of the new settlement taking place in the near future. The combination of permanent and temporary lots currently vacant within the townsite would allow Colstrip to accommodate most of the 1980 growth projected for it in the Peabody Only and Peabody-WeCo scenarios. Admittedly, many households might be dissatisfied with conditions in the temporary mobile home area, but they would have few settlement options if they were determined to live in the study area. By 1985, it is assumed that steps would have been taken to implement the townsite expansion plan or that an alternative site or sites would have been developed near Colstrip.

Table III-C-2 displays projected settlement in Colstrip during the study period. The projections assume that the townsite expansion takes place by 1980 in the Peabody-WeCo-MPC Scenario, and by 1985 in the other scenarios.

Table III-C-2

Projected Settlement
Colstrip, Montana
1980, 1985, 1990

	No Expansion Base Scenario	Peabody Only Expansion Scenario	Peabody-WeCo Expansion Scenario	Peabody-WeCo-MPC Expansion Scenario
1978 (Base Year)	1741	1741	1741	1741
1980	2221	2328	2409	5169
1985	3696	3961	4226	5569
1990	4848	5240	6526	7764

In the non-generator plant scenarios, most in-migrants would be forced to live in the temporary mobile home area, at least during the interim period until the townsite were expanded or alternative living sites were developed. Its general unattractiveness, crowding, lack of landscaping, unpaved roads, plant noise and dust problems are likely to make Colstrip residents dissatisfied with their living environment. Inasmuch as the area is supposedly temporary, it can play an important role in resolving a short-term living space shortage. However, if the temporary area becomes a defacto permanent residential area, it will seriously detract from the quality of the Colstrip community.

Population growth will increase the viability of commercial business investments in Colstrip and serve as an incentive to open new businesses within the community. An area of discontent among Colstrip area residents has been the unavailability of commercial services in the community. Expansion of the local commercial sector is likely to improve the local economy, increase the availability of goods, services and amenities, and enhance the resident's sense of community. A lag factor should again cause the service sector's development to occur more slowly than expansion in basic employment. Commercial rents charged by Western Energy are likely to influence the duration of the lag period. If rents remain at rates comparable to Billings, these rents will serve to retard if not stifle the sector's development.

Land use impacts in Colstrip will be profoundly influenced by corporate decisions related to the townsite's development. The Western Energy and Montana Power Companies control the developable land within and near the townsite and therefore are in a position to effectively implement a town expansion plan which minimizes the adverse effects of a sharp increase in population. If the town expansion plan were to be implemented in conjunction with demand for in-migration into the community, Colstrip would be able to accrue certain benefits, while preventing much more severe impacts elsewhere in the county.

3. Forsyth

Because of the limitations upon Colstrip's capacity to absorb projected growth, Forsyth could receive a greater population increase than assigned to it under a gravity model. By 1990, Forsyth should grow by between 500

and 800 persons, depending on the level of energy development in the county. These parameters assume that Colstrip will develop a more complete complement of ancillary services. If Colstrip residents continue to rely on Forsyth for necessary goods and services, the projections in Table III-C-3 may understate Forsyth's potential for population growth. The table indicates steady growth for Forsyth during the study period.

Table III-C-3

Projected Settlement
Forsyth, Montana
1980, 1985, 1990

	No Expansion Base Scenario	Peabody Expansion Only Scenario	Peabody-WeCo Expansion Scenario	Peabody-WeCo-MPC Expansion Scenario
1978 (Base Year)	2167	2167	2167	2167
1980	2271	2297	2338	2815
1985	2418	2462	2537	2840
1990	2656	2552	2656	2968

Forsyth hasn't formally developed a comprehensive strategy for accommodating future increases in population, but incremental planning has put the community in a fairly advantageous position in terms of future growth. Capital facilities such as schools and water and school systems have or soon will have the potential for servicing a much larger population. Within the city limits there are roughly 330 vacant buildable lots and 220 temporary dwelling units (motels, hotels, etc.). There is land available east and southeast of the city limits where additional subdivisions could be located. If expansion to the east and southeast takes place in an orderly manner, the city could systematically provide water and sewer services to 600 new homes in the area.

A factor which may limit Forsyth's ability to provide services outside its current boundaries is its poor financial situation. Developments in new areas would require new streets, pipes, expanded police and fire protection, etc. Forsyth has a limited tax base, composed primarily of residential land uses. Despite taxing at its maximum allowable mill levy, it has been intergovernmental transfers from the Montana Coal Board which have allowed the city to keep pace with increasing service demands. Whether the Coal Board program will continue is uncertain. Peripheral growth could endanger the fiscal viability of the city, particularly if such growth requires capital outlays which cannot be offset by special assessments or further intergovernmental transfers. Future land uses are intimately related to the fiscal impacts of growth on Forsyth. If residential development occurs in a low density, leapfrog manner on the city's periphery, it is likely to precipitate a financial crisis for the town.

Land use controls exercised by the city have served to influence, but not necessarily manage, Forsyth's recent growth. Government imposed conditions, established as prerequisites to approval and annexation of subdivisions contiguous to the city, should continue to insure that quality development occurs on adjoining land. Forsyth has not exercised its

extraterritorial zoning powers (R.C.M. 11-2702(2), nor has the county exercised its zoning powers in peripheral areas. Without such controls, random development patterns in the outlying areas are probable.

Within the city, zoning has not been diligently enforced, which has resulted in the initiation of several non-conforming uses. While this has not as yet created any serious problems, weak zoning enforcement may cause future growth to have disruptive effects on established land uses. A difficulty with strict enforcement of the current Forsyth zoning ordinance is its need for revision.

In addition to increasing the general population density of the area, population growth is likely to intensify the demand for expanded commercial land uses. This growth should enhance the local tax base. A shortcoming in the city's preparation for such development has been its failure to adopt an ordinance for regulating commercial expansion on Front Street (old U.S. Highway 10). Because of its locational advantage relative to probable areas of residential growth, further strip-like development on Front Street is likely to detract from the market share of the central business district. This could occur in spite of general growth in the local economy.

4. Rural Areas

Regardless of location or the availability of residential space and amenities in the two urban areas, a small proportion of new settlement in Rosebud County will take place in rural areas. It has been assumed that 10 per cent of future growth will be non-urban, a rate reflective of recent trends occurring in the area. The various Scenarios indicate that rural settlement in the study area should increase from 280 to 758 persons during the study period.

Table III-C-4
Rural Settlement
Rosebud County, Montana
1980, 1985, 1990

	No Expansion Base Scenario	Peabody Only Expansion Scenario	Peabody-WeCo Expansion Scenario	Peabody-WeCo-MPC Expansion Scenario
1978 (Base Scenario)	4615	4615	4615	4615
1980	4685	4705	4370	5068
1985	4872	4896	5376	5115
1990	4895	5049	5650	5373

*Projections do not include potential effects of natural population increases or possible other energy-related employment in areas of the county outside the study area.

If rancher opposition in the southern end of the study area remains concordant, most new rural residential land uses will be located between the Yellowstone River and Interstate 94, up drainages south of Forsyth and north of the Yellowstone River near the Forsyth Bridge. Much of this land is alluvial bottom land, therefore constituting some of the most productive agricultural land in Montana. Rural subdivisions adversely affect agricultural

land uses. Not only do such subdivisions take land out of production through direct displacement, but inherent conflicts between urban and agricultural land uses make continued agricultural use of nearby property much more difficult. Problems such as frightened livestock, vandalism, trespassing and rustling increase as a result of rural subdivisions.

Even if no rural residential development occurred, coal development and general population growth will make the ranching enterprise in Rosebud County more difficult. This study's survey of area ranchers indicates that recent coal development has had tremendously adverse impacts upon agricultural operations. These problems are likely to intensify. As an example, ranches and coal companies compete for the same local labor pool. Coal company wages are three times greater than wages which ranchers can afford to pay; therefore ranches cannot compete for labor effectively. Other problems will be related to the ignorance of in-migrants about ranching. Urban residents are likely to continue to use agricultural lands for recreation, creating a myriad of problems for ranchers.

Coal development will contribute to changes which will negatively affect the viability of agricultural land uses, increasing management problems and inflating costs of operation. In a time when the ranching enterprise is financially marginal, adverse changes in the ranching environment are likely to force some ranchers out of business.

Another plausible area for rural subdivision activity would be fee areas of the Northern Cheyenne Reservation. Coal-induced settlement in Lame Deer is unlikely.

Population growth projected for Colstrip which could not be accommodated in the townsite would not necessarily take place in Forsyth or in rural areas. Much of the county's projected growth is explained by additional ancillary employment and ancillary household settlement in Colstrip. If ancillary development is not accommodated in Colstrip, it might not occur at all: Some additional ancillary-related settlement would occur in Forsyth and rural areas, but not equivalent to the amount theoretically possible in Colstrip.

Summary: Big Sky Mine Scenario

The location of the Big Sky Mine implies that most of the 32 new households generated directly by the Peabody expansion would prefer settlement in Colstrip. This theory is reinforced by the Peabody Miner Questionnaire, in which 30 per cent of Peabody employes living in Forsyth expressed a preference to live elsewhere. This is not necessarily an indictment of the community. A more logical explanation is that these people are tired of driving 100 dangerous miles daily to and from the mine site. Unfortunately, Peabody intends to hire its additional work force in late 1978 or early 1979. This schedule would cause Peabody induced in-migration well ahead of foreseeable townsite expansion schedules.

In a situation of lot and housing scarcity, Colstrip managers are likely to be reluctant to make the few permanent vacant lots available to Peabody households but might be willing to make temporary mobile home lots

available. Another factor which might influence Peabody household settlement is the large number of company households already located in Forsyth. Existing social patterns and such factors as pre-established car pools might negate some of Forsyth's aforementioned locational disadvantages. If Colstrip is not a settlement option, it is likely that more Peabody household settlement will occur in rural areas than might otherwise take place.

Short-term settlement of new Peabody households is likely to resemble the pattern occurring when the mine initially opened in the early 1970s. Over time, some Peabody households could be expected to shift their residences to Colstrip. This phenomenon is predicated on Colstrip townsite expansion and upon increasing transfers of property by individual property owners.

D. Transportation

1. Roadways

a. General

Projected population growth will cause corresponding increases in roadway use. Table III-D-1 displays projections of vehicle trips for Rosebud County residents. The table indicates that local traffic volumes could increase by more than 50 per cent by 1980 if the proposed generating plants are built in Colstrip. The other scenarios imply a more moderate, short-term increase, ranging from 7.7 per cent to 11.2 per cent. By 1990, regardless of scenario, locally generated traffic will have increased tremendously, under the assumption that future vehicle-use patterns remain similar to current patterns made in its design. The currently high volume of commuter,

Table III-D-1

Projected Average Daily Trips*1,2
1980, 1985, 1990
Rosebud County, Montana

	No Expansion Base Scenario	Peabody Expansion Only Scenario	Peabody-WeCo Expansion Scenario	Peabody-WeCo-MPC Expansion Scenario
1978 (Base Year)*	20,746	20,746	20,746	20,746
1980	22,338	22,711	23,069	31,773
1985	26,743	27,552	29,549	33,169
1990	30,181	31,258	36,104	39,207

*-1 Assumes 6.5 A.D.T.'s per household
*-2 Includes only locally generated trips
*-3 Meadowlark Group estimates for April 1978

shopper and entertainment-related travel between Forsyth and Colstrip will be supplemented by traffic generated by additional coal-development, causing more frequent accidents. If roadway improvements are done in the early 1980s, the hazardousness of the road will be reduced.

Rural subdivisions and more frequent recreation trips by urban residents are likely to increase travel on rural county roads, which would cause additional conflicts between agricultural and passenger vehicles. Greater road use would also further aggravate the area's dust problem. Road maintenance costs for the county would rise, although the county is sound financially. As the frequency of rural subdivision grows, the county government is likely to experience greater pressure to improve rural roads. If such improvements are made, they are liable, in turn, to stimulate still additional rural subdivisions.

b. Colstrip

Colstrip road usage should increase at a higher rate than other areas of the county, as it is expected to capture most of the projected population growth. Table III-D-2 displays projected increases in average daily

trips in Colstrip. Again, if new generating plants are built, the magnitude of traffic volume will increase and the rapidity with which it will change would be amplified. Traffic volumes would grow by 200 per cent in 1980 and 345 per cent in 1990. Under the Peabody Only Expansion Scenario, volumes would increase by 27.5 per cent and 178.4 per cent respectively.

Table III-D-2

Projected Average Daily Trips
1980, 1985, 1990
Colstrip, Montana

	No Expansion Base Scenario	Peabody Expansion Expansion Scenario	Peabody-WeCo Expansion Scenario	Peabody-WeCo-MPC Expansion Scenario
1978 (Base Year)	4238	4238	4238	4238
1980	5405	5668	5864	1258
1985	8996	9641	10,286	13,555
1990	11,802	12,950	15,885	18,900

Colstrip's existing road system directs too much non-residential traffic to residential streets. While increases in community-wide traffic volumes will not be felt equally in all areas of the townsite, growth generally will increase traffic in existing residential areas. Unless a sidewalk system is constructed, the incidence of vehicular/pedestrian conflict is likely to increase.

Congestion is likely to become an increasing concern in Colstrip. Westward townsite expansion across the Colstrip Road is likely to route plant- and Burtco Trailer Park-destined traffic through commercial and residential areas. Increased use of Willow and Box Elder Streets will cause congestion problems at their railroad track intersections to become greater. A similar situation will intensify on the east side of the tracks, as plant- and Burtco-bound traffic will be lined up in greater numbers. In the townsite expansion plan, companies have provided an alternative access route to the plant and Burtco area, traveling to the north of the permanent townsite. The road should alleviate use of residential and commercial roadways by industrial vehicles in the permanent town area, although such traffic is transferred to the Burtco area. The alternative route does not call for construction of an overpass over the Burlington Northern Tracks; therefore, it does not completely reconcile the car/train problem.

New commercial development on the west side of Colstrip Road will generate a high number of east-west trips, which will at least slow through traffic on the Colstrip Road. It is possible that the new traffic pattern could create a dangerous intersection.

Road maintenance within Colstrip is currently carried out by controlling companies rather than the county. This responsibility will eventually be turned over to the county (or to the new city, if Colstrip were to incorporate). The cost of road maintenance in Colstrip would be significant, but the county could raise the necessary funds through property taxes.

c. Forsyth

Forsyth's road system is more capable than Colstrip's of handling increased road use. Front Street, Main Street and Interstate 94 are east-west corridors through the city. These roadways allow non-local traffic to avoid interference with internal circulation of city traffic. Vehicle trips generated from new peripheral developments are provided with relatively direct routes to city activity modes. An increase in these trips would have minimal impact on residential areas. If infill occurs in established sectors of the city, the lack of a north-south corridor will become a slightly greater problem.

Table III-D-3

Projected Average Daily Trips
1980, 1985, 1990
Forsyth, Montana

	No Expansion Base Scenario	Peabody Expansion Only Scenario	Peabody-WeCo Expansion Scenario	Peabody-WeCo-MPC Expansion Scenario
1978 (Base Year)	5275	5275	5275	5275
1980	5528	5591	5691	6852
1985	5886	5993	6176	6913
1990	6465	6212	6465	7225

By 1980, traffic volumes in Forsyth are projected to increase by between 6 and 8 per cent in the non-generating plant scenarios, and by 30 per cent if the generating plants are built. Greater road use will further aggravate two existing problems. The mainline of the Burlington Northern railroad intersects with north-south roadways at three locations. Heavy use of the tracks by coal-trains and the great amount of switching which is done in the Forsyth railyard regularly block vehicle traffic, inhibiting the circulation of traffic. Only on the west side of town has an overpass been constructed to remedy the situation. More road vehicle use and increasing train traffic are likely to intensify the dangers and inconveniences created by the current situation.

Increased road use is also likely to reduce the physical quality of Forsyth streets. Forsyth residents have identified road maintenance as an area of strong dissatisfaction. The cause of the problem is poor street drainage, resulting from the lack of a city storm sewer system. Until such a system is installed, Forsyth will have badly rutted streets. More traffic will cause a corresponding increase in wear and tear on city roads. The city is in a poor financial position and will have difficulty in financing higher maintenance costs.

2. Coal Transport

Whenever railroad tracks intersect roadways there is a possibility of serious accidents. The potential for conflict will increase as more coal is transported and roadways get more frequent use. Expansion of the Big Sky Mine would add 7.5 trips a week to its existing rate of 9 a week. Under the Peabody-WeCo Expansion Scenario, an additional 20 weekly trips

would be generated by 1980 and 36 by 1990, as more Western Energy coal would be exported eastward. Under the Peabody-WeCo-MPC Scenario, Western Energy's additional production would be hauled to Colstrip only. The potential for accidents on the Colstrip Road will increase as the road already mixes a large volume of high-speed traffic with a heavily used rail corridor. The inter-regional transport of coal, from Forsyth eastward, will also have increased disruptive effects.

E. Housing

1. Demand for Housing

With the out-migration of most of the work force which constructed Colstrip generators I and II, the tight housing situation has eased significantly. Vacancy rates have risen to a more acceptable rate (five per cent) and rents and housing costs are increasing less rapidly then they were a few years ago. Assuming continuation of the area's current stability, the structural mix of housing could, over time, begin to more closely resemble the typical Montana profile. However, projected population growth is likely to upset this housing equilibrium. The housing situation of the early and mid-1970s is likely to recur. Housing costs again are likely to rise, vacancy rates could become extremely low, potential home buyers will probably have few purchasing options and low income people will likely experience extreme difficulty in acquiring any kind of housing.

The degree to which the housing situation re-emerges as a major problem will depend on the rate of economic growth (which of the potential scenarios actually occurs) and the effects of private and public sector policies related to the availability of housing. The amount of population growth will naturally be the most important determinant of demand for housing. However, another factor, the trend toward smaller household size, will cause the demand for housing to grow at a rate slightly faster than the area's population growth. Table III-E-1 illustrates projected housing needs for the study area.

Table III-E-1
Projected Total Housing Demand*
Peabody Impact Study Area
1980, 1985, 1990

	No Expansion Base Scenario	Peabody Expansion Only Scenario	Peabody-WeCo Expansion Scenario	Peabody-WeCo-MPC Expansion Scenario
1978 (Base Year)	1641	1641	1641	1641
1980	1867	1931	2021	3416
1985	2275	2409	2742	3606
1990	2847	3026	3650	4347

*Assumes average urban household size of 2.6 and rural household size of 3.66
Meadowlark Group Estimate, April, 1978

The combination of population increases and smaller household size will accelerate housing demand. Without rehabilitation some of the older housing is likely to become structurally obsolete during the study period. Attrition among the existing housing stock will add to the need for new housing because Rosebud County's conventional housing stock is quite old and has been cited as being in below average physical condition. This holds for mobile homes as well. By 1990, many poorly constructed mobile homes will be approaching the end of their life expectancy. Although this will be a problem nationwide, it will be very severe in Rosebud County because of the major role mobile homes play in fulfilling housing needs within the impact area.

Estimates of future need for additional housing units within the study area are contained in Table III-E-2. New housing needs are beyond the building capacities of local contractors under any of the various economic Scenarios. In the Peabody Expansion Only Scenario, the study area's housing stock would require expansion by 18 per cent in the next two years, 47 per cent by 1985, and 94 per cent by 1990. Local contractors would have to build 128 units a year to keep pace with demand. In the Peabody-WeCo Scenario, population growth would create demand for 180 additional units annually. In the Generator Plant Scenario, population growth is less evenly distributed over time. Plant construction would require nearly 1,800 new dwelling units by 1980 and an additional 1,000 by 1990.

Table III-E-2

Projected Demand for New Housing Units
Peabody Impact Study Area
1980, 1985, 1990

	No Expansion Base Scenario	Peabody Expansion Only Scenario	Peabody-WeCo Expansion Scenario	Peabody-WeCo-MPC Expansion Scenario
1980	228	292	382	1777
1985	639	773	1106	1970
1990*2	1361	1540	2164	2861

*1 Assumes obsolescence of 0.5% of homes in excess of 40 years old each year.
*2 Assumes that 15% of current mobile homes will be obsolete in 1990.

While local contractors can expand their building capacity under the Peabody and Peabody WeCo Scenarios, it remains unlikely that they could build more than a few dozen homes a year. In the Generator Scenario, the indigenous home building industry might not expand at all, as most local skilled tradesmen would be employed in plant construction. For these reasons, most new homes are likely to be preconstructed homes. Mobile homes, and to a lesser degree modular homes, will be shipped into the study area. While indigenous dealers will probably capture a larger share of this market, most of such homes are likely to be purchased from larger urban areas. The importation of the majority of new homes will retard the development of ancillary jobs related to the construction and sale of housing.

Mobile homes are likely to constitute an increasingly larger share of total housing stock. Peabody employes expressed a strong preference for single-family homes in the miners questionnaire. Yet by the mid 1980s, mobile homes can be expected to constitute over one-half of the housing in the study area. Rather than being phased out, mobile homes are likely to play a more dominant role, perpetuating the dissatisfaction among some residents.

Roughly one-third of housing units in Montana are renter-occupied. In the impact area this percentage is slightly higher, reflecting company owned housing in Colstrip. Growth will increase demand for rental units, a demand that in all probability will not be met. The most efficient method

of supplying rental units is multi-family apartment buildings and there are not enough of these. Most rental units are single-family and mobile homes, or duplexes. The past shortage of rental units forced many persons to live for extended periods in motels, hotels and campers. Future in-migrants are likely to have similar experiences.

Rental demand would be particularly acute under the Generator Scenario, as most temporary construction workers will be seeking short-term housing. The Colstrip expansion calls for construction of 72 new apartments, temporary mobile home parks and a bachelor quarters, but this would not satisfy all of the demand for rental units.

The miniscule one per cent vacancy rate is likely to be approached again. Supply and demand factors will drive housing prices upward, particularly for conventional homes and rental units.

A constraining factor on sale-price inflation will be the effect of imported homes on the local market. "Tight money" is another factor which may influence the short-term supply and cost of housing. Current federal monetary policies have made it difficult to finance housing. If the situation continues, few new homes will appear in the study area. Purchase prices of housing will not rise in a "tight money" situation because there will be a few potential home buyers. However, demand for rental units will increase correspondingly and this will be reflected in higher rental prices.

2. Low Income Housing

Higher housing costs will have their most adverse effects on low-income persons, particularly those seeking rental units. The state's allocation of three "Section 8" housing units to Rosebud County does not approach the need for such housing. In 1977, there were 498 households in Rosebud County needing housing assistance (Rosebud County Housing Assistance Plan, 1977). While some of these people receive rent subsidy payments, most of these households compete with people who are better off financially for a finite supply of housing.

Elderly persons on fixed incomes are most vulnerable to sharp rises in housing costs. Such households have limited mobility and few opportunities to acquire supplemental income. The proportion of the older population in the area will grow steadily in ensuing years regardless of which economic scenario transpires. Being non-mobile, the size of this population is currently a function of the age profile of the indigenous population. This characteristic will change over time, as in-migrants grow older and enter the retirement age groups. The change will become noticable by the 1990s.

During the study period, the size of Rosebud County's retirement-aged population should grow from between 75 per cent (Peabody Only Scenario) and 100 per cent (Peabody-WeCo-MPC Scenario). Table III-E-3 displays the number of retirement-aged households likely to need housing assistance during this period. The table assumes the existing percentage of retirement-aged households needing housing assistance will remain constant into the future. The demand for elderly housing assistance increases significantly in 1990.

Because of its traditional role as the retirement site for Rosebud County, Forsyth is likely to continue to serve as the focus point for area retirees.

Table III-E-3

Households Over 65 in Need of Housing Assistance
Rosebud County, Montana
1980, 1985, 1990

	No Expansion Base Scenario	Peabody Only Expansion Scenario	Peabody-WeCo Expansion Scenario	Peabody-WeCo-MPC Expansion Scenario
1980	210	210	210	211
1985	239	244	247	264
1990	293	307	318	353

The number of non-elderly households needing some type of housing assistance in the county is also likely to increase. Many Northern Cheyenne have very low incomes and will have difficulty in acquiring housing under any circumstances. However, the reservation and Ashland, where most Northern Cheyenne reside, are outside of the primary impact area of coal and energy developments considered in the scenarios of this study. The housing situation in these areas is likely to be affected to a much greater degree by proposed coal mining adjacent to the east side of the reservation.

F. Government Services

1. General

The impact of coal development on public services can be assessed in terms of required increases in the monies appropriated to each service. Much of the analysis in this chapter focuses on the question of what happens to the average cost of providing services as the quantity of services provided increases. Unless otherwise noted, it is assumed that (1) the existing quality of service will be maintained as the quantity is increased and (2) the same increment of population growth will have about the same impact on one service as another.

Some impacts are related directly to population growth, while others are tied more to settlement patterns resulting from the population growth. Public services tied more directly to the size of population and its growth rate are law enforcement, schools and social services. Fire protection and water and sewer services are affected more by the location of population than its size.

As population size and location require an expansion in the quantity of public services, the following are likely to receive the greatest impact: law enforcement, fire protection, health and schools. For the most part, this is either due to lags in facility construction and manpower availability or dissatisfaction with current levels or quality of these services.

Among the services least likely to be immediately impacted are water and sewer, library, recreation and solid waste. These services already have either sufficient capacity to handle the anticipated population or are undergoing systemic expansion and improvement.

2. Law Enforcement

Because law enforcement services are provided county-wide by a single agency, the impacts of coal development on that service in Forsyth and Colstrip and in the outlying areas are examined together.

Impact is likely to be a function of both population size and location. It is anticipated that the per capita crime rate will not increase substantially; per capita law enforcement demands should, therefore, remain constant. Although law enforcement exhibits neither economy nor diseconomy of scale tendencies, per capita costs could conceivably decline until the capacity of current administrative and detention facilities is reached.

Construction of the new detention facility in Forsyth and the recently authorized construction of a holding facility (four cells) in Colstrip should provide the county with a capacity adequate to handle anticipated demands. In addition, some observers suggest that the construction of the Community Center in Colstrip is justified because Colstrip would have a jail if residents ever decide to incorporate. (See Appendix.)

As the population of Colstrip continues to expand in response to expanded mining and construction activity, additional law enforcement personnel will be required for the area. Under the Peabody Expansion Only population scenario, Colstrip will have a population of 2,328 by 1980. Forsyth currently has a law enforcement personnel/population ratio of 270 to 1 (Population: 2,167; personnel: 8). If Rosebud County attempts to provide a consistent law enforcement personnel/population ratio for its more populous areas, by 1980 Colstrip will require a total of nine deputies, or an increase of six deputies. This would represent a minimum investment, because more personnel will be required under the Peabody-WECo and Peabody-WECo-MPC scenarios of the population projection model. Additional expenses would coincide with an increase in personnel (i.e., automobiles and radios).

Overall county demands on law enforcement could rise substantially if a significant portion of the population perceives a rise in criminal activity with expanded mining and construction. Thirty-eight per cent of Forsyth respondents and 58% of Colstrip respondents said they would be willing to pay more taxes if service were improved. If residents demand and are willing to pay for additional personnel and facilities, law enforcement will consume an even larger portion of the budget. The effect of increased expenditures on perceived criminal activity will be difficult to measure; it could serve to mollify demands for more protection.

It is possible that area residents could authorize increased expenditures for additional law enforcement personnel, but because of statutory restrictions on the salaries of deputies, Rosebud County would be unable to attract suitably trained personnel.

Unless Colstrip incorporates or the legislature provides a taxing mechanism to more specifically tie tax payment to receipt of service, taxpayers in Forsyth may increasingly resist efforts to fund law enforcement services in Colstrip exclusively with general county tax revenues. Forsyth taxpayers could conceivably realize a significant increase in county taxes to help fund expanded law enforcement actitivy in Colstrip and receive no increase in service in their area. The indirect benefits associated with improved law enforcement in Colstrip probably will not offset the resistance of Forsyth taxpayers to pay higher taxes, for which they receive no direct benefit.

Impact on Lame Deer law enforcement services will be negligible.

3. Fire Protection

Because it is primarily property-oriented, fire protection is more a function of population settlement than size, although after certain population levels (40,000) are reached the probability of a fire starting increases more rapidly than accompanying population growth. No jurisdictions under examination will reach those population levels in the immediate future. The analysis, therefore, concentrates on housing density and settlement patterns.

a. Forsyth

The existing fire protection system appears adequate to accommodate the population levels of all three scenarios. As new housing is constructed on the fringes of Forsyth, the water system will have to be extended to assure that hydrants are in close proximity to potential sources of fires. Efforts should be made to ensure that the newly serviced area bears the total responsibility for the extension; otherwise the costs of the extension will be borne by all water users on the system.

New, high-density housing patterns and "fill-in" housing resulting in compact patterns will necessitate improved and more regular training of the city's volunteer firefighting force. Housing patterns adjacent to, but outside of, the municipal limits will require the formation of formal agreements regarding circumstances under which the municipal fire force will respond to fires outside the limits.

Overall costs of providing fire protection services will most likely increase. The portion of the municipal budget expended on this service (one per cent) should remain about constant.

b. Colstrip

The rapid population growth that would accompany either the Peabody only or Peabody-WECo scenarios and the resulting pressure on the fire protection system will be difficult to accommodate. The likely influx of mobile home housing in tight patterns will require careful and routine monitoring to assure that an adequate water supply and pressure are maintained to protect existing and new housing. There appears to be an adequate water supply to meet the needs arising from the Peabody only and Peabody-WECo scenarios, but not the Peabody-WECo-MPC scenario.

New commercial establishments will introduce a new magnitude of potential fire hazards. Training of the district's volunteer force will be essential to prevent fires from spreading from commercial to high-density residential areas.

As the magnitude and location of population increases are assessed, the responsibilities of the fire district board of trustees will take on added significance. Planning for the development of closer linkages between the district, county and private fire-fighting units will be important. Response time and the adequacy of equipment to fight new types of fires will require routine attention.

The high development scenario raises serious doubts that the area can be adequately serviced by a limited-purpose jurisdiction (fire district). Colstrip would have 5,169 residents by 1980. With that level of population and the resulting dispersion of housing and community patterns, fire protection would have to be more fully integrated with the expansion of the community water supply and other municipal services. Demands for a more comprehensive approach to community development will increase; pressures for the area to incorporate will also mount. (See Appendix.)

The Peabody-WECo-MPC scenario, accompanied by fire protection provided by a fire district, will probably result in spotty protection and high per capita costs, unless there is close cooperation between the district and entities providing related services.

c. Lame Deer

Projected growth for the area indicates that the expansion of mining will have a negligible impact on the fire protection system.

4. Water and Sewer

a. Water

i. Forsyth

Because of current expansions in its water storage and distribution system, Forsyth will be capable of accommodating the population resulting from any of the three development scenarios. Assuming a constant peak-use demand of 600 gallons a day per person, the capacity of the existing reservoir system would exceed projected demands through 1990, even under the high development scenario with maximum population growth. See Table III-F-1.

Table III-F-1
Projection of Forsyth Water Usage
Requirements* (000 gallons)

	1980	1985	1990
Peabody only	1,378	1,477	1,531
Peabody-WECo	1,403	1,522	1,594
Peabody-WECo-MPC	1,689	1,704	1,781

*Peak Summer use: 600 gallons a day per person.

The 3.5 million gallon per day capacity of the new water treatment plant provides Forsyth with ample capacity to absorb projected population growth. The location of new housing settlements will determine the need to extend the distribution system. Residents on the existing system are likely to be opposed to assisting in the funding of extensions of the water system to serve new areas.

ii. Colstrip

The prospect of Colstrip's water storage and distribution system being able to handle increased demands associated with coal development is questionable. The community now has a one million gallon storage capacity. The peak-use demand would exceed that capacity by 1980 under the Peabody Only Scenario, the low development and low population growth scenario. See Table III-F-2.

Table III-F-2

Projection of Colstrip Water Usage Requirements* (000 gallons)

	1980	1985	1990
Peabody only	1,979	3,367	4,454
Peabody-WECo	2,048	3,592	5,547
Peabody-WECo-MPC	4,394	4,734	6,599

*Peak summer use: 850 gallons a day per person.

Because the community is dependent upon a series of pipeline pumping stations, there is a higher risk of mechanical malfunction and a curtailed water supply. Expansion of water storage facilities appears advisable by no later than 1979.

In addition, Colstrip's current water permit of 700 gallons per minute will be inadequate to meet peak-use demands by 1980 under the low development scenario. The permit allows the community to draw up to 1,008,000 gallons per day. That volume will fall short of the low development peak-use demand by 1980.

The 1,000 gallon per minute capacity of the water filtration and treatment plant will be adequate to meet peak-use demands under the low development scenario through 1985 and the peak-use demands of the Peabody only and Peabody-WECo scenarios until 1980.

The water distribution system will need to be extended according to housing settlement patterns. Because of its unincorporated status and the absence of a planning board, Colstrip will probably provide water in response to growth patterns, rather than extending the system to influence growth.

iii. Lame Deer

Population impact on the Lame Deer water system resulting from the expansion of the Peabody Mine will be minimal. Any additional demand on the system, however, will probably push the system beyond its capacity.

b. Sewer

Construction of new sewer treatment facilities in Forsyth will provide the community with a sufficient capacity to serve a population of 5,000, a figure clearly in excess of any population projection through 1990.

Construction of an oxidation ditch treatment plant will provide Colstrip with a capacity sufficient to serve a population of 4,000. That capacity will be adequate until about 1986 under the low development scenario, until 1984 under the Peabody-WECo scenario and until 1979 under the Peabody-WECo-MPC scenario.

The location of housing settlements will determine the degree to which the current system will have to be extended; capital costs will vary accordingly.

Lame Deer will realize no significant impact on its sewer collection and treatment system.

5. Solid Waste

The population levels projected for Forsyth in any of the three development scenarios could be adequately served by the existing solid waste collection and disposal system. Per capita costs for operating the service should level off after the county assumes total financial responsibility for administering the service and should perhaps decrease slightly as new materials handling technologies and techniques are introduced.

The large increase in solid waste volume from Colstrip that would accompany the Peabody-WECo-MPC scenario would require a careful examination of the feasibility of integrating Colstrip's collection and disposal system with the county's canister system. Such an integration might require local source separation to remove construction materials waste for separate handling until housing and facility construction taper off.

The needs of Lame Deer area residents will continue to be adequately served by an Indian Action team and the Bureau of Indian Affairs.

6. Health Services

a. Physicians and Hospitals

The current population/physician ratio for Rosebud County is inadequate, according to a 1977 study by the Old West Regional

Commission and criteria developed by the National Institute of Health. According to that report, an area with a population/practitioner ratio equal to or exceeding 1500:1 is considered "medically underserved" (Old West Commission, "Priority Areas," 1977). Rosebud County has a population/practitioner ratio of 4,261:1. The national average is 660:1 (White, Irvin L., et. al.).

Population increases of any magnitude will throw the population/physician ratio even further out of balance.

Medical facilities in Forsyth are adequate to meet any projected growth but cannot be used to their full potential until the physician shortage is resolved. Population growth in Colstrip will require an upgrading of the facilities and staff at the medical clinic. Unless reliable transportation can be assured year round, a full-time physician may be required for Colstrip. A resolution of the physician shortage in Forsyth could hold the key to the adequacy of medical service in Colstrip.

The demands on the Lame Deer medical services system will experience no appreciable increase as a result of expanded mining operations.

b. Nursing Home

Expanded mining operations will have only a slight impact in the short term on the nursing home facilities and services in Forsyth. Miners and construction workers are by nature very mobile. After the completion of construction or once mining operations have peaked, employee turnover and out-migration are likely to increase.

However, in the long term, the expansion of mining operations could place additional demands on the nursing home facilities. Eight-six per cent of respondents to the miner questionnaire indicated a preference to retire in Rosebud County. Age profiles projected by the Cohort Survival model also support this contention, predicting a 75% to 100% increase in the area's over-65 population by 1990. A larger older population is likely to require eventual expansion of nursing home facilities.

c. County-wide Health Services

Increased school enrollments (See Table III-F-4) will place an excessive burden on the county health nurse, who is confronted already with a heavy caseload. The county or the school districts will have to employ additional staff to assure that an adequate level of health care services for school age children is maintained.

Sanitarians are required by law to carry the burden of the local health department's environmental health program. Increased commercial, housing and subdivision activity associated particularly with the Peabody-WECo and Peabody-WECo-MPC scenarios will require an expansion of the staff of the county sanitarians to perform routine and procedural inspections. Development or population growth in Rosebud County that affects the environment in a manner that requires the sanitarians to

act (i.e., subdivisions, mobile home parks or uncontrolled litter disposal) will either (1) overburden the existing staff and necessitate the hiring of new staff exclusively for Rosebud County or (2) require the existing staff to sacrifice lower priority but necessary responsibilities. The first alternative appears preferable. Another alternative would be to retain the part-time services of a sanitarian to meet demands in peak community expansion periods.

The success in recruiting physicians and a decision regarding the extent of medical services to be offered in Colstrip will, to some degree, affect the impact of expanded mining operations on the area's ambulance services. By increasing the number of physicians in Forsyth, the long, time consuming ambulance trips to Billings and Miles City could be reduced or eliminated altogether.

Improved medical facilities in Colstrip could provide immediate care and reduce lengthy ambulance trips.

d. Mental Health and Drug/Alcohol Abuse Services

Population increases in the area will increase the need for mental health and drug/alcohol abuse services. Young unmarried males, young families with unemployed head-of-household and alcohol problems, induced by periods of unemployment, will increase the overall demand for mental health and drug abuse programs. Rosebud County's commitment to treating drug and alcohol problems was discussed earlier.

Those involved in the program will be confronted with administration of a dilemma: how to treat a vastly expanded need for service with the current level of funding and resources while attempting to demonstrate an actual need to justify an increase in the budget. The past commitment of the county promises to permit the program to operate in a preventive mode, but overcoming taxpayer resistance to increased taxes will require a demonstration of increased need.

7. Social Services

Studies of growth impacted areas indicate that social services caseloads invariably increase as a result of the increased incidence of social pathologies, such as alcoholism, divorce and criminal activities, which seem to accompany rapid population growth. Unemployed workers are attracted to rapidly growing communities in search of job opportunities. The amount of in-migration which can be attributed to this factor appears to vary greatly, but in most all cases the supply of unemployed workers exceeds the availability of jobs.

Unemployed in-migrants to the Colstrip area may periodically find jobs difficult to secure. If unemployed heads-of-household are unable to find employment and move on in search of employment while leaving families behind, Aid to Families with Dependent Children (AFDC) caseloads are likely to rise.

Three social workers now serve a population of 8,523, or one worker for 2,841 persons. Actual AFDC caseloads and the client/social worker ratio have fluctuated, but have generally increased since 1975. See Table III-F-3.

Table III-F-3

Rosebud County AFDC Caseload

	1975	1976	1977	1978 (first half)
Number of cases	1,496	1,367	1,512	802
Number of social workers	3	3	3	2
Client/Social worker ratio	499:1	456:1	504:1	802:1

The decline of caseloads in 1976 can be attributed to two factors. First, following the completion of construction of Colstrip Units #1 and #2 and the elimination of many jobs, many families, whose head-of-household had not secured employment and who were AFDC cases, left the area. Second, a Child Abuse and Neglect Program, which was funded throughout 1976 by the Old West Commission, undoubtedly was referred some cases that ordinarily would have been referred to an AFDC social worker.

8. Schools

The projected school-aged population for Colstrip and Forsyth is shown in Table

a. Forsyth

Under the Peabody only scenario, school-aged population is expected to increase by only 53 by 1990. Under the Peabody-WECo and Peabody-WECo-MPC scenarios, school-aged population would increase by 59 and 106, respectively. Additional classroom and teacher requirements would range from 3 (low development) to 6 (high development) if the recommended adequacy standard of 18.2 students per teacher is maintained. The old elementary school would provide adequate "spillover" space to accommodate enrollment increases of any of these magnitudes. No expansion of classroom facilities appears necessary.

The Montana Board of Public Education has approved higher student/teacher ratios under certain circumstances; (additional) teacher/classroom requirements may be reduced if the prescribed conditions are met (Board of Public Education, 1977).

Capital improvement and construction programs funded by bonds will push the Forsyth elementary district to its maximum bonding capacity unless the taxable valuation of the district increases. Per capita

TABLE III-F-4

School Age Population*

Forsyth (1978 population - 2,167)

	1977	1980	1985	1990
Peabody Only	658	580	590	711
Peabody - WECo	658	623	640	717
Peabody - WECo - MPC	658	644	670	750

Colstrip (1978 population - 1,741)

	1977	1980	1985	1990
Peabody Only	644	588	609	1,306
Peabody - WECo	644	1,000	1,067	1,407
Peabody - WECo - MPC	644	1,324	1,648	1,961

*Persons aged 5 to 19 years: 25.26% of projected population totals. See Tables VII-C-1 through VII-C-5 for total projected population.

property-owner property taxes for the operations of the district will probably increase as mill levies continue to rise. The conditions will create a bleak financial picture for the district for the immediate future, regardless of the level of coal-related development. Coal-induced growth will heighten the problem as all new K-5 students to the Forsyth area will attend the elementary school.

b. Colstrip

The additional classroom space and teacher requirements are more critical here than in Forsyth. Under the low development (Peabody Only) scenario, the school-aged population will more than double by 1990 (644 to 1,306). The high development scenario indicates that the school-aged population will triple by 1990 (664 to 1,961).

If the recommended student/teacher ratio of 18.2 students per teacher is used as an indicator, Colstrip will require 36 additional classrooms and teachers by 1990 under the Peabody Only scenario, and an additional 72 classrooms and teachers under the high development scenario. Some temporary classrooms have already been installed in Colstrip.

The increase in the district's taxable valuation resulting from industrial, commercial and residential development and the district's eligibility for Coal Board grants will help maintain per capita property-owner property taxes for school finance at their current levels.

Both sets of school-aged projections, as well as the moderate growth scenario, will necessitate the development of a long-term capital construction program and a careful coordination between that program and enrollment projections, which are adjusted periodically to reflect fluctuations in development.

The current high level of satisfaction with the quality of schools will be difficult to maintain unless faculty turnover can be reduced. The sizeable increase in teachers in the area may have a positive effect here, since a small community of teachers with similar interests will likely develop. This may improve the social setting and may alleviate the tendency of teachers to leave the area in search of communities with a more diverse population.

9. Library

Library services and facilities appear adequate to accommodate anticipated population growth in Forsyth. Population levels projected under the Peabody-WECo and Peabody-WECo-MPC scenarios for the Colstrip area suggest that the current level of service provided by the bookmobile will be inadequate by 1980. Increasing the number and the length of visits per month may provide a short-term solution. As the area continues to experience rapid population growth, additional demands will be made for the area to have its own permanent library facility; these demands will add to increasing pressures for the community to incorporate.

10. Recreation

The expansion of the Big Sky Mine by itself would not create major new problems in the provision of recreation services in either Forsyth or Colstrip. Instead, the increased population would exacerbate problems which already exist (shortage of recreation facilities for school-aged population) or are are anticipated to exist within the area (marginal availability of park space, particularly in Colstrip).

As the population becomes younger there will be an increased demand for active recreational opportunities. Individuals in the 0-19 age category would use community and neighborhood parks and playgrounds. Without increased attention to current problems associated with inadequate park maintenance and underdeveloped parks, the quality of recreational services will continue to deteriorate as the population increases.

Fifty-one per cent of those surveyed in Forsyth and 60% of those surveyed in Colstrip, however, said they would be unwilling to pay higher taxes to improve the quality of recreational facilities.

The population increases projected by the Peabody Only scenario for Colstrip between 1980 and 1985 suggest a profound impact on recreational facilities. Population will increase by 41% (from 2,328 to 3,961). Providing outdoor recreational services will become a full-time administrative task, perhaps necessitating the type of coordination and integration with other services that can only be provided by an incorporated municipality.

Projected population increases under the Peabody-WECo and Peabody-WECo-MPC scenarios would only hasten the need to recognize and administer recreational services as a major community-wide service.

G. Social Structure and Values

1. Introduction and Methodology

The term "social structure" refers to the formal and informal organizations and associations that develop in communities for the purpose of satisfying collectively desired goals. The more formal organizations include official agencies, such as local county/city governments, law enforcement agencies, churches, schools, business associations and so on. Some of these more formal social structures have been discussed in the earlier sections on public services.

The informal associational networks are much more difficult to examine because they represent an aspect of the social structure that is not formally identified even by local residents. This is a part of the social structure that has no formal name and no formal list of participants but nevertheless persists over time and performs socially necessary functions. Examples might include groups of residents who regularly welcome newcomers to the community, groups of residents who regularly organize softball games or other recreational activities or residents who collectively encourage efforts to beautify their community. Such associations become part of the formal social structure only when they establish formal rules of procedure, adopt a formal association name, develop formal membership lists or otherwise formally announce their existence and purpose to the community at large.

Because informal community associations have these characteristics, they are quite difficult for a newcomer or an outsider to identify and describe, as their presence is not immediately obvious. The social scientist can identify and describe these informal associational ties, however, using a combination of ethnographic research and survey techniques. Since ethnographic research is quite costly in time and money, it was not considered feasible for this study. The next best alternative is to rely on data collected by researchers who have employed ethnographic methods. In this case, only one such study has been conducted in the impact area and this by the Institute for Social Science Research at the University of Montana. These findings are augmented by recent indirect evidence regarding change in social structure obtained from the Meadowlark Group survey of local attitudes conducted in 1978 (See appendix).

The Institute for Social Science Research conducted its study of Rosebud, Bighorn and Powder River counties from October, 1973, to May, 1974. Their data, therefore, are roughly four years old and describe a much larger geographic area than is covered by this study. Given these differences in study area and time frame, it was necessary to spend some time in the field talking with town residents, farmers/ranchers and selected community businessmen and officials to assess the current informal social structure, hence the 1978 survey. Admittedly, however, funding and time limitations did not allow as careful study as this element of the research deserves.

The formal and informal associations of a community are excellent indicators of collectively held community values because they represent activities and objectives deemed important or valuable by the community. Thus, if value conflicts develop between one segment of the community and

another, informal and formal associations are likely to emerge to represent the most popular conflicting viewpoints. In eastern Montana, for example, organizations such as the Northern Plains Resource Council, Tri-County Ranchers Association and the Rosebud Protective Association have emerged over the past few years to represent the anti-coal development attitudes of conservationists, environmentalists and/or area farmers/ranchers. The visibility and apparent effectiveness of these groups have stimulated the creation in 1978 of an association of pro-development interests calling themselves the "People of Montana for Progress," to counter the mission of the NPRC and others in the Colstrip area. The fact that such associations have become formally organized is a clear indicator of the existence of strongly held conflicting views regarding area coal development. Of course, not all value differences find expression through organized activity, but those values which are strongly held for a period of time and by a significant proportion of the residents almost always are reflected in the social structure. When the economic and social environment of a community is changing rapidly, as it is in Rosebud County, the potential for value conflict increases accordingly. Of particular importance here is an analysis of how the informal and formal social network responds to community problems resulting from coal generated growth.

Value differences also can be ascertained through survey research. The attitudinal data reported here were collected via personal interviews with a systematic sample of Forsyth and Colstrip residents and with all farmers/ranchers located in the anticipated impact area. Details of the sampling procedures are contained in the technical appendix to this report. A total of 331 persons responded to the survey, of which 153 were Forsyth residents, 136 maintained residences in Colstrip and 42 were rural residents engaged in farming/ranching in the impact area.

In general, the data support the conclusion that, of these three sub-populations, Colstrip residents are more stongly in favor of additional coal mining in the county, while area farmers/ranchers are the most strongly opposed to increasing the level of area coal development. Similarly, area farmers/ranchers tend to believe that coal development activities have already had negative impacts on the local way of life, while Colstrip residents tend to view coal mining as a positive feature and an asset to the area. In general, the views of Forsyth residents tend to fall mid-way between the other two sub-samples on this continuum of support or opposition to area coal development activities.

In the following pages the profile of social structure and values for Forsyth, Colstrip and the ranching community is discussed, using in turn the results of the Gold, et. al. ethnographic study and the Meadowlark survey findings. The survey questionnaires are reproduced in the appendix along with the tabulations of responses for each of the three sub-populations interviewed.

2. Forsyth

a. Social Structure

Given the fact that Forsyth was an established community long before

coal development became a major economic and social force in Rosebud County, within the community there is an informal, long-standing social network of oldtimers. In this respect, there is a sense of community here that does not exist in Colstrip. Furthermore, there are numerous formal organizations that could serve the function of integrating newcomers into the social network, although the Morman Church is reportedly the only official organization that has attempted to do this (Gold, et. al.). Even so, temporary residents such as construction workers and "boomers" apparently are not accepted into the informal social network, perhaps because of value differences or the newcomers' reluctance to become involved, given their image of themselves as "temporary." According to Gold, et. al., miners of two years' residence or more are becoming an accepted part of the informal associational network.

Most of the formal organizations in Forsyth were formed many years ago and at a time when agriculture was the only major economic force in the county. Thus, they reflect many values characteristic of agrarianism as a way of life, i.e. a strong sense of independence and privacy in personal and business matters. Gold, et. al. report that these historical values continue to influence the behavior of many of the key formal organizations in the community and interfere with the community's ability to adapt to the many changes associated with coal development activities. For example, although Forsyth hasa local Chamber of Commerce, Gold, et. al. suggest it has not taken the initiative to collectively organize local businessmen so they can respond in an integrated and planned fashion to the demands of a growing population. Collective action of this sort apparently would violate long-standing norms of independence and privacy in business matters. Meadowlark survey interviews with local businessmen indicate that some are very concerned that the commercial services of the community may have been over-expanded as each businessman pursued his independent course of action. According to local informants, many Forsyth businessmen would welcome additional population to provide consumers for their over-expanded commercial services.

In a similar vein, Gold, et. al. suggest that the local town and county governments have not taken the initiative to buffer the impact of coal development activities through land use and other forms of planning. Planning is typically viewed as an interference rather than an asset by rural folks who tend to value independence and freedom from organizational controls. Thus, rural folk values appear to be reflected in, and influence, the behavior of these local government institutions. Furthermore, as of this writing, elective governmental positions in Forsyth continue to be held by oldtimers rather than newcomers to the community. This, of course, is another indicator that newcomers have not yet become highly integrated into the formal social structure of the town.

b. Attitudinal Values

As a group, the Forsyth respondents to the Meadowlark study were somewhat younger than the farmer/rancher interviewees but slightly older than the Colstrip sub-sample (see Table III-G-1). The majority of the Forsyth respondents said they resided in a house (69%), rather than a trailer (29%) or apartment (9%), and most reported owning (78%) rather than renting (16%) their residence. Like their Colstrip counterparts, most Forsyth respondents

said they had a high school education or greater, but notably fewer Forsyth respondents reported annual incomes in excess of $16,000 (38% compared to 72% of the Colstrip interviewees). As anticipated, Forsyth residents have resided in Rosebud County longer than the Colstrip sub-sample, but generally not as long as the farmers/ranchers who were interviewed (see Table III-G-1).

Table III-G-1

Demographic Characteristics of Respondents a/

	Forsyth N=153	Colstrip N=136	Farmers/Ranchers N=42
Age			
18-25	15%	22%	2%
26-45	35	61	38
46-65	29	15	41
Over 65	20	1	19
Education			
Elementary	9	4	*
Some High School	8	10	*
High School	43	44	*
Some College	22	27	*
College Graduate	16	13	*
Income			
Less than $8,000	18	4	*
$8,000-$15,999	35	20	*
$16,000-$24,000	24	53	*
Over $24,000	14	19	*
Length of Residence			
1 year or less	5	24	b/
1-7 years	24	63	b/
More than 7 years	70	13	86%
Type of Residence			
House	69	29	*
Apartment	9	7	*
Trailer	21	63	*
Ownership of Residence			
Own	78	54	*
Rent	16	38	*

*Farmers/ranchers not asked this question.
a/ Percentages may not total 100% due to rounding and/or non-responses.
b/ 14% of the farmers/ranchers reported living in area 0 to 10 years.

Table III-G-2

Attitudes of Forsyth, Colstrip and Ranching Area Residents Toward Current Coal Development*

		Great Deal	A Little	Nothing
How much would you say you know about the details of the Big Sky Mine expansion proposal?	(F)	7%	60%	29%
	(C)	4%	35%	60%
	(R)	12%	48%	40%

		Strongly Favor	Favor	Uncertain	Oppose	Strongly Oppose
Given your current level of knowledge about the proposed Big Sky Mine expansion, do you favor or oppose it?	(F)	30%	46%	17%	4%	-
	(C)	18%	54%	25%	1%	-
	(R)	2%	19%	33%	21%	24%

		Too Low	About Right	Too High
In my opinion, the current amount of coal development in the county is:	(F)	53%	37%	2%
	(C)	52%	34%	2%
	(R)	7%	62%	29%

		Much Better	Better	About the Same	Worse	Much Worse
Forsyth & Colstrip wording: Considering the quality of your life today compared to where you used to live, would you say your life today is:	(F)	13%	26%	50%	6%	1%
	(C)	22%	34%	35%	3%	1%
Considering the quality of your life prior to the start-up coal mining in this area, would you say your life today is:	(R)	-	7%	48%	17%	21%

		Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
People living in this community are not as friendly as they used to be:	(F)	9%	25%	14%	39%	10%
People living in this community are not as friendly as they were where I used to live:	(C)	4%	10%	6%	59%	21%
People living in this area are not as friendly as they used to be:	(R)	26%	45%	7%	21%	-
More and more, I feel it necessary to lock doors at night and my car during the day:	(F)	16%	41%	7%	31%	3%
	(C)	8%	18%	3%	62%	9%

Table III-G-2
(Cont.)

Attitudes of Forsyth, Colstrip and Ranching
Area Residents Toward Current Coal Development*

		Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
This area is as safe to live in as it was before mining.	(R)	2%	14%	17%	26%	41%
This area would be struggling economically without coal development.	(F)	26%	45%	12%	16%	-
	(C)	35%	54%	4%	5%	1%
	(R)	2%	5%	7%	43%	38%
Rosebud County is just as beautiful today as it was ten years ago.	(F)	18%	50%	12%	16%	3%
	(C)	19%	47%	25%	5%	3%
	(R)	5%	29%	12%	21%	33%
Merchants here are more concerned with making money than giving customer service.	(F)	9%	35%	12%	39%	3%
	(C)	10%	17%	17%	49%	6%
	(R)	33%	43%	7%	14%	-
Coal developers just don't have any respect for the land and the rural way of life.	(F)	1%	14%	17%	56%	12%
	(C)	1%	4%	12%	59%	24%
	(R)	36%	31%	17%	14%	2%
The coal companies pay more than their fair share of the costs of coal development.	(F)	7%	31%	37%	20%	3%
	(C)	12%	38%	35%	12%	3%
	(R)	24%	7%	17%	38%	36%
Newcomers are providing the fresh ideas that this area has needed for a long time.	(F)	7%	39%	20%	28%	4%
	(C)	8%	51%	28%	10%	2%
	(R)	-	14%	10%	33%	43%
People on fixed incomes can't keep up with the rising cost of living caused by coal development.	(F)	16%	38%	16%	24%	4%
	(C)	4%	22%	31%	30%	7%
	(R)	12%	48%	21%	10%	5%
People who live around here are more helpful than they are in most places.	(F)	17%	62%	7%	9%	2%
This is a good community for raising children.	(C)	14%	56%	11%	15%	3%
This is a good area for raising children.	(R)	21%	43%	17%	14%	2%
There has been increased tension between Indians and non-Indians.	(F)	9%	41%	18%	27%	4%
	(C)	8%	37%	26%	25%	3%
	(R)	19%	33%	24%	21%	-

Table III-G-2
(Cont.)

Attitudes of Forsyth, Colstrip and Ranching
Area Residents Toward Current Coal Development*

		Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
I find living in Rosebud County to be interesting and fulfilling.	(F)	16%	63%	7%	11%	1%
	(C)	10%	62%	12%	13%	3%
This part of Montana has just about everything that is necessary for a happy life.	(R)	21%	62%	7%	10%	-

*Percentage totals may not equal 100 because of rounding and/or non-responses: non-adjusted frequencies.

A slight majority of the Forsyth respondents (53%) said they believed the current amount of coal development in the county was "too low," while only 2% said it was "too high" and 37% indicated it was "about right." However, in general, a significant proportion of Forsyth residents believe that recent growth in the area population has had some negative impacts. For example, 34% of the Forsyth respondents agreed with the statement that "People living in this community are not as friendly as they used to be," 57% agreed that more and more they felt it was necessary to lock their doors at night and car during the day, 68% said the county was not as attractive aesthetically as it was ten years ago, 54% agreed that people on fixed incomes were having difficulties because coal-related inflationary costs of living and 50% said that tensions between Indians and non-Indians had increased.

On the positive side, most Forsyth respondents (71%) attributed the area's economic prosperity to coal development, most (68%) disagreed with the statement that "Coal developers don't respect the land and rural way of life," a substantial majority (79%) agreed that "this is a good community for raising children," and a similarly large proportion (79%) said that living in Rosebud County was "interesting and fulfilling."

There was uncertainty on the issue of whether coal companies pay more than their fair share of the costs of coal development: 37% were uncertain, 38% believed that they did and 23% did not agree.

Forsyth respondents were about equally split in their attitudes toward local merchants and newcomers. For example, 45% agreed that local merchants were more concerned with making money than with giving customer service, while 51% disagreed with this statement. Similarly, 46% said that the newcomers provide fresh ideas that the area has long needed, while 48% disagreed with this point of view.

In general, however, Forsyth residents appear to be fairly satisfied with their way of life and, except in the area of community services

see few negative consequences as a result of current coal development activities. Thirty-nine per cent of Forsyth respondents said that the quality of their life was either "better" or "much better" than it had been prior to the recent initiation of coal mining activities. Exactly half (50%) said their quality of life was "about the same," and only 6% indicated that it had deteriorated.

In summary, Forsyth residents have fairly positive attitudes toward area coal development activities and more than half favor additional coal mining in the area: 72% favored the Big Sky expansion and no one was strongly opposed. From the Forsyth residents' point of view, the only areas of current concern include coal related inflationary costs of living, increased tensions between Indians and non-Indians, precautionary measures now necessary for security reasons (i.e., locking doors and cars) and a perceived decline in the aesthetic beauty of the area because of development activities.

3. Colstrip

a. Social Structure

Because of the relative newness of its residents and the fact that it is an unincorporated town, there are few formal associations in Colstrip. The three churches and the public school are the major formal mechanisms through which newcomers can be integrated into the social network. Church attendance in particular has reportedly increased in recent years, as the population of the town has grown. This relative absence of formal and informal associations in Colstrip let Gold, et. al. (1974) to conclude that a major social event for many residents included picking up the mail each day at the post office.

The apparent absence of a "sense of community" is accentuated by the geographic segregation of residents by housing type. According to Gold, et. al. (1974), newcomers were assigned housing on the basis of occupation, with construction workers occupying spaces in one trailer court, miners another, managers another area of town, etc. As a result, temporary residents feel isolated from the more permanent residents and, in the absence of formal or informal community associations, have no means of becoming integrated into the social network. Furthermore, newcomers who think of themselves as temporary residents tend to avoid developing more personal associations with others (Lucas). According to Gold, et. al., this is the case in Colstrip for those residents having different lifestyles (i.e., the boomers) and for other newcomers who think of themselves as temporary residents. However, some newcomers, particularly those whose lifestyles and values are similar to those of the indigenous population, apparently are becoming integrated to some extent into the community. Gold, et. al. noted this and suggested that such persons may become catalysts of social change as they assume future positions of community leadership. So far, however, our research indicates that a sense of community has not yet developed in Colstrip nor have newcomers assumed formal positions of leadership.

b. Attitudinal Values

As indicated earlier, of the three sub-populations interviewed, Colstrip residents generally hold the most favorable attitudes toward area coal development activities and are least likely to anticipate negative impacts from area coal mining. A slight majority of the Colstrip respondents said they believed that the current amount of coal development in the county was "too low" (52%), only 2% said it was "too high" and roughly one-third (34%) said it was "about right." Surprisingly, virtually no difference exists between the Colstrip and Forsyth samples in this regard.

In their assessment of the existing situation in Rosebud County, Colstrip residents are somewhat more positive than their Forsyth counterparts. On the negative side, a fairly large proportion of the Colstrip respondents (45%) said they believed that tension between Indians and non-Indians had increased, and roughly one-third of the Colstrip residents (31%) agreed that coal-related inflation was posing problems for people on fixed incomes. On all other items measuring their perception of the existing quality of life in the county, the vast majority of Colstrip respondents had highly favorable attitudes. For example, 73% of the Colstrip residents said that living in Rosebud County was "interesting and fulfilling," 70% agreed that "newcomers provide fresh ideas which the area needs," 50% said they felt that the coal companies paid more than their fair share of the costs of coal development and 66% agreed that Rosebud County "is just as beautiful as it was ten years ago." Furthermore, 83% of the Colstrip respondents disagreed with the statement that "coal developers don't respect the land and the rural way of life," 55% said that local merchants were more concerned with giving customer service than with making money, 80% felt that people in the community were just as friendly as where they previously lived, 71% disagreed that it was increasingly necessary to lock doors and cars and a significant 89% agreed that "the area would be struggling economically without coal development."

These attitudes of Colstrip respondents clearly indicate a very positive opinion concerning the quality of their current lives. Thus, it is not surprising that, when asked to compare the quality of their lives today with what it was prior to moving to Colstrip, the majority (56%) said it was "better" or "much better." In fact, only 9% indicated that the quality of their lives had deteriorated since moving to Colstrip.

In summary, Colstrip respondents hold favorable attitudes toward coal activities in the area, the majority are inclined to support additonal coal development and, by nearly all quality of life indicators, they feel that previous coal mining activities have had very positive impacts upon the area. Other than in the area of community services, the only two issues over which Colstrip residents indicate some concern are those of Indian non-Indian relations and of perceived coal-related inflationary costs of living. The issues on which Colstrip residents differed most from Forsyth residents involved the need to lock doors and the demise of the friendly nature of the community.

4. Ranching Community

a. Social Structure

According to Gold, et. al., Rosebud County ranchers have a highly interdependent social system in the sense that they are environmentally interdependent; if some sell their land to coal developers, adjacent or nearby ranches could be jeopardized by the environmental and social effects of coal activity. Thus, it has been necessary for area ranchers to alter the traditional norm of independence and privacy in business matters and to join together in formal associations to protect their collective interests (e.g. Rosebud County Protective Association, Tri-County Ranchers Association). Even so, Gold, et. al. report that ranchers do not have a collective sense of "where they stand" because of their hesitancy to communicate freely with one another, and that this lack of communication tends to interfere with their attempts to organize in opposition to coal development activities.

Traditionally, Rosebud County ranchers have been quite influential in local government affairs, and some residents believe area ranchers have had too much power in the past. According to Gold, et. al., however, local ranchers now feel some loss of control and a reduced sense of influence over the county commissioners who appear to be supportive of more growth than the ranchers prefer. Although elective county government positions are still held by oldtimers, area ranchers apparently are fearful that individuals having pro-coal development attitudes will gain elective office and area ranchers will become even more disenfranchised from local decision-making processes.

Unlike ranchers in Wyoming, Gold, et. al. report that Montana ranchers view ranching as a way of life that is threatened by coal development activities. However, their norms of independence and privacy interfere with their efforts to collectively oppose coal development and they are beginning to feel disenfranchised from the local decision-making apparatus.

b. Attitudinal Values

The attitudes of the sample of local farmers/ranchers present a sharp contrast to those of the Forsyth and Colstrip residents reported above. Unlike the Forsyth and Colstrip respondents, only 7% of the farmers/ranchers believed that the current amount of area coal development is "too low," while most (62%) said it was "about right" and nearly one-third (29%) stated it was "too high."

This tendency of area farmers/ranchers to view local coal development activities in a negative light is evident in nearly every attitudinal question asked. For example, 71% of the farmers/ranchers interviewed agreed with the statement that "people living in the area are not as friendly as they used to be," 67% said they felt the area was not as safe a place to live as it was before mining became a dominant force, 81% asserted that coal mining was not essential to the economic well-being of the area, 54% said they believed that tension between Indians and non-Indians

had increased, 76% agreed with the opinion that local merchants are more concerned with making money than with giving customer service, 67% said they believed the coal developers did not have respect for the land and rural way of life, 74% indicated that they felt the coal companies did not pay their fair share of the costs of development, and 76% disagreed with the statement that "newcomers are providing the fresh ideas the area has needed."

On the positive side, area farmers/ranchers appear to hold favorable attitudes toward other residents in general and toward the local way of life. For example, 60% of the farmers/ranchers agreed with the opinion that area residents are more helpful than residents of most places, 64% said they thought Rosebud County is a good area for raising children, and a significant 83% agreed that the area "has just about everything that is necessary for a happy life."

The existing level of local coal development is perceived in negative terms by the majority of area farmers/ranchers. Furthermore, many feel that some of the problems they are encountering are related directly to recent coal development activities. Of a list of 14 potential problem areas, eight were identified by the vast majority of the farmers/ranchers as "severe or minor problems" for them personally and the majority believed these problems were related directly to coal development activities in the county. Among the problem areas, the "cost of farm labor" was mentioned as a "severe problem" more frequently than any other area (62%) and as a "minor problem" by an additional 29% of the farmers/ranchers. Furthermore, 86% of the respondents said this problem was related to recent coal mining activities in the area (see Table III-G-3). The remaining problems of highest concern to area farmers/ranchers, in order of greatest severity, are litter, road maintenance, trespassing, poaching, power plant emissions, noise and friction between neighbors (see Table III-G-3). More than one-half of all respondents indicated that all eight of these problems were related to local coal development activities. Other problem areas of concern to approximately one-third of area farmers/ranchers include polluted water, frightened livestock, coal dust, transporting livestock and lowered water table. Roughly one-third of all respondents in the farmer/rancher sample said these problems were related to coal mining activities in the area. Of the 14 potential problem areas listed on the questionnaire, "weed control" was the only problem most respondents did not feel could be attributed to local coal development (see Table III-G-3).

Table III-G-3

Existing Problems Perceived By Farmers/Ranchers

N=42[a/]

Problem Area	Severity of Problem			Related to Coal Development	
	Severe	Minor	No Problem	Yes	No
Cost of Farm Labor	62%	29%	10%	86%	10%
Litter	60	33	7	74	19
Road Maintenance	48	36	17	71	19
Trespassing	45	43	12	81	12
Poaching	43	45	12	83	12
Power Plant Emissions	36	24	38	60	24
Noise	19	43	36	55	31
Friction Between Neighbors	19	36	45	55	26
Polluted Water	21	19	52	33	38
Frightened Livestock	12	26	60	36	38
Coal Dust	10	26	64	43	38
Transporting Livestock	10	26	60	33	38
Lowered Water Table	10	24	50	31	33
Weed Control	7	38	48	12	57

a/ Percentages may not total 100% due to rounding and/or non-responses.

It is important to note that these data reflect the opinions of local farmer/ranchers and, thus, are not data on the actual or objectively measured "problems" landowners are experiencing. However, the fact that such large proportions of area farmers/ranchers are reporting these items as problems related directly to local coal development activities is significant in itself. It reflects a generally negative reaction to the current level of coal development and a genuine concern over the compatibility of farming/ranching as a way of life versus coal mining.

These findings certainly are consistent with the comparatively negative evaluations of the farmers/ranchers (i.e. compared to Colstrip and Forsyth respondents) concerning the existing quality of life in Rosebud County. Furthermore, when asked to evaluate the quality of their life now

with what it was prior to initiation of recent coal mining activities, 38% of the farmers/ranchers reported that it was either "worse" (17%) or "much worse" (21%). Only 7% said it was "better" and 48% said it was "about the same." These results are strikingly different from those of either the Forsyth or Colstrip respondents who, as indicated earlier, reported generally favorable attitudes concerning the existing quality of their lives.

In summary, these data on respondents' attitudes concerning the existing quality of life in Rosebud County reflect striking differences of opinion between area farmers/ranchers on one hand and Colstrip and Forsyth residents on the other. In general, the data are consistent with those reported in an earlier study by Gold, et. al. (Institute for Social Science Research, 1974), which vividly portrays the potential value conflicts between the rural, agrarian lifestyle of farmers/ranchers and the more urban, industrialized lifestyle which accompanies coal development.

CHAPTER IV: Mitigating Measures

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IV. MITIGATING MEASURES

A. Introduction

Mitigating measures are actions which tend to resolve or make less severe the adverse effects of energy development. This section discusses possible measures which could be applied by various entities to make potential impacts less harmful, or in some cases, to manage development so that some adverse effects do not occur. A more fashionable term for mitigating measures is "growth management."

The population and economic effects of the proposed Big Sky Mine expansion have been discussed previously, as were effects in various areas of human need and concern. The Big Sky Mine expansion combined with the still ongoing effects of previous energy developments and potential expansion of other energy-related activities pose a very complex growth management problem. Because the Colstrip-Forsyth-Rosebud County area has so recently experienced a small scale "boom and bust" cycle, state and local decision makers should be able to anticipate many of the consequences of repeated sudden growth. This is not to imply that solutions are automatic or simple, but only that few surprises ought to arise. The now seasoned officials should have developed a good understanding of the dynamics of energy-related growth.

B. Growth Management

In this report areas of potential adverse impact have frequently been singled out and discussed. While it is very useful to isolate these problems for purposes of impact analysis, it is a mistake to believe that various identifiable socio-economic problems can in real life be isolated from the rest of their environment. Although an identified problem might very well be reconciled by an individually directed strategy, there exists a fundamental error in problematic mitigation. Individual problems are identifiable, but they are also a part of a complex system of interdependent socio-economic phenomena. These linkages mean that a change in one aspect of Rosebud County's human environment may indirectly catalyze many other changes. A solution to one problem may stimulate several others, or the opposite may occur.

The existence of linkages also creates opportunities for squandering or maximizing resources. A development pattern can contribute negatively to the fiscal viability of a local government by extracting more in service costs than it returns in tax payments, or it can make a positive contribution.

To deal effectively with the spectrum of potentially adverse impacts which may occur as a result of expanded energy developments in Rosebud County, it is necessary to understand the complex interrelationships which exist within the socio-economic environment. In developing mitigation strategies, it is equally necessary to identify the implications of various alternatives in the context of these interrelationships (e.g. land-use, housing, service costs, taxation, etc.), therefore, allowing such relationships to be dealt with concomitantly. This can best be accomplished through the development of a comprehensive growth management plan.

The term "growth management" should not be confused with the more controversial perspective of "No Growth." A growth management plan attempts to provide a balanced approach to meeting the economic needs of a growing and affluent population while preserving the qualities of the human environment. Its purpose is both optimization and minimization; directing growth impacts in such a manner as to enhance the beneficial qualities of growth while limiting its adverse effects.

The importance of understanding the dimensions of potential impact, and the need to establish terms under which growth may be permitted to occur may be realized too late. In spite of the impact area's recent experience with the effects of energy development, the fundamental question of "how the impact area wants to grow, qualitatively?" has never been fully answered. This question is vitally important as it provides a basis by which the adverse implications of energy development can be evaluated and a systemmatic approach to dealing with those impacts can be developed.

It is important to recognize that a local government, a state or a private corporation cannot design and implement a growth management plan unilaterally. A spirit of cooperation between elements of the public and private sector is prerequisite to a successful management program. This spirit must manifest itself early in the process of plan formulation, as access to information, to management skills and powers, and to money are divided between the sectors. Growth management can obviously be most effective if complementary resources can be mobilized toward common objectives.

In Meadowlark's Socio-Economic Study of the Proposed Shell Oil Company Pearl Mine, David Williams identified the major elements of a growth management plan. While the succeeding list was initially applied to the Decker-Sheridan area, the elements of the list are also relevant to Rosebud County.

The elements of a growth management plan should include:

1) Inventory of current conditions;
2) Analysis of expected impacts;
3) Organization and responsibility for managing growth;
4) Staffing needs and training program;
5) Comprehensive land use plan;
6) Land use controls and enforcement program;
7) Capital improvement program;
8) Plans for specific services, e.g. storm sewers;
9) Annual budgets for operations;
10) Financing plan; and
11) System for coordinating all of this with other related agencies, governments and energy companies.

In most energy impact areas, the burden of leadership in the development and implementation of mitigation measures have fallen on local governments. In Rosebud County, energy companies have voluntarily chosen to share and often assume this leadership role. Nearly all of the above mentioned elements are equally applicable to growth management by either a public sector or a private sector.

In the development of the various elements of a growth management plan there are basic guidelines but no "canned programs." In ensuing pages of this volume, many individual policies related to growth management are discussed. These discussions are not meant to be inclusive. If the policies suggested are to be useful to public officials they must be interpreted in the broader context of how they can be integrated into a comprehensive growth management plan.

C. General Growth Management Recommendations

1. Informational Access and Communication

The first time that Colstrip managers and Forsyth and Rosebud County local government officials became aware of Peabody's plans to expand its Big Sky Mine operation was when Meadowlark's staff requested interviews pursuant to this project. This has left only an eight-month period between the time officials were informed of the action and the time of its tentative implementation. In order for public officials and Colstrip managers to successfully plan for growth it is necessary that they understand in advance when and to what degree future energy developments will influence their planning environments. Because the Peabody Company did not make basic information available well in advance, potential mitigation opportunities may have been forfeited. In particular, no space has been set aside in Colstrip's expansion plan for additional Peabody households (Fandrich, 1978).

While permit requirements and economic externalities often make coal development planning imprecise, even tentative information could be very useful to managers of growth. Local government officials and private businesses are better able to plan for development if they have reasonably reliable advance data on the approximate numbers of new employes expected. Peabody and other energy developers could supply a community with this information without exposing particularly sensitive information or severely limiting its development options.

Supplying potential impact communities with basic development plan information should be a fundamental courtesy provided by energy developers. This could be accomplished on an informal basis or at regularly scheduled meetings between energy companies and local officials and managers (including reservation and Colstrip representatives). Such information cannot be provided as a "one-shot effort," but needs to be continually updated as a company's development plans are altered. The latter point seems particularly applicable to Peabody's proposed expansion, as its additional work force estimates appear to be the absolute minimum and are subject to change.

Another less diplomatic means of insuring that local communities are given adequate advance notice of impactive energy developments would be for the state to require developers to submit detailed developmental schedules for several years in advance. The state could then issue periodic reports to local governments regarding the status of potential developments. A drawback to having the state fulfull this function is that it foregoes the opportunity for energy companies and local officials and managers to discuss other matters of mutual concern.

2. Staging of Developments

Of the indicators of severity of impact, the rate of growth appears to be the best (Williams, 1976). Obviously, there are limits to the maximum population influx an area can accommodate in a short period of time. When a rate of growth exceeds this capacity an area becomes subject to severe socio-economic impacts. To a degree, this has already occurred in Rosebud County's impact area, since 40 per cent of the ranchers interviewed felt their lives were worse or much worse as a result of recent coal mining developments.

In general, company planners of coal developments have not been sensitive to the finite capacity of southeastern Montana and Wyoming areas to accommodate population growth. Furthermore, companies have made their development schedules irrespective of the schedules of other energy developers, creating situations of concurrent impacts. As a result, many previously rural-agricultural areas have experienced an overwhelming rate of growth. Were it not for the development of the Colstrip townsite, Rosebud County's growth experience would likely have mirrored the experience of Gillette and Rock Springs.

Obviously, impact areas would benefit from a more controlled approach to energy development. The magnitude and timing of a development have so much to do with the ability of an area to successfully manage the development's implications. A more coordinated approach to the staging of impactive activities would allow for reduced initial impacts and contribute toward a more stable long-term economic environment. If developments were phased in or scheduled sequentially in order to provide a more gradual rate of population growth, impacted areas would be better able to make the necessary adjustments to accommodate the growth. Additionally, if the termination dates of various types of energy-related employment were identified (e.g. out-migration of generator plant construction forces), new developments could be timed to fill the void created in an area's economic base.

Through judicious exercise of its permit powers, the Montana Department of State Lands could profoundly influence the timing and magnitude of coal mining impacts. The "Lands Department" permit powers allow it to control if and when a mining activity takes place. Additionally, if the Department were given statutory authority to place conditions on approval of a mine, the Department could conceivably influence the mine's annual rate of production (i.e. rate of population inducement).

In order to exercise sagacious staging of energy developments it would be necessary for the Department to develop a keen understanding of the life expectancies of various existing and proposed energy developments, the potential for further energy developments within each specific impact area, and the nature of the external forces creating demands for these activities. This would require an atmosphere of mutual cooperation between the Lands Department and the energy companies and relevant state and federal agencies. In concert with development of information regarding energy activities, the department would have to make judgements regarding the capacities of individual impact areas to accommodate various rates of growth. These judgements would be based upon such variables as population, previous rates of growth,

demography, economy, tax base, condition of services, housing and quality of planning, and would depend largely upon input from local and state officials. The information could thereafter be assimilated into a strategy designed to reduce the "boom and bust cycle" of energy developments.

Without the previously mentioned data base, it would be difficult for the Lands Department to identify an ideal time for the Peabody expansion. In light of what short-term information is available for the impact area, increased employment and population might best take place immediately as has been proposed. If implementation is to be delayed it should be delayed until after Colstrip Units III and IV are built or until the issue of their construction is resolved. If the Big Sky Mine is expanded, approval of further energy developments in the area should be delayed until new Peabody households have been assimilated into the impact area.

3. State and Local Government Assistance to Colstrip

The single most important factor which has differentiated energy impacts in Rosebud County from similarly impacted areas in the west, has been the settlement alternative provided by Colstrip. Permanent dwelling sites within the townsite are now nearly completely occupied, meaning that in order for Colstrip to accommodate projected additional in-migration, further townsite expansion is necessary. The state and Rosebud County governments would appear to have a vested interest in further expansion of the townsite, as such expansion would insure a manageable settlement pattern.

In the case of Colstrip, the rate and extent of expansion lies much more in the hands of energy companies than with the state and local governments. Montana Power and Western Energy will make the major development choices. However, the Rosebud County government can contribute to the success of the project. The most obvious way is through the approval of the final expansion plan (defined legally as a major subdivision) by the county commission. To assist in the implementation of the plan the county can: cooperate in the establishment and financing of special districts; adopt and assist in the enforcement of zoning; and, make commitments for the delivery of county services to the area.

Numerous state agencies could also contribute to the success of further Colstrip expansion. Most prominent of these is the Montana Coal Board. The purpose of the Coal Board is to dispense a portion of Montana's Coal Severance Tax revenues to energy impact areas. Because Colstrip is a company-owned town, the Board has been reluctant to grant monies for capital projects in the townsite. Contributions to Colstrip could conceivably be viewed as a subsidy to a private company. The contradiction here is that Colstrip's ability to accommodate in-migration is the key to keeping Rosebud County's energy impacts under control.

The issue of grant propriety apparently lies in to whom the grant award is made. A consideration relevant to this issue is that Western Energy and Montana Power are slowly divesting themselves of the ownership of individual homes in the townsite. The process may take several years, but ultimately Colstrip will likely develop a property ownership profile similar to most other Montana Communities. It is also likely that these ownership changes will motivate Colstrip residents into incorporating as a city.

In light of the likelihood of eventual incorporation of Colstrip, Coal Board financed capital improvements could be placed in a trust status and managed by the county. When the townsite incorporated these improvements would simply be given to the new city.

4. Peabody Participation in Colstrip Expansion

Because Peabody Coal Company did not participate in the initial expansion of the Colstrip townsite, Peabody employee households did not have Colstrip as a settlement option. This has resulted in Peabody household settlement patterns being more random and rurally oriented than those of Western Energy and Montana Power employes. This type of settlement pattern tends to maximize the adverse effects of growth on land uses and service delivery costs, as well as inconvenience to employee households.

Unlike the Montana-based energy companies, Peabody has done little to directly assist its employes in locating suitable living spaces. Furthermore, there has been no communication between Peabody and Colstrip's developers regarding the Big Sky Mine expansion plan. This has been unfortunate, as Colstrip is the most logical settlement location for new Peabody households. Colstrip administrators have indicated that additional space in the townsite could have been made available had Peabody notified them of its needs prior to the completion of the current townsite expansion plan (Fandrich, 1978).

The delay and ambiguities regarding the construction of Units III and IV could create another opportunity for Peabody households to be accounted for in Colstrip's expansion plans. Certainly, communication on the matter between Peabody and the Colstrip companies would seem appropriate. Whether Peabody would be required to participate financially in the townsite's further development is a matter requiring negotiations between the companies.

5. Coal Board Grants for Social Services

As an area's population grows, so does the demand for more sophisticated services from government. Coal Board Assistance Grants have made an important contribution in helping local government to meet these additional demands. The Board's award guidelines effectively restrict the utilization of funds to capital projects under the auspices of a local government unit. For this reason grants have primarily been "bricks and mortar" type projects; the scope of assistance being limited to such things as schools, roads, or water or sewer plants. For the most part, these grants have addressed obvious and critical needs. However, equally pressing needs have developed for certain types of socialservices; needs which are not currently being addressed by the Coal Board program.

There are numerous examples of where energy development-related in-migration has contributed to a pressing human need, creating demand for new, larger or more inclusive social services from government. A prime example of this is the impact area's unmet demand for public recreation programs. Typically, recreation in rural Montana communities is provided by the great outdoors. Newcomers are often accustomed to urban-type recreational services with complex facilities and organized active recreation programs (Williams 1976). Concern over the lack of a public recreation program was a re-occurring theme among local officials and many survey respondents interviewed in conjunction with this study. Other studies imply that organized recreation hastens assimilation of newcomers into a community, enhances sense of community and generally reduces demand for certain other services (e.g. law enforcement and mental health) (EPA 1090). Coal Board money directed to the funding of a public recreation program should be available to address this energy development-related need.

Similarly Coal Board money could be used to address a need for upgraded medical services in the impact area. If guidelines were altered there are several appropriate uses for funds, such as a clinic at Colstrip, more specialized diagnostic and treatment equipment or an emergency helicopter for access to Billings. More flexible guidelines also might enable programs to be established whereby impacted communities could be tied into para-medical or intern programs.

Other examples of where the need for a social program has been created by or expanded by energy developments include: prenatal clinics, daycare centers, adult education programs, school nursing, cultural and vocational education programs.

Administration of social-human service-type programs would be more difficult than the current "one-shot" grants for capital facilities. Such grants would probably require a commitment of funds for a period of years. Monitoring and measuring the success of a social program would also be much more difficult, as there would be no immediate physical product to show for the Coal Board's investment. Still, the demand for such programs are attributable in whole or in part to energy impacts. Often such programs not only serve to mitigate a problem, but they enhance the quality of life in a community.

6. Vocational Training

Energy development impacts can be more positive if new jobs are filled by indigenous residents rather than by newcomers. The hiring of locals reduces short-term demands in such areas as housing and community services, and the problem of newcomer assimilation is avoided. Furthermore, energy companies have expressed a preferance for hiring locals provided the desired skills are available in the local labor pool (Fox 1978).

The problem is there are few ongoing vocational training programs in the impact area. This is unfortunate, as it tends to perpetuate the importation of skilled labor from elsewhere. Conversations with school, reservation and coal company officials have indicated a need and a willingness to support such a program, but nothing substantial has yet materialized. If these groups would combine their resources to develop an area-wide vocational education program, which includes the teaching of skills needed in the energy industry, energy companies would gain a readily available labor resource, local people would improve their employability and income levels and some adverse effects related to in-migrants would be reduced.

7. Service Consolidation and Tax Base Sharing

One of the financial management problems endemic to virtually all energy development projects is the inability to join revenues generated by a project to their negative impacts. The case of Rosebud County amply illustrates this point. Rosebud County is apparently in a good position to capture coal generated taxation while it is not directly responsible for a significant portion of settlement-related impacts. Forsyth on the other hand experiences population impact yet has no automatic access to impact assistance. Similarly the Colstrip's elementary school district receives revenues directly from energy developments and Forsyth's district does not, yet both districts have incurred significant increases in enrollment due to energy development.

The problem lies in the inequities between the tax bases of the two communities. The 1977 assessed valuation of Colstrip was estimated to be over $55,000,000 while in Forsyth it was only $9,500,000 (Rice, 1978). Thanks to the presence of energy developments, individual taxpayers in Colstrip pay relatively low taxes for a relatively high quality of service (particularly in school services) while Forsyth residents are taxed to the "hilt."

One of the methods which a municipality or school district can use to lessen its financial burden is to merge service delivery with the county government or another school district. This has the effect of saving money by eliminating duplications and causing expansion of tax bases. Forsyth and Rosebud County have already set an important precedent in the area of law enforcement. In the instance of municipal-county service consolidation there is no prohibition on mergers of other services such as road maintenance or even government structure. Additionally, several school consolidations have taken place recently in Montana. The net effect of consolidations on individual taxes would be to lower significantly median taxes in Forsyth and cause very slight increases on median taxes in Colstrip.

8. Reallocation of Assistance Funds

In 1976 Congress enacted the BLM Organic Act which provides in part for an increase in a states' portion of shared royalties charged by the national government to producers of minerals and fuels on leased government land. The states'share was changed from 37.5 per cent to 50 per cent and each legislature was authorized to target the increment to energy impacted local governments. Some Western states, Wyoming and New Mexico, did adjust their formulas to provide for local assistance, but Montana simply added the increase to the state's education equalization fund. It is estimated that approximately $2 million could be made available as a result of increased funding in fiscal year 1979. The 1979 Montana Legislature could revise the sharing formula to make at least some of the fund available to impacted communities.

9. Montana University System

Growth management plans do not implement themselves. Most smaller communities do not have capabilities in areas such as grant applications, budgeting, engineering, program evaluation, etc. The Montana University System possesses a multitude of applicable resources which are as yet undirected to the needs of the impacted areas of the state. For example, a systematic, reliable program of general government management assistance could be obtained through utilization of talent generated through the state's inter-university Masters of Public Administration (M.P.A.) program. Students being graduated from this program are trained in areas of public management, including budgeting, personnel administration, information systems, program evaluation and financial management. Emphasis on curriculum has been placed on state agency administration, but such skills are equally applicable to local government management. Students are required to develop an area of substantive emphasis, such as natural resource management. Currently, demand for internships has been high enough that all students have been placed either with state agencies or in positions in other states, but they could just as easily be placed with local governments. A similar program was initiated this year in Wyoming, Colorado and Utah through a H.U.D. grant. Another source of potential funding in Montana could be the Montana Coal Board. If a working arrangement could be developed between the impact area, local governments and the university system, it would be mutually beneficial.

D. Locally Provided Service Recommendations

1. General

Most of the public services required by Peabody mine employes, ancillary employes and family members will be provided by Forsyth, Colstrip or Rosebud County. The argument has been made frequently that these units of government will be required to meet the service needs without the immediate benefit of the tax resources generated directly by the mines. While this is the case, it is also true that the current residents of Rosebud County themselves will not necessarily be forced to subsidize all of the costs of these service increases.

Local services in Montana are funded through a very complex system of revenues in which many distributional mechanisms operate. The following points are important: (1) many local services are funded on a "pay-as-you-go" basis by individual users; (2) newcomers arriving in Rosebud County will contribute to the property tax base; (3) Forsyth and Rosebud County receive a significant proportion of shared revenues from the state in categories such as fuels and gasoline taxes and alcohol and beer taxes; (4) the school districts receive substantial state assistance; (5) all local units receive both state and federal grant-in-aid funds and some receive portions of shared revenues or royalties. Of the total appropriations of local governments, including school districts, perhaps only from 20 to 40 per cent is raised strictly at the local level. This means that Rosebud County and Forsyth are not necessarily reliant on local sources for the majority of their revenues. Moreover, of that proportion which is raised by local taxation, a substantial contribution would be made by the new worker or resident.

There are also numerous sources of assistance from other levels of government which are not automatically built into the revenue formula. These involve primarily discretionary grants in a variety of categories which depend upon the initiative of local officials for application. Simply because a particular area is energy-impacted there is no guarantee that the funds will be forthcoming, but there is a high degree of probability that considerable supplementary assistance will be available. These funds usually show up as assistance to capital projects but they may also be direct payments to community residents.

An exhaustive listing of the various kinds of categorical aid and block grant programs of particular relevance to municipalities affected by energy impact has been compiled by the Federal Energy Administration (F.E.A., Federal Assistance Programs and Energy-Development-Impacted Municipalities). Suggestions extend to available grants in dozens of areas, including public works, public safety, schools, transportation, planning, technical assistance, personnel administration, manpower programs, health and community development and housing. Thus, it is not strictly fair to include these in the revenue/expenditure imbalance because they are not certain of being received. But neither is it fair to argue that the impacts are not capable of being at least partially ameliorated through this mechanism. It is true that revenues are available which might not be apparent at first glance.

Rosebud County residents are more willing to tax themselves directly

for certain services than for others. Both the Forsyth and Colstrip Needs Surveys asked respondents if they would be willing to pay more local taxes if they knew the county would spend the money for a specific service. Table IV-D-1 lists the services and the proportion of respondents favoring each.

Table IV-D-1

Services Preferred for Upgrading
Through Greater Local Taxation

Forsyth Survey		Colstrip Survey	
Service	%	Service	%
Roads and Streets	51	Medical Care	67
Fire Protection	48	Law Enforcement	58
Schools	46	Roads and Streets	55
Sewage Disposal	45	Schools	53
Recreational Facilities	39	Fire Protection	49
Law Enforcement	38	Library	48
Solid Waste Disposal	37	Water Quality	33
Medical Care	36	Sewage Disposal	32
Library	32	Recreational Facilities	30
Water Quality	32	Housing	27
Land-Use Planning	25	Shopping Facilities	26
Housing	22	Solid Waste Disposal	24
Shopping Facilities	15	Land-Use Planning	22

2. Law Enforcement

Rosebud County law enforcement is faced with two problems which require legislative action: manner of funding and personnel salaries.

The county should seek legislative authorization to create service, or taxing districts for law enforcement. This would permit the county to levy different levels of taxes to correspond with varying levels of service provided. In addition to funding one minimum level of law enforcement provided countywide through a uniform county tax, the county could levy an additional tax against areas(districts) receiving higher levels of service. Colstrip area residents could then be taxed according to the level of service desired and provided without affecting the level of service provided or amount of taxes levied for law enforcement in Forsyth or the remainder of rural Rosebud County.

Through such a mechanism the county could retain the benefits of a unified law enforcement agency but would eliminate the financial inequities inherent in the current method of financing services like law enforcement. See discussion under "Existing Environment."

The recruitment and turnover of law enforcement personnel will continue to be a problem for Rosebud County (and most rural counties) until it can offer a competitive starting salary and subsequent salary increases. Current law prevents a county from paying its deputies more than 90 per cent of the salary

paid the sheriff. The provision serves to keep salaries artificially low. As a result, the county will be able to attract (1) mostly inexperienced law enforcement personnel who will move on to higher salaried positions after acquiring some experience or (2) personnel who are unable to secure employment in other areas or other lines of work. Neither type of recruitment is likely to strengthen a law enforcement agency which will need to become more highly professional to meet new and increased demands for service. The limitation on salaries should be repealed by the legislature.

Several internal management strategies can be introduced in the agency to provide for more visible levels of service which would not necessarily increase taxes but would serve to deter crime and to meet demands for more protection. One cost-efficient alternative would be to retain the current population-peace officer ratio for Colstrip (580:1) by increasing personnel as population increases and to devise a patrolling system that would place more deputies in Forsyth during periods of higher crime rates. Although the current population-peace officer ratio for Forsyth (270:0) is lower than that for Colstrip, this alternative is preferable to shifting personnel permanently from Forsyth to Colstrip until a more equitable funding mechanism is statutorily authorized.

Another strategy would be to designate the law enforcement office in the newly authorized Colstrip Community Center as a satellite sheriff's office which would serve all of southern Rosebud County when the center is completed. While the designation may be more symbolic in nature than the first alternative, it would nonetheless serve to make Colstrip one focus of law enforcement activity. Population levels projected under the Peabody-WeCo and Peabody-WeCo-MPC Scenarios may eventually require that the facility become the center of activity. The satellite designation would assist in identifying and resolving problems before new population levels in Colstrip, which will shift the law enforcement focus away from Forsyth, are reached.

If the perceived quality of law enforcement in Colstrip can be maintained while the area undergoes population growth, there may be decreased pressure from area residents for the community to incorporate and form its own police department. The success of the county in maintaining service will depend to a great extent upon the level of cooperation between the elected county officials, particularly the sheriff, county attorney and county commissioners.

3. Fire Protection

There are few short cuts in the providing and maintaining of adequate fire protection. As the service area expands, the need for additional facilities will accompany growth because time and distance are so crucial to service effectiveness. Citizens will continue to demand close proximity, guided by their insurance rates. Control measures are available but they impinge upon other choices regarding residence currently being made by residents. Thus, high density zoning and stricter annexation requirements forcing the best utilization of existing contiguous space could help to hold down fire protection costs but these may be considered radical measures in the community.

One important measure is to increase city-county cooperation and coordination whereby "no man's lands" at the edge of developments are avoided.

In the case of the Colstrip area, district fire protection facilities will need to be relied upon until growth patterns and population levels justify a more integrated delivery of service.

Fire prevention services (inspection and public information) could be introduced in both communities to eliminate the causes of fires at their source. The benefits of these types of programs would exceed the program costs.

4. Water and Sewer

With proper planning and an appropriate combination of funding sources, the water and sewer system can be made to operate primarily as a "pay-as-you-go" system. Water supply and sewage disposal are services for which costs can be apportioned fairly equitably among those who benefit. This is because users can be metered and because there are few externalities associated with use.

Theoretically, the growth impacts can be assimilated as they occur. It is only when new capital investment is required that special financial arrangements are necessitated.

5. Health Services

a. Physicians

The short-term and long-term health service priority for Rosebud County is to recruit physicians to serve an increasing population and to treat an increased number of industrial accidents that are likely to accompany an expansion of mining activity.

The Health Systems Research Institute (Salt Lake City, Utah), which recently assisted the town of Philipsburg, Montana, in recruiting a physician, may be able to similarly assist Rosebud County.

In addition, since adjoining coal-impacted counties (Treasure and Big Horn) are also faced with a shortage of physicians, the three-county area should investigate the feasibility of sharing a team of physicians. Initial funding could be provided under the "Health and Nutrition Demonstration Projects" of the Old West Regional Commission. The program now restricts funding assistance to a five-year period. If successful in providing services and minimizing medical treatment in Billings and Miles City, such a cooperative arrangement could establish an adequate population-physician ratio (by experimenting with different numbers of physicians) and a corresponding adequate level of medical services.

b. Nursing Home

On the basis of the community surveys and the Cohort Survival Model, there will be an increase in the overall number of senior citizens in Rosebud County as a result of increased coal production activity. Workers deciding to settle permanently in the area coupled with an aging native population, will place a long-term strain on nursing home facilities which already operate at capacity.

Local government in the impact area has virtually no resources for substantially upgrading medical services. The rural market has failed to provide sufficient incentives to draw physicians from population centers. To date governments have been equally unsuccessful in designing subsidy programs to achieve that end. Assistance must be sought of state and federal governments through grant or revenue-sharing programs. Within Montana it might be necessary to modify grant guideline criteria to allow for utilization of funds for medical programs.

There is no way to guarantee recruitment of physicians to a community in an impact area. Success will depend upon local initiative and innovation. A prospective physician might respond to inducements in the form of a loan guarantee for equipment or a clinic or the existence of a clientele with health insurance coverage. The coal company or a consortium of companies could be persuaded to take the lead, as has occurred in Wyoming, in the creation of a clinic or the establishment of a Health Maintenance Organization for employes. (E.P.A., Energy from the West, Vol. III, p. 1082).

Funding for the expansion of nursing home facilities may be available from the Montana Coal Board, provided the county can demonstrate a correlation between expanded mining operations and a long-term modification of the area's age profile caused in part by that expansion.

The increased maintenance and operating costs associated with the expansion of facilities will have to be funded through increased taxes, increased patient fees or additional state assistance.

6. Social Services

The influx of a large mining population and the increase on social services caseloads that accompanies that type of growth will require the employment of one additional social worker to re-establish a workable client-social worker ratio. Since most of the population growth will be in and around Colstrip, the county welfare department should consider placing one social worker there to serve prospective clients.

The financial impact of expanding the welfare department staff and providing additional monies to meet the county portion of financial match for economic assistance payments could be easily absorbed within the authorized mill levy limits. Rosebud County levied 1.804 mills for FY 1978; 12 mills are authorized.

7. Schools

Schools provide an illustration of a case where impact is not limited to the local jurisdiction. Because of the nature of the school foundation program, the State of Montana is a full partner in the provision of financial resources. In a sense, then, the schools in the impact area can never really "go broke" because equalization funds derived from other sources of state revenue will automatically be transferred as school enrollments grow and local property taxes fail to cover the costs of education.

Substantial expansion of capital facilities is certain for Colstrip

schools. The high bonding capacity of Colstrip's school districts and the area's eligibility for financial assistance from the Montana Coal Board create a promising financial picture. The low mill levies and the projected increased expenditures for operating the districts can be absorbed without a significant impact on per capita property-owners taxes.

On the other hand, the Forsyth elementary district will have to experience growth in its taxable valuation to avoid (1) reaching its bonding capacity and (2) accelerating property tax increases to keep pace with increased operating and maintenance costs associated with increased enrollment not accompanied by an expansion of the district's wealth.

There appear to be three local approaches to resolving the taxable valuation problem: district annexation of portions of adjoining rural elementary districts; consolodation of the districts with outlying elementary districts; or acquiring valuation resulting from the transfer of territory from outlying elementary districts.

The latter alternative is unlikely since a majority of the electors in a territory wanting to transfer to the Forsyth district would have to approve such a transfer. In addition, the first two alternatives would be difficult to accomplish because a majority of the voters of the new district resulting from annexation or consolidation would have to agree to assume the bonded indebtedness of the Forsyth district as a condition of annexation or consolidation. While each approach is fraught with political uncertainties making a resolution of the problem is more difficult, none should be dismissed from consideration until a more acceptable possibility is identified.

There are a variety of mechanisms for channelling additional state aid to the school districts near coal development areas which do not gain increasing taxable valuation. The possible sources of additional aid are (1) the coal impact assistance fund; (2) a share of the severance taxes which the state now deposits in the state general fund; (3) a portion of the state-shared federal mineral lease revenue; or (4) the electric energy producers tax.

A condition of revenue shortfall may plague the Forsyth elementary district for decades. The State of Montana should consider providing both loans and an increased annual flow of revenues to districts like Forsyth elementary. Loans should include provisions for a deferred payment of principal.

8. Recreation

It is doubtful that sufficient revenues will be generated locally to meet anticipated increases in the demand for recreation services. Federal financial assistance for such purposes is available and local governments have been successful in procuring grant money for recreation. However, federal assistance programs may not be flexible enough to respond adequately to accelerating demands for recreational services.

In order to minimize adverse effects on public recreation, local governments must maximize the use of the monies and other resources they

have available. Sites for future park and playground development should be acquired as soon as possible. While it may not be feasible financially to develop sites immediately, acquisition long prior to development will result in significant savings relative to future acquisition costs, and will result in superior facility siting. Nearly any acquisition or development project that will provide public outdoor recreational opportunity is eligible for funding under the Land and Water Conservation fund which is administered by the Montana Department of Fish and Game.

When possible, recreation sites should be coordinated with school sites to maximuze use. Because parks are a major stimulus for residential development, Forsyth and Colstrip should design the park system in a manner encouraging appropriate development. When possible, governments and agencies should coordinate the development of recreation facilities.

Rosebud County could adopt a policy requiring subdividers to dedicate parkland or cash in lieu of parkland, at the discreation of the county, as a condition of subdivision approval. The county would probably be wise to accept parkland in and around urban areas and cash in lieu of land in rural areas. Park services in the urban areas will be needed in the short run and will become financially feasible as vacant land areas are consumed by residential land uses. In rural areas, park development and management are difficult to justify. Money in lieu of parkland could be placed in a special fund earmarked for county-wide recreation services.

Future needs in recreational programs currently provided by Forsyth and non-governmental entities in Colstrip should be analyzed. Particular attention needs to be given to the changing characteristics of the area's population.

9. Land Use

The ramifications of growth will be most serious if it occurs randomly throughout the impact study area. The cost of providing government services, changes in traditional economic patterns and disruptive impacts on agriculture and wildlife are greatest with sprawl-type development. Conversely, if new settlement is systematically isolated in a few areas, especially in existing townsites, government can experience economics in the delivery of services, traditional economic patterns are enhanced and disruption of rural land uses is minimized. For these reasons, management of the spatial pattern of growth can help determine its magnitude.

For several reasons, the spatial pattern of coal development-induced population growth in Rosebud County has been more systematic than in other similarly impacted areas in the Northern Great Plains. Paramount of the reasons have been the attractive settlement options provided by the communities of Colstrip and Forsyth, the reluctance of ranchers to subdivide land and limited road access into rural areas. To a lesser degree, fairly restrictive land use controls have influenced settlement patterns.

Model growth projections imply that population will increase regardless of additional coal development within the impact area. Whether this growth will be systematic or random depends on perpetuation of the factors which influenced settlement in the recent growth period. The most important of these factors will be the capability of Colstrip to accommodate most of the new settlement expected in the study area. The townsite's geographical location makes it the logical focus for future settlement. The Montana Power and Western Energy Companies have sponsored preparation of a master plan for a townsite expansion. This would provide in-migrants with an attractive settlement alternative except that the expansion is intended to accommodate settlement occurring in conjunction with the construction and operation of Colstrip Units III and IV. If approval of plant construction is granted, implementation of the townsite expansion plan could begin immediately thereafter. In the event that approval is deferred, it is unclear whether the companies would be willing to sponsor further townsite development.

Non-expansion of the Colstrip townsite would likely reduce the population growth in the impact area, since much of projected ancillary employment is contingent on the availability of space for such development in Colstrip. However, non-expansion would create extreme pressure for development in inappropriate locations elsewhere in the study area, likely causing severely disruptive effects on many existing land uses.

If the controlling companies choose not to implement the master plan themselves, an available option is the transfer of development rights to other private developers. With the probability of tremendous demand for land within the townsite, private developers are likely to find Colstrip an attractive economic opportunity. Through adoption of the master plan and a subsequent zoning ordinance by the county commission, development in conformance with the master plan could be insured.

Some changes in the timing of master plan implementation may be required as a result of varying rates and amounts of population growth projected by the

economic scenarios. The plan was designed to accommodate a tremendous population influx over a short period of time. If the plants are not constructed, settlement pressure will occur more gradually. In this case, it might be advantageous to implement the master plan incrementally. A westward expansion appears to be a logical first step. This area is closest to existing service delivery systems, it provides good locations for additional commercial land uses, part of its residential land uses are allocated to needed multi-family units and the remainder to single-family homes. Upon development, this area would allow for the accommodation of approximately 1,000 persons. Some of the proposed northward expansion might also be necessitated in order to provide adequate space for mobile homes. An option here would be an amendment of the master plan designating a portion of the western area to mobile homes. In any case, the steady population growth projected should eventually justify the complete implementation of the expansion plan.

The underdeveloped nature of ancillary services in Colstrip would be addressed by the commercial land uses proposed in the expansion plan. Another factor which might improve the attractiveness of the community to commercial investors would be a different system of commercial rents. If Western Energy based its rent charges on a percentage of gross sales rather than on a fixed floor space rate, business would be in a better position to survive the period necessary to develop a local clientele. Continuation of a rental structure comparable to Billings is likely to slow the development of ancillary services.

Forsyth is in a good position to handle its growth projected, provided the spatial arrangement of the growth is compatible with its service delivery systems. Ongoing improvements to many of the city's capital facilities will enable the city to accommodate a sizable population increase. To maximize this advantage the city should encourage the"infill" of vacant land within its limits.

The encouragement of infill and the discouragement of incompatible peripheral developments would be supported through the city's enactment of extraterritorial zoning and through cooperation by the county in the review of subdivisions. The city should refuse to provide any municipal services outside its limits and continue to refuse annexation of any subdivision in which services have not been developed to city standards by the developer. A tradeoff of this is that, by limiting external development, the city would be inflating the cost of land within its limits.

The extent to which the Front Street commercial strip continues to develop will influence the viability of Forsyth's central business district. The incidence of competition between the two areas is likely to intensify as the local and regional markets expand. Because of its locational advantages, commercial expansion along Front Street is likely to work to the detriment of the CBD. If a city objective is to maintain or enhance the quality of its primary business area, it should consider amending its zoning ordinance to regulate the character of further commercial development on Front Street. Another activity which would improve the viability of CBD enterprises would be a program designed to rehabilitate older structures in the area. This could best be accomplished through a cooperative effort between the public and private sectors. Considering the city's limited financial resources,

Forsyth would have to participate in federal urban redevelopment programs or receive assistance from the Montana Coal Board.

The county has done a good job of preventing sprawl development in rural areas and should continue to do so if Colstrip and Forsyth capture most new settlement. A certain amount of new residential development in rural areas is unavoidable. These subdivisions will have adverse effects regardless of where they are located. However, location and the intensity of the developments will determine the extent to which they will displace existing land uses. A paramount concern should be that rural subdivisions do not cause fertile bottom land to be taken out of production, either through direct displacement or indirectly through residential-agricultural land use conflicts. Similarly, subdivision locations which would interfere with existing livestock activities should be avoided.

It is unlikely that zoning is a politically acceptable method for managing rural land development in Rosebud County. Zoning has been enacted in only a few rural areas in the state, as Montana ranchers generally view zoning as an undesirable restriction on their property rights. In spite of the strong support for land use controls indicated in this study's survey of ranchers, it is dubious that area ranchers would cooperate in any type of county wi zoning program. However, it is possible that certain ranchers might join together in the creation of a special zoning district. Montana law allows land owners to petition for creation of such a district (16:4101 R.C.M. 1947).

Rancher support for land use controls is probably an endorsement of continued vigorous enforcement of county subdivision regulations. Montana's Subdivision and Platting Act requires that counties consider the potential effects on agriculture in their deliberations as to approval or denial of a subdivision proposal. Strong rancher opposition to rural subdivisions in certain parts of the impact area has heightened the importance of this review criterion, but this opposition is not uniform throughout the impact area. A danger here is that the county could approve a subdivision in one area and deny a similar subdivision elsewhere, leaving itself vulnerable to an accusation of arbitrary decision-making. It is important that the county establish precedents establishing criteria for approval or denial of rural developments.

Montana's subdivision law contains exemptions which allow land to be divided without government review. The exemptions are intended to allow for special circumstances and to prevent unnecessary hardships. Montana's law also contains a provision establishing that the exemptions should not be used to circumvent the county subdivision review powers. The county would be wise to monitor the use of exemptions to ensure that they are not being misused.

The county has been reluctant to improve its rural roadways or to construct new roads to service undeveloped areas, which has restricted access to areas otherwise feeling subdivision pressure. Continued discretion in the construction of county roads is an effective deterent to inappropriate development.

10. Housing

Lack of sufficient housing may be the most common problem encountered by coal impact areas in the West (EPA 1069). There appears to be no encompassing solution to this situation, as no area has been completely successful in reconciling the problem. The housing issue is multi-faceted, and each facet is influenced by a combination of local and regional economic factors and by public and private sector policies. The housing industry must be able to supply necessary housing units, and the local production of housing is greatly influenced by the availability and cost of skilled labor and building materials. Housing must be financable by potential consumers. Banks must be able to make home loans, which is influenced by both local bank assets and federal monetary policies. Adequate sites must be available to locate new dwelling units, a function of land values, landowner attitudes, the nature of government land use controls and government policies regarding the provision of public services.

Rosebud County's housing experience has probably been much better than in most other coal impact areas. The explanation for this again lies in the major role Montana Power and Western Energy have played in the provision of new housing. The companies were involved in the initial procurement of housing (modular, multi-family, and mobile) and in the development of housing sites. If the companies participate in the same manner if and when the Western Energy operation is expanded and new generating plants are built, future housing problems in the study area will be reduced substantially. Similarly, the Peabody Coal Company could consider supplying housing for its new employes, possibly in conjunction with implementation of Colstrip expansion. The latter suggestion seems unlikely, as Peabody has not expressed interest in such involvement.

In the absence of an omnipotent benefactor working to reconcile these housing needs, new Peabody households will have to acquire housing on their own. Fortunately, Peabody's expansion schedule places its new employes in the impact area ahead of other coal-related population growth. This should allow more affluent households to take advantage of the temporary lag in local construction industry activity. Working agains this advantage will be the tight money situation caused by federal monetary policies.

Most new Peabody households and ancillary households are likely to experience few options in fulfilling their short-term housing needs. Mobile homes are likely to be the most common housing selection by in-migrants. Mobile homes have the advantages of being readily available through regional suppliers and more easily financed. (Mobile homes are financed through consumer loans which provide lender institutions with a higher interest rate than conventional home mortgages.)

In light of the probable predominance of mobile homes, local governments must be willing to make adequate space available for mobile home siting. A tradeoff is involved here. If local governments are not discriminating in their review of mobile home subdivisions, they risk creating fiscal problems for themselves and may allow undesirable residential areas to develop. Montana's mobile home regulations are designed to establish minimum standards for mobile home park development, but to not insure that such developments

will be of a high caliber. Local governments have been granted some latitude as to what additional qualities they may require in order to improve the serviceability or aesthetic character of a proposed development. Such requirements might include more restrictive setback or spacing requirements, skirting, landscaping or amenity provision. The danger here is that government requirements may become unnecessarily demanding or restrictive and may inhibit the development of mobile home parks, driving up the cost of available mobile home sites and encouraging the location of mobile homes in rural areas. The latter could be induced through nonjudicious use of subdivision or zoning regulations. Obviously a delicate balance must be struck between policies to encourage an adequate supply of mobile home spaces and regulatory policies intended to insure that the spaces provide a quality living environment. One approach to this problem is proposed by the Colstrip expansion plan. The plan proposes some very high density mobile home parks for an interim period until the community's population begins to stabilize. Thereafter, as new home sites become available, the density of the mobile home area would be systematically reduced to afford a more aesthetically pleasing permanent living environment. The city or county could try to induce a developer to make a similar commitment as a condition for subdivision approval.

Local contractors cannot be expected to fulfill the projected demand for single-family homes, nor could many of the in-migrants afford to pay current prices for new conventional homes. Modular homes are the most feasible method of addressing the demand for this type of housing. They can be supplied in sufficient numbers through their many regional dealerships, and their average cost is $10,000 less than the cost of an average new conventional home in the study area. Currently, Forsyth's building code and zoning ordinance do not discriminate between conventional "stick built" homes and precut modular homes. As in the regulation of mobile home parks, it is important that regulations not be unnecessarily restrictive. Since conventional and modular homes have similar life expectancies, they should be dealt with without differentiation.

Even in the instance of cheaper modular homes, the problem of obtaining financing poses a major obstacle to housholds seeking to purchase housing. In most instances, FHA financing is unavailable because the program's housing cost ceiling is lower than the selling price of most homes in the impact area. In addition, local banks are small and have a limited amount of money available to make housing loans. Further compounding the problem are federal monetary policies which have created a tight money situation nationwide.

One coal company policy which would increase the loan capacities of local banks would be for the companies to deposit a greater share of their capital in local banks. This suggestion is particularly applicable to the Peabody Coal Company, which conducts most of its banking in eastern states. Another partial remedy to the problem may be provided through Montana's housing finance program. This new program administers bonds for the purpose of assisting individual households in the procurement of housing financing. The program will probably be implemented through some type of quota system based on county population. Such a system will work to the detriment of Rosebud County residents, as the program will not be responsive to the unique situation emerging in the impact area. In response to this system, public officials in Rosebud County would be wise to document the special housing problems resulting from the area's rapid population growth, in hopes that

such evidence would induce the state to target additional assistance into the impact area. To date, the federal government has done little to reconcile the housing problems created in western coal impact areas. Several bills have been before congress which address the problem, but none has been adopted. There is always a possibility that some type of federal program may be implemented which will address the housing finance issue, but impact communities should not count on such assistance.

The need for rental housing can best be addressed by the development of multi-family housing units. The Colstrip expansion plan calls for the construction of apartment buildings containing a total of 72 dwelling units. Forsyth could use a similar development. Again, the availability of money to finance construction of multi-family units will be a crucial determinant as to whether such structures will be developed. Another influencing factor will be the availability of attractive building locations for such units. Local governments must be careful not to inhibit such developments through over-restrictive use of zoning, or through designating only undesirable land for higher density uses. Instead, governments should encourage such developments through the appropriate designation of advantageous building locations, and through the provision of public services and amenities.

The provision of an adequate number of housing units affordable by low-income households is the most difficult housing problem confronting the impact area. Rent subsidy payments will help a few households as will the few public housing units which will be constructed in the area. The state's assumption of the leadership role in acquiring federal "Section 8" housing units will work to the benefit of most eastern Montana areas, but not to coal impact areas. Rosebud County could probably do better on its own, as its individual case for housing assistance need is very strong. This of course is an option available to the county. Another option would be to simply appeal to the state for a greater allocation of "Section 8" units. In either case, the number of public housing units received would not significantly affect low-income housing problems.

Another approach to the provision of low-income housing would be policies to accelerate the housing filtration process. This is the process whereby older homes become available to low-income households as middle-income households purchase new homes. Bank and government policies designed to rapidly improve the availability of middle- and upper-income housing will also improve the availability of housing for low-income households. A problem here is that the filtration process works most effectively in a situation where a population is fairly stable.

In light of the anticipated tight housing situation, the area can ill afford to lose existing units to housing obsolescence. Such losses would increase the need for new housing proportionately. Obsolescence will occur unless programs are initiated to rehabilitate deteriorating homes. Low-interest loans and grants are available from the federal government for this purpose. Program participation is particularly advantageous for low-income households, but the city or county must decide whether to participate.

Regardless of what measures are taken in the public or private sectors, it is highly unlikely that the area's need for low-income housing is going to

be reconciled. This is an impact area where adverse affects of coal development will not be mitigated successfully. The Peabody expansion will contribute incrementally to this problem.

11. Transportation

The most critical transportation-related problem in the impact area is the unsafe character of the Colstrip Road. This problem should be reconciled to a degree by Montana Highway Department's scheduled improvements to the roadway. Even so, the 47-mile trip from Forsyth to the Peabody Mine Site will continue to cause inconvenience, energy waste and potential danger in inclement weather. Carpools are currently serving as a successful voluntary mitigation measure, and nearly all Peabody households living in Forsyth commute to work via carpools. This measure could be taken one step further if bus service were provided from the city to the mine site. Bus service could be provided directly by the company or through a contractual arrangement with a private vendor.

Road maintenance in the impact area would be greatly improved if the state would make the severance tax money designated for impact area roads available. After a number of years of trying, it is becoming apparent that the federal government is not likely to allow this money to be used as matching funds to gain additional federal highway assistance.

The city of Forsyth must find a way of financing a storm sewer system in order to reconcile its road maintenance problem. A Coal Board Grant would appear to be the most logical source for this funding. Without this, major improvement investments in Forsyth road maintenance are stop-gap measures only.

The problems created by railroad/roadway vehicle conflicts will not be easily resolved. As unit tram traffic increases, more attention is likely to be focused on the problems created by coal shipments. An expensive solution to the problem is a complete system of grade separations which would eliminate the intersection of railroad tracks and roads. Another partial solution would be the reconstruction of rail routes to avoid population centers. A short-term method of implementing the latter suggestion would be the shipment of coal on the Milwaukee Road east-west tracks rather than the Burlington Northern's mainline. Milwaukee's tracks run on the northside of the Yellowstone River and avoid most of eastern Montana's population centers. Improvements to the Milwaukee tracks would be necessitated.

E. Discussion of Municipal Incorporation of Colstrip

Colstrip is likely to become the largest unincorporated community in Montana by 1980. The Meadowlark Group projects that, under the Peabody only development scenario, Colstrip will have a population of 2,328 in 1980. Black Eagle, currently the largest unincorporated community, has a population of 2,100. More than 89 Montana incorporated communities are smaller than Colstrip. It is an oddity, but likely that Rosebud County will soon have an unincorporated community larger than its county seat.

1. Factors Affecting A Movement for Incorporation

As the townsite continues to grow and to experience the effects of increased demands for expanded urban-type services (law enforcement, fire prevention and protection, water and sewer) residents will likely be more concerned about how their services are delivered and interest will grow in the municipal incorporation of Colstrip.

Because of its recent history as a company town, Colstrip's residents are unaccustomed to participation in municipal politics. Relative apathy is reinforced by the transient nature of many Colstrip residents. Under these circumstances, momentum for incorporation could be slow to develop. A greater interest in local political affairs will have to precede the initiation of incorporation. Several factors are likely to heighten interest and activity in the near future:

2. Political representation. As the center of population and economic activity shifts to Colstrip, its residents will desire increased opportunities to influence county policies, particularly policies that affect Colstrip.

   Even in the event that Colstrip's population eventually grows to nearly half of the county total, Colstrip residents might not be able to elect more than one of their number among the three county commissioners. Thus, while the district residency requirement under Montana law would guarantee that one commissioner would come from the area, that person might frequently be the minority in a stream of 2-1 board decisions. Frustration with a chronic situation in which the county is unresponsive to the growth problems in the southern end of the county might prompt recourse to incorporation.

   Reapportionment of commissioner districts is a new, slow and inexact process. Inaction or delay could serve to stimulate interest as much as actions designed to maintain the current balance of representation.

3. Grievance Mechanism. Periodic dissatisfaction with conditions or services within the townsite must currently be directed at a number of either remote or semi-private decision-making bodies.

Forsyth, the seat of county government, is remote. The absence of immediate accessibility can discourage input and result in long-term frustration and cynicism. Other agencies responsible for services operate with a relatively low degree of public visibility. Public accountability is low.

The governmental mechanism that would accompany incorporation would provide an accessible and accountable structure to which grievances could be directed.

Continued inaccessibility, inadequate or delayed responses to demands, and questionable public accountability in Colstrip and Forsyth could escalate interest in a governmental structure that would accompany incorporation.

4. Coordination and Integration of Services. As the number and levels of public services increase, there will be an increased need to 1) coordinate service delivery (water and fire protection; social services and recreation) to provide maximum effectiveness in serving an expanding population and possibly to 2) integrate the jurisdiction of services (fire and law enforcement; library and recreation) to provide services in the most efficient manner.

   Increasing taxes to fund the duplicate overhead costs of many limited-purpose agencies (i.e., fire district) in addition to general county taxes used to fund services provided elsewhere may cause many Colstrip area property-owners to demand centralization of service delivery responsibility within one jurisdiction.

5. Financial Implications. Colstrip residents may eventually desire or require a higher level of a service provided by Rosebud County than county taxpayers are willing to fund. For example, demands by Colstrip for increased law enforcement services within the existing property taxation framework could provide two stimulii for consideration of incorporation:

   a. Forsyth and rural Rosebud County taxpayers, who would pay higher taxes if the demands were met but would receive no increase in services could insist that the county essentially stop subsidizing Colstrip and that Colstrip incorporate. After incorporation the county would provide a base of funding for law enforcement (and any other service provided countywide by the county) and the town of Colstrip could levy additional taxes against its residents to fund the higher level of services desired.

   b. Colstrip area residents, who have been repeatedly refused additional law enforcement services because of resistance by rural Rosebud County and Forsyth taxpayers to pay higher taxes, could accurately argue that incorporation would create the tax base necessary to fund an adequate level of law enforcement or any other service within limits prescribed by the state.

Finally, the informal agreements between the coal and power companies and Colstrip area residents could be strained in times of financial hardship or recession. Although not likely, the possibility of a recession in the coal development industry cannot be dismissed completely. In such an event, area residents could understandably feel that incorporation would guarantee the delivery of services in Colstrip regardless of the financial furtunes of local industries.

6. Legal Requirements

Colstrip already meets the legal requirements for municipal incorporation. Title II, Chapter 2, Revised Codes of Montana, 1947, specifies three requirements for incorporation:

a. Density. Proposed town must not exceed one square mile for each 500 inhabitants.

b. Population. Proposed town must have a population of at least 300.

c. Separation. Proposed town must be more than three miles from the nearest incorporated municipality. Proposed towns within three miles of an incorporated municipality may incorporate if incorporated municipality has refused to annex area desiring to incorporate.

The density requirement is easily fulfilled by population settlement in Colstrip. Boundaries may include undeveloped territory but have to be compact enough to meet the 500 inhabitants per square mile minimum requirement. With its current population of 1,741, Colstrip could incorporate an area of just under 3.5 square miles.

Consideration should be given to the amount of territory needed for long-term development of the proposed municipality. The type of property included in the municipality will affect the value of the tax base, as well as the kind and level of services to be provided after incorporation.

There appears to be no statutory restriction on incorporating an area that would include the coal-fired generating plants around Colstrip. Including such an area would add dramatically to the taxable valuation of the incorporated area, but the community would have to demonstrate that it would provide services to those sites (i.e., law enforcement and fire protection) or that the sites created demands for municipal services (i.e., streets and recreation). Intentions to include these areas and plans to provide services could increase the front-end or "start-up" costs of the new municipality by necessitating the purchase of more sophisticated equipment (i.e., fire protection).

If these sites are not included initially in the new municipality, there is serious question about whether they could be annexed later. Section 11-509, R.C.M. 1947 provides one method of annexation and defines areas exempted from annexation:

Lands used for certain purposes may not be annexed. No parcel of land which, at the time such petition for such proposed annexation is presented to such council or legislative body, is used in whole or in part for agricultural, mining, smelting, refining, transportation, or any industrial or manufacturing purpose or any purpose incident thereto, shall be annexed under the provisions of this act.

The issue of annexation of coal-fired generation plant sites would focus on an interpretation of whether those areas are used "in whole or part" for "industrial or manufacturing" purposes. This provision makes it imperative that those residents desiring incorporation give consideration to the long-term condition of the area in order to prevent "islands" which impose expenses on the municipality but are immune from municipal taxation.

Although the formal decision to incorporate rests with the community residents, the fact that Colstrip is a company town complicates the process immensely. Because the stakes are large for the Montana Power Company it seems highly unlikely that incorporation would occur without its blessing. In fact, the initiative would probably have to come from the Company and it is doubtful that they would allow for the inclusion of industrial property in the municipal tax base. This circumstance reduces the advantages of incorporation to ordinary Colstrip residents.

7. Incorporation Process

The process of municipal incorporation includes three major steps:

a. Petition.

Two-thirds, but no more than 300 qualified electors residing in the limits of proposed incorporation must sign a petition requesting incorporation. The petition must include the name and describe the limits of the proposed municipality and describe wards within the proposed municipality, each of which must contain 150 qualified electors. The petition, together with a map, are submitted to the board of county commissioners and filed with the county clerk and recorder.

b. Census.

County commission appoints an individual to conduct a "house-to-house census of the residents of the territory to be incorporated."

c. Election on question of incorporation.

If the census reveals that the territory meets the population requirements, an election on the question is then conducted within the territory desiring incorporation. The question appears on the ballot as: "For incorporation" or "Against incorporation." If a majority of those voting favor incorporation, the community is considered incorporated and an election of the corporation's officers must be scheduled by the board of county commissioners.

The petition process would be fairly simple to facilitate as 300 qualified electors constitute less than half of the voting population of Colstrip. Motivation seems to be the most important factor.

8. Additional Considerations

a. Contracting for services

In order to minimize excessive start-up costs due to capital outlay requirements, Colstrip should consider contracting or franchising for some services after incorporation.

Initially, Colstrip may want to retain the current service delivery mechanisms and modify specific service delivery only after evaluation. An incremental approach of this type would permit the municipal governing body (town council) to weigh the advantages of granting contracts to private firms to provide services. Depending on the extent that the council decided to implement this practice, the town of Colstrip could conceivably provide a full array of services with only a small number of employes on the municipal payroll.

Concluding interlocal and service consolidation or transfer agreements with other governmental jurisdictions could also serve to minimize the number of municipal employes and capital outlay. Rosebud County is already a leader in this field with its initiative in law enforcement and solid waste disposal.

b. Local revenue sources

Incorporation would allow Colstrip to take advantage of previously untapped local revenue sources such as user fees for services (i.e., garbage) and license fees. The overall revenue burden would not be lowered by utilizing these but the municipality could reduce pressure on the property tax.

Colstrip could also realize large returns on idle funds through a well-managed investment program.

Finally, depending on economic conditions, the interest costs on bonds issued in connection with the provision of municipal services would be at municipal rates. Montana Power must now borrow at corporate rates to finance construction of facilities or to purchase equipment used in providing municipal services. On long-term obligations, corporate rates now run from 8.6 to 11 per cent a year depending on the corporation. If Colstrip should incorporate, it could borrow at the lower municipal rates, now ranging from between 6 and 7.5 per cent for Montana municipalities.

c. State-shared revenues

Upon incorporation, Colstrip would become eligible for state-shared revenues currently available to all incorporated municipalities. These non-property tax revenue sources include: gasoline tax revenues; beer

and alcohol tax revenues; insurance premium apportionment; motor vehicle registration fees. The amount of the revenue from these sources would vary according to the distribution formula of each and would only supplement, not significantly displace, revenues generated from local property taxes.

d. Federal revenues

Upon incorporation, Colstrip would become eligible to receive federal revenue sharing monies and to compete for federal grants-in-aid.

CHAPTER V: Unavoidable Adverse Impacts;
Short vs. Long-Term Uses;
Irreversible and Irretrievable Commitments of Resources;

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V. UNAVOIDABLE ADVERSE IMPACTS; SHORT VS. LONG TERM USES; IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES;

These categories of analysis are required by both Montana and Federal law. They are of a summary and overview nature which is intended to draw pertinent conclusions from the detailed analysis from Volume III, Environmental Impacts. While these categories of analysis may be more pertinent to physical and natural aspects of environmental impacts, there are examples of significant social and economic impacts which require amplification under these headings.

A. Adverse Impacts that Cannot be Avoided

Adverse impacts that cannot be avoided are those for which a mitigating measure is non-existant or ineffectual. With certain socio-economic impacts it is very important to recognize the distinction between mitigation as prevention and mitigation as cure. Some impacts are capable of being alleviated or minimized by mitigating measures, but this does not imply restoration to a previous state.

1. Population

Approval of expansion of the Big Sky Mine will cause a small local population increase, regardless of Peabody's policies favoring local hiring. Population growth, per se, is neither a positive or a negative impact. However, in general the demographic characteristics of prospective in-migrants will differ from those of the indigenous population. These differences will create pressure for change of some facets of the socio-economic environment. Changes such as these have been shown to be virtually unavoidable in processes of urbanization or modernization.

2. Economy

Localized economic prosperity is usually viewed as a beneficial effect of coal development. A signficant portion of area residents are likely to be financially better off as a result of increased local economic activity. However, benefits are not likely to accrue evenly among all segments of the population or all economic sectors. Because of age, sex or occupation, an individual or household may not share in the prosperity. Inflation in wages and prices will actually lower the relative standard of living for some. Elderly persons on fixed incomes are particularly vulnerable.

The agricultural sector is likely to experience economic hardship as a result of expanded mining. Mine wages serve to inflate the cost of farm labor. Furthermore, population growth will increase urban-agricultural land use conflicts such as trespassing and rustling, thereby increasing the stock losses, and the preventative and administrative costs of ranching. These additional costs are not likely to be recouped through higher cattle selling prices.

The unstable nature of the mining industry itself will also contribute to economic difficulties. The industry is historically cyclical. Automation has steadily reduced the labor requirements relative to production. Strikes occur periodically among mine workers and may last for extended period. Chronically high unemployment is likely to be a secondary effect of the industry's presence. The potential of a "bust" period when the area's coal is exhausted must also be taken into account.

Increased population is likely to pose additional financial problems for the city of Forsyth. The community's tax base will not reflect the tax revenues generated by mining activity. Since the city is already taxing at its maximum permitted levy, service cut-backs may be required. Additionally, the city, county and school districts are likely to have financial difficulties if front-end costs are required in advance of revenues ultimately generated by mining activity. Currently, there is no guarantee that this can be

ultimately generated by mining activity. Currently, there is no guarantee that this problem can be alleviated.

3. Land Use

The housing needs of Big-Sky induced in-migrants are likely to create changes in traditional land use patterns. Regardless of land use controls or other public policies some new residential settlement are likely to displace existing agricultural land uses. The phenomenon of infilling vacant lots will cause a corresponding loss of open space within townsites.

4. Housing

Big Sky expansion, particularly in conjunction with other proposed energy related developments in the impact area is likely with the recurrence of vacant housing shortages. Vacancy rates are likely to become very low, prices and rents become inflated and housing selections become increasingly limited. Mobile homes will constitute most new housing in the impact area. The most severe hardhsips will be felt by low-income households, as they will be unable to compete for the limited numbers of dwellings available.

5. Transportation

The incidence of conflicts between trains and road vehicles at road crossings will increase proportionately as mining expands. When combined with the regional flow of coal, unit train interference with greater roadway use is likely to become increasingly serious.

6. Government Services

In nearly every category of governmentally provided service related to population growth, mine expansion will increase the cost of service delivery. In some instances costs will be covered by attendant revenues, in other cases they will not. As yet there is no comprehensive mechanism for tying costs to revenues or providing sufficient front-end funding for impacts. And, importantly, there are some social service impacts for which revenues are not a panacea, such as alcoholism, child abuse or crime.

7. Social Structure and Values

Disruption of informal patterns of association and conflict of life-styles are not amenable to formal remedies. Newcomers cannot be forced to change their ways nor can established perspectives be forced to accommodate new viewpoints. Over time there may come a greater harmonizing of values but little can be done to consciously hasten the process. It will occur or it won't. It is presumptuous to assume that some mechanism of social engineering can be designed to prevent the conflict of lifestyles or to preserve the older way of doing things.

B. The Relationship Between Short-Term Uses of the Environment and Maintenance and Enhancement of Long-Term Productivity

This section identifies the nature of the tradeoff between various short-term uses of the environment caused by the mine expansion relative to long-term options it would preclude. Short-term benefits are those that occur within the duration of the expanded mine operations. Long-term productivity is that which may occur after the project is no longer active.

1. Social Structure and Values

As the impact area experiences additional in-migration, the social values of indigenous residents will become less and less the norm for the impact community. Over time, as the non-indigenous population becomes the predominant population group, social norms within the impact area are likely to reflect a much more urban-industrial perspective. The long-term residents' attitudes evolve into being minority attitudes, reflected as a different system of formal and informal institutions and structures. While gain or loss relative to change in community structures and values is a subjective appraisal, its significance to this section is that the traditional structure value relationship could never be reinstated.

2. Land Use

Some agricultural land is likely to be displaced by residential land uses. Once converted, the change is essentially permanent. For all practical purposes the agricultural productivity has been lost - although the new use might be a permanent one as well. If, in the subdividing process, an agricultural water right is transferred to a non-agricultural use, the transfer will serve to compound the loss of agricultural productivity by indirectly lowering the carrying capacity of marginal grazing land.

The developments of vacant land in townsites also has the effect of altering the use of land by placing permanent structures on previously open areas.

C. Irreversible and Irretrievable Commitments of Resources

This section identifies resources which are expended as a result of the proposed activity. These include: the coal itself which is mined and shipped elsewhere; the energy used to mine and transport the coal, to build the machinery to mine and transport the coal, and to transport workers; the labor involved in the extraction and shipping of the coal, and the capital utilized in the mining and shipping operations. Less obvious are the permanent loss of open space and agricultural land and changes in traditional lifestyles.

VI. ALTERNATIVES TO THE PROPOSED ACTION

Denial of a permit for the Big Sky Mine expansion would shortly result in the mine's closure. Under the current permit there is only enough coal to allow mining for approximately one more year at the present rate of extraction. Without the availability of additional coal the Peabody Coal Company would have no choice but to close down or suspend the existing operation. This would create a reduction of 82 jobs followed by economic slowdown. These consequences have been taken into account in the Coal Town II model and are outlined in the Baseline Scenario.

Because the permit application is for the extension of an existing mine rather than for the opening of a new mine site, the consequences of denial are markedly different in principle. The results of denial would not be the status quo but rather reversion to the status quo ante. In practice, the socioeconomic impacts of readjustment could prove to be equal to or greater than the initial impacts of the mine's development. This is largely a conjectural question, not easily amenable to quantification. As with the initial development of a mine site, the impacts are likely to be mixed blessings. For example, to the extent that population growth from coal development in the Rosebud County area has already exceeded the area's ability to provide needed local services, a cutback in mine employment might induce an appropriate readjustment. For example, a housing shortage would be alleviated by a reduction in population. On the other hand, to the extent that the local service infrastructure has been expanded to accommodate this growth, population decline would create adverse affects similar to those found in many declining rural areas. The combination of underutilization of facilities, fixed costs and shrunken tax base epitomizes this problem.

While denial of the permit application would profoundly affect the lives of many of the Big Sky Mine workers it would have only a marginal effect on aggregate trends in the impact area. Population will grow at a slower rate but it will grow nevertheless. The explanation of this phenomenon lies in the fact that the ancillary development expected of the recent mining and construction activity has not yet materialized. The Coal Town II model assumes that a mature economic base will eventually evolve. Because of the uncertainty regarding the future of Colstrip 3 & 4 there is a pronounced lag in ancillary development; investment is uncertain at a time when construction workers from Colstrip 1 & 2 are leaving. Denial of the Big Sky Mine permit would serve to accentuate this acute situation but would not contribute markedly to it.

The effect of either approval or denial of the Big Sky Mine expansion permit is, by itself, virtually inconsequential within the context of the possible scale of coal-development activity in the impact area. Both approval and denial create only marginal adjustments. Clearly, the local economy could survive the phase-out of this one mine (although 80 per cent of Colstrip and Forsyth residents surveyed agreed with the statement: "Without coal development this area would be struggling economically," just as other small communities have adapted to changing economic circumstances, i.e., the dieselization of the railroad.

Sooner or later a "bust" period is almost inevitable, but it seems illogical to create or allow for a "bust" if it is likely to be followed in the near future by still another "boom." The greatest costs of development involve cyclical adjustments to alternating periods of prosperity and decline. A real challenge in designing an effective growth management strategy goes beyond deferring those peak impacts which cannot be accommodated by local facilities. It involves evening out activities so that subsequent slack periods do not occur. If the local service delivery structure has been expanded to accommodate high levels of activity, then certain fixed costs must be covered. The underutilization of facilities is a negative impact with as much importance as is the overutilization of inadequate facilities. Thus, if it is likely that an economic setback would be only temporary, it seems that every reasonable effort should be made to sustain activity throughout the slack period.

One possible alternative along this line would be to allow for expansion of available coal to an extent that would permit continued operation of the Big Sky Mine at the current output and/or employment of the present work force of 82. Selecting this alternative obviates the need for analysis of impacts since it implies no change from a condition already examined and approved.

CHAPTER VII: APPENDIX

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A. GLOSSARY OF TERMS

Absolute - actual numerical value.

Ancillary Employment - secondary and support employees. Does not include mining and economic base employees.

Appraised Value - dollar value (worth) placed upon property in accordance with House Bill 70(84-401) by County appraisers and assessors as prescribed by State Department of Revenue. Synonym for assessed value and market value except for agriculture and mines.

Assessed Value - synonym for appraised value and market value except for agriculture and mines where value is based upon production and gross proceeds, respectively.

Assimilation - the act or process of absorbing or incorporating new individuals and businesses into the human fabric of a community.

Boom - a descriptor for economic conditions characterized by significant increases in population and economic activity in a short period of time.

Bust - a descriptor for economic conditions characterized by a significant decline in population and economic activity, often experienced following a boom period.

Cohort - in demography, a grouping of common characteristics, particularly age and sex.

Cohort Survival Model - a framework for demographic analysis which involves breaking a subject population into relevant cohorts, integrating birth and death rates, and simulating the patterns of population growth over time. Also referred to as a components of population model.

Consumer Price Index (CPI) - indicator of the general level of prices at the retail level which is a statistical measure of changes in prices of a group of commodities over time compared to a base year.

Cycle (cyclic) - a recurrent fluctuation, in business activities and variables over time.

Deficit - situation where revenues are less than expenditures for a unit of government.

Demography - the statistical study of the characteristics of human populations.

Economic Base Employment - a category which includes mining, manufacturing, agricultural, transportation and federal employees but excludes ancillary employees.

Employment-Population Ratio - number of individuals employed divided by the population for an area at a point in time.

Expenditures, Current - actual money outlays by units of government which recognizes a rate of inflation such that increases in expenditures reflect actual and inflationary increases.

Expenditures Index - real money outlays by units of government - adjusts nominal money outlay by rate of inflation.

Front End Load - refers to demands for goods and services, public and private, which precedes the supply of such goods and services being provided in an impacted area, or which precedes tax revenues in the case of some public services.

General Trend - line of prevailing inclination or movement of a variable in the course of time.

Incremental Increase - an added or additional increase due to a particular alternative.

Inflation - An increase in the general price level.

Instability - fluctuations, increases and decreases, in business activities and economic variables.

Labor Market Conditions - as used in the Coal Town II model, an index ratio of labor demand to labor supply such that a ratio of 1:1 indicate labor demand is equal to labor supply while ratio greater than one indicates labor demand is greater than labor supply so that wages must be bid up to equate supply and demand.

Lag - to fall behind in time, for example, the provision of services may lag the demand for services.

Market Value - synonym for appraised and assessed value and equal to sales price of property.

Median Income - middle value of the range of incomes such that 50 per cent of incomes are less and 50 per cent of incomes are more.

Migration - number of individuals moving into an area minus number of individuals moving out of an area so that a negative migration indicates that number entering an area is less than number existing from an area.

Mill - one tenth of one cent or 1/1000 of a dollar.

Mill Rate (Levy) - number of mills charged for taxable value of property.

Mining Employees - employment opportunities directly mining coal as well as supervisory, clerical, secretarial, maintenance and construction personnel associated with the mine.

Personal Property - all property not included in real estate and improvements.

Proprietors - individuals as owners of business who are self employed in the operation of their activities excluding agricultural proprietors.

Real Property - land and buildings.

Revenue, Current - money receipts by units of government at the state, county, town and school levels based on current tax policies and which recognizes that inflation is reflected in revenues.

Revenue Index - real money receipts by units of government at the state, county, town and school levels based on current tax policies and which recognizes that inflation is occurring with adjustment for inflation (money receipts divided by index of inflation).

Scenario - an account or synopsis of a projected course of action or events.

School - A school district or districts within an impacted area.

School Children - individuals aged 6-17 in a given area.

Sector - A distinctive part of an economy, for example, agriculture.

Surplus - situation where revenues collected are greater than expenditures for a unit of government.

Taxable Value - the amount against which the mill levy is applied, computed as a percentage of assessed value.

Total Employment - the sum of individuals employed in economic base, ancillary and proprietors.

Town - An incorporated area or areas within an impacted area.

B. METHODOLOGICAL APPENDIX FOR ATTITUDINAL RESEARCH

Three separate sub-populations of the residents of Rosebud County were examined: Forsyth residents, Colstrip residents and area farmers/ranchers. A total of 331 respondents completed questionnaires, of which 153 were residents of Forsyth, 136 were Colstrip residents and 42 were area farmers/ranchers. All responses to the questionnaires were collected during the months of May and June, 1978.

The samples for the Forsyth and Colstrip sub-populations were drawn in the following ways. First, using existing city maps and directories supplemented by on-site reconnaissance, an inventory, a complete listing of all the dwelling units within the town boundaries was obtained. Next, a starting point was randomly selected and the interviewers proceeded systematically down each street. In Forsyth, every fourth dwelling unit was selected until three units had been chosen, then a fourth unit was selected by skipping one dwelling unit and taking the next. Then every fourth dwelling unit was chosen until three more had been selected, the next dwelling unit was skipped and the following one was chosen and so on. This procedure made it possible to avoid selecting identically located units from each block and, at the same time, compile a systematic sample of sufficient size to produce reasonable confidence boundaries for the research results. ~±10%

In Colstrip, a similar selection procedure was used. Every third dwelling unit was selected until three units had been chosen then the next unit was skipped and the following unit selected. Next, every third unit was chosen until three more were selected, the next unit was skipped and the following unit selected and so on.

In all cases, field workers alternated between interviewing the female and male adult heads of household. Call backs were made for those respondents not at home or otherwise not available for an interview at the first visit. The total number of refusals for Colstrip and Forsyth combined was only ten.

To conserve time and money in the field, roughly one-half of the Colstrip and Forsyth questionnaires were left for the respondent to complete and retrieved later and checked for completeness by the field worker. The remainder were administered personally by the interviewers. A cursory review of the data indicated no systematic pattern in the responses of those who were interviewed as compared to those who completed the questionnaire on their own.

The sample of area farmers/ranchers was compiled somewhat differently than the Colstrip and Forsyth samples. First, an "impact area" was identified on the basis of existing traffic patterns in the vicinity of the Big Sky Mine (see page II-47). Farm/ranch units in the impact area were identified through on-site reconnaissance and inventory. Since the number of farm/ranch units was quite small, the decision was made to interview every farm/ranch household head. Call backs were made if the respondent was not available for an interview at the first visit. In the entire impact area, only three farm/ranch heads refused to participate in the survey.

The three questionnaires used in this research are reproduced in the following pages, along with the frequency distribution of responses to each

of the items. The Colstrip and Forsyth questionnaires are identical, except for modest changes in phrasing which were necessary to reflect the shorter time of residence characteristic of Colstrip respondents. The farmer/rancher questionnaire was similarly modified to accommodate the unique quality of life and occupational concerns of this sub-population (see attached questionnaires).

The interpretation of the data from the farmer/rancher interviews should be done with great care. In no case should one infer that these data are representative of all farmers/ranchers in Rosebud County because these results reflect the opinions only of farmers/ranchers in the immediate impact area of the Big Sky Mine. On the other hand, the samples of the Colstrip and Forsyth residents were drawn systematically to obtain a representative respondent group from each of these communities; thus, the viewpoints expressed by these respondents can be generalized to the entire resident populations of Colstrip and Forsyth.

ROSEBUD COUNTY COAL DEVELOPMENT IMPACT SURVEY
(Colstrip Questionnaire - Cont.)

OCCUPATION:

Housewife	(37.2%)
Skilled Labor	(43.0%)
Business	(1.7%)
Professional	(8.3%)
Education	(3.3%)
Government	(.8%)
Supervisor/Manager	(4.1%)
Retired	(.8%)
Unemployed	(.8%)

NUMBER OF CHILDREN UNDER 18:

0	(24.6%)
1	(14.0%)
2	(28.9%)
3	(17.5%)
4	(9.6%)
5	(2.6%)
6	(2.6%)
9	(-)

ANNUAL FAMILY INCOME FROM ALL SOURCES:

Less than $8,000	(3.8%)
$8,000 - $16,000	(20.8%)
$16,000 - $24,000	(55.4%)
over $24,000	(20.0%)

Do you live in a: House (29.9%)
Apartment (6.7%)
Trailer (63.4%)
Other (-)

Do you own your home? (58.7%)
rent your home? (41.3%)

ETHNIC GROUP:

Native American	(11.9%)
Caucasian	(88.1%)
Other	(-)

EDUCATION:

Elementary	(4.5%)
Some High School	(10.4%)
High School	(44.8%)
Some College	(26.9%)
College Graduate	(13.4%)

With whom do you primarily associate after working hours:

Coworkers	(11.9%)
Neighbors	(6.7%)
Old friends	(3.7%)
Business contacts	(.7%)
Family	(18.5%)
All equally	(33.3%)
No one	(1.5%)
More than one of the above	(23.7%)

Where did you last live?

Elsewhere in Rosebud County	(2.9%)
Elsewhere in Montana	(64.0%)
Outside Montana	(31.6%)
Always lived here	(1.5%)

Length of residence in Rosebud County:

one year or less	(24.3%)
one to seven years	(62.5%)
more than seven years	(13.2%)

ROSEBUD COUNTY COAL DEVELOPMENT IMPACT SURVEY
(Colstrip Questionnaire)

1.	How much would you say you know about the details of the Big Sky Mine expansion proposal?	great deal	3.7%
		a little	35.6%
		nothing	60.0%
2.	Given your current level of knowledge about the proposed Big Sky Mine expansion, do you favor or oppose it?	strongly favor	18.0%
		favor	55.6%
		uncertain	25.6%
		oppose	.8%
		strongly oppose	-
3.	In my opinion, the current amount of coal development in the county is:	too low	59.2%
		about right	38.3%
		too high	2.5%

4. The following are some statements about the quality of life in your community. In each case will you indicate by circling whether you strongly agree (SA), agree (A), are uncertain (U), disagree (D), or strongly disagree (SD) with the particular statement.

	SA(%)	A(%)	U(%)	D(%)	SD(%)
People living in this community are not as friendly as they were where I used to live.	3.7	10.3	5.9	58.8	21.3
More and more, I feel it necessary to lock doors at night and my car during the day.	8.1	17.8	3.0	62.2	8.9
This area would be struggling economically without coal development.	34.8	54.8	4.4	5.2	.7
Rosebud County is just as beautiful today as it was ten years ago.	19.3	47.4	25.2	5.2	3.0
Merchants here are more concerned with making money than giving customer service.	10.4	17.2	17.2	49.3	6.0
Coal developers just don't have any respect for the land and the rural way of life.	.7	3.7	11.9	59.3	24.4
The coal companies pay more than their fair share of the costs of coal development.	11.9	37.8	35.6	11.9	3.0
Newcomers are providing the fresh ideas that this area has needed for a long time	8.2	51.5	28.4	10.4	1.5
People on fixed incomes can't keep up with the rising cost of living caused by coal development.	4.4	26.7	31.1	30.4	7.4
This is a good community for raising children.	14.1	56.3	11.1	15.6	3.0
There has been increased tension between Indians and non-Indians	8.2	37.3	26.1	25.4	3.0
I find living in Rosebud County to be interesting and fulfilling.	9.6	62.2	11.9	13.3	3.0

ROSEBUD COUNTY COAL DEVELOPMENT IMPACT SURVEY
(Colstrip Questionnaire - Cont.)

5. I will list a number of local services below and I would like to have your opinion of the quality of services provided.	Very Satisfied	Satisfied	Uncertain	Dissatisfied	Very Dissatisfied
schools	14.1%	54.1%	20.0%	10.4%	1.5%
law enforcement	2.3%	42.9%	16.5%	24.1%	14.3%
housing	3.7%	39.3%	13.3%	27.4%	16.3%
library	6.7%	48.5%	29.9%	13.4%	1.5%
roads and streets	3.0%	42.5%	4.5%	32.8%	17.2%
sewage disposal	4.5%	64.2%	15.7%	8.2%	7.5%
medical care	11.1%	9.6%	43.0%	36.3%	- %
fire protection	3.0%	56.7%	20.1%	15.7%	4.5%
water quality	8.1%	60.0%	5.9%	15.6%	10.4%
recreation facilities	13.4%	58.2%	3.7%	17.9%	6.7%
shopping facilities	3.7%	33.3%	4.4%	38.5%	20.0%
land use planning	5.2%	32.8%	36.6%	21.6%	3.7%
solid waste disposal	8.2%	56.7%	23.1%	9.0%	3.0%

ROSEBUD COUNTY COAL DEVELOPMENT IMPACT SURVEY
(Colstrip Questionnaire - Cont.)

6. Would you be willing to pay higher taxes to improve the quality of those services listed below?

schools	Yes (57.1%)	No (42.9%)
law enforcement	Yes (61.2%)	No (38.8%)
housing	Yes (29.3%)	No (70.7%)
library	Yes (51.2%)	No (48.8%)
roads and streets	Yes (58.6%)	No (41.4%)
sewage disposal	Yes (34.7%)	No (65.3%)
medical care	Yes (72.8%)	No (27.2%)
fire protection	Yes (53.6%)	No (46.4%)
water quality	Yes (35.7%)	No (63.5%)
recreation facilities	Yes (33.1%)	No (66.1%)
shopping facilities	Yes (28.2%)	No (71.0%)
land use planning	Yes (25.2%)	No (73.9%)
solid waste disposal	Yes (26.8%)	No (72.4%)

7. Considering the quality of your life today compared to where you used to live, would you say your life today is:

much better (22.2%)
better (34.1%)
about the same (34.8%)
worse (8.1%)
much worse (.7%)

8. Thinking about the future, say five years from now, do you think your life will be:

much better (23.9%)
better (44.8%)
about the same (29.9%)
worse (.7%)
much worse (.7%)

9. If the Big Sky Mine had to close down because permission to mine more coal is denied, the over-all effect on Rosebud County would be:

good (1.5%)
uncertain (29.9%)
bad (68.7%)

ROSEBUD COUNTY COAL DEVELOPMENT IMPACT SURVEY
(Colstrip Questionnaire - Cont.)

10. The following are statements about the potential effects of expanded mining in Rosebud County. In each case will you indicate whether you strongly agree (SA), agree (A), are uncertain (U), disagree (D), or strongly disagree (SD) with the statement?

	SA	A	U	D	SD
More local young people will be remaining here and getting jobs as a result of coal mining.	19.4%	66.4%	7.5%	6.0%	.7%
There will be a sharp increase in crime and illegal drug use.	9.6	30.4	17.0	37.0	5.9
Local people will have less control over important decisions that affect their lives	6.7	19.3	16.3	51.1	6.7
Even if we need new industry and jobs, we cannot sacrifice our clean air and natural scenery to attain them.	5.3	32.1	16.8	31.3	14.5
Rosebud County could easily handle a population several times as large as it is today.	12.6	60.0	11.9	14.1	1.5
There won't be enough housing for low-income people living here.	7.4	47.4	16.3	26.7	2.2
New settlement in Rosebud County should be carefully regulated by land use controls.	7.4	53.3	22.2	14.8	2.2
Carpools or vanpools should be used to carry workers from communities to the mines.	11.1	55.6	20.7	9.6	3.0
Mobile home parks are the best answer to the housing shortage.	7.4	42.2	19.3	25.2	5.9

BACKGROUND INFORMATION

AGE:
- 18-25 (22.2%)
- 26-45 (61.5%)
- 46-65 (15.6%)
- Over 65 (.7%)

SEX:
- Male (52.9%)
- Female (47.1%)

MARITAL STATUS:
- Single (10.4%)
- Married (87.4%)
- Divorced (.7%)
- Widowed (.7%)
- Separated (.7%)

ROSEBUD COUNTY COAL DEVELOPMENT IMPACT SURVEY
(Forsyth Questionnaire)

1. How much would you say you know about the details of the Big Sky Mine expansion proposal?

great deal	(7.4%)
a little	(61.7%)
nothing	(30.2%)

2. Given your current level of knowledge about the proposed Big Sky Mine expansion, do you favor or oppose it?

strongly favor	(30.9%)
favor	(47.7%)
uncertain	(17.4%)
oppose	(4.0%)
strongly oppose	(-)

3. In my opinion, the current amount of coal development in the county is:

too low	(57.9%)
about right	(40.0%)
too high	(2.1%)

4. The following are some statements about the quality of life in your community. In each case will you indicate by circling whether you strongly agree (SA), agree (A), are uncertain (U), disagree (D), or strongly disagree (SD) with the particular statement.

	SA	A	U	D	SD
People living in this community are not as friendly as they used to be.	8.8%	25.7%	14.7%	40.5%	10.1%
More and more, I feel it necessary to lock doors at night and my car during the day.	16.1%	42.3%	6.7%	31.5%	3.4%
This area would be struggling economically without coal development.	25.8%	45.7%	11.9%	16.6%	-
Rosebud County is just as beautiful today as it was ten years ago.	17.9%	50.3%	12.6%	15.9%	3.3%
Merchants here are more concerned with making money than giving customer service.	8.6%	35.8%	12.6%	39.7%	3.3%
Coal developers just don't have any respect for the land and the rural way of life.	.7%	13.8%	17.1%	55.9%	12.5%
The coal companies pay more than their fair share of the costs of coal development.	7.3%	32.0%	37.3%	20.7%	2.7%
Newcomers are providing the fresh ideas that this areas has needed for a long time.	6.7%	39.6%	20.8%	28.9%	4.0%

ROSEBUD COUNTY COAL DEVELOPMENT IMPACT SURVEY
(Forsyth Questionnaire - Cont.)

	SA	A	U	D	SD
People on fixed incomes can't keep up with the rising cost of living caused by coal development.	16.6%	38.4%	16.6%	24.5%	4.0%
This is a good community for raising children.	17.6%	64.2%	6.8%	9.5%	2.0%
There has been increased tension between Indians and non-Indians.	9.2%	41.4%	18.4%	27.0%	3.9%
I find living in Rosebud County to be interesting and fulfilling.	16.7%	64.7%	6.7%	10.7%	1.3%

5. I will list a number of local services below and I would like to have your opinion of the quality of services provided.	Very Satisfied	Satisfied	Uncertain	Dissatisfied	Very Dissatisfied
schools	7.3%	57.0%	18.5%	13.9%	3.3%
law enforcement	4.6%	42.4%	15.2%	29.8%	7.9%
housing	2.6%	53.6%	13.9%	23.8%	6.0%
library	46.0%	46.7%	4.7%	2.0%	0.7%
roads and streets	2.0%	27.2%	4.0%	41.7%	25.2%
sewage disposal	2.6%	50.0%	11.2%	28.9%	7.2%
medical care	2.0%	35.8%	17.2%	33.1%	11.9%
fire protection	11.2%	69.7%	12.5%	5.9%	.7%
water quality	7.2%	70.4%	3.9%	15.8%	2.6%
recreation facilities	3.3%	42.1%	11.2%	25.7%	17.8%
shopping facilities	2.6%	60.9%	9.9%	21.9%	4.6%
land use planning	0.7%	33.8%	37.1%	20.5%	7.9%
solid waste disposal	5.3%	40.4%	24.5%	21.2%	8.6%

ROSEBUD COUNTY COAL DEVELOPMENT IMPACT SURVEY
(Forsyth Questionnaire - Cont.)

6. Would you be willing to pay higher taxes to improve the quality of those services listed below?

schools	Yes (51.4)	No (47.1)
law enforcement	Yes (42.0)	No (58.0)
housing	Yes (24.4)	No (74.8)
library	Yes (36.0)	No (64.0)
roads and streets	Yes (55.7)	No (44.3)
sewage disposal	Yes (50.7)	No (49.3)
medical care	Yes (40.4)	No (59.6)
fire protection	Yes (47.8)	No (52.2)
water quality	Yes (35.8)	No (64.2)
recreation facilities	Yes (43.1)	No (56.9)
shopping facilities	Yes (16.8)	No (83.2)
land use planning	Yes (29.5)	No (70.5)
solid waste disposal	Yes (42.2)	No (57.8)

7. Considering the quality of your life prior to the start-up of coal mining in this area, would you say your life today is:

much better	(13.6%)
better	(27.2%)
about the same	(52.4%)
worse	(6.1%)
much worse	(.7%)

8. Thinking about the future, say five years from now, do you think your life will be:

much better	(14.1%)
better	(36.2%)
about the same	(42.3%)
worse	(6.0%)
much worse	(1.3%)

9. If the Big Sky Mine had to close down because permission to mine more coal is denied, the over-all effect on Rosebud County would be:

good	(2.0%)
uncertain	(35.1%)
bad	(61.5%)

ROSEBUD COUNTY COAL DEVELOPMENT IMPACT SURVEY
(Forsyth Questionnaire - Cont.)

10. The following are statements about the potential effects of expanded mining in Rosebud County. In each case will you indicate whether you strongly agree (SA), agree (A), are uncertain (U), disagree (D), or strongly disagree (SD) with the statement?

	SA	A	U	D	SD
More local young people will be remaining here and getting jobs as a result of coal mining.	23.8%	60.9%	4.6%	9.9%	.7%
There will be a sharp increase in crime and illegal drug use.	9.3%	38.0%	20.7%	29.3%	2.7%
Local people will have less control over important decisions that affect their lives.	10.5%	32.9%	15.8%	36.2%	4.6%
Even if we need new industry and jobs, we cannot sacrifice our clean air and natural scenery to attain them.	9.5%	33.8%	19.6%	31.8%	5.4%
Rosebud County could easily handle a population several times as large as it is today.	7.2%	47.4%	17.1%	22.4%	5.9%
There won't be enough housing for low-income people living here.	14.1%	49.0%	13.4%	22.1%	1.3%
New settlement in Rosebud County should be carefully regulated by land use controls.	13.2%	64.2%	12.6%	9.9%	-
Carpools or vanpools should be used to carry workers from communities to the mines.	20.7%	67.3%	9.3%	2.7%	-
Mobile home parks are the best answer to the housing shortage.	4.0%	52.0%	16.0%	20.0%	8.0%

BACKGROUND INFORMATION

AGE: 18-25 (15.1%)
26-45 (35.5%)
46-65 (28.9%)
Over 65 (20.4%)

SEX: Male (48.0%)
Female (52.0%)

MARITAL STATUS: Single (13.1%)
Married (74.5%)
Divorced (2.6%)
Widowed (7.2%)
Separated (.7%)
Other (2.0%)

ROSEBUD COUNTY COAL DEVELOPMENT IMPACT SURVEY
(Forsyth Questionnaire - Background Information - Cont.)

OCCUPATION:

Housewife	(26.0%)
Agricultural & Farmer	(.7%)
Skilled Labor	(34.2%)
Business	(6.8%)
Professional	(2.1%)
Education	(4.8%)
Government	(5.5%)
Supervisor/Manager	(1.4%)
Retired	(16.4%)
Unemployed	(1.4%)
Student	(.7%)

ANNUAL FAMILY INCOME FROM ALL SOURCES:

Less than $8,000	(20.0%)
$8,000 - $16,000	(37.9%)
$16,000 - $24,000	(26.4%)
Over $24,000	(15.7%)

ETHNIC GROUP:

Native American	(23.3%)
Caucasian	(74.7%)
Other	(2.0%)

With whom do you primarily associate with after working hours:

Coworkers	(4.0%)
Neighbors	(7.3%)
Old friends	(11.3%)
Business contacts	(.7%)
Family	(28.0%)
All equally	(26.7%)
More than one of the above	(22.0%)

Do you live in a:

House	(90.2%)
Apartment	(8.6%)
Trailer	(21.2%)
Other	(-)

Do you own your home?	(82.1%)
Do you rent your home?	(17.2%)

EDUCATION (Please mark highest level completed.)

Elementary	(8.7%)
Some high school	(8.1%)
High school	(43.6%)
Some college	(22.8%)
College graduate	(16.1%)

Length of Residence in Rosebud County:

one year or less	(5.3%)
one to seven years	(24.3%)
more than seven years	(70.4%)

Where did you last live? (Check One)

Elsewhere in Rosebud County	(8.6%)
Elsewhere in Montana	(33.1%)
Outside Montana	(31.8%)
Always lived here	(25.2%)

Number of Children under 18:

0	(37.0%)
1	(18.5%)
2	(24.1%)
3	(13.9%)
4	(4.6%)
5	(.9%)
6	(-)
7	(.9%)
8	(-)
9	(-)

ROSEBUD COUNTY COAL DEVELOPMENT IMPACT SURVEY
(Rancher Questionnaire)

1. How much would you say you know about the details of the Big Sky Mine expansion proposal?

great deal	(11.9%)
a little	(47.6%)
nothing	(40.5%)

2. Given your current level of knowledge about the proposed Big Sky Mine expansion, do you favor or oppose it?

strongly favor	(2.4%)
favor	(19.0%)
uncertain	(33.3%)
oppose	(21.4%)
strongly oppose	(23.8%)

3. In my opinion, the current amount of coal development in the county is:

too low	(7.1%)
about right	(61.9%)
too high	(28.6%)

4. The following are some statements about the quality of life in your community. In each case will you indicate by circling whether you strongly agree (SA), agree (A), are uncertain (U), disagree (D), or strongly disagree (SD) with the particular statement.

	SA(%)	A(%)	U(%)	D(%)	SD(%)
People living in this area are not as friendly as they used to be.	26.2	45.2	7.1	21.4	-
This area is as safe to live in as it was before mining.	2.4	14.3	16.7	26.2	40.5
This area would be struggling economically without coal development.	2.5	5.0	7.5	45.0	40.0
Rosebud County is just as beautiful today as it was ten years ago.	4.8	28.6	11.9	21.4	33.3
Merchants here are more concerned with making money than giving customer service.	34.1	43.9	7.3	14.6	-
Coal developers just don't have any respect for the land and the rural way of life.	35.7	31.0	16.7	14.3	2.4
The coal companies pay more than their fair share of the costs of coal development.	2.4	7.1	16.7	38.1	35.7
Newcomers are providing the fresh ideas that this area has needed for a long time.	-	14.3	9.5	33.3	42.9
People who live around here are more helpful than they are in most places.	12.5	50.0	22.5	10.0	5.0
This is a good area for raising children.	22.0	43.9	17.1	14.6	2.4
There has been increased tension between Indians and non-Indians.	19.5	34.1	24.4	22.0	-
This part of Montana has just about everything that is necessary for a happy life.	21.4	61.9	7.1	9.5	-

ROSEBUD COUNTY COAL DEVELOPMENT IMPACT SURVEY
(Rancher Questionnaire - Cont.)

5. Below is a list of problems sometimes found by landowners. Would you please indicate whether these problems exist for you:	Severe Problem	Minor Problem	No Problem
Coal Dust	9.5%	26.2%	64.3%
Frightened Livestock	11.9%	26.2%	59.5%
Transporting Livestock	9.8%	26.8%	61.0%
Lowered Water Table	10.3%	25.6%	53.8%
Trespassing	45.2%	42.9%	11.9%
Poaching	42.9%	45.2%	11.9%
Cost of Farm Labor	61.9%	28.6%	-.5%
Friction Between Neighbors	19.0%	36.7%	45.2%
Polluted Water	23.1%	20.5%	56.4%
Road Maintenance	47.6%	35.7%	16.7%
Power Plant Emissions	36.6%	24.4%	39.0%
Litter	59.5%	33.3%	7.1%
Noise	19.0%	42.9%	35.7%
Weed Control	7.7%	41.0%	51.3%

ROSEBUD COUNTY COAL DEVELOPMENT IMPACT SURVEY
(Rancher Questionnaire - Cont.)

6. Are the problems listed below, if any, related to coal development?

	YES	NO	DON'T KNOW
Coal Dust	52.9%	47.1%	
Frightened Livestock	48.4%	51.6%	
Transporting Livestock	46.7%	53.3%	
Lowered Water Table	44.8%	48.3%	6.9%
Trespassing	85.0%	12.5%	2.5%
Poaching	85.4%	12.2%	2.4%
Cost of Farm Labor	90.0%	10.0%	
Friction Between Neighbors	67.6%	32.4%	
Polluted Water	46.7%	53.3%	
Road Maintenance	78.9%	21.1%	
Power Plant Emissions	71.4%	28.6%	
Litter	77.5%	20.0%	2.5%
Noise	63.9%	36.1%	3.3%
Weed Control	16.7%	80.0%	

7. Considering the quality of your life prior to the start-up of coal mining in this area, would you say your life today is:

much better	(7.5%)
better	(50.0%
about the same	(17.5%)
worse	(22.5%)
much worse	(2.5%)

8. Thinking about the future, say five years from now, do you think your life will be:

much better	(-)
better	(7.1%)
about the same	(38.1%)
worse	(26.2%)
much worse	(28.6%)

9. If the Big Sky Mine had to close down because permission to mine more coal is denied, the over-all effect on Rosebud County would be:

good	(21.4%)
uncertain	(45.2%)
bad	(31.0)

ROSEBUD COUNTY COAL DEVELOPMENT IMPACT SURVEY
(Rancher Questionnaire - Cont.)

Would you sell your surface rights? Yes (2.4%) No (65.9%)
Conditionally, Yes (9.8%) Uncertain (22.0%)

Who has the lease rights?

Self held	15.0%
Private, Coal Co.	15.0%
Self, Other	5.0%
Federal	5.0%
Federal-private	40.0%
No one, don't know	20.0%

What kind of crops/livestock do you have?

Cattle	4.8%
Cattle/Hay	42.9%
Cattle/Grain	40.5%
Grain	9.5%
Cattle, Other Stock	2.4%

How many people regularly work for you?

None	35.7%
1	31.0%
2	19.0%
3-4	9.5%
5-10	4.8%

How long have you lived here?

0-10 years	14.3%
11-20 years	21.4%
21-30 years	4.8%
31-40 "	16.7%
41-50 "	19.0%
51-60 "	16.7%
61-70 "	4.8%
70 and up	2.4%

How long has your family ranched in this area?

0 -20 years	12.2%
21-40 "	4.9%
41-60 "	17.1%
61-80 "	24.4%
81-100 "	41.5%

How large is your ranch/farm?

Less than 3,500 acres	42.9%
3,500 to 15,000 acres	21.4%
15,000 to 25,000 acres	16.7%
more than 25,000 acres	16.7%

What portion of this land do you own?

None	16.7%
One quarter or less	9.5%
More than one half	9.5%
More than three quarters	64.3%

How much of your land is irrigated?

None	56.1%
Sub-irrigated	4.9%
Some	2.4%
Up to 300 acres	26.8%
300 to 1,000 acres	7.3%
More than 1,000 acres	2.4%

Table VII-C-1

Age and Sex Distribution,
Components of Population Simulation Run,
Unadjusted Model,
Rosebud County,
1975-2000.

	1975		1980		1985	
Age	Male	Female	Male	Female	Male	Female
0 - 4	483	483	570	585	600	616
5 - 9	502	459	483	483	570	585
10-14	505	475	503	459	483	483
15-19	471	448	497	472	494	456
20-24	439	406	460	445	485	469
25-29	478	460	435	406	456	446
30-34	376	303	469	460	426	407
35-39	337	225	371	299	463	455
40-44	280	217	335	223	368	296
45-49	294	202	273	215	326	220
50-54	304	194	282	191	261	204
55-59	224	169	291	184	269	181
60-64	156	121	206	160	267	174
65-69	98	86	136	113	179	149
70-74	75	68	78	81	108	106
75-79	34	47	42	59	44	71
80-84	22	54	15	34	19	43
85 +	33	40	15	111	10	69
Total	5111	4457	5458	4981	5829	5430
Total Population	9568		10,439		11,259	

	1990		1995		2000	
Age	Male	Female	Male	Female	Male	Female
0 - 4	617	633	642	659	694	712
5 - 9	600	616	616	633	642	659
10-14	570	585	600	616	617	634
15-19	475	480	561	582	590	613
20-24	483	454	465	477	548	578
25-29	481	470	479	454	460	478
30-34	447	446	471	470	469	454
35-39	421	402	441	441	465	464
40-44	459	450	418	397	438	436
45-49	359	293	447	446	407	393
50-54	312	209	344	278	429	422
55-59	250	193	299	198	329	263
60-64	247	172	230	183	274	187
65-69	232	162	215	160	200	170
70-74	142	140	184	152	171	150
75-79	60	93	80	122	104	133
80-84	20	51	27	66	36	88
85 +	13	69	13	104	19	136
Total	6189	5935	6533	6439	6891	6972
Total Population	12,124		12,972		13,863	

Table VII-C-2

Age and Sex Distribution,
Components of Population Simulation Run,
High School Education or More Model
Unadjusted Model,
Rosebud County,
1975-2000

	1975		1980		1985	
Age	Male	Female	Male	Female	Male	Female
0 - 4	218	286	282	293	296	308
5 - 9	231	275	218	286	282	293
10-14	233	285	231	275	218	286
15-19	217	269	230	282	229	272
20-24	202	245	211	266	224	279
25-29	220	276	200	245	209	266
30-34	173	182	217	276	197	245
35-39	155	135	171	182	214	276
40-44	129	130	152	135	167	182
45-49	135	121	124	127	146	132
50-54	140	116	130	116	120	122
55-59	103	101	135	111	125	111
60-64	72	73	94	95	123	104
65-69	45	52	60	71	78	92
70-74	34	41	35	49	47	67
75-79	16	28	19	35	20	42
80-84	10	33	7	22	8	28
85 +	15	24	6	135	4	90
Total	2348	2672	2522	3002	2707	3197
Total Population	5020		5524		5904	

	1990		1995		2000	
Age	Male	Female	Male	Female	Male	Female
0 - 4	304	316	309	321	316	329
5 - 9	296	308	304	316	309	321
10-14	282	293	296	308	304	316
15-19	216	283	279	290	293	305
20-24	223	270	210	281	272	287
25-29	222	280	220	270	208	281
30-34	206	266	219	280	217	270
35-39	194	245	203	267	216	280
40-44	210	276	191	246	199	267
45-49	161	179	202	271	183	241
50-54	141	127	155	171	195	259
55-59	115	116	136	121	149	163
60-64	114	104	105	109	124	114
65-69	102	101	95	101	87	106
70-74	61	87	80	96	74	95
75-79	27	57	35	75	45	82
80-84	8	33	11	45	14	59
85 +	5	113	5	135	7	184
Total	2887	3455	3054	3702	3213	3959
Total Population	6342		6756		7172	

Table VII-C-3

Age and Sex Distribution,
Components of Population Simulation Run,
Less than High School Education Model*
Rosebud County,
1975-2000.

Age	1975 Male	1975 Female	1980 Male	1980 Female	1985 Male	1985 Female
0 - 4	265	197	291	289	307	306
5 - 9	271	184	265	197	291	289
10-14	272	190	271	184	265	197
15-19	254	179	266	190	266	184
20-24	237	161	249	179	261	190
25-29	258	184	235	161	247	179
30-34	203	121	252	184	230	161
35-39	182	90	200	117	249	179
40-44	151	87	182	87	201	114
45-49	159	81	149	88	180	88
50-54	164	78	152	76	142	82
55-59	121	68	156	73	144	71
60-64	84	48	112	65	144	70
65-69	53	34	76	42	101	57
70-74	41	27	43	32	61	39
75-79	18	19	23	24	24	28
80-84	12	21	9	12	11	15
85 +	18	16	9	22	7	12
Total	2763	1785	2939	2022	3129	2261
Total Population	4548		4962		5390	

Age	1990 Male	1990 Female	1995 Male	1995 Female	2000 Male	2000 Female
0 - 4	317	316	341	339	396	394
5 - 9	307	305	317	316	341	339
10-14	291	289	307	305	318	316
15-19	260	197	285	289	301	305
20-24	260	184	254	197	279	289
25-29	259	190	258	184	252	197
30-34	241	179	253	190	252	184
35-39	227	157	238	174	250	185
40-44	249	174	227	152	239	169
45-49	198	115	246	175	224	153
50-54	171	82	189	107	234	163
55-59	135	77	163	77	180	100
60-64	133	68	125	73	151	73
65-69	130	61	120	59	112	64
70-74	81	53	105	57	97	55
75-79	34	35	45	48	58	51
80-84	11	18	16	22	22	30
85 +	8	16	9	18	12	23
Total	3314	2514	3498	2783	3717	3090
Total Population	5828		6281		6807	

*Unadjusted Model

Table VII-C-4

Age and Sex Distribution,
Components of Population Simulation Run,
Agricultural Population Model*
Rosebud County,
1975-2000.

Age	1975 Male	1975 Female	1980 Male	1980 Female	1985 Male	1985 Female
0 - 4	120	120	146	146	154	154
5 - 9	125	115	120	120	146	146
10-14	126	119	125	115	120	120
15-19	118	112	123	119	122	115
20-24	110	102	115	112	120	119
25-29	119	115	110	102	116	112
30-34	94	76	116	115	107	102
35-39	84	56	91	72	112	110
40-44	70	54	84	53	92	69
45-49	73	51	70	54	84	54
50-54	76	48	70	48	68	52
55-59	56	42	74	45	68	46
60-64	39	30	53	42	69	45
65-69	25	22	33	30	45	43
70-74	19	17	18	19	23	26
75-79	9	12	11	15	10	16
80-84	6	14	7	9	8	11
85 +	8	10	5	18	5	11
Total	1277	1115	1371	1235	1471	1350
Total Population	2392		2606		2821	

Age	1990 Male	1990 Female	1995 Male	1995 Female	2000 Male	2000 Female
0 - 4	158	158	164	164	177	177
5 - 9	154	154	158	158	164	164
10-14	146	146	154	154	158	158
15-19	118	120	143	146	151	154
20-24	120	115	115	120	139	146
25-29	121	119	120	115	115	120
30-34	112	112	117	119	117	115
35-39	104	98	109	107	114	114
40-44	113	105	105	93	110	102
45-49	92	70	113	106	105	94
50-54	82	51	89	66	109	100
55-59	66	49	79	48	86	62
60-64	64	46	62	49	75	48
65-69	59	46	55	46	53	49
70-74	32	37	42	40	39	40
75-79	13	22	18	32	23	34
80-84	8	12	10	17	13	23
85 +	6	14	6	15	8	21
Total	1566	1472	1657	1593	1755	1722
Total Population	3038		3251		3477	

*Unadjusted Model

Table VII-C-5

Age and Sex Distribution,
Components of Population Simulation Run,
Non-Agricultural Population Model*
Rosebud County,
1975-2000.

	1975		1980		1985	
Age	Male	Female	Male	Female	Male	Female
0 - 4	373	363	430	435	452	457
5 - 9	377	344	373	363	429	435
10-14	379	356	377	344	373	363
15-19	353	336	373	353	372	341
20-24	329	304	345	333	365	350
25-29	359	345	324	304	340	333
30-34	282	227	353	345	319	304
35-39	253	169	280	227	350	345
40-44	210	163	250	169	277	227
45-49	221	151	203	161	242	167
50-54	228	146	211	143	194	152
55-59	168	127	217	138	201	136
60-64	117	91	153	118	198	129
65-69	73	64	102	82	134	107
70-74	56	51	61	62	85	80
75-79	25	35	31	45	34	55
80-84	16	40	9	25	11	32
85 +	25	30	10	98	6	61
Total	3844	3342	4104	3746	4382	4074
Total Population	7186		7850		8455	

	1990		1995		2000	
Age	Male	Female	Male	Female	Male	Female
0 - 4	465	470	483	489	520	526
5 - 9	451	457	464	470	483	489
10-14	430	435	452	457	465	470
15-19	368	360	424	431	445	453
20-24	363	339	359	357	414	428
25-29	360	351	358	339	354	358
30-34	335	333	354	351	353	339
35-39	317	304	332	334	351	351
40-44	347	345	313	305	329	334
45-49	267	224	335	340	302	300
50-54	231	158	255	212	320	323
55-59	184	144	220	150	243	201
60-64	183	126	168	134	200	139
65-69	173	116	160	114	147	121
70-74	111	104	143	113	133	111
75-79	48	70	62	91	80	99
80-84	12	39	17	50	23	64
85 +	7	78	8	95	11	122
Total	4652	4453	4909	4832	5174	5529
Total Population	9105		9741		10,403	

*Unadjusted Model

Table VII-C-6 : Adjusted Scenario 1. Peabody Constant Reference Scenario
Rosebud County, Selected Years, 1975-1990.

Year	Tons	Miners	Econ. Base Empl.	Ancillary Empl.	Proprietors	Total Empl.
1975	11,300,000	472	1,955	1,950	332	4,236
1978	12,500,000	688	2,171	1,662	246	4,079
1980	16,399,993	618	2,101	2,072	307	4,480
1985	7,100,000	453	1,936	2,967	439	5,342
1990	2,300,000	282	1,965	3,379	514	5,658

Year	Labor Mkt.	Migration	Emp/Pop.	Town Size	School Kids	Population
1975	1.2684	1543	.4578	3,888	2,429	9,254
1978	1.1183	-1051	.4786	3,908	2,237	8,523
1980	1.1025	774	.4819	4,682	2,440	9,279
1985	1.1935	-13	.4757	5,865	2,949	11,231
1990	1.3205	672	.4447	7,358	3,341	12,724

1970 Dollars

Year	State Rev.	County Rev.	School Rev.	Town Rev.	County spend	School Spend	Per Cap. Town Rev.
1975	24,136,416	1,805,080	3,795,265	146,045	1,079,140	2,038,911	37.57
1978	25,489,274	1,065,785	3,854,450	149,015	974,966	1,878,535	37.65
1980	33,167,033	923,517	4,357,858	170,012	1,099,251	2,049,184	37.95
1985	17,383,456	659,983	3,338,647	206,263	1,225,474	2,477,199	35.17
1990	8,842,489	521,246	3,513,389	250,471	1,330,092	2,808,266	34.04

Current Dollars

Year	State Rev.	County Rev.	School Rev.	Town Rev.	County Spend	School Spend	Per Cap Town Rev.
1975	33,453,056	2,501,840	5,260,236	202,418	1,495,687	2,825,929	52.07
1978	42,235,727	1,766,006	6,386,824	246,918	1,615,518	3,112,732	62.38
1980	61,823,349	1,721,436	8,123,047	316,902	2,049,004	3,819,679	70.74
1985	43,441,248	1,649,296	8,343,277	515,451	3,062,459	6,190,519	87.88
1990	28,914,928	1,704,474	11,488,783	819,041	4,349,401	9,183,031	111.31

Table VII-C-7 : Adjusted Scenario 2. Peabody Expansion Scenario.
Rosebud County, 1980, 1985, 1990.

Year	Tons	Miners	Econ. Base Empl.	Ancillary Empl.	Proprietors	Total Empl.
1980	17,300,000	646	2,119	2,085	309	4,523
1985	9,000,000	485	1,968	2,989	438	5,395
1990	4,200,000	314	1,797	3,411	512	5,721

Year	Labor Mkt.	Migration	Emp./Pop.	Town Size	School Kids	Population
1980	1.1025	862	.4819	4,770	2,464	9,385
1985	1.1936	-8	.4767	5,953	2,972	11,319
1990	1.3214	681	.4455	7,475	3,371	12,841

1970 Dollars

Year	State Rev.	County Rev.	School Rev.	Town Rev.	County Spend	School Spend	Per Cap. Town Rev.
1980	35,732,045	955,032	4,493,424	173,162	1,165,365	2,069,267	36.30
1985	20,922,000	721,844	3,432,849	208,827	1,231,723	2,496,569	35.08
1990	12,421,549	578,085	3,608,416	253,945	1,338,131	2,834,297	33.97

Current Dollars

Year	State Rev.	County Rev.	School Rev.	Town Rev.	County Spend	School Spend	Per Cap. Town Rev.
1980	66,604,531	1,780,180	8,375,742	322,774	2,172,240	3,857,114	67.67
1985	52,284,064	1,803,888	8,578,688	521,858	3,078,075	6,238,924	87.67
1990	40,618,464	1,890,337	11,799,521	830,401	4,375,688	9,268,152	111.09

Table VII-C-8: Adjusted Scenario 3. Peabody-WeCo Expansion Scenario. Rosebud County, 1980, 1985, 1990.

Year	Tons	Miners	Econ. Base Empl.	Ancillary Empl.	Proprietors	Total Empl.
1980	17,600,000	721	2,204	2,154	319	4,661
1985	18,500,000	822	2,305	3,188	418	5,911
1990	22,000,000	822	2,305	3,800	484	6,589

Year	Labor Mkt.	Migration	Emp./Pop.	Town Size	School Kids	Population
1980	1.0340	1,084	.4852	4,992	2,522	9,607
1985	1.1342	221	.4870	6,773	3,187	12,139
1990	1.3327	808	.4582	9,016	3,776	14,382

1970 Dollars

Year	State Rev.	County Rev.	School Rev.	Town Rev.	County Spend	School Spend	Per Cap. Town Rev.
1980	36,379,555	1,002,120	4,551,149	178,391	1,995,284	2,118,480	35.74
1985	38,805,488	1,036,985	4,803,348	232,676	1,289,602	2,678,428	34.36
1990	45,823,792	1,163,778	5,419,825	299,034	1,441,460	3,176,215	33.17

Current Dollars

Year	State Rev.	County Rev.	School Rev.	Town Rev.	County Spend	School Spend	Per Cap. Town Rev.
1980	67,811,490	1,867,952	8,483,342	332,521	3,719,210	3,948,847	66.61
1985	96,974,896	2,591,425	12,003,564	581,458	3,222,714	6,693,390	85.57
1990	149,843,808	3,805,554	17,722,816	977,840	4,713,574	10,386,224	108.46

Table VII-C-9 : Adjusted Scenario 4. Peabody-WeCo-MPCo Expansion
Rosebud County, 1980, 1985, 1990.

Year	Tons	Miners	Econ. Base Empl.	Ancillary Empl.	Proprietors	Total Empl.
1980	17,600,000	2,615	4,098	2,610	387	7,096
1985	18,500,000	1,072	2,555	3,750	408	6,712
1990	22,000,000	1,072	2,555	4,453	475	7,483

Year	Labor Mkt.	Migration	Emp./Pop.	Town Size	School Kids	Population
1980	.9256	4,529	.5418	8,437	3,426	13,052
1985	1.1420	262	.4963	8,158	3,551	13,524
1990	1.3425	918	.4646	10,739	4,228	16,105

1970 Dollars

Year	State Rev.	County Rev.	School Rev.	Town Rev.	County Spend	School Spend	Per Cap. Town Rev.
1980	37,972,332	996,683	4,856,959	282,667	1,304,236	2,882,831	33.50
1985	42,875,328	1,506,750	6,906,492	276,475	1,384,402	2,985,739	33.89
1990	49,967,584	1,636,542	7,544,995	352,846	1,552,646	3,558,944	32.86

Current Dollars

Year	State Rev.	County Rev.	School Rev.	Town Rev.	County Spend	School Spend	Per Cap. Town Rev.
1980	70,780,426	1,857,816	8,916,198	526,891	2,431,096	5,373,598	62.45
1985	107,145,424	3,765,367	17,259,312	690,912	3,459,620	7,461,360	84.69
1990	163,394,016	5,351,493	24,672,128	1,153,807	5,077,153	11,637,748	107.44

Table VII-C-10: Adjusted Scenario 5. Peabody No Permit Base Scenario. Rosebud County, 1980, 1985, 1990.

Year	Tons	Miners	Econ. Base Empl.	Ancillary Empl.	Proprietors	Total Empl.
1980	14,100,000	536	2,019	2,091	309	4,420
1985	4,800,000	371	1,854	2,901	444	5,198
1990	0	200	1,683	3,287	518	5,489

Year	Labor Mkt.	Migration	Emp./Pop.	Town Size	School Kids	Population
1980	1.0924	704	.4740	4,612	2,422	9,227
1985	1.1933	-24	.4732	5,620	2,884	10,986
1990	1.3183	648	.4426	7,034	3,255	12,400

1970 Dollars

Year	State Rev.	County Rev.	School Rev.	Town Rev.	County Spend	School Spend	Per Cap. Town Rev.
1980	29,754,844	850,540	4,021,393	167,335	1,041,492	2,033,346	36.28
1985	13,053,987	584,259	3,191,760	199,029	1,207,856	2,422,873	35.41
1990	4,494,495	450,917	3,354,889	240,835	1,307,747	2,736,346	34.24

Current Dollars

Year	State Rev.	County Rev.	School Rev.	Town Rev.	County Spend	School Spend	Per Cap. Town Rev.
1980	55,463,029	1,585,406	7,495,876	311,913	1,941,344	3,790,157	67.63
1985	32,621,904	1,460,063	7,976,206	497,372	3,018,431	6,054,758	88.50
1990	14,697,000	1,474,499	10,970,488	787,532	4,276,333	8,947,852	111.96

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