

GEORGIA INSTITUTE OF TECHNOLOGY
OFFICE OF CONTRACT ADMINISTRATION
SPONSORED PROJECT INITIATION

Date: 7/9/79

Project Title: Up-date the Existing Assessment of Potential Socioeconomic Impacts
of the South Powder River Basin

Project No: G-43-A01 (Subproject under G-43-A00) *Green card*

Co-Project Directors: Dr. Frederick A. Rossini and Dr. Jay Weinstein

Sponsor: Union Carbide Corp.; Nuclear Division; Oak Ridge, TN 37830

Agreement Period: From 6/1/79 Until 7/31/79 (Project Authorization
Period of Performance)

Type Agreement: Project Authorization No. X01 under Subcontract No. 7670
(under DOE Prime Contract No. W-7405-eng-26)

Amount: \$5,760 UCC
1,906 GIT (G-43-321)
\$7,666 TOTAL

Reports Required: Report (Revisions/update)

Sponsor Contact Person (s):

Technical Matters

Contractual Matters

(thru OCA)

Mr. W. R. Osborn
Contract Administrator
Purchasing Division
Union Carbide Corporation
Nuclear Division
P. O. Box M
Oak Ridge, Tennessee 37830

Defense Priority Rating: none

Assigned to: Social Sciences (School/Laboratory)

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Project File (OCA)
Project Code (GTHI)
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GEORGIA INSTITUTE OF TECHNOLOGY
OFFICE OF CONTRACT ADMINISTRATION
SPONSORED PROJECT TERMINATION

Date: 1/19/81

Project Title: Up-Date the Existing Assessment of Potential Socio-economic Impacts
of the South Powder River Basin

Project No: G-43-A01

Project Director: Dr. F. A. Rossini; Dr. J. Weinstein

Sponsor: Union Carbide Corporation

Effective Termination Date: 7/31/79

Clearance of Accounting Charges: 7/31/79

Grant/Contract Closeout Actions Remaining:

- Final Invoice ~~AND RELATED DOCUMENTS~~
- Final Fiscal Report
- Final Report of Inventions (Submit Jointly w/G-43-A00 and A-02)
- Govt. Property Inventory & Related Certificate
- Classified Material Certificate
- Other _____

Assigned to: Social Sciences (School/~~XXXXXX~~)

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2.4 DEMOGRAPHIC AND SOCIOECONOMIC PROFILE

This report brings up to date the description of socioeconomic conditions and impacts in the draft Environmental Impact Statement (1977) for the proposed uranium mill in the Kerr-McGee Nuclear Corporation's South Powder River Basin Project in Converse County, Wyoming.

In 1977, the Kerr-McGee Nuclear Corporation filed with the Wyoming Industrial Siting Council (WISC) a petition for non-jurisdiction because construction on the site had commenced before 1975, which was the date when the Wyoming Industrial Siting Act took effect. This act requires a siting permit for industrial facilities costing more than \$50 million. As part of the application process, the applicant must file a siting application which is analogous to an Environmental Report. In order to receive a siting permit, the applicant must demonstrate compliance with the law and show that the proposed facility will cause no undue adverse effects on the public health, safety, and welfare of the local population. As a condition of granting the permit, the Council may require the applicant to mitigate the adverse effects that it can deal with, for example, by paying for such amenities as housing and sewer facilities, and by providing a bus transportation for its employees from residential areas to the site.

WISC rejected Kerr-McGee's contention of non-jurisdiction, and ordered the company to file a siting application. Under the compliance schedule, Kerr-McGee is to file a statement to WISC on August 11, 1979. This statement, presently proprietary and unavailable to the authors of this report, should significantly update the applicant's Environmental Report of 1977.

It is clear that the socio-economic impacts of the mill on the Converse County area are dependent upon the broad context in which

the mill will operate. This context includes such factors as U.S. Energy Policy, market conditions for uranium, regulations by all levels of government which will affect the mill, and other energy-related developments in Converse County, including uranium mining in this permit area by Kerr-McGee and other companies. Enormous uncertainties exist in all of these factors as well as in the specific plans for the mill by Kerr-McGee which may, in the August 11, 1979 statement, be modified.

The proposed site for the Kerr-McGee uranium mining and milling project is located in Converse County, Wyoming (Fig. 1.1). The site boundary is about 13 km (8 miles) north-northeast of Glenrock, 26 km (16 miles) northwest of Douglas, and 45 km (28 miles) northeast of Casper (in Natrona County). The geographic coordinates of the proposed site are longitude $105^{\circ} 40' 10''$ west and latitude $43^{\circ} 05' 20''$ north.

2.4.1 Demography of the area

2.4.1.1 Current population and distribution

The permit area is located in a very sparsely populated rural area. The 1970 populations within 8, 16, 32, and 48 km (5, 10, 20, and 30 miles) were 0, 0, 1864, and 5533 respectively (ER, Fig. 2.2-2). Included within the 80-km (50-mile) radius are the towns of Glenrock (1515), Douglas (2677), and Casper (39,361). Table 2.5 gives the 1970 population distribution within an 80-km (50-mile) radius of the proposed site.

The population density of Converse County in 1970 was 1.4 persons per square mile, as compared to the state average of 3.4. The unincorporated areas of the county (all but the towns of Douglas and Glenrock) had an average density of about 0.4. The applicant has estimated that the population density of permanent residents in the vicinity of the permit area is between 0.1 and 0.2 persons per square mile (ER, p. 2-9).

Table 2.4. Air quality measurements relevant to the Kerr-McGee permit area

Pollutant ^a	Averaging period	Maximum concentration	Wyoming maximum acceptable concentration ^b (%)	Sampling location
Total suspended particulates	Annual, 1976 (geometric mean)	16 µg/m ³	27	Manning Ranch, 21 km (13 miles) north of proposed Kerr-McGee mill site
	24 hr, 1976	49 µg/m ³	33	
	Annual, 1974 (geometric mean)	23 µg/m ³	38	Stoddard Ranch, about 26 km (16 miles) northeast of proposed mill site
	Annual, 1974 (geometric mean)	55 µg/m ³	92	Burkes Ranch, about 32 km (20 miles) south of proposed mill site ^c
	24 hr, 1974	33 µg/m ³	22	Exxon's Highland uranium mine and mill, adjacent to and east of proposed mill site
Sulfur dioxide	Annual, 1973 (arithmetic mean)	8 µg/m ³	13	Casper, Wyoming
	Annual, 1974 (arithmetic mean)	3 µg/m ³	5	Casper, Wyoming
Photochemical oxidants (as O ₃)	1 hr	40 µg/m ³	25	Minerals Exploration Company, Sweetwater uranium project area; similar rural area in south-central Wyoming
Nonmethane hydrocarbons	4 days	Below lower limit (0.01 ppm) of detection equipment		Minerals Exploration Company, Sweetwater uranium project area; similar rural area in south-central Wyoming
Nitrogen dioxide	Annual, 1974	12 µg/m ³	12	Casper, Wyoming

^a Local monitoring data on background levels of total settleable particulates, sulfation rate, hydrogen sulfide, fluorides, and carbon monoxide were not available.

^b Wyoming maximum acceptable standards from *Wyoming Air Quality Standards and Regulations*, 1976, Chap. 1, Sects. 3-12; see also Table 2.3.

^c Applicant suspects that high mean value at the Burkes Ranch is partly the result of emissions from the nearby Dave Johnson Power Plant. Source: ER, Sect. 2.7.

Table 2.5. Distribution of 1970 population within 80 km of proposed Kerr-McGee Mill

Radial sector	Population within specified distances (in kilometers)				
	0-16	16-32	32-48	48-64	64-80
North	0	0	0	0	199
North-northeast	0	0	0	0	85
Northeast	22	0	0	0	0
East-northeast	0	189	0	127	0
East	4	0	0	0	0
East-southeast	0	0	0	230	7
Southeast	0	0	2677	0	149
South-southeast	0	0	559	0	201
South	0	0	0	0	0
South-southwest	0	1515	266	0	0
Southwest	0	0	0	887	56
West-southwest	0	0	167	44,496	3528
West	0	0	0	0	0
West-northwest	0	160	0	206	0
Northwest	0	0	0	1,135	0
North-northwest	0	0	0	0	0

Note: Mill site is at latitude 43°05'20" and longitude 105°40'10". Source: ER, Table 2.2-2.

Although the 1970 census reported no residents within 16 km (10 miles) of the site, the applicant has reported that there are an estimated 31 people living within the boundaries of the permit area, 22 of whom are permanent residents living within 16 km of the mill site. Table 2.6 lists the resident populations within certain regions of the permit area. There has been little change in ranching activity and associated population in the permit area since 1977.

The population of Converse County has fluctuated since 1940: the population decreased by 10.5% between 1940 and 1950, increased by 7.3% from 1950 to 1960, and declined 6.7% from 1960 to 1970. Since 1970, the county has started to undergo rapid population increases. Estimates by the U.S. Department of Commerce indicate that Converse County grew by almost 35% between 1970 and 1975, and 1979 population estimates of the Converse Area Planning Office indicate that the population has more than doubled since 1970. Table 2.7 shows the historical population changes in Converse and Natrona Counties and their municipalities.

Table 2.6. Resident population, mining permit area

Ranch	Kilometers, direction from mill site	Resident population
Hornbuckle	15.9, north-northeast	6
Baker	14.0, north-northeast	6
Mason	4.8, north	4 (part-time)
Reynolds	12.2, northeast	10
Lenzen	6.8, west	2 (part-time)
Crouch	6.9, southwest	1 (part-time)
Smith	7.9, south	2 (part-time)
Total		31

Source: Modified from ER, Table 2.2-3.

The recent rapid increases in population have been the result of greatly increased mineral extraction and construction activity associated with energy resource development in Converse County. Much of this growth has taken place in the towns of Douglas and Glenrock. Based on the 1979 population estimates, Douglas has grown by at least 195% and Glenrock by at least 91% since 1970. Note that the Converse Area Planning Office estimates are higher than those of Stuart/Nichols for the County and for Douglas in 1979. Natrona County has shown steady growth since 1940 (Table 2.7), with the largest documented growth taking place between 1950 and 1960 (approximately 58%). It is likely, however, that growth between 1970 and 1980 will substantially surpass this.

2.4.1.2 Projected population and distribution.

Converse County is currently undergoing rapid population growth, which is expected to continue until at least 1985 and possibly beyond. Tables 2.8 and 2.9 present various population projections made in 1976 by different government agencies. Table 2.8 shows recent projections made by Stuart/Nichols Associates (S/N) and the Converse Area Planning Office (CAPO) and an older set of projections by the Wyoming Department of Planning and Economic Development (DEPAD). The Stuart/Nichols projections are generally lower than those of the Converse Area Planning Office (possibly due to lack of accounting for non-permanent residents) and assume a relatively smooth increase between 1980 and 1985. The CAPO projections include the assumption of rapid population increase in the 1982-1984 interval with declines in 1984 and 1985. This assumption is based on construction and operation associated with the Panhandle Eastern Coal

Gasification project, slated for 1983 start-up. The DEPAD projections are the highest of the three and clearly assume increased mining and mill activity in the 1978-1980 interval. This activity has not in fact begun. Thus, these estimates are too high. When construction begin, it is possible that some of the growth projected by DEPAD for 1980 will eventuate. This would also affect (in an upward direction) the CAPO projection, perhaps in the initial 1982-1984 interval. Depending on the growth rates represented by the various projections in Table 2.9, Converse County will experience growth rates which (at a minimum) will continue a steady strain on local service capacities and could (at the maximum) result in severe disequilibrium between the demand and the supply of local services. The wide range of future growth rate projections is the result of a number of possible energy development projects, of which the Kerr-McGee mining and milling operations is only one.

2.7. Historical Population of the Kerr-McGee area: Counties and Municipalities.

Year	Converse County	Douglas	Glenrock	Natrona County	Casper
1940 ^a	6631	2205	1014	23,858	17,964
1950 ^a	5933	2544	1110	31,437	23,673
1960 ^a	6366	2822	1584	49,623	38,930
1970 ^a	5938	2677	1515	51,264	39,361
1972 ^b	6700			54,385	
1973 ^b	6800	3104	1875	52,357	40,012
1974 ^b	7200	4800 ^c		52,600	
1975 ^b	8000			54,600	
1976 ^d	9100	5300	2400		
1977 ^e	10,192	6662	2662		
1978 ^f	11,700	7500	2700		
1979	12,400 ^f	13,000 ^d	7910 ^f	8500 ^d	2975 ^f 2900 ^d

^aU.S. Census of Population

^bEstimated by U.S. Department of Commerce

^cEstimated by Wyoming Department of Economic Planning and Development (DEPAD).

^dEstimated by Converse Area Planning Office

^eEstimated from weighted average of 1976 and 1978 growth rates.

^fEstimated by Stuart/Nichols (P.5).

Sources: ER, Table 2.2-1; Stuart/Nichols Associates, Impact Analysis Converse County, Wyoming, 1978-1985; Converse Area Planning Office, "Population Projections for Converse County and the Towns of Douglas and Glenrock," March 5, 1979.

by Stuart/Nichols (S/N), Converse County Planning Office (CAPO), and Wyoming Department of Economic Planning and Development (DEPAD).

Area/ Source	1980		1981		1982		1983		1984		1985	
	S/N	CAPO	S/N	CAPO	S/N	CAPO	S/N	CAPO	S/N	CAPO	S/N	CAPO
Douglas	8520	9689	8975	10,141	9185	12,291	9400	16,901	9605	14,339	9815	12,430
Glenrock	3250	3573	3475	3841	3550	4215	3620	5167	3700	4603	3775	4145
Converse County	13,300	14,809	14,000	15,529	14,300	18,053	14,600	23,615	14,900	20,489	15,200	18,122
DEPAD County Projections	19,821		15,975		12,344		13,753		12,578		14,286	

Source: ER. Table 2.26.; Converse Area Planning Office, "Population Projections for Converse County and the Towns of Douglas and Glenrock," March 5, 1979; Stuart/Nichols Associates, Impact Analysis Converse County, Wyoming, 1978-1985; Department of Economic Planning and Development, Report on the Economic Base of Converse County, May 1978.

Table 2.9. Population projections for Converse County for selected years, 1977-2000

Source	1977	1978	1979	1980	1985	1990	2000
Bureau of Reclamation							
Primary assumptions				11,000			18,800
Alternative assumptions				10,500			15,400
Wyoming Department of Economic Planning and Development ^a							
Alternative Future I	14,485	18,862	21,037	21,037	16,662	16,662	
Alternative Future II	14,954	19,331	21,506	17,525	18,069	18,150	
Alternative Future III	15,110	19,487	21,662	17,681	19,225	19,319	
U. S. Department of the Interior (1974) ^b		13,200		13,200	14,900	15,200	
Water Resources Research Institute, University of Wyoming ^b							
Scenario I				11,280	12,110		11,730
Scenario II				12,690	16,970		16,810
Scenario II-A				15,350	17,760		18,510
Scenario III				12,800	17,490		22,120

^a Assumes development of both coal and uranium.

^b Assumes coal development only.

Source: Table 3.8-2, *TVA Morton Ranch DES*, 1977.

2.4.1.3 Transient Population.

Construction workers and their families clearly represent a temporary transient population in Glenrock, Douglas, and elsewhere in the county. Growth in employment has increased housing demand, but development has, in general, kept pace. House trailers are a common housing option for the construction sector, and they are increasingly in evidence in the outlying areas of the towns. But permanent housing, both rental and purchase, is also being built and utilized. Between 30 and 40 percent of the truly transient population will reside in the Casper area, but the contribution of construction workers from the permit area to Casper's total (and rapid) population growth will be minimal. Accommodations in Glenrock are limited, but Douglas has several hotels, new motels, and restaurants near the airport. While Casper may receive some spillover from Converse County, most overnight transients can be accommodated close to the permit area in Douglas.

2.4.2.1 Social profile

Converse and Natrona counties, except for Casper, are sparsely populated, rural, traditionally agricultural areas. The main social and economic impacts from the Kerr-McGee Project will likely occur within Converse County, primarily in Douglas and Glenrock. Because there will be a relatively small impact within the Natrona County-Casper area, discussion of public services will be limited mainly to the Converse County area.

Water supply system.

Douglas has two sources of water. Up to 1.8 million gallons per day (MGD) are supplied through a 12-inch line from the Little Box Elder Spring located 16 miles west of town. The secondary source of water is the North Platte River which runs through town. Prior to distribution, the spring water needs only to be chlorinated, while the river water must be settled, filtered, and chlorinated. The peak capacity of the treatment plant is .7 MGD, so the peak supply is only 2.5 MGD. A new \$2.8 million water treatment plant with a capacity of 2.5 MGD is under consideration and projected for construction in 1979. It will replace the existing treatment facility and increase the total supply to 4.3 MGD. This level of supply would satisfy the 1985 projected population of 9000 in most other areas of Wyoming but if the high level of consumption (averaging 330 GPCD with a peak of 560 GPCD) continues in Douglas, an additional .7 MGD supply would be needed by 1985. No expenditures have been projected, however, as it was assumed that this excessive consumption will be reduced in the future.^{5a}

Glenrock's water supply consists of four shallow wells, one deep well, and an infiltration gallery located on the east side of town near Deer Creek, with another deep well located on the northeast side of town. They will supply up to 1.63 million gallons per day (MGD). Upon completion of new wells in 1979, the supply will be increased to 2.5 MGD, which is adequate for a population in excess of 5,000. The cost of the new wells is projected at \$275,000 for 1978-79, and is included in the \$3.3 million Municipal Facilities project funded by the Farm Loan Board. With these proposed improvements, the system will be adequate for a population well in excess of the 1985 projection. ^{5b}

Sewer System

The Douglas sewage treatment facility is a two-cell, 190-acre oxidation lagoon system built in the 1950s which can properly serve a population of only 1900, which is well below the current estimated town population. The facility is incapable of meeting minimum effluent standards, and the town has requested \$100,000 from the U.S. Environmental Protection Agency (EPA) to design a new treatment plant. EPA has given Douglas a fairly low priority for funding because the nearest downstream user of the North Platte River water, other than for recreational purposes, is in Nebraska. Thus a health hazard does not exist. The cost of a new treatment plant is not known and is not projected, but is assumed that it will be required before 1985.^{5c}

Glenrock's wastewater is collected by a network of six, eight, and ten-inch vitrified clay pipes which flow northward to a lift station, which then pumps the sewage across the North Platte River to a sewer lagoon. A 1976 study of the system recommended replacing some sewer lines with larger pipes, installing and replacing manholes, and increasing the lift station pumping capacity to 1.55 MGD. Since all of these improvements have been made, the collection network is in good condition and adequate to serve a population of 6,200, assuming a peak sewage flow of 250 GPCD.

The town has two separate sewage treatment facilities. The main town lagoon system, located on the north side of the North Platte River, was recently improved, and a third cell with chlorination equipment was added. It now has the capacity to serve up to 6,200 people. The other treatment facility was designed to serve up to 250 people in the Oregon Trail Estates subdivision. There are no plans for expansion of this facility.

Prior to 1976, Glenrock had a limited storm sewer network, which was inadequate to collect the increasing amount of run-off caused by urban development. Two miles of 18-inch to 36-inch sewer lines and catch basins have recently been installed, which gives the town an adequate storm run-off collection system for current and future requirements. 5d

Educational system

The public school system in Converse County is composed of two school districts: District 1 (Douglas), which serves the eastern part of the county, and District 2 (Glenrock), which serves the western part of the county.

Table 2.10.1 and 2.10.2 show the capacity and projected enrollment of School Districts No. 1 and 2 respectively.

Table 2.10.1. School Capacity and Projected Enrollment (K-12)
Douglas, Wyoming.

ATTENDANCE AREA	1978-79*	1979-80	1980-81	1981-82	1982-83	1983-84	1984-85
Douglas							
Elementary*							
Enrollment	1,113	1,005	1,081	1,122	1,088	1,115	1,138
Capacity	1,500	1,500	1,500	1,500	1,500	1,500	1,500
Secondary*							
Enrollment	783	1,049	1,130	1,201	1,281	1,302	1,328
Capacity	800	1,700**	1,700	1,700	1,700	1,700	1,700
Rural							
Enrollment	58	59	60	62	63	64	65
Capacity	225	225	225	225	225	225	225

*1978-79 enrollment reflects grades K-6 and 7-12. 1979-80 through 1984-85 reflects K-5 and 6-12.

**Reflects addition of a 900 student senior high nearing completion.

Source: Stuart/Nichols, Associates, Impact Analysis, Converse County School District No. 1, Douglas, Wyoming, 1978-1985.

In School District 1, a new elementary school, West, opened for the 1978-79 school year with a capacity of 600 students. The addition of this new facility to the existing two elementary schools, East and South, will provide adequate capacity to meet projected K-5 enrollment.

Douglas has the only secondary school in the district. A new high school is under construction, and is expected to be completed after the beginning of the 1979-80 school year. The building is solar heated, and will include grades 9-12 with a capacity of 900, at an estimated cost of \$7 million. The existing junior-senior high will then be used as a middle school for grades 6-8, and possibly 5-8 should enrollment warrant it. The combined capacity of the high school and middle school will be 1,700. An \$11 million bond program has funded the construction of the new schools.

Future plans center around structural problems with the old junior-senior high building. The conversion of the senior high to a middle school may be only temporary, if the building deteriorates further as a result of water and bentonite under the foundation.^{5e}

In District 2, the recently completed addition to the Glenrock Elementary School has increased capacity and has avoided possible split sessions. The optimum capacity is 500, and maximum capacity is 600, compared with a 1978-79 enrollment of 528. This crowding situation will be relieved when the new high school is completed in 1980-81, and a middle school is established in the existing junior-senior high school. Projected K-5 enrollment of 574 in 1984-85 indicates a less than optimum situation; however, adequate classroom space will be available.

The junior-senior high capacity has been reached by enrollment, and the district has passed a \$3.8 million bond issue to construct a new facility. This new facility will have an enrollment capacity of 400 to 500, and is estimated to cost \$4 million. Upon completion of the new high school, the existing junior-senior high will be remodeled as a middle school. Projected enrollment indicates that these two facilities (with a total capacity of 1,000) will be adequate to meet future enrollments.^{5f}

Table 2.10.2. School Capacity and Enrollment (K-12), Glenrock, Wyoming

ATTENDANCE AREA	1978-79	1979-80	1980-81	1981-82	1982-83	1983-84	1984-85
<u>Glenrock</u>							
Elementary							
K-6	528	541					
K-5							
Capacity	600	600	514	541	551	563	574
Secondary							
7-12	440	491					
Capacity	500	500					
6-8			269	283	276	282	288
Capacity			500	500	500	500	500
9-12			326	341	361	368	374
Capacity			500	500	500	500	500
<u>Rural</u>							
Enrollment	12	13	13	13	13	13	14
Capacity	60	60	60	60	60	60	60

Enrollment groupings change in 1980-81 due to the creation of a middle school that will include grades 6 through 8.

Health Services

Memorial Hospital, located in Douglas, is a 32-bed facility providing surgical, medical, and emergency care to residents of Converse County.

Both projected population growth and the hospital's floor plan contribute to the need for additional hospital space. Over the past year, the occupancy rate has been increasing and is currently running about 80%, which is considered the optimum operating level. Recent remodeling has created additional space for such functions as x-ray, physical therapy, and the laboratory; however, these functions become more inconveniently located with each expansion. Other inconveniences include the substandard size room sizes, the long distance from rooms to toilet facilities, and the lack of storage space for supplies needed on a daily basis. State health officials have indicated a need for a 44-bed hospital, for which plans have been formulated. The projected population of 1985 would indicate a need for approximately 50 beds, but the Casper hospital may be sufficiently close enough to justify fewer beds in Douglas.

After the new hospital is occupied, projected for 1983, the existing hospital will be available for other uses, such as the expansion of the medical clinic or office space for social services and health-related agencies.

There is a clinic in Glenrock which will not be expanded. Converse County contributes to the Converse-Natrona Mental Health Center. Custer promotes specialized major medical care facilities for the area.

The anticipated population growth will necessitate one additional physician in 1981, and because the county has a policy of supplying physicians with office space, one more office will be needed at that time. It is assumed that interim arrangements can be made until the current hospital is remodeled for such purposes.*

Converse County subsidizes emergency medical transportation for the entire county. It provides the services of a health officer and a sanitarian. It is estimated that three public health nurses will be added during the next five years.^{5g}

2.4.2.2 Economic profile.

Except for Casper, the region is sparsely populated and has been traditionally agricultural. Table 2.11 lists the labor force data for Converse County from 1965 to 1975. Clearly, the areas of employment growth over the last ten years are related directly to energy development (mining, construction) or indirectly to increased employment to meet the needs of an expanding population (transportation-communications-utilities, trade, finance, services). Recently, employment has shifted from a heavily agricultural orientation to a shared agricultural, mining, and construction economy. Table 2.12 lists projected employment for Converse County from 1977 to 1985.

Table 2.12.1 contains projected additions to the labor force of Converse County for the 1979-1985 interval. The CAPO assumptions are reflected in these projections (see sec. 2.4.1.2). Table 2.12.2 shows the projected additional employment to be generated by four Kerr-McGee projects. Since all operations are delayed and the Bill Smith Mine is on stand-by, it is not possible to associate these projections with specific years. Instead, the number of the year from startup (or resumption of activity) is noted. Thus, for example, if construction on the mill were to begin in 1981, 170 temporary employees would be added that year (year 1), withdrawn in 1983 (year 3), etc. These projections are probably too high if a more recent assessment of Kerr-McGee's plans are taken into account.

2.4.2.3. Transportation

Glenrock and Douglas are both on Interstate 25; the towns are also served by the Chicago and Northwestern and the Burlington Northern railroads. All traffic to the proposed site is by car or truck. Access is by State Route 93 from Douglas and State Route 95 from Glenrock, which meet just before the beginning of County Road 31, which provides access to the site. The state roads are paved, two-lane highways. However, County Road 31 is simply blacktop over an existing bed and is not holding together well. The current road system of Converse County is shown in figure 2.0.

2.5 LAND USE

In June 1979, the State of Wyoming issued a state land use plan. This plan contained some general, statewide elements. In addition, the plan included land use plans for each county, formulated by that county. Converse County is becoming quite strict in its land use and zoning. For example, new housing developments are restricted to within three miles of the towns of Douglas and Glenrock in order to provide public services at reasonable cost.

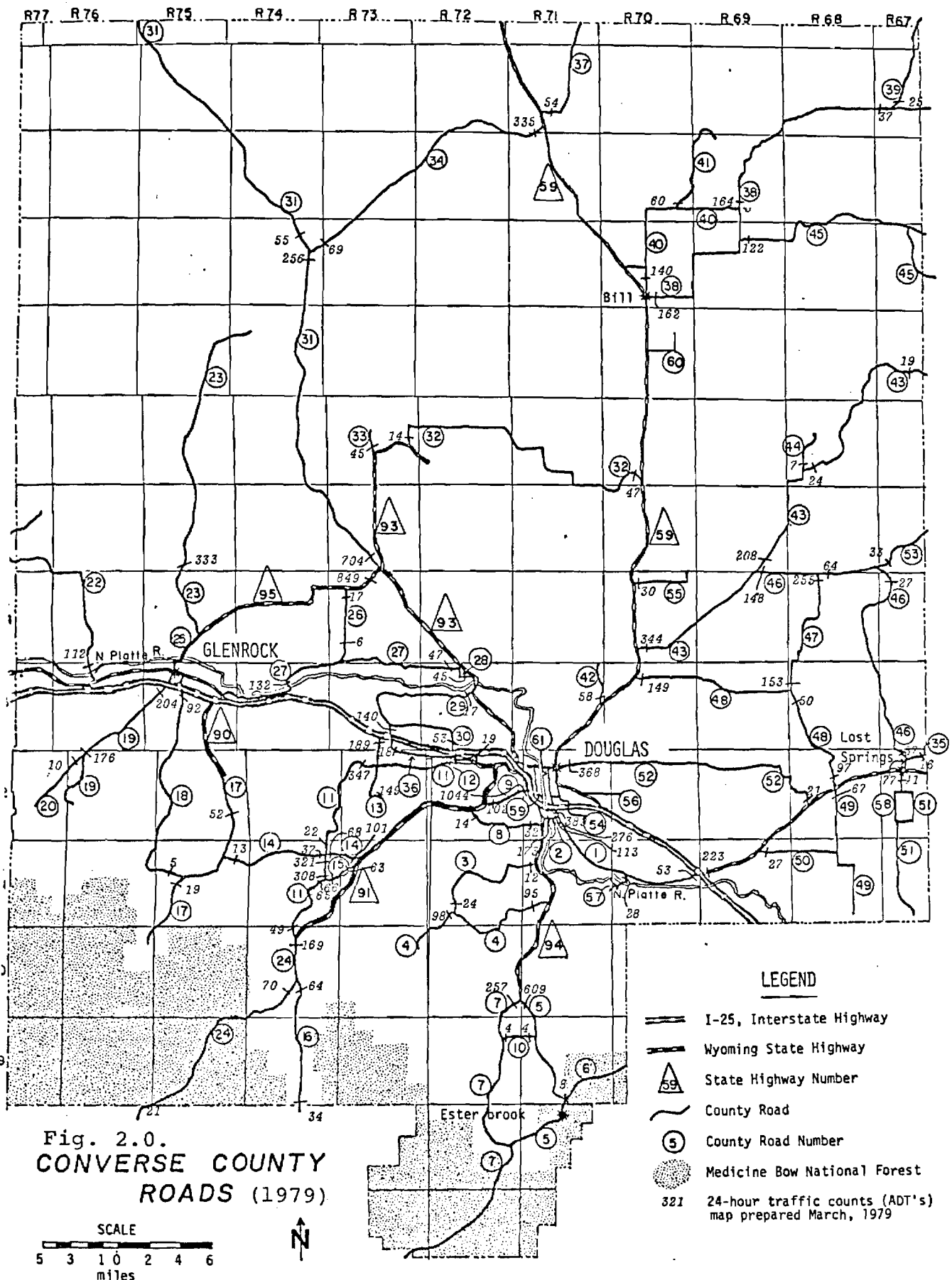


Fig. 2.0.
**CONVERSE COUNTY
 ROADS (1979)**

SCALE
 5 3 1 0 2 4 6
 miles

Source: Converse Area Planning Office

Table 2.11. Labor force data for Converse County for selected years, 1965-1978.

	1965	1970	1971	1972 ^a	1975	1978 ^e
Total Work Force (annual average)	2770	2600	3070	3080	4310	4788
Unemployed	90	110	100 [*]	120	130	140 [*]
Unemployment rate, %	3.2	4.2	3.3	3.9	3.0	2.9 [*]
I.-covered employment ^b	1030	1090	1480	1540	2302	3361
Manufacturing	50	20	20	20	44	44
Nonmanufacturing	980	1070	1460	1520	2258	3317
Agriculture	20	20	30	25	4	-
Mining	80	155	230	240	686	1682 ^f
Transportation, Communications, and utilities	190	210	250	350	381	317
Construction	220	170	390	345	307	361
Trade	330	330	360	350	359	655
Finance, insurance, and real estate	40	55	50	60	102	108
Services	100	130	150	150	238	188
Government	0	0	0	0	1	0
Noncovered employment ^c					1720	1427
Nonagricultural					1040	899
Nonprofit institutions	30	10	10	30	-	-
Domestic	70	50	60	60	-	-
Self-employed and unpaid family	440	290	360	350	-	-
Federal government	70	50	60	60	-	g
Railroads	10	10	10	10	-	-
State and local governments	400	460	480	410 ^d	-	g
Agricultural	630	530	510	570	680	528
Wage and Salary workers	240	190	180	280 ^d	-	-
Self-employed and unpaid family.	390	340	330	290	-	-

^aYear-to-year data are not comparable (specifically in services and in state and local government categories) because of the inclusion of non-profit and reimbursable employers and workers in covered employment beginning January 1, 1972.

^bEligible for unemployment insurance benefits.

^cIneligible for unemployment benefits.

^d1972 data may not be comparable to previous years because of benchmark revisions based on 1970 census information.

^eDEPAD,

^fIncludes oil and gas extraction.

^gTotal government employees=640

*Estimate

Sources: ER, Table 2.2.11, DEPAD, Report on the Economic Base of Converse County.

Table 2.12.1. Projected Additions to the Labor Force 1979-1985 for Douglas, Glenrock, and Converse County.

	1979	1980	1981	1982	1983	1984	1985
Douglas							
Permanent Employees	99	74	14	0	120	102	109
Construction Employees	170	42	188	1048	2592	1312	275
Induced Service Sector	192	122	68	262	829	481	233
TOTAL	461	238	270	1310	3541	1895	617
Glenrock							
Permanent Employees	49	47	32	0	43	0	0
Construction Employees	30	8	35	185	458	232	49
Induced Service Sector	82	73	57	46	179	58	12
TOTAL	161	128	124	221	680	290	61
Converse County							
Permanent Employees	148	121	46	0	163	102	109
Construction Employees	200	50	223	1233	3050	1544	324
Induced Service Sector	272	195	125	308	1007	539	245
TOTAL	622	366	394	1541	4220	2185	678

Source: CAPO.

able 2.12.2. Projected Employment Generated by Kerr-McGee Projects

Year	Bill Smith Mine	Proposed Mine (Sec. 34)	Proposed Open-pit Mine (Sec. 28/31)	Proposed Mill	Total
1	70			170*	240
2	150			170*	320
3	150	150	100	70	470
4	150	150	100	70	470
5	150	150	100	70	470
6	150	150	100	70	470
7	150	150	100	70	470
8	150	150	100	70	470

*Temporary employment.

Source: Stuart/Nichols Associates, Rocky Mountain Energy Survey, 1977.

Table 2.13. Land ownership, Converse County

Ownership	Area		Percent of total
	ha	acres	
Surface			
Private	824,900	2,037,900	74.4
State and local governments	134,520	332,310	12.1
Federal			
Bureau of Land Management	43,579	107,656	
U.S. Forest Service	104,245	257,523	
Other Federal agencies	1,956	4,832	
Total Federal	149,780	370,011	13.5
Total	1,109,600	2,741,120	
Land	1,109,240	2,740,220	
Water	360	900	
Subsurface			
State government	115,510	285,352	11
Federal government	426,530	1,053,681	38
Other (county, municipal, private)	567,565	1,402,087	51
Total	1,109,600	2,741,120	100

Source: ER, Tables 2.2-9 and 2.2-10.

The Kerr-McGee mining and milling permit area is in Converse County (Fig. 1.1) approximately 13 km (8 miles) north-northeast of Glenrock and 23 km (16 miles) northwest of Douglas. Kerr-McGee has obtained the mining rights to 29,550 ha (73,070 acres) of land. The Federal government owns 3320 ha (8200 acres) of the permit area, the state owns 2980 ha (7360 acres), and the balance of the area is privately owned. Figure 2.1 shows the land ownership pattern for the permit area. The applicant estimates that 620 ha (1540 acres) of land will be disturbed by surface and underground mines over the life of the project, although the total area disturbed at any one time should not exceed 160 ha (400 acres). The proposed mill, tailing disposal system; access roads, power lines, and ore storage area will cover another 300 ha (750 acres).

2.5.1.1 Mill ownership

Kerr-McGee Nuclear Corporation (KMNC), a wholly owned subsidiary of Kerr-McGee Corporation of Oklahoma, has purchased 550 ha (1360 acres) of land for the mill site. Table 2.14 lists the property acquisitions for the mill site. Kerr-McGee has obtained mining rights to the rest of the 29,550 ha (73,030 acres) of land within the permit area (see Fig. 2.1).

2.5.1.2 Farmlands

The proposed mill site and adjacent permit area lie within a large region of native rangeland (Fig. 2.2) used primarily for the grazing of sheep, cattle, and some horses. The area is marginal for crops because of limited rainfall. Agricultural land uses in Converse County are presented in Table 2.15.

On the proposed mill site, grazing capacity is estimated at 1.2 to 2 ha (3 to 5 acres) per animal unit month (AUM). Stated another way, 1.2 to 2 ha are required to support one cow (or five sheep) for one month. Croplands occur (alfalfa hay and some grains) on approximately 48 ha (120 acres) located about 6.4 km (4 miles) south of the proposed mill site (ER, Sect. 2.2, p. 2-17).

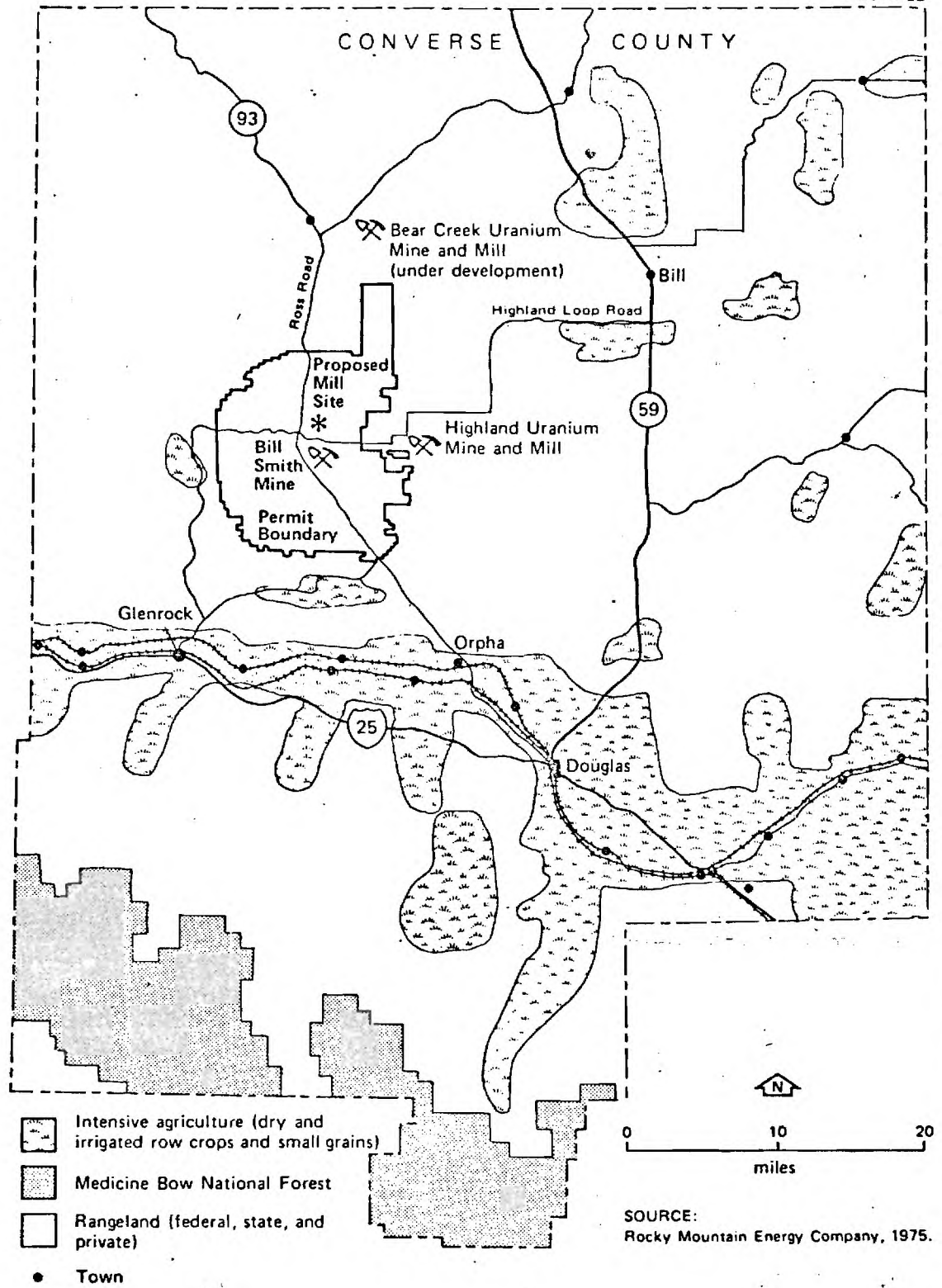




Fig. 2.2. Generalized land-use map for Converse County, Wyoming. Source: ER, Fig. 2.2-2.

LEGEND

-  Surface control by parties other than Kerr-McGee
-  Land purchased by Kerr-McGee for mill complex

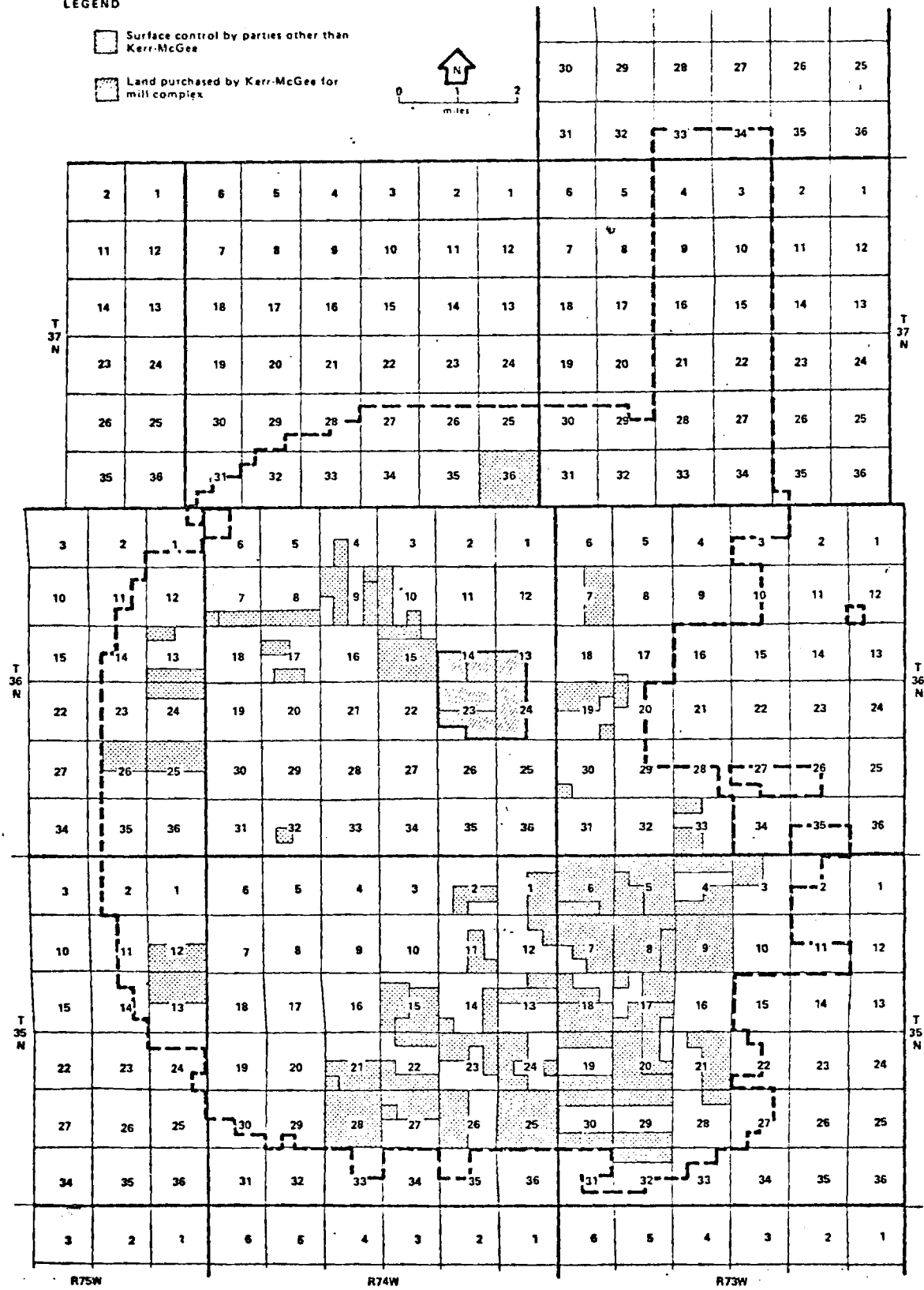


Fig. 2.1. Ownership in the Kerr-McGee permit area. Source: ER, Fig. 2.1-3.

2.5.1.3 Urban Areas

There are no urban areas in Converse County. The population distribution is discussed in Section 2.4. Casper, in Natrona County, is a major area population center, with a 1970 population of 39,500. The towns of Douglas and Glenrock are discussed in more detail in other sections.

Table 2.14. South Powder River Basin mill surface property acquisition

	Purchased from ^a	Option date	Date of deed
Sect. 23			
All except S $\frac{1}{2}$ SW $\frac{1}{4}$	SSC	6/21/71	8/2/76
Sect. 24			
W $\frac{1}{2}$	SSC	6/22/71	8/2/76
Sect. 14, S $\frac{1}{2}$			
SW $\frac{1}{4}$	DCR	8/20/71	9/21/76
SE $\frac{1}{4}$	SSC	8/20/71	9/21/76
Sect. 13			
SW $\frac{1}{4}$	DCR	8/20/71	9/20/76

^aSSC = Smith Sheep Co. - Wyoming Corporation; DCR = Duck CR Ranches - J. W. & M. A. Reynolds and W. J. & E. Reynolds.

Source: ER, Table 9.6-1.

Table 2.15. Agricultural land use in Converse County

Land use	Hectares	Acres	Total agricultural use (%)
Irrigated cropland	27,654	68,316	2.6
Dry cropland	8,380	20,702	0.8
Irrigated pasture	6,774	16,735	0.6
Unirrigated grazing	979,697	2,420,199	90.7
Tree-covered	57,658	142,437	5.3
Total	1,080,163	2,668,389	100.0

Source: ER, Table 2.2-7.

2.5.2 Historical and archaeological resources

Within the permit area, there are no sites that are listed in the National Register of Historic Places or the National Registry of Natural Landmarks. The Bozeman Trail, a major route for cattle drives between Texas and Montana in the mid-1880s, passes through the permit area (Fig. 2.3). Although the entire trail will not be nominated for inclusion in the National Register, it is likely that portions of the trail where significant events have occurred will be nominated in the future. The U.S. Bureau of Land Management has completed a study of the Bozeman Trail, and has identified several visible sections of the trail within the permit area. In Fig. 2.3, these portions are located in Sections 1, 2, and 12, T 35 N, R 75 W; Sections 3, 10, and 15, T 36 N, R 74 W; and Sections 26 and 35, T 37 N, R 74 W.

When the Wyoming state archaeologist conducted a survey of those portions of the permit area that will be disturbed by surface mining activities, the proposed underground mine in Section 34, T 36 N, R 74 W, and the mill, no archaeological sites were discovered.⁶

4.2 LAND USE.

4.2.1 Land resources

Mine

The uranium mines associated with the mill will disturb an estimated 680 ha (1700 acres) during the estimated project life of 15 years. This includes 488 ha (1220 acres) for surface mines, 128 ha (320 acres) for underground mines, and 64 ha (160 acres) for power lines and haul roads (Fig. 4.1). The total surface area disturbed at any one time because of mining activities should not exceed 160 ha (400 acres).

The major impact of mining activities on land use will be the loss of potential grazing. The applicant has estimated a grazing loss of from 1200 to 1980 animal-unit-months (AUMs) based on a disturbed area of 160 ha (400 acres) in any one year and an estimate of 0.2 to 0.3 AUMs per acre for the project area. The duration of this impact will depend upon the length of time between disturbance and reclamation of the areas and the length of time it takes for a "suitable" vegetative cover to become established on each reclaimed area.

Both surface mining and above-ground land disturbances due to underground mining are regulated by the Wyoming Environmental Quality Act.¹ Specific rules and regulation regarding land quality are presented in Appendix C. In general, these regulations require the operator to submit a reclamation plan for all areas to be affected. If approved, the reclamation plan must be coordinated with the operator's mining plans to facilitate reclamation. All reclamation efforts must begin as soon as possible after mining begins and must continue concurrently until all affected lands are reclaimed. Revegetation efforts are not considered successful until the vegetative cover of the affected land is demonstrated to be capable of renewing itself under natural conditions prevailing at the site, and is at least of a density comparable to undisturbed lands in the area (Appendix C).

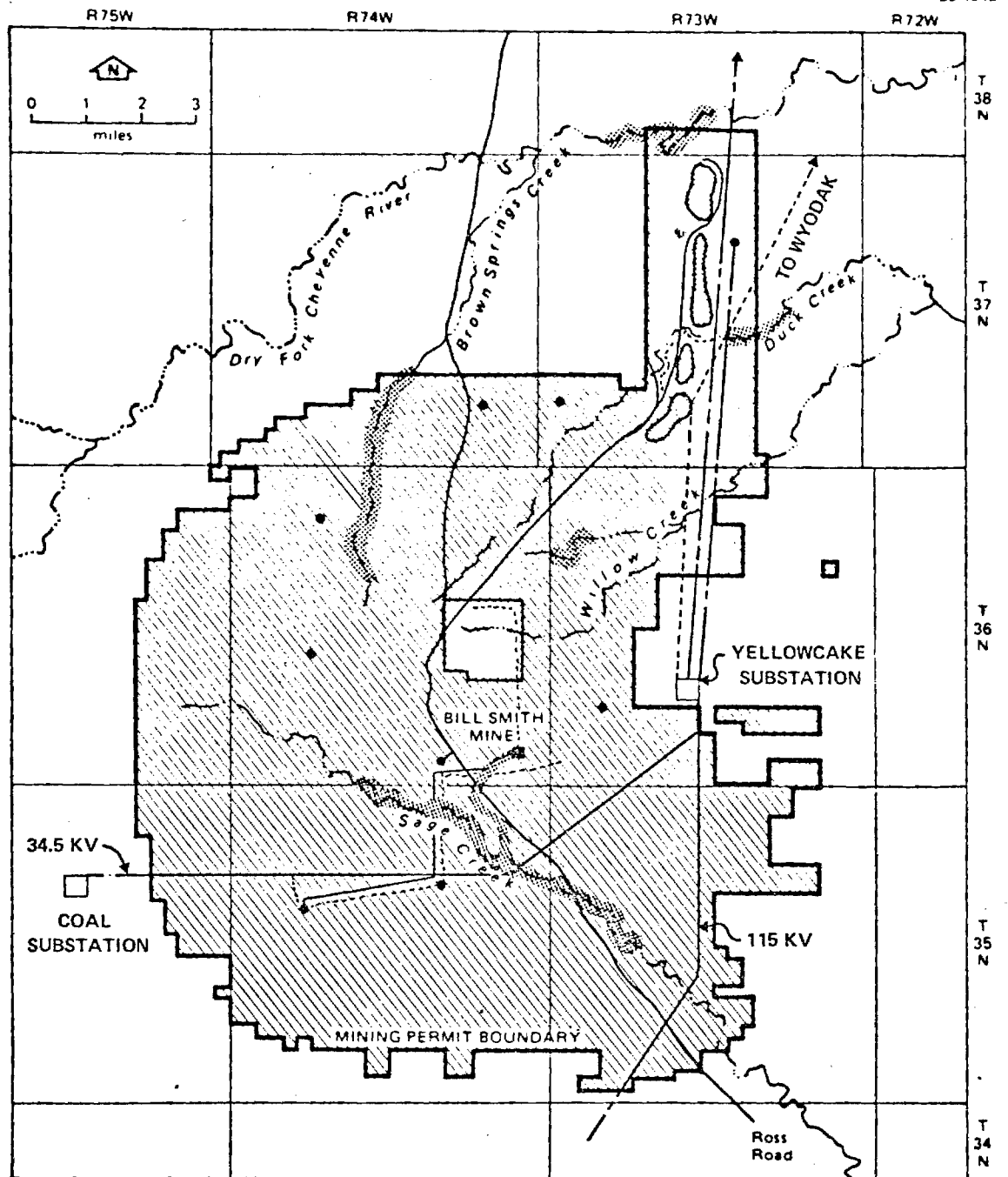
A reclamation plan for the mine permit area was prepared and submitted in accordance with 1975 amendments to the Wyoming Environmental Quality Act, and the permit was approved on April 4, 1975 (ER, Sect. 9). In addition, the applicant has specified the following:

1. Land will be reclaimed concurrently with mining.
2. Excess overburden will be placed in the abandoned pits present on the permit area (Fig. 2.9).
3. Once abandoned pits have been filled, they will be contoured to blend with the surrounding topography, covered with topsoil, and revegetated.
4. At the completion of mining, all but a portion of the final pits will be backfilled, contoured to blend with the surrounding topography, and revegetated.
5. All pits that are not backfilled will be properly engineered and allowed to fill with water, forming small lakes (ER, Sect. 5.5; and Appendix C).

For land surfaces affected by underground mining activities, reclamation procedures identified by the applicant are the following:

1. All land surfaces will be backfilled (if applicable), graded, and contoured as soon as mining activities permit.
2. As soon as possible after mining, all shafts and vent holes will be sealed, shaped, covered with topsoil, and revegetated.
3. Any remaining spoil piles will be contoured, covered with topsoil, and revegetated (for additional details, see ER, Sect. 9.2.3).

Assuming that approved reclamation efforts will be successful, long-term land use impacts due to mining activities within the permit area are not expected to be significant.



LEGEND

- Proposed mine shafts
- Proposed mill and tailings dam
- Proposed surface mines
- ▨ Riparian
- ▨ Sagebrush/grassland
- Proposed Power Li
- Existing Power Lir
- Haul Roads

Fig. 4.1. Proposed mining activity, power lines, and haul roads on the Kerr-McGee permit area. Source: Adapted from ER, Fig. 2.8-2.

Mill

As envisioned in the applicant's 1977 Environmental Report, construction and operation of the proposed mill will disturb an estimated 300 ha (750 acres) throughout the life of the project (15 years). That total consists of mill site and ore storage, 30 ha (75 acres); tailings disposal system, 240 ha (600 acres); and access roads, 30 ha (75 acres). Acreage for grazing will be lost on the mill site, tailings disposal area, and mill access roads for the estimated project life. Estimated losses range from 2250 to 3720 AUMs. The tailings disposal area probably will not be available for grazing use for 50 years after project termination.

However, the method of tailing disposal proposed in Kerr-McGee's 1977 Environmental Report is unacceptable to the Wyoming Department of Environmental Quality. One disposal method which has been recently approved is the burial of tailings with low water content a minimum of 13 feet above the ground water table. No matter what alternative method of tailing disposal is ultimately approved, it will be significantly more costly, both in dollars and personnel, than the method originally proposed.

Recently Kerr-McGee has been considering the use of in situ leaching of ore as an alternative to mill operations. This process appears most cost effective for low grade ores which otherwise could not be utilized, and will most likely be applied there. If this is the case, there will be a slight increase in financial and personnel requirements, but little change in the land use.

Kerr-McGee has signed an agreement with the nearby Bear Creek Uranium Mill and is in the process of negotiating an agreement with the

Exxon Mill. Milling costs are high under these arrangements. However, given a continued low level of mining activity, this offers a viable alternative to mill construction. Such an arrangement would create no additional impact on land use except for increased mileage of ore transportation.

Other

As discussed in Section 2.2 of the ER, a portion of the discharge water from the Bill Smith Mine, currently on standby, has been used to irrigate approximately 48 ha (120 acres) of field crops within the permit area. As can be seen in Table 2.18, this water is considered to be good quality. No other croplands occur on the permit area. It is possible that discharge water from other mines may be used for irrigation of crops, thus increasing crop acreage on the permit area. Furthermore, if possible, water remaining in open mine pits could be used as a source of water for livestock and natural fauna.

No existing or proposed organized recreation facilities occur on the permit area (ER, Sect. 2.2). There may be some hunting on the permit area by Kerr-McGee employees and other land owners, but most hunting is prohibited. Thus, the proposed project should have little or no adverse impact on recreation. Because hunting will be restricted an increase in game population may be realized.

The relatively strict zoning policies of Converse County now keep residential developments within three miles of town. Thereby, in the absence of organized transportation, greater road usage and pressure for improved access roads to the mill area are to be expected. Since these roads cross open range, there is the possibility of

some increased damage to range and game animals which graze near the road, as well as a higher probability of traffic accidents on the low quality access roads.

4.2.2 Historical and archaeological resources

Based on the applicant's review of the National Register of Historic Places, the National Registry of Natural Landmarks, and correspondence with the Wyoming State Historic Preservation Officer (ER, Appendix A), no cultural sites included in these references occur on the permit area.

Archaeological clearance has been provided for the opening and operation of proposed mines, haul roads, mill, and tailings impoundment (ER, Appendix A). If any artifacts are discovered during construction, the Wyoming State archaeologist will be notified promptly and operations will be temporarily diverted. Archaeological surveys will be conducted at the other proposed underground mine sites prior to opening of these mines.

The Bozeman Trail, a major route for cattle drives between Texas and Montana in the mid-1800s roughly parallels Ross Road through the permit area (Fig. 2.3). Portions of this trail are still visible, and the U.S. Bureau of Land Management is currently in the process of determining the locations of these sections. The presence of visible portions of the Trail on the permit area will be determined before road construction begins, and if such sections occur in the area, they will be marked with protective and interpretive signs and will be avoided (ER, p. 4-19).

4.8 SOCIOECONOMIC IMPACTS

4.8.1 Demography and settlement pattern

Peak mill construction employment is expected to be 170 during years 1 and 2 of construction (see table 2.12.2). Mill operating personnel will number no more than 70 throughout the anticipated 15-year life of the project, with an associated mining employment of 400. The applicant has calculated the total direct and induced employment, along with resulting increases in the local population. Since mill construction has not yet begun by July, 1979 (and is not likely to begin until late 1980 or 1981), these calculations should be revised. In addition, estimates of employment have been adjusted downward in accordance with Table 2.12.2. Thus, Table 4.10 lists the applicant's original estimates along with appropriate revisions. Table 4.11 summarizes the forecast of total population increase to the local area using the employment data in Table 4.10 and two sets of multipliers, those of the applicant and those of CAPO. Although there is uncertainty associated with these assumptions, especially in areas experiencing rapid general population growth or fluctuations in demand for minerals such as uranium, the assumptions appear to be reasonable on the basis of other available information from Mountain West Research, Inc.,^{27,28} the U.S. Department of Housing and Urban Development,²⁹ the Converse Area Planning Office, and the applicant.

The applicant has provided estimates of the percentages of employees, families and induced work force expected to relocate near the permit area. These estimates have been revised in accordance with findings from the Stuart/Nichols survey and reports of the Converse Area Planning Office. The applicant's original estimates were: 50% to Douglas, 15% to Glenrock, 25% to Casper, 5% to Converse County, and 5% to Natrona County. Stuart/Nichols estimates 40% to Douglas, and 30% each to Casper and Glenrock. Using the applicant's

basis for disaggregation, the final estimates are: Douglas-38%, Glenrock-27%, Converse County-5%, Casper-25%, Natrona County-5%. Table 4.12 summarizes the anticipated distribution of new population based on these final estimates.

The proportion of county population increase contributed by resettlement of mill and mining employees will be moderate to substantial during years two and three (depending upon the contribution of the Panhandle Eastern project for which the CAPO projections account). Between 1981 and 1982 (assuming 1981 to be year one), construction and operation personnel will contribute approximately 17 percent of the total increase in the county. Between 1982 and 1983, an additional 13 percent will be added. During the first year of actual operation, the contribution will be quite large, since general population growth will have slowed and eventually declined -- particularly if Panhandle Eastern construction is completed by 1985. After Converse County has reached a fairly stable population, project-related population growth will have accounted for about 10 to 20 percent of the total predicted county population. The Kerr-McGee mill and mining development will have variable impact on the Converse County population, with the peak coming during the early operation stages. The impact of construction, though slight and temporary in absolute terms, is likely to be felt as only one part of a rapid general development in the area.

Table 4.10. Anticipated Peak Employment

	October, year 2		July, year 3		Years 4-9	
	old est.	revised	old est.	revised	old est.	revised
Mill Construction	228	170	276	170		
Mill Operation	25		70		70	70
Mining	100	70	400	150	800	400
Total	353	240	746	320	870	470

Source: ER, Table 4.1.1; Stuart/Nichols Associates, Impact Analysis Converse County, Wyoming, 1978-1985.

Table 4.11 Anticipated Population Increase

	October, year 2 applicant's ^a CAPO's Multipliers		July, year 3 applicant's ^b CAPO's Multipliers		Years 4-9 applicant's ^b CAPO's Multipliers	
Mill Construction	243	375 ^c	243	375 ^c		
Mill Operation	-	-	-	-	288	192 ^d
Mining	192	440 ^d	493	943 ^d	1646	2515 ^d
Total	435	815	736	1318	1934	2707

^aThis figure was calculated with the assumptions that (1) 50% of the total construction work force relocated, (2) 60% of all the relocating workers brought families with an average family size of 3.7, (3) there was an induced work force multiplier of 0.3, and (4) 30% of the induced work force relocated.

^bThis figure was calculated with the assumptions that (1) 75% of the operation workers relocated, (2) 90% brought families, (3) induced work force multipliers were 1.0 for 1978, 1.2 for 1979, and 1.4 for 1970-1985, (4) 30% of the induced work force relocated, and (5) 60% of the induced work force brought families.

^cCAPO assumes .25 service sector employees per construction worker and additional multiplier of 2.0.

^dCAPO assumes 1.5 service sector employees per permanent worker and an additional multiplier of 2.5.

Sources: ER Table 4.1-1, CAPO.

Table 4.12. Anticipated Distribution of New Population*

	1982 (Year 2)	1983 (Year 3)	1984-1990 (Years 5-9)
Town of Douglas	165-310	280-501	735-1029
Town of Glenrock	117-220	199-356	522- 731
Unincorporated Converse County	22- 41	37- 66	97- 135
Subtotal (Converse County)	300-563	516-923	1354-1895
City of Casper	109-204	184-330	484- 677
Unincorporated Natrona County	22- 41	37- 66	97- 135
Subtotal (Natrona County)	131-245	221-369	581- 812
TOTAL	435-815	736-1318	1934-2707

*Low estimate based on applicant's multiplier, high estimate based on CAPO multiplier.

4.8.2 Social organization.

Housing

At the projected rate of development, sufficient subdivision capacity is currently available to meet the housing needs. Although construction may at times lag behind demand, the problem will not be acute unless a number of large construction projects (including the proposed Panhandle Eastern Coal Gasification Project) take place at the same time. Of and by itself, the construction and operation of the mill will have a minor impact on the housing market. However, given the high probability of an increase in Kerr-McGee mining activity in order to supply the mill with ore, the stress on the housing sector will be several times greater.

Water and sewer

Both the Douglas and Glenrock systems are inadequate to meet expected demand resulting from population growth. The water and sewer systems are being improved (Sect. 2.r.2.1), but new capacity will lag behind demand for the near future.

Educational facilities

The Douglas school system is currently at or over capacity, and the Glenrock system has *excess* capacity only at the elementary school level (Table 2.10). Although both systems are *under-*going expansion, overcrowding may occur during the rapid population growth periods while *the* school expansion programs are taking place.

Health and Social Services

Project-related population increase will put additional stress on existing health and social services. However, the expansion of the hospital and the provision for additional health services by the county (including public health nurses) indicates that orderly development is likely. Of primary concern is the need to develop additional, more specialized forms of health and social services appropriate to Converse County's growing population and changed economic status, such as day care centers.

Fire and Police

At the current rate of development and with the current zoning policy, police and fire protection are being expanded. It would appear that additional demands caused by the project would be dealt with within this pattern of expansion.

4.8.3. Political Organization

The proposed project will contribute to the generally increased demands for government and public services, in numbers, professionalization, and specialization of function. It will reinforce the power shift from agricultural to energy interests presently occurring in Converse County. A Joint Powers Board, consisting of Converse County and the towns of Douglas and Glenrock, has been formed. Its generic function is to smooth the transfer of taxes collected on the energy and mineral base of this county to meet the needs generated by the additional population which are felt in the towns. The proposed project may, in addition, contribute to demand for town development in the northern part of Converse County, around the village of Bill.

4.8.4 Economic organization

Income

During the 23-month construction period, approximately \$9.5 million in direct wages will be paid to construction workers (based on an assumed average salary of \$27,950 per person). Mill operation will have an estimated annual payroll of \$1.96 million annually, with associated mining payrols of \$15.34 million annually (including fringe benefits estimated to be 30% of wage payments). These payrolls will add to the trend toward overall higher incomes for area residents.

Tax revenue

Based upon the current tax structure and tax rates for Converse County, the applicant has calculated direct tax payments for each year of construction and for full operation of the project. Table 4.13 shows these direct payments to the various county tax jurisdictions, adjusted for inflation and assuming year 1 to be 1981. Wyoming and its counties levy a severance tax on uranium, with the state assessing 5.5% of the ore's value and the county 6%. Based on mill startup for the last quarter of 1982, and assuming the processing of 2250 tons of ore per day for 85 days during the quarter and an assessed ore value of \$32.50 per ton, the severance tax for the last quarter of 1982 alone will be \$338,704 for the State and \$369,495 for Converse County.³⁰ Extrapolating those figures to estimate the expected annual operation of the mill (340 days per year, 2250 tons per day), the State would receive over \$1,350,000 a year, and Converse County would receive over \$1,450,000 annually. In addition,

4.8.4

other sales and use taxes will accrue to the State and to Converse County. Clearly, after operation of the mill has started, the direct taxes alone to Converse County will be substantial. Table 4.14 summarizes additional direct and indirect tax benefits to the county and State resulting from the project and its related population.

Public expenditures

The applicant has estimated the annual governmental costs due to project-related population for Douglas, Glenrock, Converse County, and for the school districts. These costs are based on anticipated expenses, population estimates for the government costs, and on 1975-1976 school expenditures. Table 4.15 summarizes the project-related costs to the local governments and school districts. These cost estimates do not necessarily reflect the higher cost for services that usually result when rapid population growth exceeds the capacity of existing community services.

Projections of costs and benefits of a specific project, especially in an area undergoing rapid growth in population due to a variety of projects, will be subject to many uncertainties. However, based on relevant references and the applicant's projections of costs and revenues within Converse County, it is clear that adverse impacts on area public budgets will probably result from rapid growth. These impacts will occur principally during the construction phase of the project, which may coincide with population expansion due to other projects as well. These impacts are the result of (1) the time lag between the need for services due to new population and the increased revenues from the projects and their direct and induced work force and (2) possible mismatches between the particular jurisdictions who benefit from the taxes and the jurisdictions that incur costs

4.8.4

for expanded services

Because of the uncertainties caused by the various possible growth rates between now and 1990 and by a variety of possible actions by local and State officials, the severity of public-service-finance impacts -- along with Kerr-McGee's specific contribution to these impacts -- is difficult to quantify. It is probable, however, that the greatest impacts will occur (and are already occurring) in the educational system, in the water and sewer capacity, and with respect to cultural amenities. These impacts will continue to occur regardless of whether the Kerr-McGee project is built, although the project will have an effect on the severity and duration of these impacts.

Table 4.13. Direct tax payments by Kerr-McGee to Converse County

Jurisdiction	Year 1	Year 2	Year 3
School district	\$80,182	\$195,566	\$203,210
County general fund	13,768	33,580	34,892
Weed and pest control district	478	1,165	1,210
Total	\$94,428	\$230,311	\$239,312

Source: W. J. Shelley, Kerr-McGee, letter to Frank Lomax, NRC, Nov. 18, 1977, revised for inflation.

Table 4.14. Estimated major annual project related indirect taxes.

Tax	Dollars
Personal income (project-related personnel)	
Mill	469,800
Mining	3,769,000
Property (project-related personnel)	
Mill	99,800
Mining	809,800
Sales (3% of retail sales)	
Mill	37,700
Mining	291,000
Total (indirect taxes)	5,537,100

Source: ER, Table 8.1-4, revised for inflation and new work-force estimates (medium estimate).

Table 4.15. Estimated annual project-related external costs

Costs	Dollars
Mill-related	
Douglas	27,800
Glenrock	10,000
Converse County	28,500
Converse school district 1	100,300
Converse school district 2	28,200
Subtotal	194,800
Mining-related	
Douglas	239,400
Glenrock	87,400
Converse County	248,300
Converse school district 1	887,500
Converse school district 2	257,700
Subtotal	1,720,500
Total	1,915,300

Source: ER, Table 8.2-6, revised for inflation and new work-force estimates (middle estimate).

4.8.5 Sources of Impact Mitigation

Wyoming Joint Powers Act. This act expands the power of counties to aid communities in providing public facilities. The act permits the transfer of funds from the county level to the community level for joint projects of mutual benefit. For example, a joint powers agreement could be arranged to share the county tax base with a local community to plan, finance, and operate water, sewer, and waste disposal systems; recreation; police and fire protection; and transportation. A joint powers board may be organized to finance the facilities and may issue revenue bonds paid by revenue from the joint entities. In addition, the Wyoming Farm Loan Board may loan money to the joint agencies. The total amount of the loan cannot exceed 20 million dollars nor can the repayment period exceed 40 years. Such a board consisting of Converse County, Douglas, and Glenrock presently exists.

Wyoming Community Development Authority. This state authority can issue up to \$100 million in tax free general purpose revenue bonds. The proceeds are used to finance housing and a wide variety of public facilities. The authority is enabled to provide or loan money for civic projects such as water and sewer systems, roads, storm sewers and lighting, schools, airports, hospitals, recreation facilities, and public housing. Housing may be provided through a mortgage purchase or a "loan to lender" program.

Severance tax trust fund for impact assistance. Two percent of the revenues collected by the state from severance taxes on uranium are allocated to the Wyoming Mineral Trust Fund. These funds are

administered by the Wyoming Farm Loan Board and may be loaned to communities impacted by mining activities. The revenues are collected via a coal and uranium privilege tax and may be used to assist in financing public water, sewer, and transportation projects which are directly or indirectly impacted by production of coal and uranium. This money can also be used to match federal funds and can be pledged to support borrowed funds.

Optional local sales tax. Wyoming has a three percent sales tax. One percent of this tax is returned to the cities and counties where the sale was made. Counties can vote an additional one percent sales tax which goes directly to the place of sale. The optional sales tax must be passed county-wide. Voter approval is for two years and must be voted on again to continue for an additional two years. Converse County is currently participating in this local sales tax option.

Supplemental state school aid. Revenues distributed to school districts via the School Foundation Act are based on a complex formula concerned primarily with average daily attendance. Attendance is recorded on the 60th day of school and on February 1. Supplemental school foundation revenues may be available to school districts if the 60th day enrollment is up 10 percent over the previous year or February enrollment is up 15 percent over the previous year.

In cases where school enrollment is increasing but assessed valuation is rising at a faster rate, the state legislature may decide not to allocate additional funds to the school district. In school districts where enrollment has increased more rapidly than assessed valuation, additional monies are granted.

In addition to the state school foundation program, the Wyoming supplemental school aid program provides revenues to school districts whose average assessed valuation per classroom is significantly lower than the state average.

Kerr-McGee is an active member of the Converse County Industrial Association comprised of representatives from Burlington Northern Railroad, Rocky Mountain Energy, Panhandle Eastern Pipeline Co., United Nuclear, Pacific Power and Light, Mountain Fuel Supply Co., and Exxon USA. The association provides yearly employment projections. Some of its members have provided limited technical assistance to governmental entities. No money has been advanced.

The Wyoming Industrial Siting Council may, as a condition of granting a siting permit, require the applicant to provide immediate resources to mitigate some impacts clearly attributable to the project. Typical requirements are the construction of housing and the provision of transportation for employees from residential areas to the job site. The council will determine any such requirements when it acts on Kerr-McGee's application.

Several current impact-mitigation programs are in operation to which Kerr-McGee does have access -- but has not utilized to date. These include those of the State Farm Loan Board, several programs administered by DEPAD -- including HUD 701, EDA 304 and 302, and those of the Old West Regional Commission. The State Planning Office is prepared to aid the applicant in locating and applying for these and other impact mitigation funds.

Conclusion

Converse County is currently undergoing rapid population growth due to a variety of energy-related projects. The area is already experiencing the effects of rapidly increasing demand on public and private goods and services -- some of which are inadequate to meet current demands. Because of the uncertainties surrounding the various possible growth rates, the severity of the impacts, as well as Kerr-McGee's specific contribution to these impacts, outcomes are difficult to quantify. These impacts are occurring and will continue to occur regardless of whether the Kerr-McGee project is built, although the project will have an effect on the severity and duration of these impacts.

There are a number of general considerations which bear upon the Kerr-McGee mill and the environment in which it operates. First there is the interdependence of milling and mining. The mill becomes viable to Kerr-McGee only when its mines are producing an adequate quantity of ore. Without a reasonable level of production, the present arrangement of contracting with others to mill the products of its mines is a reasonable option. Thus, concurrent with mill startup, it would be reasonable to anticipate increased mining activity by Kerr-McGee on the permit area, thus intensifying the impacts of all types.

Second, Kerr-McGee is one (presently one of the smallest) of a number of energy-related firms operating in Converse County. The development plans of these firms are typically uncertain, and will amplify or attenuate the sorts of impacts discussed above. It can be said with some assurance that Converse County and the State of Wyoming are "on top of the situation" and, generally,

can handle the current growth rate. The Kerr-McGee projects have been carefully monitored by the State Department of Environmental Quality, the Industrial Siting Commission, the Converse Area Planning Office, and others. However, concurrent startup of a number of pending projects -- especially the Panhandle Eastern Coal Gasification facility, proposed since 1974 -- would seriously tax local resources and create a true "boom town" situation. The obvious message is to coordinate, insofar as possible, the startup of the various major pending projects, of which the Kerr-McGee mill is one.

Third, Converse County is doing quite well at providing basic services and amenities by expanding those already in existence. Its performance is weaker, however, in the development of services new to the area such as day care and major shopping. Impact mitigation would be more effective if periodic steps were taken to determine which new services and amenities should be developed at a particular phase of area development.

Finally, the long term impacts of energy development are only now beginning to be addressed. Non-renewable resources such as uranium do not last forever. Three possible scenarios after the non-renewable resources are gone may be advanced. The first, which is highly unlikely because of local concern, is that of a desolate area with no economic base, unable to return to farming and ranching activities because of a lack of environmental restoration. The second, perhaps implicitly envisioned by many, is a restoration of the environment to its former state, with the continuation of farming and grazing. The third, possibly the one least often considered, is to use the energy boom to develop a diverse and balanced economy. There is little evidence that this last prospect is seriously being considered, since those involved have focused on short-run needs.

Social, Economic, and Institutional Components
of the Draft Environmental Impact Statement of
the Proposed Expansion of the Federal-American
Partners Uranium Mill, Fremont County, Wyoming

August, 1980

Frederick A. Rossini

and

Jay A. Weinstein

with the assistance of Morris Mitzner
Technology and Science Policy Program
School of Social Sceinces
Georgia Institute of Technology
Atlanta, Georgia 30332
(404-894-3195)

INTRODUCTION

This report consists of the social, economic, and institutional components of the draft Environmental Impact Statement of the Federal American Partners Uranium Mill in the Gas Hills District of Fremont County, Wyoming.

The mill is located in the south half of Section 28 and the north half of Section 33 of Township 33 north, range 90 west of the 6th principal meridian, Puddle Springs Quadrangle, Fremont County, Wyoming. It is approximately 80 kilometers or 50 miles east of Riverton via state highway 136 (Environmental Report, FAP Uranium Mill, 1979, 2-1). Since most of the employees currently reside in the Riverton area or in the FAP village (located about 0.8 km or .5 miles from the mill site (ER 2-1), the discussion of social, economic, and institutional conditions and impacts will focus on the situation in Fremont County and Riverton (See Map 1).

(Map 1 here)

The proposed action consists of mill expansion from an ore capacity of 950 metric tons per day to 2,950 metric tons per day, approximately a three-fold increase, and a modification of the tailings disposal system (presentation at Scoping Meeting, Ken Wright, FAP, 2-13-80). It is anticipated that construction phase employment will be 100 from June 1981 to November 1982 (communication from Kaiser Engineers for FAP, May 1980), and that the milling operations which will begin in November 1982 will require an additional 20 employees (ER 8-1).

This report focuses on the impacts of mill expansion. However, the effects of relocating the population of the FAP village consisting of about 100 dwelling units with a population of 350, which will occur over the next year are significant. This relocation of employee residences will combine with the impacts caused by the

expansion of the mill itself.

The body of the report is divided into seven sections. The first several sections consider the current state and projected future of the area's demography, facilities, economic base, land use, and other relevant conditions. The Impacts Sections cover the effects of the proposed development. The final section presents conclusions and general observations.

1. DEMOGRAPHIC CHARACTERISTICS

1.1 DESCRIPTION OF IMPACTED AREA

Within a 25-mile radius of the site, settlement is sparse. Nighttime population in the immediate vicinity -- i.e., residents of surrounding ranches and the FAP and Lucky Uranium Corporation company villages -- does not exceed 850 (approximately 350 of whom reside at the site; see Splitrock EIS, 2-5), with a density of less than 3 persons per square mile. Towns within a fifty-mile radius include Hiland, Waltman, and Powder River in northwest Natrona County, Moneta, Shoshone, and Splitrock in Fremont County, and the cities of Riverton and Jeffrey City (also in Fremont). Although the site is located near the Fremont-Natrona County line and about 25 miles from the Carbon County line, the principal area impacted is Riverton and its environs in Fremont County. The impacted area also includes the county seat, Lander. Lander is approximately seventy miles from the site, but it is a principal administrative center and contains tertiary medical facilities and other services.

Daytime population in the immediate area is relatively large because of the high concentration of mines and mills. Table 1 indicates that seven uranium mines and four or five related mills lie within a 50-mile radius of the site.

(Table 1 here)

Other types of mining and a few scattered ranches contribute to the daily patterns of commuting and activity within the area. Nevertheless, commercial facilities, housing, social services, and schools (other than the Gas Hills Elementary) are not present within a 25-mile radius. Most of the demand for such services by FAP employees (and employees of the other companies) is met in Riverton and other parts of Fremont County.

State Highway 136 to Riverton is accessible from the site year-round. An unpaved road, maintained by the county, connects the site with Jeffrey City. This road is reported (by FAP) to be in good condition.

1.2 RECENT POPULATION HISTORY: FREMONT COUNTY

The 1980 population size of Fremont County is estimated at 40,500 (see Table 2), representing an average annual rate of increase of over 4.3 percent since 1970.

(Table 2 here)

This decadal rate is the highest in recent history, exceeding the rapid growth between 1950 and 1960 (3.36 percent per year; see Figure 1).

(Figure 1 here)

The greatest annual growth occurred between 1977 and 1978 (10 percent).

Current estimates and projections indicate a very recent slowing of growth. Between 1979 and 1980, growth was about 4.0 percent (the smallest increase of the decade and 0.3 percent below the mean). These and alternate assumptions are incorporated in the range of projections in Tables 5-7.

According to recent estimates, the County is more than 54 percent urban (i.e., living in places with population greater than 2500), with over 25 percent of the County's population in Riverton. The urbanization rate has probably decreased slightly since 1970, as has Riverton's share of the County's total population (from 28 percent).

The County's three cities, Riverton, Lander, and Jeffrey City, have grown at 3.9 percent per year since 1970. Lander has had the slowest growth with 1.7 percent. Estimates of the 1980 population sizes of these cities are 10,500, 8300, and 3100, respectively.

As shown in Table 3, approximately 13 percent of the County's population is preschool age. A slight increase has been projected for this age category.

(Table 3 here)

The age 65 and over segment accounts for a little over 7 percent of the total. An increase has also been projected for this category. In general, the age structure of the population has been relatively stable during the past few years. The greatest changes have occurred in the 14-18 and 19-22 cohorts (both have decreased). This suggests that without increments due to migration, the group entering the labor force during the eighties will be somewhat smaller than in the recent past. The sex ratio in the County appears to be stable, at about 98 men per 100 women.

1.3 CURRENT AND PROJECTED LABOR FORCE CHARACTERISTICS

The labor force of Fremont County nearly doubled in size between 1962 and 1980. Currently, 46 percent of the total population is employed in one of the sectors shown in Table 4. Considerable growth has occurred in services and government; these increased by 420 and 138 percent respectively between 1962 and 1980, and by 74.6 and 45.8 percent between 1977 and 1980. Mining, however, remains the largest employer in the county. Current estimates show well over 4000 workers in mining, or nearly one quarter of the work force. In addition, growth in the mining sector is second only to services, with an increase of over 145 percent between 1962 and 1980 and 54.6 percent between 1977 and 1980 (see Table 4A).

(Tables 4 and 4A here)

Agriculture, which accounted for nearly the same proportion of the labor force as mining in 1962, was only the fourth largest employer in the County in 1980. The decrease between 1962 and 1978 averaged about 3 percent per year, although current estimates show no losses between 1978 and 1980. The past twenty years has seen a steady shift in the economy of the County from a rural one of mixed agriculture and mining to an urban one of mining and associated services (including wholesale and retail trade).

Construction was at a peak in the early 1960s and then experienced a sharp drop. Since the mid-seventies, its proportion of the labor force has generally increased. The early 1980s is expected to see increases at about 4.2 percent, but the 1962 level of activity is unlikely to be reached in the near future.

1.4 POPULATION PROJECTIONS: FREMONT COUNTY, RIVERTON, AND LANDER

Table 5 contains a range of population projections for Fremont County provided by various sources. The projections in Column A are generally agreed to be outdated, and those in Column B are observed to be low. The projections in columns D through G are are credible. Because of their recency, we recommend columns E and G as most realistic. In any case, these projections should be revised upon publication of the 1980 census enumeration results.

(Table 5 here)

In Column E, projected growth between 1980 and 1985 is 18 percent or about 3.6 percent per year. This assumes a continuation of the decline in growth rates that began in 1978. In Column G, 20 percent growth (4.0 percent per year) is projected -- based on the assumption that the 1979-1980 growth rate remains constant for the five succeeding years. Projections to 1990 indicate

a population size in excess of 56,000, assuming that growth rates continue to decline (to 3.46 in the 1985-90 interval). If we assume a 4.0 average annual growth rate, the projected 1990 size exceeds 60,000.

Based upon these projections, it is likely that approximately 16,000 persons will be added to the population of Fremont County in the next ten years. According to the age structure estimates in Table 3, as much as 87.5 percent of this projected growth will be due to migration (i.e., assuming a rate of natural increase of 0.57 percent per year).

Table 6 shows a range of projections for Lander and Riverton. The projections in Column C for Lander and E for Riverton are the most credible, for

(Table 6 here)

reasons stated above (note that Columns E and F are quite close). Lander is expected to grow at an average annual rate of 4.19 percent in the next ten years, more rapidly than Riverton and the County as a whole. This is a reversal of recent trends. The County Land Use Plan projects similar growth (about 4.0 percent per year) for Jeffrey City with medium estimates of 3740 and 4375 for 1985 and 1990 respectively. Riverton's growth is projected at about 3.3 percent per year, about the same annual average as in the 1970-1980 interval.

The most likely reason for these assumptions can be found in the projected employment breakdown in Table 7. While mining activity is expected to increase

(Table 7 here)

by about 34 percent in the 1970-1980 decade, the number employed in services is expected to double. Thus, the shift in economic activity of the past twenty years is anticipated to continue, with even greater proportions of the labor force found in white-collar occupations. Lander, the service and administrative center of the County, would, thus, grow more rapidly than Riverton, the mining center. Despite these trends, mining will continue to be the principal employer in the County at the end of the decade.

2. CURRENT FACILITIES AND PROJECTED NEEDS

This section discusses the current state of facilities and amenities necessary for human habitation and group living in the Fremont County and especially Riverton, Wyoming. It also discusses additional needs for these facilities and amenities during the next several years without considering any impacts of the proposed FAP uranium mill enlargement.

2.1 WATER AND SEWER - RIVERTON (Impact Analysis, Riverton, Wy., Stuart/Nichols Associates, 1979; letter of Wm. A. Peterson, Jr., Riverton City Administrator, 12-26-79).

Riverton's water supply comes from a number of wells in the city. Construction has begun on a four-million gallon treatment facility which will be completed in September 1980.

A major problem facing Riverton is the inadequacy of its sewer collection and treatment. The current trickling system, designed for treating 1.5 million gallons per day, is treating 4 million gallons per day, and its effluent is not meeting EPA standards. Riverton has recovered a STEP I grant, under the Clean Water Act, to construct a new treatment facility. The facility will cost about \$10.5 million of which the city will have to raise \$2.5 million. It is estimated that the system will be operational in 1983. Because of its lack of sewage treatment capacity, the city has been forced to declare a moratorium on new subdivision development pending the development of sanitary sewer facilities.

2.2 HEALTH CARE (Impact Analysis, Fremont County, Wy., Stuart/Nichols Associates, 1979)

There are approximately 19 physicians, 11 dentists, and 4 optometrists in the Riverton area. Health facilities include Memorial Hospital in Riverton with 56 beds and an occupancy rate of about 75%. A survey of future needs determined

that an additional 35 beds will be needed by 1985 in the Fremont County hospitals in addition to any other remodeling and capital investments.

Fremont County also supports a public health nursing service which provides immunization clinics, adult health maintenance clinics, maternal-child health service, and home health care.

2.3 PUBLIC SAFETY AND EMERGENCY SERVICES (Impact Analysis, Riverton, Wy.; Impact Analysis, Fremont County, Wy.)

Police services are provided by the Fremont County Sheriff's Office and the Riverton Police Department. The Sheriff's Department has roughly 0.5 officers per 1000 county residents, somewhat below the average of about 0.75 officers per county residents for other energy impact counties in Wyoming. The department has not had enough officers to provide 24 hour service from its five service bases. It is estimated that the maintenance of 0.65 officers per 1000 residents should be an adequate standard. This would require additional personnel and expense during the next several years. Additional personnel and real budget increases of about 10% per annum are also projected for the Riverton Police Department.

Fire Protection services are voluntary. Rural fire protection is the responsibility of the Rural Fire District, which is separate from the county government. In Riverton, protection is provided by the Riverton Volunteer Fire Department. Both services will have to continue to grow to deal with the growth of Fremont County and Riverton.

Ambulance service is provided by Fremont County Ambulance Service which uses both professional staff and volunteers. Most of its revenue comes from the fees for service, although there is a limited county subsidy. As is the case with other services, demand for the ambulance service should rise as population increases.

2.4 EDUCATION (Impact Analysis, Fremont County School District 25, Stuart/Nichols Associates, 1979; Letter of Wm. A. Peterson, Jr., Riverton City Administrator, 12-26-79).

Fremont County School District No. 25 provides elementary and secondary education for Riverton and surrounding areas. It includes portions of the Gas Hills where the FAP mill is located. The District operates five elementary schools, one of which is in the Gas Hills, one Junior High (7-9), one Senior High (10-12), and an alternative school. Current facilities are badly overcrowded and only spot openings in specific grades are available. The district currently has four portable classroom units in use, and class sizes are much larger than the recommended levels.

Current enrollment (Table 8) is 129 students (more than five classroom units) above last year's enrollment. Total certificated personnel is 206, giving a student/certificated-instructor ratio of 15.8 to 1. Because of the anticipated growth of Fremont County, this situation will continue. Projected enrollment to 1984-1985 is shown in Table 9.

(Tables 8 and 9 here)

Current and projected enrollments exert tremendous pressure on existing facilities, necessitating construction of new school facilities. Through bond issues and loans from the state, the district has raised funds for the construction of a high school with a capacity of 1000, which will be ready for occupancy in 1980-81. One wing of the existing high school will be preserved for use by junior high and elementary school students. It has been recommended that an additional elementary school with a capacity of 600 be constructed for occupancy in 1982-1983. It is believed that the district's debt capacity will be sufficient to finance the school by a bond issue.

The nearest colleges are Central Wyoming College in Riverton and Casper College in Casper, both of which offer two year associates-degree programs.

2.5 UTILITIES

Electricity for Riverton and Lander is provided by Pacific Power and Light; rural electricity by the Riverton Valley Electric Association; natural gas by Northern Utilities Gas Company; and telephone service by Mountain Bell.

2.6 RECREATION AND OTHER AMENITIES (Impact Analysis, Riverton, Wy.: Impact Analysis Fremont County, Wy.)

Public recreation opportunities in Fremont County and Riverton are somewhat limited. The Fremont County Recreation Board operates a single facility -- a 40 acre campground and public area near Jeffrey City. There are plans to expand and improve this facility with land obtained from the Bureau of Land Management. The board also owns a picnic area and boat ramps at Ocean Lake. This facility is operated by the State Fish and Game Department. Riverton currently operates four parks with a combined area of 23 acres. Developers are required to allocate open space for parks in planned unit developments, mobile home parks, and multi-family developments, but not in normal residential subdivisions. However, there is much interest in outdoor activities, such as hunting, fishing, hiking, and camping, which do not require fixed public facilities.

The Fremont County Library has 110,000 volumes dispersed at 11 locations. Services are limited to book loans, magazine subscriptions, and reference services. More modern audio-visual services cannot be added to present budget levels.

Fremont County operates three museums, located in Lander, Riverton, and Dubois. The major emphasis of these museums is pioneer history.

The Fremont County Fair is held at the County Fairgrounds each August. Other major events held at the Fairgrounds include Wyoming Rodeo Association Rodeos, High School and Little Britches Rodeo events, horseshows, professional wrestling, and rock music concerts.

2.7 HOUSING (Fremont County Land Use Plan, 1978; letter from Wm. A. Peterson, Jr., City Administrator, 12-26-79).

Construction in Fremont County has been rising steadily during the past decade. Table 10 is illustrative, showing building permits for Riverton during the 1970s.

(Table 10 here)

Riverton City Administrator Peterson notes that current development plans in existing subdivisions call for the construction of 200 housing units during the 1980 construction season along with various multi-family projects. Currently, the city of Riverton has been forced to declare a moratorium on new subdivision development pending the development of sanitary sewer facilities (see section 2.1 above).

By using the Fremont County Land Use Plan (Table 26 and 27), projections of additional housing requirements may be made based both on existing preferences (81% single family, 6% multi-family, 13% mobile homes), and on projected preferences (59% single family, 13% multi-family, 28% mobile homes; see Table 11).

(Table 11 here)

3 HISTORICAL AND ARCHAEOLOGICAL RESOURCES (ER 2-3,2-4)

The nearest landmark listed in the National Register of Historical Places is the Castle Garden Petroglyphs, which is located 16 km/10 miles north of the site. This site contains rock carvings and evidence of prehistoric habitation by Native Americans. There are no other known historic sites on or near the mill property. The mill site was reviewed by a TVA staff archaeologist and found to be suitable

for the project's development. A study prepared in 1976 by the Associate State Archaeologist found that "there are several archaeological sites in the general vicinity (of the property), but anything that may have been on the lands in question is now gone" (Environmental Report, 2.4).

4. TRANSPORTATION

The Riverton Regional Airport, with its 2.6 km/8000 ft. runway is served by Frontier Airlines. Railroad freight service is provided by the Chicago and North-western Railroad. Five carriers offer motor freight service. U.S. highway 26, state highway 789, and state highway 136 are the major roads to Riverton.

Access to the site is provided by state highway 136 which connects Riverton to the site. This road is a paved, two-lane, all-weather highway in good condition which runs within 1/4 mile of the site.

5. LAND USE

Most of eastern Fremont County is an arid region on which the principal activity has been ranching and the grazing of wildlife. While cattle ranching was the most important economic activity in the past, uranium-mining has become increasingly important. It now plays an important role in the land use in the Gas Hills where the FAP mill is located. Cattle Ranching is the only other significant economic activity.

The principal urban areas in Fremont County are Riverton, the largest town, and Lander, the county seat. The nearest large city is Casper in Natrona County, which is 50 miles east of the site.

Fremont County is largely owned by the federal government and Indian tribes. Only 13.5% of the land in the county is privately owned. Table 12 shows a breakdown of land ownership.

(Table 12 here)

The FAP mine and mill environs are owned 80% by the Bureau of Land Management, 10% by the State, and 10% privately. The site is about one square mile. The mill facilities take up 265 acres. There is considerable mining activity and no stock grazing within a five mile radius. There is limited grazing of stock within a 25-mile radius.

6. IMPACT ANALYSIS

6.1 TAXES AND INCOME

6.11 PROPERTY TAXES

FAP's estimate of construction costs for the mill expansion is \$25 million. This estimate leads to an assessed valuation of 6.25 million dollars and assuming a 72.72 mil rate, property tax payments of \$454,000 per year upon completion of the mill construction. (These estimates were provided by Scott Lorimer, FAP, on August 13, 1980.)

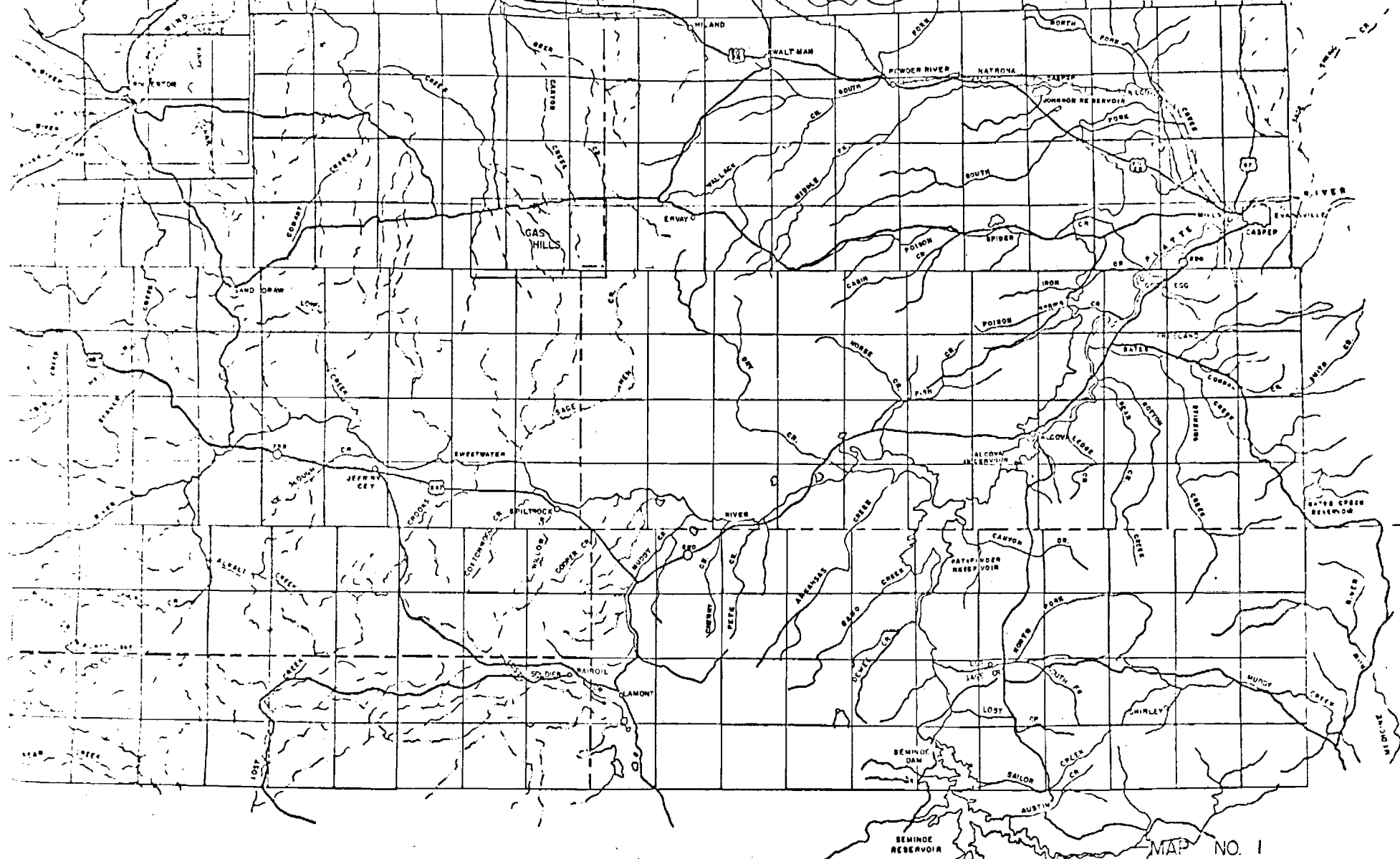
6.12 URANIUM SEVERENCE TAX

A uranium severence tax is collected by the state and county on all ore processed by the mill. The state rate is 5.5 percent, while Fremont County collects 7.105 percent (communication from Warren Bower, State of Wyoming Ad Valorem Tax Department, August 8, 1980). Based on information provided by FAP (communication from Scott Lorimer, August 13, 1980), the severence tax for the first three years of operation can be estimated based on the assumption of 300 operating days a year and a capacity of 2000 tons per day. Table 13 shows the estimates for property and severence taxes.

(Table 13 here)

6.13 SALARIES AND WAGES

FAP estimates that 100 workers will be involved in the construction phase and that there will be 20 permanent employees. Estimates were derived based on the following assumptions: (1) an average current wage rate of \$11.08 per hour (communication from Scott Lorimer, FAP, August 13, 1980), (2) the same wage rate for construction workers, (3) 75.0 percent of that rate for induced workers (largely in the



LEGEND

- CITIES, TOWNS, or VILLAGES
- CORPORATE BOUNDARY SHOWN FOR TOWNS OVER 2500 POPULATION
- 789 STATE HIGHWAYS
- 87 U.S. HIGHWAYS
- OTHER PRINCIPAL ROADS

FEDERAL AMERICAN PARTNERS

Title: Settlements in relation to the F&P Site

Property: _____

Mining District: GAS HILLS Sec. _____ T. _____ R. _____

State: Wyoming County: Fremont

Date Drawn: 1/1/75

Effective Date: 1/1/75

Drawn by G.S. and kkw Approved by _____

Scale: 1:500,000

service sector), and (4) an inflation rate of 10.0 percent per year. Table 14 shows the wages paid over the construction and start-up periods. Additional assumptions, including population estimates, are based on Table 15 and Section 6.3.

(Tables 14 and 15 here)

Wyoming has no state income tax. The state sales tax rate is 3.0 percent and Fremont County does not make use of the optional 1.0 percent local sales tax.

6.2 DISTRIBUTION OF TAX REVENUE

Some of the State's share of the severance tax is available for distribution for impact mitigation to communities needing such aid through the Wyoming Mineral Trust Fund, which is administered by the Wyoming Farm Loan Board. The major portion of property taxes and the county's share of the severance taxes go to the school district, which includes Riverton (Warren Bowen, Wyoming State Ad Valorem Tax Department, August 8, 1980). The other revenues go to the county general fund, for such specific needs as fire protection and weed and pest control. Impacts on Riverton can be dealt with by county funds. The county contributes to the city by direct request of the city Departments (e.g., sewage), for a percentage of yearly expenses (Ray Price, Fremont County Planning Department, August 8, 1980).

However, these substantial revenues will not begin to accrue until mill expansion is complete and refining underway. During the construction period, the county will receive only the additional property taxes paid directly or indirectly by the construction work force. Thus, the tax resources available for "front-end" impact mitigation will be slight compared to those which will ultimately appear.

6.3 POPULATION IMPACTS OF MILL EXPANSION

Since a large percentage of the projected growth in the area is assumed to be due to migration, it is likely that the population impacts of growth in the sectors most likely to attract migrants -- mining and service -- have been accounted for. Nevertheless, under the circumstances (especially an increase in the demand for nuclear fuel), future population growth directly or indirectly associated with increased mining activity in the County and in Riverton might be greater than the projections suggest. Increments due directly to the proposed mill expansion may have been taken into account in most recent projections, but these projections are subject to revision -- not only in light of the 1980 population reports, but also as demand and activity levels in mining and related sectors change.

Table 15 reports projected increments to the population between 1981 and 1983 (and after). According to FAP (Kaiser Engineers, Inc, May 1980), one hundred employees will be added for the construction phase and twenty employees will be added on a permanent basis.* Based on these assumptions and appropriate multipliers (Table 15, notes e, f, and g), a final total of 110 persons will be added to the population. This represents approximately 0.2 percent of the projected total for the County and about 1.0 percent of Riverton's projected total. At some point (here assumed to be November 1982), direct and indirect additions to the population will peak at over 360 or 0.8 percent of the county's total and about 3.6 percent of Riverton's. A final total of 20 school age children will be added as a result of mill operation, although at a peak, this could be as high as 80.

*We assume that 100 percent of the construction and permanent labor force required for Mill expansion will migrate to the impacted area. With a 2.0 percent unemployment rate in the County, this is not unreasonable. Based on growth projections, 87.5 percent would be a credible low estimate.

In general, the population impact of the proposed mill expansion will not be great, although a slight construction boom is likely. The Fremont Planning Office and other officials concur that such increases have generally been anticipated, although it is likely that the addition of temporary and permanent individuals at the peak period has been underestimated. Still, direct revenue from the expansion which could be used to mitigate the impacts will lag them.

On May 8, 1980, the Riverton Ranger reported that the FAP Company Village is to be closed. While this change does not add to the current workforce of the company or the impacted area, it does represent an increase in demand for housing and primary schools since "those living in the camp [i.e., Village] would have to move..., probably either to Riverton or Jeffrey City."

Presently, the village contains just over one hundred households in three types of housing: twenty permanent single-family units for company staff, a dormitory for single employees, and approximately ninety mobile homes. Based on the information provided by personnel at the site (February 13, 1980), the total population of the Village is 350; about 120 of the residents are employees.

All elementary school age children living in the Village attend Gas Hills Elementary School and all children in grades 7 and above attend school in Riverton. Thus, approximately 20 additional pupils will seek enrollment elsewhere upon closing of the Village.

Assuming a closing of the Village on September, 1980, housing for one hundred households and school space for twenty children will be required in the impact area. At present, no company employees reside in Jeffrey City. Thus, the largest share of this new demand will be felt in Riverton. Table 16 shows the total required housing and school demand for the 1980-1983 period, taking account of mill construction, operation, and the closing of the Village.

(Table 16 here)

These projections indicate a significant level of unanticipated growth -- i.e., as many as 198 new homes and space for 100 students may be required by November, 1982. This possibility should be taken into account seriously as projections are revised and impacts are monitored.

6.4' IMPACTS ON FACILITIES

Fremont County has been growing rapidly because of energy related developments. The area most impacted by the FAP Uranium Mill expansion plans is Riverton and its environs in eastern Fremont County. The three types of facilities most under strain here are sewage disposal, housing, and elementary and secondary education in Riverton.

In this situation, four separate but overlapping strains on the human ecosystem are anticipated. First, there is the dispersal of the estimated 350 persons resident in the FAP village to Riverton and environs. This dispersal will take approximately one year from May 1980 to May 1981. Second, there is the arrival and residence of the construction work force necessary to build the new FAP milling facility. The work force numbers 100 and will be employed from June 1981 to November 1982. Third, there are the additional operating employees necessary to staff the expanded mill, 20 in number, who will begin work about November 1982. Finally there is additional employment in the service sector induced by the permanent population increases that the mill expansion will cause.

The saturation of sewer facilities and the attendant limitation on new sewer connections in Riverton with its effect on new housing development mean that the FAP villagers will mostly move into temporary quarters, mobile homes, or developments away from Riverton, thereby adding to sprawl and straining public safety services. Further, the dispersal will tend to shift enrollment in K-6 in Fremont County School District 25 from Gas Hills Elementary, the only under-enrolled K-6 school in the district, to the saturated K-6 schools in

Riverton, accelerating the need for an additional elementary school in Riverton.

The somewhat temporary character of the construction work force could be better borne if it were not coupled in time with the Village dispersal.

By itself, the additional permanent workforce at the FAP mill will not significantly strain facilities. It should be noted, however, the the company has estimated that induced service sector employment will result only from the additional permanent, not construction, workforce. This suggests that projected population increments during the construction phase are underestimated here.

7. CONCLUSIONS AND GENERAL OBSERVATIONS

Of and by themselves, the construction and permanent operation of the FAP Uranium Mill expansion in Fremont County, Wyoming, are within the normal development pattern of this energy-rich county. However, the imminent dispersal of the company villages of FAP and other energy-related firms puts an additional strain on this developing human ecosystem which, prudence dictates, should be anticipated in conjunction with the mill expansion.

Although the site has a conscientious safety program, the present mill and equipment present potential hazards because of age. In addition, personal health and safety practices of employees (e.g., scrubbing after handling dangerous chemicals) are not as well monitored as they may be. The attitude of some toward these hazards may be too casual. These factors should be taken into account as construction plans and the safety procedures for the new mill are formulated.

Should there be any other major energy-related developments in the Riverton and Gas Hills areas, their coupling with Village dispersal and construction could exacerbate the situation. Any attempts at mitigating the impacts described above should consider the aggregate of energy-related developments in Riverton and Gas

Hills. At some point it may be necessary either to hasten the planned expansion (Impact Analysis, Fremont County, Wy.; Impact Analysis, Riverton, Wy.; Impact Analysis, Fremont County School District 25) in facilities and services, to moderate the rate of development, or to make some provision for limiting the lag in obtaining tax revenue from the project which may be used to mitigate project-generated impacts.

Table 1: Nuclear Fuel Cycle Facilities
within a 50-Mile Radius of the Site.

Uranium Mines	
1.	Federal-American Partners Gas Hills Mine
2.	Union Carbide West Gas Hills Mine
3.	Union Carbide East Gas Hills Mines
4.	Pathfinder Lucky Mc Mine
5.	Minerals Exploration Co. Sweetwater Mine
6.	Western Nuclear Inc. Crooks Gap Mines - Congo, Golden Goose II, Seismic, Reserve
7.	Pathfinder Big Eagle Mine
Uranium Mills	
8.	Federal-American Partners
9.	Union Carbide
10.	Pathfinder
11.	Western Nuclear Inc.
12.	Minerals Exploration (under construction)

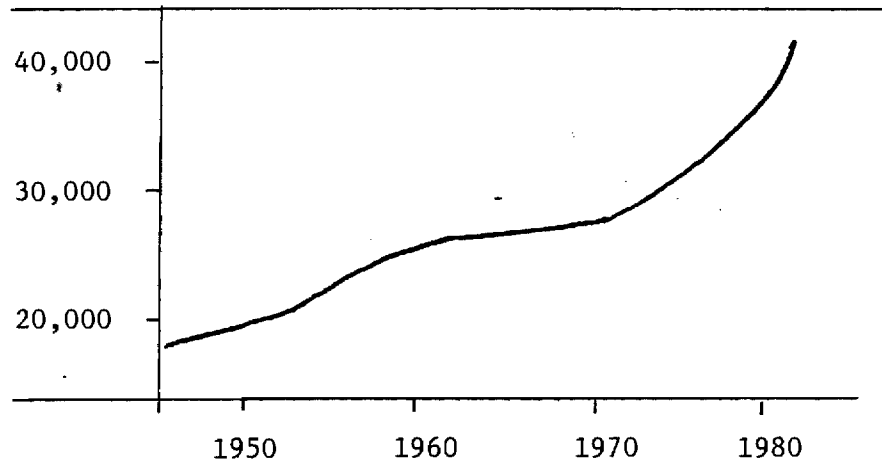
Source: Bison Basin EIS, Table 2.2.2

Table 2: Historical and Projected Population Data for
Freemont County, Riverton, and Lander, Wyoming.

Year	Fremont County	Riverton	Lander
1950 ^a	19580		
1960 ^a	26168		
1970 ^a	28352	7995	7125
1971 ^b	28982		
1972 ^b	29098		
1973 ^b	29204		
1974 ^b	30114		
1975 ^b	30804		
1976 ^b	32581		
1977	34732 ^c	9234 ^d	7667 ^d
1978	38226 ^c	10098 ^c	
1979	39009 ^c	10300 ^c	
1980 (Projectd)	40597 ^c	10573 ^e	8343 ^c

- Sources: a. Land Use Plan, Fremont County, 1978.
b. Wyoming Population and Employment
Forecast Report, Div. of Research and
Statistics, Cheyenne, June, 1978.
(estimates based on "backcasting"
procedures, in which a future base
derived from adjusted 1970 totals is
used to project back to intervening years).
c. William Peterson, Riverton City Administrator, 1979
d. Mrs. Catherine O'Brien, Population Dept., U.S.
Bureau of Census, Washington, D. C., October 16,
1979. See Bison Basin, E.S., Table 3.1.
e. Impact Analysis, Riverton. Stuart/Nichols
Associates, Denver, 1979.

Figure 1: Recent Population Growth, Fremont County



Source: Table 2.

Table 3: Age-Sex Structure of Population Projections.
Fremont County

	1978		1979		1980		1981	
	Number	%	Number	%	Number	%	Number	%
Preschool (0-5)								
Male	2498	6.51	2567	6.58	2691	6.63	2764	6.65
Female	2411	6.31	2477	6.35	2597	6.40	2667	6.42
6-13								
Male	3027	7.93	3090	7.92	3225	7.94	3333	8.02
Female	2981	7.57	2936	7.53	3078	7.58	3178	7.65
14-18								
Male	2020	5.29	1959	5.02	1963	4.84	1949	4.69
Female	1981	5.19	1948	4.99	1943	4.79	1923	4.63
19-22								
Male	942	2.47	979	2.51	990	2.44	946	2.28
Female	1135	2.97	1187	3.04	1209	2.98	1229	2.96
23-64								
Male	9071	23.76	9240	23.69	9658	23.79	9903	23.83
Female	9606	25.17	9862	25.28	10353	25.50	10666	25.66
65 and over								
Male	1214	3.18	1263	3.24	1318	3.25	1360	3.27
Female	1430	3.75	1501	3.85	1573	3.87	1644	3.96
TOTALS	38,172		39009		40598		41562	

Source: Wyoming Population and Employment Forecast Report, 1979,
Table 2.

Table 4: Employment Breakdown, Fremont County

	1962 ^a	1966 ^a	1972 ^a	1977 ^b	1978 ^b	1979 ^c	1980 ^c	1981 ^c
Agriculture	1629	1434	1378	1500(est)	1042	1042	1042	1042
Mining	1676	1540	1919	2644	3644	3811	4118	4204
Construction Manufacturing	1126	378	562	610	751	730	713	736
Transportation & Utilities	377	344	407	563	743	771	823	859
Trade (Retail & Wholesale)	1439	1331	1826	2246	2945	3046	3235	3367
Finance	169	167	209	266	318	326	342	353
Services	442	590	881	1317	2115	2159	2242	2300
Government	1350	1550	1820	2200(est)	3111	3134	3177	3207
Others					941	941	941	941
TOTALS	8514	7718	9420	11959	16081	16432	17107	17481

Sources: a. Land Use Plan, Fremont County, Table 18, p. 49.
b. Wyoming Population and Employment Forecast Report, 1979, Tables 3,4. (Backcast)
c. Wyoming Population and Employment Forecast Report, 1979, Tables 3, 4. (Forecast)

Table 4A: Mining and Construction as a Percentage of the Labor Force, 1962-81.

	1962	1967	1972	1977	1978	1979	1980	1981
Mining	19.7	19.8	20.4	22.1	22.66	23.19	24.07	24.05
Construction	12.78	4.89	6.08	5.1	4.67	4.44	4.17	4.21

Source: Table 4.

Table 5: Population Projections, Fremont County

Year	A	B	C	D	E	F	G
1980	33509	36197	39650	39651	40600	42386	44127
1981							45827
1982							47592
1983							51330
1984							
1985	36241	44641	45640	47948	47950	51255	52998
1990	38999	47860	52369	56248	56250	60127	

- Sources:
- A. Wyoming DPAD, 1976
 - B. Land Use Plan, Fremont County, Low Projection
 - C. Fremont County Planning Corp, 1978, Low Projection
 - D. Land Use Plan, Fremont County, Medium Projection
 - E. William Peterson, Riverton City Commissioner, 1979.
 - F. Land Use Plan, Fremont County, High Projection
 - G. Impact Analysis, Fremont County, Stuart/Nichols, 1979

Table 6: Population Projections (Lander and Riverton)

Year	Lander				Riverton					
	A	B	C	D	A	E	F	B	C	D
1980	8343	8960	8961	9579	10190	10610	10573	10940	10943	11670
1981							10853			
1982							11141			
1983							11437			
1984							11740			
1985	10088	10836	10840	11583	12321	12365	12015	12230	13234	14146
1990	11835	12710	12712	13588	14454			15520	15524	16596

- Sources:
- A. Land Use Plan, Fremont County, Low Projection
 - B. Fremont County Planning Commission, 1978
 - C. Land Use Plan, Fremont County, Medium Projection
 - D. Land Use Plan, Fremont County, High Projection
 - E. William Peterson, Riverton City Commissioner, 1979
 - F. Impact Analysis, Riverton, Stuart/Nichols, 1979

Table 7: Projected Employment, Fremont County

	1980	1985	1990
Agriculture	1545	1620	1695
Mining	2945	3447	3950
%	22.01	20.84	20.36
Construction	738	951	1165
%	5.51	5.75	6.01
Manufacturing	745	966	1187
Transportation & Utilities	630	743	855
Trade	2229	3000	3472
Finance	296	347	397
Services	1834	2697	3560
Government	2411	2763	3115
TOTALS	13382	16534	19396

Source: Land Use Plan, Fremont County, p. 51.

Note: 1980 totals are based on a projected population size of 39,651. Thus, 33.7 percent of the total population is estimated to be employed in these nine categories. According to the Wyoming Population and Employment Forecast, 1979, 17,107 persons of a total population of 40,598, or 42.2 percent, is estimated to be employed in its ten categories (see tables 3 and 4). This discrepancy is due both to differences in projection procedures and in the categories used. See the explanation on Land Use Plan, Fremont County, 1978, p. 50, and Wyoming Population and Employment Forecast, 1979, pp. 13-17. While the procedures used in the latter are more precise, they still may prove to be higher when compared with 1980 census totals.

Table 8: 1979-1980 Enrollment by Grade.

(Letter from Wm. A. Peterson, Jr., City Administrator, Riverton)

	<u>In City Schools</u>	<u>Gas Hills Elementary</u>
K	209	12
1	245	12
2	224	14
3	239	13
4	239	11
5	220	9
6	214	12
7	238	
8	248	
9	257	
10	244	
11	273	
12	227	
Alternative School	44	
Fixed Base Rooms (Spec. ED.)	50	
Total Enrollment	3,171	83

Table 9: Projected Enrollment, Fremont County School District 25

Attendance Area	80-81	81-82	82-83	83-84	84-85
Gas Hills:					
K-6	88	91	94	98	103
Riverton:					
K-6	1703	1734	1771	1809	2051
7-12	1608	1639	1671	1714	1937
TOTAL:	3398	3464	3529	3620	4091

Enrollment projections were calculated based on an analysis of historical enrollment data¹, cohort survival enrollment projections², population forecasts³, and available district enrollment estimates. Enrollment projections for Gas Hills. (25 percent increase between 1979-1980 and 1984-1985).

¹Wyoming Dept. of Education, Division of Planning, Evaluation and Information Services, "Statistical Report Series, No. 2," 1976, 1977, 1978.

²Wyoming Dept. of Education, "Cohort Survival Enrollment Projections," 1978.

³Fremont County Planning Office, "Population Projections," 1979.

Source: Stuart/Nichols, Associates, Impact Analysis, Fremont County School District No. 25, Denver, Co., 1979, as revised to reflect current enrollment information.

Table 10: Building Permits Issued by City of Riverton

	1970	71	72	73	74	75	76	77	78	79
Residential Housing (# of units both single and multiple)	62	70	97	57	58	52	83	75	105	185
Commercial Status	N/A	10	15	10	13	18	13	25	25	18

Table 11: 1990 Projected Additional Housing Needs, Fremont County, Wyoming*

Area Fremont County	Preferences	Housing Types			Total
		Single Family	Multi-Family	Mobile Homes	
Urban	Existing	3156	286	576	4018
Urban	Projected	2299	619	1241	4159
Rural	Existing	1626	147	297	2070
Rural	Projected	1184	319	639	2142
Total County	Existing	4782	433	873	6088
Total County	Projected	3483	938	1880	6301
Riverton	Existing	1124	102	205	1431
Riverton	Projected	819	221	442	1482

*Calculations based on Tables 26 and 27 of the Fremont County Land Use Plan, 1978.
 Figures do not include replacement of existing housing.

Table 12: Land Ownership and Control, Fremont County^a

	Hectares ^b	% of County Area
Private Lands	327,300	13.5
Shoshone and Arapaho tribes	623,246	27.4
Federal Lands		
Forest Land	396,820	16.4
Bureau of Land Management	848,900	35.1
Bureau of Reclamation	57,459	2.4
Other Agencies	<u>568</u>	<u>0.02</u>
Total Federal Lands	1,303,747	53.9
State and Local	105,450	4.4
Water surface	<u>18,106</u>	<u>0.8</u>
TOTAL AREA	2,377,849	100.0

^aSource: Fremont County Planning Commission, "Fremont County, Wyoming, Natural Resource and Land Use," 1975.

^bone hectare = 2.5 acres.

Table 13: Property and Severence Taxes

	Year of Operation		
	1	2	3
Property Tax ^a	\$ 454,000	\$ 454,000	\$ 454,000
Uranium Severence Tax ^b			
State (5.5%)	677,160	714,780	790,020
County (7.105%)	874,768	923,366	1,020,562
Total Severence Tax	1,551,928	1,638,146	1,810,582
TOTAL	\$2,005,928	\$2,092,146	\$2,264,582

- Sources:
- a. Assuming as assessed valuation of \$6.25 million and a millage rate of 72.72 (estimates from Scott Lorimer, FAP, August 13, 1980).
 - b. Uranium price estimates from Scott Lorimer, FAP, August 13, 1980. Assumes 300 operating days per year and 2000 tons per day.
 - c. Rate from Warren Bower, Wyoming State Ad Valorem Tax Department, August 8, 1980.

Table 14: Wages Related to Mill Expansion*

Work Periods: #	June 1981 to June 1982	June 1982 to November 1982	November 1982- November 1983
Construction Workers	\$2,535,104	\$ 697,154	\$ -----
Permanent Mill Employees	-----	-----	557,723
Induced Workers			284,439

*See Notes on Table 15 and Section 6.3 for alternative estimates of immigration which affect whether the wages paid are or are not in addition existing payrolls in Fremont County. #Assumes construction begins June 1981 and ends November 1982 and that mill operation begins November 1982. Source: Kaiser Engineers, Inc., May 28, 1980.

Table 15: Projected Population Increments due to Mill Expansion*

	Date ^a			
	June 1981	June 1982	Nov. 1982	After Nov. 1982
Employees				
Construction ^b	100	100	100	
Permanent ^c			20	20
Total Households ^d	78.1	78.1	93.7	15.6
Total Persons ^e	254.6	254.6	319.8	65.2
Induced Employment ^f			13.6	13.6
Total Direct and Indirect Population Added, ^{e,f}	255	255	364	110
School Age Population Added ^g	60	60	80	20.

a. Assumes that construction begins June 1981 and ends November 1982, and that mill operation begins November 1982. Source: Kaiser Engineers, Inc., May 28, 1980.

b. Kaiser Engineers, Inc., May 28, 1980.

c. Carol Tevepaugh, TVA, March, 1980.

d. Based on estimate 1.28 employees for household.

e. Based on estimated 3.26 persons per household.

f. A multiplier of 0.68 induced workers per permanent employee; Tevepaugh, 1980.

g. FAP provides an estimate of 0.6 school age children per employee. Table 3 indicates that approximately 24.0 percent of the population will be school age. The increments yielded with either algorithm agree closely. School age children of induced employees are included here.

*See note, Section 6.3. Under the assumption that 87.5 percent of the workforce added (direct or induced) migrates, the total indirect population added would be 223 between June 1981 and November 1982. It would peak at 319 and would be 96 after November 1982. Corresponding school age population added would be 53, 70, and 17.5.

Table 16: Population Increments due to Mill Activity and Village Closing.

	June 1981	June 1982	Nov. 1982	After Nov. 1982
No. of Households				
due to Mill Activity*	78	78	94	15.6
Induced Labor Force	0	0	4.1	4.1
Due to Village Closing	100	100	100	100
	<u>178</u>	<u>178</u>	<u>198</u>	<u>120</u>
No. of School Age Children				
Due to Mill Activity*	60	60	72	12
Induced Labor Force	0	0	8	8
Due to Village Closing	20	20	20	20
	<u>80</u>	<u>80</u>	<u>100</u>	<u>40</u>

*Assuming that the entire workforce migrates. See Table 13.