PART I
REGIONAL ANALYSIS

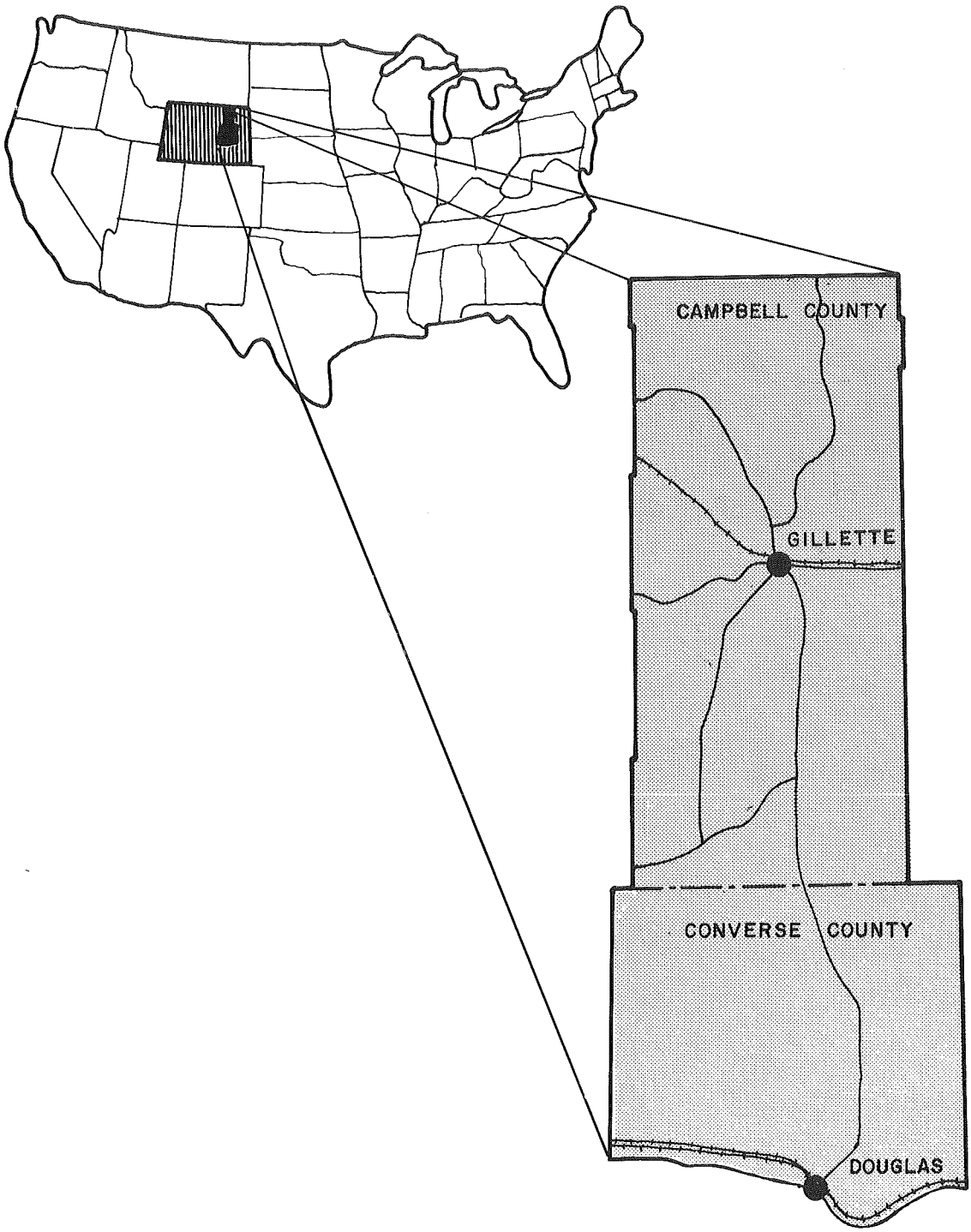

Figure 1
Basic Study Area Location Map.
(EASTERN POWDER RIVER COAL BASIN)

CHAPTER I

INTRODUCTION

Involved agencies of the Federal Government have pending before them several industry proposals (Map 3, Appendix A). The proposals are briefly outlined in this chapter to provide a perspective for analysis of regional impacts. Each proposal is the subject of a detailed analysis in Parts II, III, IV, V, and VI of this report. This chapter also includes a brief summary of the roles of the several involved federal agencies in authorizing proposed development actions.

Specific Applications

Railroad

Initially, Burlington Northern Inc. and Chicago and North Western Transportation Company planned separate rail lines to serve planned coal development in the Eastern Powder River Coal Basin. However, on January 31, 1974, the companies filed with the Interstate Commerce Commission a joint application to build one line from the present main line at Fisher and Shawnee (respectively 15 and 19 miles east of Douglas) to the vicinity of the present Amax coal mine about 15 miles southeast of Gillette. Total distance of mainline construction will be 113 miles; there will be additional spurs which are considered part of the respective mining operations. The proposed route crosses about 2 miles of land managed by the Bureau of Land Management, 21 miles of Forest Service managed lands, and 7 miles of land owned by the State of Wyoming. Rights-of-way must be filed with these agencies. The proposed route is shown on Map 3, Appendix A.

Atlantic Richfield Company

The Atlantic Richfield Company has submitted to the Geological Survey mining and reclamation plans detailing its proposal to open a conventional surface coal mine on federal coal lease W-2313 about 40 miles south of Gillette (Figure 2). The company plans to start production in 1975 and to ship the coal to electric utilities in Nebraska, Oklahoma, and Texas. Ownership in acres of the lease area is shown below.

	Surface	Coal
United States	3844*	5884
State of Wyoming	640	640
Private	2040	0
Total	6524	6524

*Forest Service

Target production for the mine, to be known as the Black Thunder mine, is 10 million tons per year by 1979. This could be doubled by opening a second operating area at the mine.

Carter Oil Company

Carter Oil Company has also submitted mining and reclamation plans detailing its proposal to open a conventional surface coal mine on federal coal lease W-5036 about eight miles north of Gillette. Production at this mine, the North Rawhide mine, is scheduled to begin in 1976 and rise to five million tons per year by 1978. Present plans are for a full production of 11 million tons. Coal will be exported from the basin to the Michigan-Indiana Power Company. Ownership of this mine area is as follows:

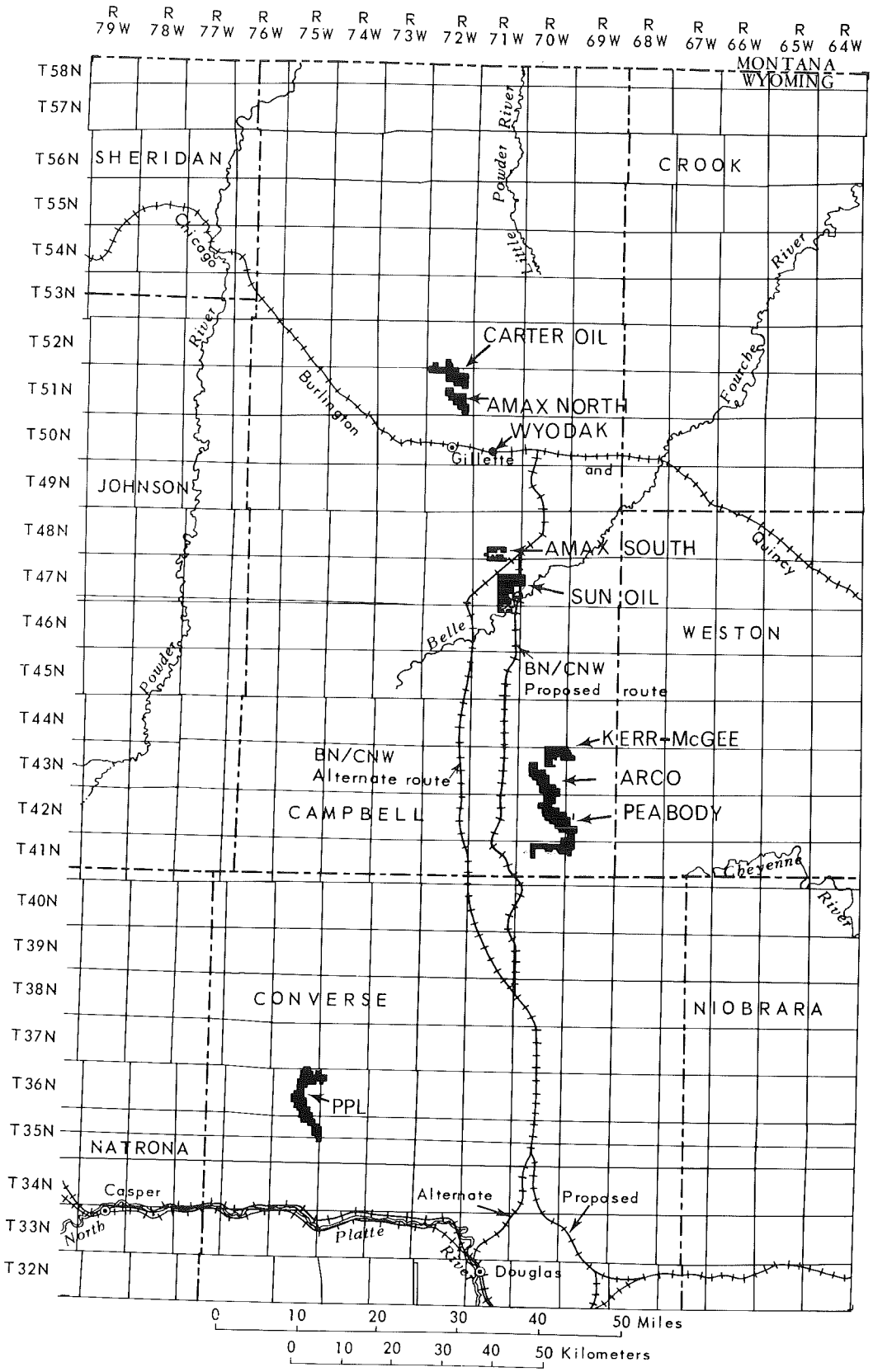

Figure 2

Index Map Showing Locations of Some Federal Coal Leases in the Eastern Powder River Basin, Wyoming

	Surface	Coal
United States	40*	5417
Carter	960	0
Other private	4457	40
Total	5457	5457

*Bureau of Land Management

Kerr-McGee Corporation

Mining and reclamation plans submitted by Kerr-McGee Corporation set forth its plans to develop a conventional surface coal mine on federal leases W-23928 and W-24710 about 40 miles to the south and east of Gillette. This mine, the Jacobs Ranch mine, will produce 15.9 million tons per year by 1982. Beginning in 1977, coal will be shipped to Arkansas and Louisiana for production of electric power. An accelerated schedule, contingent on completion of the railroad, calls for delivery of two million tons in 1976. Lease area ownership in acres is shown below.

	Surface	Coal
United States	640*	4352
Kerr-McGee	3712	0
Total	4352	4352

*Forest Service

Wyodak Resources Development Corp.

Wyodak Resources Development Corp. has submitted plans to expand its present mining operation about five miles east of Gillette on U.S. Highway 14-16. The company plans to commence operations on federal coal lease W-073289. The Wyodak mine is a conventional surface mine. Production last year was 725,000 tons; this will be expanded to five million tons by 1982. About 1.5

million tons of this will be burned in a new power plant to be built at the site and to go on line in 1977. Most of the balance will be consumed elsewhere in the Black Hills region. Mine area ownership in acres is shown below.

	Surface	Coal
United States	0	1880
Wyodak	1920	40
Other Private	160	160
Total	2080	2080

Proposed future actions

Having made the decision to prepare the present environmental statement, and initiated related data collection and evaluation, an administrative determination was made to include in the site specific parts of this statement only the railroad and those mining and reclamation plans described above and already then in hand, and which were sufficiently detailed and complete to enable immediate and substantial environmental analysis. This determination brought the scope of the statement within manageable limits at an early stage of preparation. At the same time, it was determined that all potential mining of which knowledge was available, or which could be reasonably inferred or projected, would be included in the comprehensive regional analysis (Part I) portion of this present environmental statement, and this has been done.

Subsequent to the administrative definition of scope of the present EIS, five additional mining and reclamation plans, or letters indicating an intent to mine coal in the near future, were received by the Geological Survey. As indicated in the preceding paragraph, all pertinent information from these documents and available related data from the companies concerned have been fully

utilized in Part I of this statement, but these later proposals have not been analyzed on a site specific basis.

The five later proposals include: mining and reclamation plans for the Belle Ayr South mine (Amax Coal Company), the Rochelle mine and coal gasification complex (Peabody Coal Company to supply the Panhandle Eastern Pipe Line Company complex and other customers), and the Belle Fourche mine (Sun Oil Company). Letters of intent to mine coal at the Belle Ayr North mine (Amax Coal Company) and at the Antelope holdings (Pacific Power and Light Company) are also in the hands of the U.S. Geological Survey, pending receipt of formal mining and reclamation plans.

The Belle Ayr complex of Amax Coal Company is scheduled to produce more than 35 million tons of coal per year by 1982, the Rochelle mine 11 million tons by 1980, and the Belle Fourche mine 12 million tons by 1981. All proposed mines are scheduled to begin production in 1977 and 1978.

These plans are now under intensive study and environmental analyses are being prepared. After completion of these analyses the Department of the Interior will decide what additional actions are required by the National Environmental Policy Act of 1969.

Institutional Arrangements

A number of federal agencies have responsibility for authorizing proposed development actions analyzed in this report. Agencies with primary responsibility are the Forest Service, Bureau of Land Management, Interstate Commerce Commission, and Geological Survey. Other federal, state and local governmental agencies have a secondary responsibility in that they administer portions or phases of the developments once authorized.

Authority

Authority for management of public lands is contained in a great many laws (Public Land Law Review Commission, 1968). Many deal specifically with the resource or actions involved, e.g., grazing, rights-of-way, while others are more broad. Only a few of the key acts will be mentioned here.

The Act of March 3, 1875 (18 Stat. 482; 43 U.S.C. 932-939, known as the Railroad Right-of-Way Act) grants rights-of-way to railroad companies through public lands of the United States. Rights-of-way on acquired lands in the National Grasslands are granted under authority of the Bankhead-Jones Farm Tenant Act (50 Stat. 525; 7 U.S.C. 1010-1013).

The statutory authority for leasing all federal public domain coal deposits is contained in the Act of February 25, 1920, known as the "Mineral Leasing Act of 1920" (41 Stat. 437, as amended; 30 U.S.C. 181 et seq).

Lands excluded from operation of the Mineral Leasing Act of 1920 include lands in incorporated municipalities, in national parks and monuments, lands within naval petroleum and oil shale reserves, those acquired under the Appalachian Forest Act and Lands acquired by the United States under other authorities.

Lands disposed of with reservations of coal (and/or other mineral) deposits to the United States are also subject to the provisions of the Mineral

Leasing Act of 1920. Coal is subject to disposition by leasing only, with the exception of permits to take coal for local domestic needs.

Authority for leasing coal on federally acquired lands is contained in the Act of August 7, 1947, known as the "Mineral Leasing Act for Acquired Lands," (61 Stat. 913; 30 U.S.C. 351-359). Lands excepted from the Act include those acquired specifically for development of mineral deposits, lands within incorporated municipalities, and lands within national parks or monuments. Acquired lands considered in this report include portions of the Thunder Basin National Grasslands. For the most part, the basic leasing provisions and conditions under both leasing acts are similar. However, the Mineral Leasing Act for Acquired Lands requires consent of the head of the federal agency having administrative jurisdiction over the lands before a deposit is leased. If coal or other minerals were reserved to the United States in the original transfer of title and the land was later reacquired by the United States, provisions of the Mineral Leasing Act of 1920 apply.

Both laws give the Secretary of the Interior broad authority to make rules and regulations necessary to carry out the mineral leasing program. The Secretary has delegated his authority to issue leases to the Director, Bureau of Land Management, and the Director has redelegated his authority to the State Directors. Likewise, the Secretary has delegated his authority to administer operations conducted under leases to the Director, Geological Survey.

Regulations governing the leasing of Federal coal and operations under such leases are found in Title 43 Code of Federal Regulations (CFR), Parts 23 and 3500 and in Title 30 CFR Part 211.

The statutory authority for construction and operation of a new line of railroad is contained in Section 1(18) of the Interstate Commerce Act (49 Stat. 543; 49 U.S.C. ϕ 1(18). A certificate of public convenience and necessity

issued by the Interstate Commerce Commission is required before the start of construction. Spur, industrial team switching, or side tracks located wholly within one state are exempted from the act.

Federal agencies

The Bureau of Land Management (BLM) classifies and manages national resource lands and their related resources according to principles of multiple use, sustained yield, and environmental quality. In the federal coal leasing program, the Bureau of Land Management exercises the Secretary of the Interior's discretionary authority under the mineral leasing acts to determine whether or not leases, permits, or licenses are to be issued. It is responsible for issuing leases and for formulating the surface, non-mineral resource protection and rehabilitation requirements to be incorporated in them. With respect to federal coal deposits where BLM has surface management responsibilities and on private surface overlying federal coal, BLM determines the adequacy of environmental protection and rehabilitation aspects of all mining operation plans. BLM also is responsible for compliance examinations on prospecting permit or license lands beyond operating areas.

In addition to managing the national resource lands, administering mining laws applicable to all federal lands, and conducting cadastral surveys of all federal lands, the Bureau of Land Management also maintains the official land status records (title records) for all federal lands.

The Geological Survey is the principal federal agency concerned with preparing maps of the physical features of the country and providing earth science information essential to use and conservation of the nation's land, mineral, and water resources.

The Conservation Division of the Geological Survey is responsible for geologic, engineering, and economic value determinations needed for federal coal leasing and for supervision of coal mining on federal lands under the terms of leases issued by the Bureau of Land Management. It approves operating plans which meet requirements of the mineral leasing acts, regulations, and lease terms and conditions, including environmental and rehabilitation stipulations. It makes compliance examinations of operations under federal mineral leases and maintains records of operations of lessees, permittees, and licensees.

The Forest Service manages the national forests and national grasslands. All lands under Forest Service jurisdiction are managed in accordance with the principles of multiple use and sustained yield, as expressed in the Multiple-Use Sustained-Yield Act of 1960 (74 Stat. 2.5, 16 U.S.C. 528-531). In addition, the Forest Service conducts cooperative programs of state and private forestry and an extensive forestry and forest products research program.

Historically, lands managed by the Forest Service have been subject to mineral exploration and mining. Coal leasing is subject to the constraints and direction developed in multiple use planning. A summary of Forest Service objectives and procedures concerning coal leasing is found in Appendix C.

The Interstate Commerce Commission (ICC) is an independent regulatory agency which implements the aims of national transportation policy and the Interstate Commerce Act. It regulates the surface transportation system by requiring prior authorization for the institution of expansion of existing operations and for termination or consolidation of services. It administers its programs to recognize and preserve inherent advantages of different modes of transportation and to promote sound economic conditions by fostering competition among individual carriers and avoiding unnecessary and duplicative facilities. The ICC predicates its findings upon a determination that the

present or future public convenience and necessity require or will require a proposed service or operation.

The Environmental Protection Agency (EPA) administers both the Clean Air Act and the Federal Water Pollution Control Act. The Clean Air Act requires that any entity proposing a new industrial facility (fossil fuel-fired steam generators) must obtain a permit certifying that the plant complies with EPA's new source performance standards. These standards are established separately for each category of plant. The heart of the water quality program is also a permit system which requires any entity discharging pollutants that may enter navigable waters to obtain a permit. EPA effluent guidelines and standards determine whether any specific permit may be issued. Authority for handling both permit systems may be delegated by EPA to the states, but neither has yet been delegated to Wyoming. In carrying out the permit programs, however, EPA works closely with the Wyoming Department of Environmental Quality.

The Federal Power Commission (FPC) issues certificates for the construction and operation of interstate natural gas pipeline facilities and interstate power transmission lines. Its standards for such construction include requirements for protection of the environment. FPC has disclaimed jurisdiction over pipelines transmitting only manufactured gas, such as gas derived from coal.

Safety standards for natural gas pipelines are administered by the Department of Transportation (DOT) under the Natural Gas Pipeline Safety Act. The DOT also has jurisdiction over liquid pipeline safety under the Transportation of Explosives Act. The Department's Federal Railroad Administration is responsible for administering federal laws concerned with railroad safety.

The DOT's Federal Highway Administration oversees the federal aid highway program of financial assistance to the states for highway construction. In

the allocation of federal matching funds for highways, it establishes and administers standards for highway safety, design, construction, and maintenance.

The Mining Enforcement and Safety Administration of the Interior Department enforces federal health and safety standards on all mining operations.

State agencies

A number of state agencies also have control over some of the development described in this statement.

The Wyoming Department of Environmental Quality (DEQ) has enforcement authority concerning air quality standards, water quality standards, and mined land reclamation. The Wyoming Environmental Quality Act grants authority to DEQ to institute permit systems in air, land and water quality matters. Permittees must comply with both state and federal standards. The DEQ is active in both air and water quality, particularly with air pollution enforcement and is working to obtain full delegation from EPA of authority to administer both programs. Any facility that may cause air pollution emissions must obtain a construction permit from DEQ. In addition, operating permits are required for all mobile sources and permanent sources after an initial 120-day start-up period.

The portions of the Wyoming Environmental Quality Act pertaining to mined land reclamation apply to all solid mineral prospecting and mining activities except those conducted by government agencies or their contractors and certain noncommercial or minor operations. The Land Quality Division issues permits and licenses to mine, or to explore for minerals by dozing, upon its approval of a mining and reclamation plan submitted by the applicant. Each mining permit applicant must post a performance bond with the state to insure mined land reclamation. Licenses to mine may be revoked or suspended for substantial violation of their terms.

Regulations under the Act, which became effective July 1973, have not all been issued. Air Quality Standards and Regulations became effective June 3, 1974, and Land Quality Regulations are in the public hearing stage.

The Wyoming Inspector of Mines also has some jurisdiction over mining operations, particularly for assuring safe working conditions for mine employees and the protection of public safety. The latter responsibility relates to laws and regulations covering abandonment of mines.

All public utilities in Wyoming are regulated by the Wyoming Public Service Commission. Its jurisdiction extends to rate, safety, and environmental aspects of powerlines and facilities, telephone lines and facilities, gas lines and facilities, and railroads. Interstate natural gas lines and rail lines which are regulated by federal agencies do not fall under the Public

Service Commission's jurisdiction. The commission had adopted Utility Environmental Protection Rules which apply to proposed electric generating plants, electric transmission lines and substations of 69 kv capacity or more, gas transmission lines designed for pressures greater than 125 pounds per square inch, railroads, and certain other significant facilities.

The Wyoming State Engineer and the Wyoming State Board of Control administer state water laws which regulate use of surface and ground waters of the State. Applications for new water rights are filed with the State Engineer and petitions for transfer of existing water rights with the State Engineer or the Board of Control depending on the status of the existing rights. Requests are normally approved if it is determined that approval will not jeopardize prior water rights.

The act admitting Wyoming into the United States granted the state certain lands for support of common schools. The lands granted are referred to as public lands of the state and are administered by the State Board of Land Commissioners which is responsible for the granting of rights-of-way (such as may be required for the railroad) and mineral leases on these lands. Rights to coal on the state public lands may be obtained by lease only.

Counties and cities in Wyoming have authority under state law to regulate land uses by comprehensive planning and by zoning.

Relationships with private interests

Interaction between private and federal property interests occurs frequently in the Powder River Basin, resulting from the historical federal practice of conveying land to private ownership with reservation to the United States of some or all minerals underlying the land. The Acts of June 22, 1910

(30 U.S.C. 83-85) and July 17, 1914 (30 U.S.C. 121-124) were the earliest federal statutes calling for this reservation. The reservations required by those acts were limited to specific minerals, most commonly oil and gas or coal.

In the case of reservation of coal, the Act of June 22, 1910, provides that any person having rights to prospect for or mine the coal may enter and occupy the land for that purpose. He must first pay the surface owner for damages caused by his operation or post a bond to cover those damages.

By far the most common reservation of minerals occurs with lands which passed to private ownership under the Stockraising Homestead Act of December 29, 1916 (39 Stat 862; 43 U.S.C. 291-302). Section 9 of that Act provides that all conveyances of land under its provisions shall contain a reservation to the United States of all minerals, together with the right to prospect for, mine, and remove them. In addition, the law spells out in some detail the relative rights of the surface owner and the holder of mineral rights. Again, there is provision for posting of bond by the holder of any mineral rights (lease) for the benefit of the surface owner if agreement with the surface owner cannot be reached. Liability of the holder of mineral rights is limited to damage to crops (including forage) or other tangible improvements. Damages for reduction in the value of land for grazing can be awarded pursuant to the Act of June 21, 1949 (63 Stat 215; 30 U.S.C. 54).

Bonds posted under the above Acts are filed with the Bureau of Land Management (BLM). If amounts of the bonds are protested as inadequate by the landowner, BLM must decide the proper amount.

In recent years, BLM has further concerned itself with protecting interests of surface landowners when it proposes to issue new coal leases by consulting with the landowners when preparing stipulations for inclusion in the leases. Protection of facilities critical to the landowners' ranching operations is of particular concern. BLM field offices make similar contact with landowners

when reviewing lessees' proposed mining plans which are submitted to BLM by Geological Survey for comment and recommendations.

The Wyoming Environmental Quality Act also has provisions for considering interests of surface landowners where the surface and mineral estates are split. In such instances, a mining permit may not be issued without consent of the surface owner or the posting of a bond for the surface owner's benefit to secure payment of any damages "to the surface estate, to the crops and forage, or to the tangible improvements" of the landowner. Under both federal and state laws, if the extent of compensable damages cannot be agreed on by the parties, the landowner must sue for damages in court.

Private interests do not have any legal control over location of railroads or other public utility facilities in Wyoming, for such utilities are authorized by state law to condemn lands where needed for their purposes, subject only to compensation for the market value of the taking.

Geographic Area Relationship

The Powder River Basin is the western extension of the great plains in Wyoming. The basin covers nearly half of northeastern Wyoming and parts of southeastern Montana. The structural or geologic basin is bound by the Bighorn Mountains on the west, the Black Hills on the east, the Laramie Mountain Range on the south, and the Cedar Creek Anticline in Montana on the north. The Wyoming portion of the basin contains approximately 8,000,000 acres.

The basic study area, the "Eastern Powder River Coal Basin," contains all of Campbell County and that part of Converse County north of the Platte River as outlined on Figure 1. It includes 4,978,560 acres. Gillette and Douglas, the major communities, are the county seats of Campbell and Converse, respectively. Glenrock, Moorcroft, and Arvada are other small communities located on edges of the study area. Rural post offices, country stores, gasoline stations, rural schools, and oil camps are scattered throughout the area at places such as Weston, Spotted Horse, Recluse, Reno Junction, Bill, Hilight, etc.

Large tracts of land are leased for coal development extending from 25 miles north of Gillette to 70 miles southeast of that city. An additional area approximately 22 miles long and located about 32 miles northwest of Douglas is also covered by several leases. Map 5, Appendix A, illustrates the extent of coal leasing in the study area, and Map 6 shows the mines expected to be developed by 1985.

Present indications are that there will be two centers of coal development in the time frame of this report although it is probable that most of the large leases will eventually be developed. The first of these

centers is the Gillette vicinity. Two mines are now active near Gillette, the Wyodak mine about five miles east and the Amax mine about 14 miles southeast. In addition, Carter Oil Company plans to develop a mine about eight miles north of Gillette. Finally, it is expected that before 1985 a second Amax mine will be developed north of Gillette and Sun Oil Company will develop a mine about 17 miles to the southeast. The Carter mine and expansion of the Wyodak mine are examined in detail in Parts IV and VI of this report. These mines, centered around Gillette, will create a population and activity center with that city as nucleus.

A second center of mining activity will be about 12 miles southeast of Reno Junction, the Junction of State Highways 59 and 387. Here leases of Atlantic Richfield Company and Kerr-McGee Coal Corporation are scheduled for early development. Also in this area, the lease of Peabody Coal Company is to be developed in conjunction with a coal gasification plant to be built by Panhandle Eastern. Location of the plant site has not been announced, but it could be at or near the mine. Lying just to the west of the Peabody and Atlantic Richfield lease is a large lease block held by Pacific Power and Light Company. Development of the Peabody and Pacific Power leases is expected prior to 1985. Commuting distances are about 50 miles from Gillette and 80 miles from Douglas. Because of these distances, some employees may choose to settle closer to their work in order to cut down commuting time.

The Douglas vicinity may be a third development area. The second principal alternate site for the Panhandle Eastern coal gasification plant is near Douglas. In addition, some employees of the Altantic-Kerr-McGee-Peabody-Pacific Power mine complex may choose to live in Douglas in spite of the longer commuting distance.

Certain potential impacts of coal development within the Eastern Powder River Coal Basin are not confined to the study area. Considerations of socio-economic conditions, land use controls and constraints, transportation, history, archeology and paleontology, air quality, water resources, and climate have been analyzed basinwide (Figure 3) and include the eight-county area of Sheridan, Johnson, Natrona, Campbell, Converse, Crook, Weston, and Niobrara Counties. Analysis of recreation impacts extends beyond the Powder River Basin proper into Montana, South Dakota, and eastern Wyoming so that major, popular recreation opportunities available to residents of the basin could be identified. Such analyses as topography, soils, minerals, aesthetics, vegetation, wildlife, and agriculture are primarily confined to the basic study area with such minor exceptions to accommodate data sources aggregated on some other geographic basis.

Ownership of land within Campbell and Converse Counties is shown in acres below (State of Wyoming 1973):

County	Federal	State & Local	Private	Total
Campbell	384,647 (12.7%)	199,759 (6.6%)	2,450,205 (80.7%)	3,034,614
Converse	344,327 (13.0%)	260,638 (9.8%)	2,048,319 (77.2%)	2,653,284

Federal lands within Campbell and Converse Counties are principally under the jurisdiction of the Bureau of Land Management and Forest Service. The Bureau of Reclamation has small holdings within each county and the Defense Department has small holdings within Converse County. In Campbell County, 221,721 acres are national resource lands administered by the Bureau of Land Management. BLM managed lands are scattered throughout Campbell County, and no area could be considered a large block of national resource lands (Map 1, Appendix A). Forest Service managed lands in Campbell County

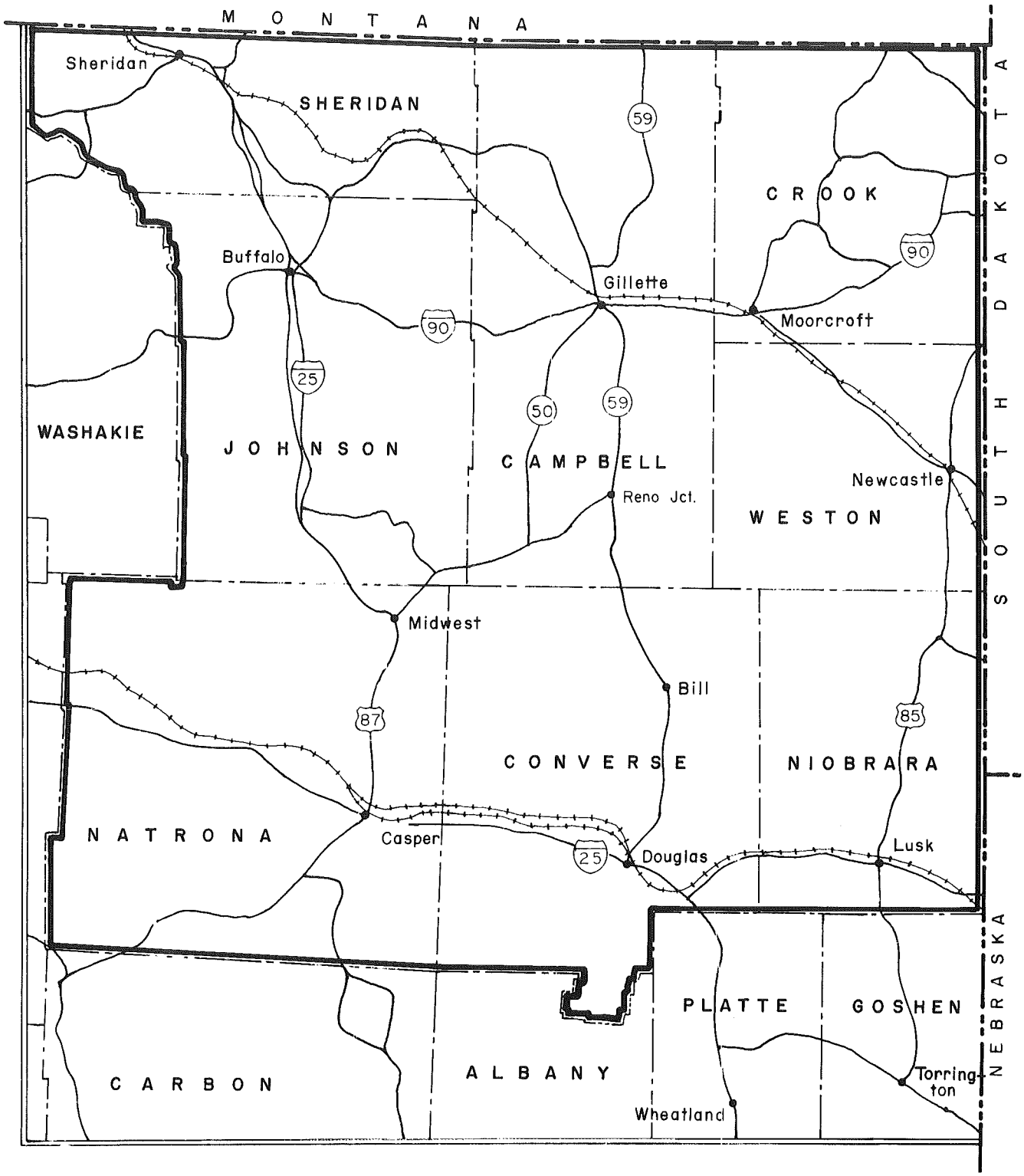

Figure 3
EIGHT COUNTY BASIN AREA

(158,484 acres) are confined within two portions of the Thunder Basin National Grasslands in the northeast and southeast parts of the county. Forest Service holdings are more blocked than those of the Bureau of Land Management, but there are large inholdings of private land within the Grasslands' boundaries. State ownership is largely restricted to sections 16 and 36 of each township throughout the county. The Federal Government owns the minerals on about 85 percent of the lands in Campbell County.

In Converse County, the Bureau of Land Management administers 107,656 of the 370,010 acres of federal land. Most of the BLM holdings are located in the northwest portion of the county but without any solid blocks of ownership of significant size. Forest Service holdings of 257,523 acres are within the Thunder Basin National Grasslands in northeast Converse County and Medicine Bow National Forest in the southern portion of the county. Forest Service holdings are again relatively better blocked than those of the Bureau of Land Management but are nevertheless interspersed with large private holdings. As in Campbell County, state ownership is principally in sections 16 and 36; however, the state does have more extensive and solid holdings south of Glenrock and south of Douglas. The Federal Government owns the minerals on approximately 75 percent of the lands in Converse County. Surface ownership in both Campbell and Converse Counties is dominated by the private sector.