

APPENDIX B

SCREENING OF ALTERNATIVE ROUTES

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APPENDIX B

SCREENING OF ALTERNATIVE ROUTES

B1.0 INTRODUCTION

In the spring of 1980, the Tongue River Railroad Company (TRRC) notified the Interstate Commerce Commission (ICC) of its intent to file an application for authorization to construct and to operate a new rail line from Miles City, Montana, to a terminal point on the Tongue River about 8.9 miles south of Ashland, Montana. The primary purpose of the proposed line would be to transport coal from the Ashland/Birney/Otter Creek areas of southeastern Montana to markets in the Midwest.

In accordance with the National Environmental Policy Act (NEPA), the Section of Energy and Environment (SEE) of the ICC, acting as "lead agency", assumed responsibility for preparation of the Environmental Impact Statement (EIS) on the proposed railroad. In addition to the ICC, several federal, state and local agencies and groups, with jurisdictional responsibility for, or interest in, the TRRC railroad, were designated "cooperating agencies", and charged with providing such assistance as might be required of them in the EIS preparation effort. Designated cooperating agencies for this project were the U.S. Army Corps of Engineers, the U.S. Department of Agriculture (USDA), the Federal Railroad Administration (FRA), the Montana Department of State Lands (DSL), the Custer County Planning Board, the Powder River County Commissioners, and the Northern Cheyenne Indian Tribe.

To comply with NEPA, the SEE was charged with identifying and evaluating reasonable alternatives to the Proposed Action (e.g., the construction and operation of the TRRC railroad). A screening process was developed and conducted to facilitate the identification of alternatives that might merit further consideration and to eliminate those that could not be considered reasonable alternatives to the proposed railroad.

The SEE solicited input and suggestions regarding the proposed rail line and possible alternatives from the cooperating agencies and from the public at-large. The resulting suggestions and alternatives included alternative alignments within the proposed right-of-way, alternative routes, and alternative modes of transportation. The feasibility of a "No Action Alternative" also was considered.

With the assistance of the cooperating agencies and technical consultants in a variety of disciplines, the SEE began evaluating alternatives in the fall of 1980. Criteria applied in the evaluation included engineering feasibility and cost considerations, marketing implications, legal ramifications, and the potential social and environmental consequences of each alternative.

As a result of these deliberations, the SEE eliminated a number of alternatives from further consideration. Several alternatives, however, were identified as being worthy of a more in-depth analysis. These have been retained, and are studied in detail in the Draft EIS.

Meanwhile, in the spring of 1981, the TRRC announced its intent to modify the proposed alignment by constructing an additional branch from a point near Ashland to a terminus 7.7 miles southwest of Ashland in the Otter Creek drainage. In response, the SEE once again solicited input from the public and cooperating agencies. The response, in terms of comments and suggestions, was incorporated in the screening process where applicable. However, there were no alternatives suggested for the proposed modification. Therefore, the results of the original EEB screening were unchanged.

In the discussions that follow, each alternative examined by the SEE during the screening process is described. Rationale used to eliminate certain alternatives is given. Likewise, justification for giving further consideration to certain alternatives is provided. It should be noted that the base data employed in this process refers to the original proposed railroad. To reflect current costs, all dollar figures cited must be adjusted for inflation.

B2.0 DESCRIPTION OF THE PROPOSED ACTION (Map Designation 1)

The Tongue River Railroad Company proposes to construct an 89-mile-long rail line extending southward from Miles City to two terminal points near the community of Ashland (see Figure B-1). At Miles City, the proposed rail line would connect to the abandoned Chicago, Milwaukee, St. Paul and Pacific (Milwaukee Road) Railroad and utilize the now-abandoned yard and maintenance facilities formerly operated by that rail line. Ultimately, the proposed rail line would connect with the mainline of the Burlington Northern (BN) Railroad in Miles City.

Upon leaving Miles City, the proposed rail line would follow the west side of the Tongue River southward, remaining about a mile from the river's nearest meanders during the first few miles of the route. This portion of the route would cross the USDA Livestock and Range Research Station (LARRS).

From the LARRS, the rail line would continue southward, generally following the course of the river along the west bank, to a point some 10 miles north of Ashland. There it would cross the Tongue River and continue southward along the east side of the valley. Approaching Ashland, the proposed rail line would follow one of two alignments. The Ashland Southeast (SE) Alignment would follow the river closely, dividing just north of Ashland, with one branch turning southwest toward the river about a mile north of town. The other branch would swing eastward around Ashland and cross Otter Creek at its terminus about 7.7 miles up the Otter Creek drainage. The branch along the Tongue River crosses Otter Creek near its mouth, and continues south along the river to the proposed Montco Mine site, about 8.9 miles upstream from Ashland. The Ashland Northwest (NW) Alignment would leave the proposed rail line north of Ashland and proceed southwesterly through the community. Selection of this latter alignment would avoid the large cut and fill associated with the Ashland SE route.

The total length of the proposed rail line would be 89 miles, with an approximate cost of \$129.2 million. The ruling grade against load would be low (0.2 percent), with a total length of ruling grade of 15,000 feet and a total rise against load of only 30 feet.

Unit trains, consisting of 105 cars capable of carrying 100 tons each, would be employed to transport the coal. Most western coal is transported over railroad lines, as the shipment of coal has proven to be a reliable source of revenue for railroads.¹ The unit train method of coal shipment has proven to be more efficient and economical than most other modes of transportation. The competitive advantages of rail shipment of coal creates the expectation that new railroads will be constructed in the Western states and that revenues will continue to expand.

B3.0 IDENTIFICATION AND DESCRIPTION OF ALTERNATIVES

A number of possible alternatives to the proposed TRRC railroad were identified as a result of public and cooperating agency input during the early stages of the EIS preparation process. Additional alternatives were developed by the TRRC as a result of engineering, environmental and social concerns regarding the proposed railroad. In accordance with NEPA, alternative modes of coal transportation and the possibility of a "No Action Alternative" also were examined. Alternatives examined can be divided into four categories:

- (1) The "No Action Alternative"
- (2) Alternative modes of transportation
- (3) Alternative rail alignments outside the proposed rail line
- (4) Alternatives (options) within the proposed rail line

B3.1 THE "NO ACTION ALTERNATIVE"

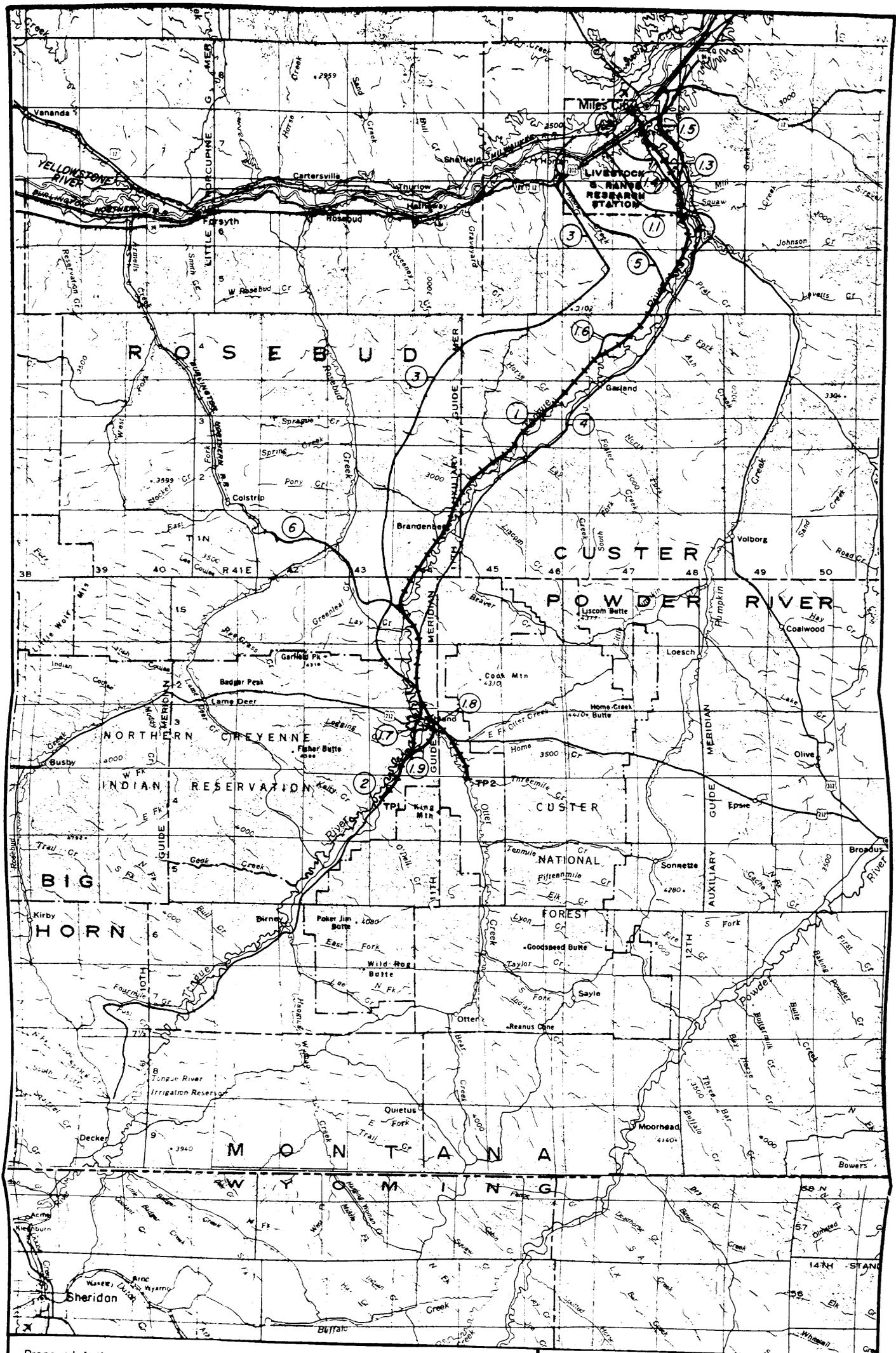
The "No Action Alternative" suggests the possibility that the TRRC project may not merit a "Certificate of Public Convenience and Necessity" from the ICC. This alternative is based upon the assumption that either: (1) there is not or will not be a need to transport coal from the Montco Mine or other potential mines in the area; or (2) another mode of transportation is preferable to the proposed railroad. The "No Action Alternative" would constitute the ICC's denial of a Certificate of Public Convenience and Necessity for the proposed railroad.

The "No Action Alternative" further assumes that alternative modes and alternative railroad routes are likewise unjustifiable in terms of the nation's energy demands balanced against the potential environmental, social, and economic impacts that would accrue to the affected area.

B3.2 ALTERNATIVE MODES OF TRANSPORTATION

B3.2.1 Coal Slurry Pipeline

Coal movement by a slurry pipeline system is a possible alternative to the proposed railroad. Such a system could transport coal from the Ashland/Birney/Otter Creek area to Miles City or to another railhead serving the Midwest markets. A slurry system would require several components, including: (1) a coal slurry preparation facility; (2) a water supply system; (3) a 24-inch pipeline (buried or elevated); (4) pump stations as necessary over the length of the route; (5) a dewatering plant and loading facility. Such a system would require at least a 30-foot right-of-way and could consume an estimated 7,200 acre-feet of water per year.



Proposed Action and Alternatives

- 1. Proposed Action
- 2. Decker
- 3. BLM
- 4. Tongue River Road
- 5. Moon Creek
- 6. Colstrip

Options Within the Proposed Action

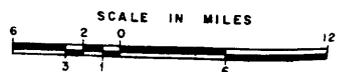
- 1.1 Custer County - LARRS
- 1.2 IntraSearch - LARRS
- 1.3 LARRS - Tongue River
- 1.4 Proposed Route Through LARRS
- 1.5 IntraSearch - East of Miles City
- 1.6 Option in T4N,R47E
- 1.7 Ashland NW Alignment
- 1.8 Optional Route Around Ashland
- 1.9 Ashland SE Alignment

FIGURE B-1

PROPOSED ACTION WITH
ALTERNATIVES
**TONGUE RIVER
RAILROAD COMPANY**

July 1982

Prepared by
IntraSearch
Billings, Montana



B3.2.2 Conveyor Belt System

A conveyor belt system could be constructed as an alternative to the proposed railroad. A conveyor system could transport coal over the 89.2-mile route from the Ashland/Birney/Otter Creek area to Miles City, where it would be transferred to unit trains for transport to the Midwest markets.

A conveyor system would require several components, including: (1) storage and loading facilities; (2) a series of sections of conveyor belt in 89, 1-mile straight lengths; (3) unloading, storage, and loading facilities at the railhead. The conveyor system would be covered and would contain a belt, 48 inches wide, on which the coal would be transported. The system could rest at ground level or could be elevated. A minimum 30-foot-wide right-of-way would be required, and, based upon a projected coal production of 12 million tons a year, the cost of such a conveyor would be roughly \$162 million.

B3.2.3 Hauling by Truck

The use of trucks to haul coal from the Ashland/Birney/Otter Creek area to railroad loading facilities at or near Miles City could be an alternative to the proposed railroad. The transportation corridor followed by the existing Tongue River Road likely could be adapted for this purpose.

Such a means of transporting coal would require the construction of a separate, hard surface roadway. Approximately 300, 50-ton trucks would be necessary to transport the expected annual production of coal to the railhead. Facilities requirements for such a transportation system would include road and vehicle maintenance shops to provide continual maintenance of the road and to keep the trucks in constant operation. Storage and loading facilities also would be required at the railhead.

B3.2.4 Mine-mouth Generation

Transportation of coal over long distances could be avoided completely if electrical-generating facilities were located at the sites of the coal mines to be serviced by the TRRC railroad. A number of such power plants have been suggested for southeastern Montana but, other than the existing Colstrip facilities, none, to date, has gone beyond the conceptual stage.

Such a generating plant would necessitate the construction of high voltage power lines to a destination where they could join existing power grids serving the same customers as would coal transported by the railroad. A large volume of water would be required for the operation of such a plant, since a typical power plant requires 7 to 8 tons of water per ton of coal burned. For the Montco Mine, at a projected 12 million tons annually, water requirements would reach more than 61,000 acre-feet.

B3.3 ALTERNATIVE RAIL ALIGNMENTS OUTSIDE THE PROPOSED RAIL LINE

B3.3.1 Decker Route (Map Designation 2)

The Decker Route was evaluated because of the shorter distance involved and because of the existence of established coal transportation facilities at the railhead. This route also would avoid the direct impacts of railroad construction through the communities of Ashland and Miles City.

The Decker Route would originate at a point just west of the Tongue River Reservoir, where it would join the Burlington Northern spur now serving the Spring Creek Mine. The route heads north for approximately 10 miles from the Burlington Northern line before turning due east for approximately 8 miles. At that point, the route would cross to the east side of the Tongue River and follow the river in a generally northeasterly direction to the site of the proposed Montco Mine, about 8.9 miles south of Ashland. From the Montco site, the route would continue north to an area near Ashland suitable to turn up the Otter Creek drainage and form a terminus some 7.7 miles south of Ashland. Specifications for this alternative are as follows: total line length is approximately 65 miles; approximate cost is \$103.5 million; ruling grade against load is 1.0 percent; length of ruling grade is 80,000 feet; total rise against load is 1,000 feet.

B3.3.2 Bureau of Land Management Route (Map Designation 3)

The Bureau of Land Management (BLM) Route was suggested by personnel from that agency as a means of limiting impacts to the lower Tongue River Valley bottomlands and avoiding impacts to many of the vegetation research plots on the LARRS. This route also would minimize impacts to the community of Miles City, proper.

The BLM Route is essentially a high ground route, starting at a juncture with the Burlington Northern Line west of Miles City and heading in a southwesterly direction across the hilly country west of the Tongue River. It is possible that a Yellowstone River crossing would be required, if it became necessary to join with the abandoned Milwaukee Road Line rather than with the Burlington Northern Line. Generally, this route would parallel the Tongue River for approximately 40 miles, at which point it would drop into the valley, cross the Tongue River, and continue south past Ashland via the route of the proposed rail line. The terminal points, once again, would be the proposed Montco Mine site and a site in the Otter Creek drainage.

This route is similar to the Moon Creek route (see section B3.3.4) and would include a crossing of the Moon Creek drainage near the Tongue River/Yellowstone River divide. Specifications for the BLM route are as follows: total line length is 92 miles; approximate cost is \$160.6 million; ruling grade against load is 1.0 percent; length of ruling grade is 40,000 feet; total rise against load is 450 feet.

B3.3.3 Tongue River Road Route (Map Designation 4)

This route was examined at the suggestion of the Custer County Planning Board. The principal advantage of this route would be the use of an existing transportation corridor.

The Tongue River Road Route departs Miles City, where it joins the existing Burlington Northern Line, and follows a southerly course, west of the Tongue River and through the LARRS to a point just north of Pumpkin Creek. Here the route crosses the Tongue River and turns due south, immediately crossing the Pumpkin Creek drainage. The route parallels the Tongue River Road south to a point approximately 9 miles north of Ashland, where it joins the proposed rail line. The remainder of the route follows the proposed rail line to the two terminal points in the Otter Creek drainage and at the Montco Mine site, respectively.

Specifications for the Tongue River Road Route are as follows: total line length is 88 miles; approximate cost is \$146.3 million; ruling grade against load is .85 percent; length of ruling grade is 18,500 feet; and total rise against load is 380 feet.

B3.3.4 Moon Creek Route (Map Designation 5)

The Moon Creek Route was suggested by the U.S. Department of Agriculture as a means of minimizing impact to the LARRS. The Moon Creek Route would leave Miles City, heading west via the old Milwaukee Road, crossing the Yellowstone River and following the existing right-of-way to a point approximately 8 miles west of town. Here the Moon Creek route diverges from the abandoned line and again crosses the Yellowstone, heading south. The route crosses the western edge of the LARRS as it follows the east side of Moon Creek to a point where it crosses the ridge dividing the Tongue River and Yellowstone River drainages. The alignment then descends to the valley bottom and connects with the route of the proposed rail line at a point about 14 miles south of Miles City. The remainder of the route is identical to that of the proposed rail line.

Specifications for this alternative are as follows: total line length is 89 miles; approximate cost is \$140.8 million; ruling grade against load is 1.0 percent; length of ruling grade is 40,000 feet; total rise against load is 400 feet.

B3.3.5 Colstrip Route (Map Designation 6)

The Colstrip Route represents the shortest alternative rail line for transporting coal from the Ashland/Birney/Otter Creek area to existing railroad facilities. The possibility of such a route was examined in detail between 1976 and 1978, by the firm of Sverdup, Parcel and Associates, Inc., of St. Louis, Missouri.² Their study involved a corridor for a possible rail link between potential mines in the Ashland area and existing facilities at Colstrip.

The route developed as a result of these studies would join the existing Cow Creek Branch of the Burlington Northern at Colstrip. From that point of origin it would cross Cow Creek and Rosebud Creek, heading southwest up the Greenleaf Creek Valley to the Rosebud Creek/Tongue River divide. It then parallels Roe and Cooper Creeks as it descends into the Tongue River Valley and crosses the river, before continuing to the two termini.

Specifications for this alternative are as follows: total line length is 46 miles; approximate cost is \$74.5 million; ruling grade against load is 0.85 percent; length of ruling grade is 31,030 feet; total rise against load is 600 feet.

B3.4 ALTERNATIVES (OPTIONS) WITHIN THE PROPOSED RAIL LINE

B3.4.1 Custer County/LARRS Option (Map Designation 1.1)

This option was suggested by the Custer County Planning Board as a means of limiting impacts to the LARRS' more important research areas to the east, and minimizing impacts to the lower Tongue River Valley and to the community of Miles City. The Custer County/LARRS option is an approximately 10-mile-long link between the Burlington Northern rail line in the Yellowstone Valley and the proposed rail line. It connects to the Burlington Northern line about 5 miles southwest of Miles City and reaches the Tongue River Valley bottom just north of Pumpkin Creek.

Specifications for proposed rail line with this option are as follows: total line length is 90 miles; approximate cost is \$132.5 million; ruling grade against load is 1.0 percent; length of ruling grade is 40,000 feet; total rise against load is 400 feet.

B3.4.2 IntraSearch/LARRS Option (Map Designation 1.2)

This option was examined as a potential route to minimize impacts to the LARRS. This option is an approximately 4-mile-long line connecting the Yellowstone Valley Burlington Northern line with the proposed rail line. Connections would be made with the Burlington Northern about 3 miles southwest of Miles City and with the proposed rail line about 4 miles south of Miles City.

Specifications of the proposed line with this option are as follows: total line length is 89 miles; approximate cost is \$132.3 million; ruling grade against load is 0.83 percent; length of ruling grade is 9,000 feet; total rise against load is 78 feet.

B3.4.3 LARRS/Tongue River Option (Map Designation 1.3)

This option was examined both for engineering purposes and as a possible means of limiting impacts to the LARRS. This option is an approximately 6-mile-long divergence from the proposed rail line route

just south of Miles City. It follows the Tongue River more closely than the proposed rail line, remaining on the west side of the valley. It leaves the proposed rail line 1 mile south of the Burlington Northern line just outside Miles City, rejoining the proposed route about 7 miles out of town. Specifications for this option are identical to those for the proposed rail line.

B3.4.4 Proposed Rail Line Through LARRS (Map Designation 1.4)

This is the proposed rail line route through the LARRS, as initially designed. After leaving Miles City, the route follows the west side of the Tongue River, through the LARRS, about a mile from the nearest river meanders. Costs and other data are identical with the proposed rail line.

B3.4.5 IntraSearch, East of Miles City (Map Designation 1.5)

This option was evaluated as a means of avoiding impacts to the LARRS and the community of Miles City. The route is an approximately 10-mile-long line connecting the abandoned Milwaukee Railroad just northeast of Miles City with the proposed rail line about 6 miles south of Miles City. This alignment requires two crossings of the Tongue River.

Specifications for the railroad with this option are as follows: total line length is 95 miles; approximate cost is \$133.7 million; ruling grade against load is 0.24 percent; length of ruling grade is 14,000 feet; total rise against load is 36 feet.

B3.4.6 Option in Township 4 North/Range 47 East (Map Designation 1.6)

This option was considered at the request of a private landowner, who suggested it as a means of avoiding his property. This option is an approximately 2-mile-long divergence from the proposed route. The proposed rail line route curves to the southeast in this area, generally following the river's curve; this option would curve to the northwest, away from the river.

Specifications for the railroad with this option are as follows: total line length is 89 miles; approximate cost is \$129.7 million; ruling grade against load is 0.4 percent; length of ruling grade is 8,000 feet; total rise against load is 32 feet.

B3.4.7 Ashland NW Alignment (Map Designation 1.7)

The Ashland Northwest (NW) Alignment follows the river closely on the east side, swinging southwest toward the river about a mile north of Ashland, then following the river south for about 2 miles. Specifications for the proposed rail line with this option are as follows: total line length is 89 miles; approximate cost is \$128.9 million; ruling grade against load is 0.6 percent; length of ruling grade is 6,000 feet; total rise against load is 36 feet.

B3.4.8 Optional Route Through Ashland (Map Designation 1.8)

This option was examined as a means of avoiding impacts to the Tongue River and associated flood plains at the Otter Creek confluence. It is an approximately 3-mile-long divergence from the proposed rail line route around Ashland. The proposed rail line is west of Ashland; this option would swing east of Ashland about a mile north of town, cross Highway 212 about a mile east of town, then swing back near the river about 2 miles south of town.

Specifications for the railroad with this option are as follows: total line length is 92 miles; approximate cost is \$136.5 million; ruling grade against load is 0.5 percent; length of ruling grade is 10,000 feet; total rise against load is 50 feet.

B3.4.9 Ashland SE Alignment (Map Designation 1.9)

The Ashland Southeast (SE) Alignment was examined as a means of avoiding possible impacts to Ashland. This option is an approximately 3-mile-long divergence from the proposed rail line route around Ashland. The proposed route goes west of Ashland; this option would swing east of Ashland about a mile north of town, cross Highway 212 about 1.5 miles east of town, then swing back near the river about 2 miles south of town.

Specifications for the proposed rail line with this option are as follows: total line length is 89 miles; approximate cost is \$131.1 million; ruling grade against load is 0.2 percent; length of ruling grade is 15,000 feet; total rise against load is 30 feet.

B4.0 EVALUATION OF POSSIBLE ALTERNATIVES TO THE PROPOSED ACTION

B4.1 THE "NO ACTION ALTERNATIVE"

A favorable evaluation of the "No Action Alternative" would indicate that either an alternative mode of transportation is preferable to a railroad or that there does not exist, and will not exist in the foreseeable future, a need for transporting coal from the Ashland/Birney/Otter Creek area. The alternative modes of transportation identified in section B3.0 were evaluated for their feasibility. They were found to be unfeasible alternatives to a railroad. The following sections summarize the results of the evaluation.

B4.1.1 Coal Slurry Pipeline

Constructing a coal slurry pipeline from the Ashland/Birney/Otter Creek area would present no inordinate engineering problems.³ However, recent studies have shown that transporting coal by slurry over a relatively short distance is less economical than shipment over a greater distance.⁴ A coal slurry pipeline is not economically competitive with a unit train when used for transporting small volumes of coal over a relatively short distance. Unit train rates and coal slurry compare more favorable only when the length of haul approaches 1,000 miles (0.7 cents per ton-mile to 1.1 cents per ton-mile).⁵

There are numerous legal and environmental constraints to the construction of slurry pipelines in the state of Montana. They include the beneficial use of water, water rights, changing the use of a prior appropriated water right, and the Yellowstone River Compact. Under 85-2-104(2) of the Montana Code Annotated, "Use of water for the slurry transport of coal is not a beneficial use of water."⁶ In addition, under Montana's system of prior appropriation of water rights, it would be difficult, if not impossible, to obtain water rights to construct a slurry line. The priority uses of water in the Tongue River Valley are for domestic and municipal use and for agriculture. Another legal constraint applies to change of purpose of use: "An appropriator of more than 15 cubic feet of water per second may not change the purpose of use of an appropriation right from an agricultural use to an industrial use" [85-2-402(3) MCA 1979]. It also should be stated that the Yellowstone River Compact (85-20-101 et. seq. MCA) under Article V limits the amount of water to be removed from the Tongue River to 60 percent of its flow to the State of Montana.

Promoters of coal slurry pipelines also suffer from a lack of the power of eminent domain.⁷ The ramifications of this issue have been particularly evident when slurry pipeline investors have attempted to cross railroad rights-of-way. In order to discourage competition in the movement of coal, a number of railroad companies have been notably reticent to grant a right-of-way to a coal slurry operator. Without the power of eminent domain, and given the current opposition of rail

carriers to slurry pipelines, it would be very difficult for a coal slurry line to be built from Ashland to markets in the Midwest.

The most significant issue from an environmental perspective on coal slurry pipelines is the availability of water.⁸ A reliable source of both surface and ground water would be necessary to support a slurry line of the size required to serve the Ashland/Birney/Otter Creek area. Given the relative aridity of southeastern Montana, it could be questioned whether sufficient water is available in the Tongue River Valley. Consequently, public policy in Montana discourages the construction of coal slurry pipelines, and the SEE eliminated it from further consideration as a reasonable alternative to the proposed rail line.

B4.1.2 Conveyor System

Conveyor belts are most economical when used to transport coal over relatively short distances. They are employed principally in moving coal from a strip mine to a mine mouth electrical-generating plant or to a railhead. Given the 89-mile distance to Miles City, a conveyor system would not be as economical as a railroad. The additional cost would have a negative impact on the marketability of the coal.

Construction of a conveyor belt system along the Tongue River would not offer any more substantive legal problems than would a railroad. From an environmental perspective, construction of a conveyor belt would pose similar problems as would the building of a railroad. However, a conveyor belt could have a greater impact on air quality than would the railroad. Control of fugitive dust, not only during construction but over the long term, would be difficult. Noise might also be a significant impact of such a system.

Additional environmental consequences of utilizing the conveyor belt mode of coal transport would be the difficulty in maintenance of the system. The security of the system over 89 miles would be a persistent problem. Furthermore, a conveyor system presents a significant physical barrier to wildlife migration. For these reasons, the conveyor alternative was eliminated by the SEE from further consideration as a reasonable alternative to the proposed rail line.

B4.1.3 Hauling by Truck

It is possible for trucks to use a slightly more adverse grade than locomotives. Thus, a new haul road may require fewer cuts and fills than would a railroad. However, without a substantial reduction in grade, fuel costs would outweigh any advantages. It would require more than 300, 50-ton trucks to haul the expected annual tonnage from Ashland to Miles City.

Trucks are most economical when used to haul coal over relatively short distances--less than 50 miles.⁹ In the West, they are used pri-

marily to transport coal from a strip mine to a railhead or to a mine mouth generating plant. Hauling coal by truck for the 89 miles to Miles City would not be as cost or energy efficient as transporting the product by unit train. While construction of a new coal-hauling road may require fewer cuts and fills than a new railroad line, there would be a definite increase in energy consumption with the steeper grades. Use of trucks would add roughly 12 cents per ton-mile to the cost of coal and would affect the marketability of the product.

The legal ramifications of utilizing trucks to haul coal are difficult to assess. Assuming that the existing Tongue River Road would be used by these vehicles, the road would have to be upgraded and a new right-of-way would have to be negotiated by the Rosebud and Custer County Commissioners. Potential problems in securing an adequate right-of-way would be similar to those encountered for a railroad. In addition, a significant number of disturbed acres would be added, due to larger right-of-way requirements.

The use of trucks to haul coal from the Ashland/Birney/Otter Creek area to Miles City could have significant environmental impacts. Truck haulage of coal would impact air quality. Fugitive dust from the road would be serious and could be mitigated only by continuous watering or paving. By employing either method, it is likely that the dust problems still would be greater by using trucks than by using a railroad. There also would be a significant impact from diesel exhaust from the trucks. Moreover, there would be environmental impacts associated with coal handling facilities, located near Miles City, that would be necessary for transferring coal from trucks to unit trains.

As mentioned earlier, the existing road along the east side of the Tongue River would have to be rebuilt. In order to mitigate the deleterious impacts from fugitive dust, this road would likely require some form of hard surface. Given the number of trucks that would be required to haul 12 million tons of coal from the Ashland area, continual maintenance of the road would be essential. Nonetheless, it is likely that damage to the road would occur and might result in accidents. The consequences of vehicle accidents could be fatalities to humans and livestock. Accidents would be more likely if passenger vehicles were to share the road with coal-hauling trucks.

A large number of trucks traveling over the Tongue River Road also would increase noise levels in the valley. This impact may be most significant immediately southeast of Miles City, where the county road enters town. Increased truck traffic through Miles City would certainly raise noise and vibration levels in that community and should be considered a significant environmental consequence of employing the truck mode of transportation.

In addition to dust, noise, and vibration, truck haulage of coal will require a larger work force than other modes of transportation. Consequently, the socioeconomic problems related with industrial

development in southeast Montana may be greater by carrying coal by trucks than by another means.

Considering all these factors, the SEE eliminated this alternative from further consideration as a reasonable alternative to the proposed rail line.

B4.1.4 Mine-mouth Generation

The location of a mine-mouth electrical-generating plant in the Ashland/Birney/Otter Creek area may be cost competitive with rail transportation. Recent studies are contradictory on this point. A U.S. Bureau of Mines study in 1975 concludes that unit train transport of coal would be "30 percent less costly and 21 percent more efficient" than electrical transmission.¹⁰ The National Power Grid Study, conducted by the Department of Energy during that same year, reports that mine-mouth generation of electricity would be 15 percent more efficient than rail transport of coal to local generating plants.¹¹

Notwithstanding the disparity of opinion regarding the economic benefits of mine-mouth electrical generation, few researchers dispute the environmental difficulties associated with establishing a mine-mouth power plant. One of the more important environmental constraints to siting a new generating plant in the West is the need for a large volume of water. A typical power plant requires 7 to 8 tons of water for each ton of coal that is burned.¹² The availability of sufficient water for power plants in the arid southeast Montana region is questionable. If that water were available, the environmental consequences of utilizing that much water can only be imagined.

An equally important environmental impact from mine-mouth generating plants is the possible deterioration of air quality in the Tongue River Valley. A mine-mouth generating plant located near Ashland clearly would impact the Northern Cheyenne Indian Reservation's Class I air designation.

Other significant environmental constraints that are associated with a mine-mouth electrical plant involve the siting and the construction of high voltage transmission lines. Each new plant would require electrical linkage to the place of use. As has become apparent in Montana in recent years, right-of-way acquisition for transmission lines is a serious legal and jurisdictional problem. Moreover, all of the environmental consequences that result from development of any kind would be attendant to the construction of a transmission line. When added to the apparent environmental factors presented by a power plant siting, these consequences could be cumulatively more important than the transportation of coal from the southeast Montana region. Therefore, this alternative was eliminated from further consideration by the SEE.

B4.1.5 The "No Action Alternative" as No Development

If the "No Action Alternative" is selected, it is unlikely that the development of coal resources would proceed in the Ashland/Birney/Otter Creek area. The area would thus avoid the potential environmental and socioeconomic impacts that are specifically associated with the Proposed Action.

Selection of the "No Action Alternative" might cause a "shortfall" in national coal production or might result in the increased production of coal from other mines in the region. The impacts of either occurrence are not quantified in this DEIS.

Selection of the "No Action Alternative" also would suggest that impacts associated with other activity in the region would still occur. The baseline conditions and projections for the "No Action Alternative" are described fully in section 4.0 and Appendix A of the DEIS.

B4.2 EVALUATION OF ALTERNATIVE RAIL ALIGNMENTS OUTSIDE THE PROPOSED RAIL LINE

B4.2.1 Decker Route (Map Designation 2)

The Ashland/Birney to Decker route has more physical constraints associated with it than any other alignment under consideration. The route would climb southward through the Tongue River Valley, paralleling the river. The total rise in elevation would be 1,000 feet, much of which would be gained through narrow canyons. The number of locomotives needed to transport coal over this line would raise operation and maintenance costs significantly.

Marketing problems for coal hauled over the Decker route would be substantial. Coal traveling over this route would have an initial terminus in Sheridan, Wyoming (approximately 75 miles south of the Montco Mine). The coal would then have to be shipped to Hardin, Montana, and then to Miles City for eventual transportation to markets in the Midwest. The total trip length would be roughly 327 miles. Increased transportation costs and lower BTU value of the Ashland coal would not make the product competitive with higher quality Decker and Powder River Basin coal. In addition, the Decker alternative could pose a legal constraint in that right-of-way approvals over federal lands along the route would be required from the BLM.

The Decker route also offers a number of environmental constraints to its construction. Biologists consider the aquatic values of the higher elevation segments of the Tongue River to be more important than those on the lower portions of the river. Construction of the railroad through the narrow canyons south of Birney could affect water quality and the sport fishery resource more than if the railroad were directed towards Miles City.

Another significant environmental objection to the Decker route is its possible traverse of a known antelope wintering ground. In addition, the route would parallel the western boundary of the Northern Cheyenne Indian Reservation for a greater distance than would any other alternative alignment. Effects on the reservation's Class I air quality designation might be more substantial than would occur on another route.

Finally, the direction of coal transport through the Sheridan, Wyoming, area might create a severe "bottleneck" at that point. This concentration of coal shipment would not only affect the movement of coal and other commodities, but might have significant socioeconomic impacts on northern Wyoming communities. For these reasons, the SEE eliminated the Decker route from further consideration as a reasonable alternative to the proposed rail line.

B4.2.2 Bureau of Land Management Route (Map Designation 3)

The principal engineering obstacle to constructing a rail line along the BLM-suggested alignment is the necessity to leave the Tongue River Valley. The suggested railroad route would have to climb approximately 400 feet from the valley before eventually dropping into the Moon Creek drainage. Extra locomotives would be required to pull a unit train up this grade, thereby adding to operating costs. Furthermore, this alignment would necessitate substantial amounts of cut and fill in order to cross the rougher terrain. In addition, significant cost would be incurred if the railroad connected with the Milwaukee Road, which would require construction of a bridge across the Yellowstone River. All of these factors explain the higher cost of this alignment when compared to the other alternative routes.

The same right-of-way problems that are associated with crossing federal lands on the Decker route would apply to the BLM route. Acceptance of this route would necessitate securing a second permit from the U.S. Army Corps of Engineers, should the Yellowstone River have to be crossed.

Environmentally, the BLM route presents a number of problems. The amount of cut and fill that would be necessary to cope with the rough terrain would impact more acreage during the construction phase. In addition, this route may dissect three antelope wintering ranges and one turkey range. The U.S. Fish and Wildlife Service has expressed concern over the possible effects of this alignment to wildlife populations in the area.

For these reasons, the BLM route was eliminated by the SEE from further consideration as a reasonable alternative to the proposed rail line.

B4.2.3 Tongue River Road Route (Map Designation 4)

Construction of a railroad line along the Tongue River Road would pose a number of problems. It would require substantial amounts of cut and fill. The existing right-of-way would likely be destroyed and a new, expanded right-of-way secured. It should be noted that the route would create a "roller coaster effect" due to positive and negative grades.

This alignment generally avoids the Tongue River flood plain. However, there are portions of it that likely would be proximate to the river and could have an affect on water quality and aquatic resources. In addition, the route would cross the Tongue River nearer its mouth, where water quality could be more sensitive. Finally, the Tongue River Road route would cross a number of ponderosa pine areas, which are habitat for deer and turkeys. This habitat could be disrupted by the railroad.

The potential benefits of the route include: (1) the avoidance of most of the Tongue River flood plain; (2) the utilization of an existing transportation corridor; (3) the continuing interest of the Custer County Planning Board in this alternative. These benefits were sufficient to sway the evaluation in favor of retaining this alternative for further study.

B4.2.4 Moon Creek Route (Map Designation 5)

The Moon Creek alternative presents a number of engineering problems. The climb from the Tongue River Valley would not only require more disturbance of land through cuts and fills, but would necessitate using additional locomotives during operation of the railroad. A crossing of the Yellowstone River, should the line connect with the Milwaukee Road, would not only be expensive, but would potentially affect water quality and aquatic resources.

The Moon Creek option does offer an opportunity to avoid much of the LARRS, although the railroad right-of-way would still cross the western edge of the facility. The ephemeral nature of Moon Creek would likely limit impacts to the aquatic resources of this drainage. Existing data indicate that selection of the Moon Creek alternative would have approximately the same impact to terrestrial wildlife as would the proposed route. This may be a reflection of the lack of data regarding wildlife resources on the Moon Creek route.

The avoidance of many important research plots on the LARRS and the avoidance of the lower Tongue River flood plain were significant in the decision to retain this route for further study.

B4.2.5 Colstrip Route (Map Designation 6)

The Colstrip route presents a number of constraints to its construction. From an engineering viewpoint, a rail line along this

alignment would require large amounts of cuts and fills. The total rise against load of 600 feet represents a significant engineering obstacle. The longer haul for coal on the Colstrip route also would have some affect on the coal's marketability in the Midwest.

Brief previews of the environmental impacts from construction and operation of a rail line to Colstrip suggest that the route might be more acceptable than other alignments. However, the route's proximity to the Northern Cheyenne Indian Reservation and its Class I air designation could be a potential constraint to the project.

Possible benefits of this route, particularly the shorter distance and smaller associated disturbance, in conjunction with the large volume of data available, were decisive factors in retaining this route for further evaluation.

B4.3 EVALUATION OF ALTERNATIVES (OPTIONS) WITHIN THE PROPOSED RAIL LINE

B4.3.1 Custer County/LARRS Option (Map Designation 1.1)

The Custer County option differs from the other alignments in that it has a 400-foot rise. Its location through the LARRS offers no qualitative advantage over other options. The route would require more cuts and fills than other options and probably would create more environmental impacts to the research facility. In addition, the Custer County route as suggested bisects the LARRS and would likely have more impact on the facility than would a route nearer the station's extremities. For these reasons, the SEE eliminated this option from further consideration.

B4.3.2 IntraSearch/LARRS Option (Map Designation 1.2)

This option would have a more adverse grade than other routes through the LARRS. As with the other alignments through the range station, it could affect activities at the facility. However, this option could have a more serious impact to the station than other alignments in that it might cross several irrigated fields north of Interstate Highway 94. Therefore, the SEE eliminated it from further consideration.

B4.3.3 LARRS/Tongue River Option (Map Designation 1.3)

Selection of this option would dictate raising the grade above the Tongue River flood plain. Proximity of the river also might necessitate placement of rip-rap. Selection of this option might avoid possible impacts to range experiments at the LARRS. However, the route's proximity to the river may present aquatic and hydrological problems. Should rip-rap in the banks of the Tongue River become necessary, additional Section 404 permits would be required from the Corps of Engineers. This option was retained for further study as

part of the Proposed Action because of the minimal impacts it would have on the LARRS.

B4.3.4 Proposed Rail Line through LARRS (Map Designation 1.4)

This option represents the best route from an engineering perspective. It is further from the Tongue River than the LARRS/Tongue River option, yet it has the same engineering characteristics (0.2 ruling grade against load). The main constraint to selection of this option would be its significant impact to range research plots at the LARRS. Due to this consideration, this option was eliminated from further consideration by the SEE.

B4.3.5 IntraSearch, East of Miles City (Map Designation 1.5)

This option has significant engineering and environmental consequences associated with it. This route would bisect agricultural, commercial, and residential properties on the east side of Miles City. The city's future residential expansion to the east would directly conflict with the railroad. In addition, selection of this option would necessitate a second crossing of the Tongue River. Two additional highway crossings also would be needed. Greater socioeconomic, aquatic, and hydrological impacts are associated with this option than with other options or alternatives. This option was not retained by the SEE for further study because of the concerns cited here.

B4.3.6 Option in Township 4 North/Range 47 East (Map Designation 1.6)

This option presents some minor additional engineering constraints when compared to the proposed rail line. It would require more cuts and fills and would result in additional adverse grade. The possible benefits that might result from this option were not significant enough to warrant its retention for further consideration by the SEE.

B4.3.7 Ashland NW Alignment (Map Designation 1.7)

The Ashland Northwest (NW) Alignment presents the best engineering route around Ashland. However, it might affect some residential areas of Ashland and might isolate the community fire station. Socioeconomic impacts associated with this option are the possible constraints to its selection, but it was retained as an option and will be considered in the DEIS.

B4.3.8 Optional Route Through Ashland (Map Designation 1.8)

The principal difficulty in constructing a rail line along this optional route is the amount of earthwork that would be required. Conceivably, a substantial amount of fill would be needed through the Otter Creek drainage. This work might increase sedimentation to the creek and impact water quality and aquatic resources. The SEE eliminated this option since it did not appreciably differ from the proposed rail line.

B4.3.9 Ashland SE Alignment (Map Designation 1.9)

The Ashland Southeast (SE) Alignment presents the same difficulties as does the optional route (1.8), but does afford more direct access to the Otter Creek terminus, and minimizes direct flood plain encroachment near the Tongue River/Otter Creek confluence. A large quantity of fill would, however, be needed to cross the Otter Creek drainage. Impacts to water quality and aquatic resources might result. This route was retained for further evaluation, and has become part of the Proposed Action.

B5.0 SUMMARY COMPARISON OF ALTERNATIVES

B5.1 "NO ACTION ALTERNATIVE"

This alternative represents the "no development" scenario for the coal resources of the Ashland/Birney/Otter Creek areas. Without reliable transportation, development of these energy resources would not take place. The SEE retained consideration of the "No Action Alternative" in the DEIS. In most instances, it is presented as the baseline forecast for the analysis period.

B5.2 ALTERNATIVE MODES OF TRANSPORTATION

Each alternative to the construction of a railroad line from the Ashland/Birney/Otter Creek area to Miles City poses a number of engineering, legal, and environmental problems. From the cursory review presented in this chapter and portrayed in Table B-1, one can see that certain alternative modes of transportation are not feasible.

The coal slurry alternative to constructing a railroad is not a reasonable option, given the statutory constraints in Montana law. Hauling by truck might appear to be an acceptable alternative to the railroad. However, with the truck haulage alternative, one could expect a continuous stream of vehicles on the 82-mile Tongue River Road to Miles City. The obvious safety and environmental problems raised by the selection of this transportation mode effectively exclude it from further consideration.

Construction of a conveyor belt might be a feasible option, if the required length of the system was considerably shorter than 82 miles. Security problems and the necessary maintenance of such a system would quickly render its operation unprofitable. Furthermore, construction of a conveyor belt from Ashland to Miles City would present more of a physical barrier than would construction of a railroad.

Mine-mouth generation of electricity (coal by wire) is complicated by many legal and environmental problems. It is doubtful that sufficient water would be available in the Tongue River Valley area to service the number of plants that could be located there. Effects on the Northern Cheyenne tribe's Class I air quality standard would be significant if the plants were built in the region. More importantly, selection of the mine-mouth generation alternative would necessitate the identification and assessment of impact on new transmission corridors in the northern tier region. Mine-mouth generation of electricity is clearly more environmentally harmful than construction of a railroad.

TABLE B-1
COMPARISON OF ALTERNATIVE MODES OF TRANSPORTATION

TRANSPORTATION MODE	ENGINEERING/COST	LEGAL	ENVIRONMENTAL
Railroad	----- PROPOSED ACTION -----		
Coal Slurry	Higher cost (most economical when used for long distance transportation)	Use of water for transport of coal outside of Montana is contrary to Montana state law; lack of power of eminent domain	Impact to water availability and quality
Conveyor	Higher cost (economical when used for short distance transportation); security of system	Right-of-way acquisition	Impact to air quality
Truck Haulage	Higher cost (economical when used for short distance transportation); safety	Acquisition of a new right-of-way	Additional acreage disturbed; impact to air quality; noise; vibration; socioeconomic; energy consumption
Mine-mouth Generation (coal by wire)	Need to construct transmission lines	Numerous state and federal permits required; right-of-way for transmission lines	Impacts to water quality and air quality; socioeconomic impacts

B5.3 ALTERNATIVE RAIL ALIGNMENTS OUTSIDE THE PROPOSED RAIL LINE

Initial comparison of the various alternative routes suggests that several should be eliminated from further consideration. Table B-2 provides information on the physical characteristics of each alternative route and alternative (option) within the proposed rail line evaluated during the screening process. Table B-3 provides brief sketches of the significant constraints posed by each alternative or option in terms of engineering/cost, marketing, legal, and environmental considerations. These data were incorporated in the elimination of those alternatives and options not appearing to provide reasonable alternatives to the Proposed Action.

The Decker route (Map Designation 2) would not only present significant engineering problems, but, due to the additional distances involved, also would not be a realistic way to market coal to the Midwest. Coal intended for sale to mid-American markets and shipped to Miles City, Montana, via Sheridan, Wyoming, would clearly not be competitive with higher quality coal from the Powder River Basin. More importantly, the socioeconomic impacts from directing enormous coal shipments through northern Wyoming could be pronounced.

The BLM route (Map Designation 3) was eliminated for engineering and environmental reasons. The rough terrain encountered on this route would require a substantial amount of cut and fill in order to make the grade acceptable to FRA standards. A crossing of the Yellowstone River would present numerous construction and environmental constraints. In addition, adoption of this route ensures that important wildlife habitat west of the Tongue River would be impacted during construction and operation of the railroad.

The Colstrip, Tongue River Road, and Moon Creek routes, on the other hand, showed potential as reasonable alternatives to the proposed rail line for a variety of reasons. The Tongue River Road route would use portions of an existing transportation right-of-way, although additional right-of-way would have to be secured, disturbing additional lands. While more complex from an engineering perspective, the Colstrip route is shorter. However, it is more expensive on a cost per mile basis due to the adverse terrain. The Moon Creek route, most importantly, avoids significant impacts to the LARRS. The Tongue River Road (Map Designation 4), Moon Creek (Map Designation 5), and Colstrip (Map Designation 6) routes are subjected to a similar level of scrutiny in the DEIR/DEIS as the proposed rail line.

B5.4 ALTERNATIVES (OPTIONS) WITHIN THE PROPOSED RAIL LINE

Initial comparisons of possible options within the proposed rail line indicated that several should be eliminated from further consideration. Comparison data employed in this screening process are summarized in Tables B-2 and B-3.

TABLE B-2

PHYSICAL CHARACTERISTICS OF THE ALTERNATIVE ROUTES
FOR THE PROPOSED TONGUE RIVER RAILROAD AND ALTERNATIVES (OPTIONS) WITHIN THE PROPOSED RAIL LINE

MAP DESIGNATION AND ALTERNATIVE	TOTAL LENGTH (miles)	APPROXIMATE COST (MM\$) ^a	RIVER CROSSINGS (Number)	RULING GRADE AGAINST LOADS (Percent)	LENGTH RULING GRADE AGAINST LOADS (Feet)	TOTAL RISE AGAINST LOAD (Feet)
1. Proposed Rail Line	89	129.2	1	0.2	15,000	30
1.1 Custer County/LARRS ^b	90	132.5	1	1.0	40,000	400
1.2 IntraSearch/LARRS ^b	89	132.3	1	0.83	9,000	78
1.3 LARRS/Tongue River Option	88	131.1	1	0.2	15,000	30
1.4 Proposed Rail Line through LARRS ^b	88	128.9	1	0.2	15,000	30
1.5 IntraSearch, east of Miles City	95	133.7	2	0.24	14,000	36
1.6 Option in T4N, R47E ^b	89	129.7	1	0.4	8,000	32
1.7 Ashland NW Alignment ^b	89	128.9	1	0.6	6,000	36
1.8 Optional route through Ashland ^b	92	136.5	1	0.5	10,000	50
1.9 Ashland SE Alignment ^b	89	131.1	1	0.2	15,000	30
2. Decker Route	65	103.5	1	1.0	80,000	1,000
3. Bureau of Land Management Route	92	160.6	2 ^c	1.0	40,000	450
4. Tongue River Road Route	88	146.3	1	0.85	18,500	380
5. Moon Creek Route	89	140.8	2 ^c	1.0	40,000	400
6. Colstrip Route	46	74.5	1	0.85	31,000	600

^a Includes earthwork, trackage, drainage, and right-of-way fence; MM\$ = millions of dollars

^b The numbers for these options are tied into the total railroad length

^c One crossing of the Tongue River and one crossing of the Yellowstone River

TABLE B-3

INITIAL SCREENING OF OPTIONS WITHIN THE PROPOSED RAIL LINE AND ALTERNATIVES TO THE PROPOSED ACTION

MAP DESIGNATION AND TRANSPORTATION ROUTE	SIGNIFICANCE CONSTRAINTS			
	ENGINEERING/COST	MARKETING	LEGAL	ENVIRONMENTAL
1. Proposed Rail Line	----- PROPOSED ACTION -----			
1.1 Custer County/LARRS Option	400-ft rise against load; substantial cuts and fills	Insignificant	--	Impact to additional acreage; USDA research facility
1.2 IntraSearch/LARRS Option	Slight adverse grade	Insignificant	--	Impact to USDA research facility; possible crossing of irrigated fields
1.3 LARRS/Tongue River Option	Raising grade above flood plain; possible rip-rap	Insignificant	Floodway Management Act	--
1.4 Initial Option Through LARRS	--	Insignificant	Floodway Management Act; Sec. 404 permits from Corps of Engineers	Impacts to aquatic resources and water quality
1.5 IntraSearch, East of Miles City	Necessitates 2 river crossings and 2 highway crossings	Insignificant	Crosses legal subdivisions	Impact to aquatic resources; bisects agricultural, commercial, & residential properties; potential conflict with residential expansion; socioeconomic impacts
1.6 Option in T4N R47E	Additional cuts and fills	Insignificant	--	--
1.7 Ashland NW Alignment	--	Insignificant	--	Socioeconomic impacts to Ashland
1.8 Optional route through Ashland	Additional fill	Insignificant	--	Impacts to water quality and aquatic resources of Otter Creek
1.9 Ashland SE Alignment	Additional fill	Insignificant	--	Impacts to water quality and aquatic resources of Otter Creek
2. Decker Route	Greatest rise against load of all alternatives	Increased mileage & cost to market in Midwest via Sheridan, WY	FRA requirements; right-of-way across federal lands administered by BLM	Impacts to water quality, aquatic resources, wildlife, Northern Cheyenne Class I air, socioeconomic
3. Bureau of Land Management Route	450-ft. rise against load; substantial cuts & fills; possible crossing of Yellowstone River	Some increase in mileage	Right-of-way across federal lands administered by BLM	Impact to additional acreage, wildlife, cultural resources, water quality
4. Tongue River Road Route	380-ft. rise against load; substantial cuts & fills; rebuilding Tongue River Road	Insignificant	New right-of-way from County	Impacts to aquatic resources, water quality, and wildlife
5. Moon Creek Route	400-ft. rise against load; substantial cuts & fills; possible crossing of Yellowstone River	Additional mileage	--	Impact to wildlife
6. Colstrip Route	600-ft. rise against load	Significantly longer haul to upper-Midwest	--	Impact to Northern Cheyenne Class I air

The Custer County/LARRS option (Map Designation 1.1) and the IntraSearch/LARRS option (Map Designation 1.2) demonstrate no benefits over other choices through the LARRS. In addition, the Custer County route would require more cuts and fills, and therefore more disturbed acreage, at the research facility than other routes. The proposed route through LARRS (Map Designation 1.4) also was deemed unacceptable due to damage to research projects. All three BLM routes were eliminated from further study.

The IntraSearch, East of Miles City route (Map Designation 1.5) would offer no apparent benefits to the Tongue River Railroad over the other options, but would pose significant environmental and legal problems. One additional river crossing and construction of the line through residential and commercial areas of Miles City would be significant impacts. It was eliminated from further consideration in the DEIR/DEIS.

The option in Township 4 North, Range 47 East (Map Designation 1.6) appeared to offer no advantages over the proposed rail line and was eliminated from further consideration. Likewise, the optional route through Ashland (Map Designation 1.8) showed no advantage over the others under consideration, so it too was eliminated.

The TRRC has requested permission to construct either the Ashland NW Alignment (Map Designation 1.7) or the Ashland SE Alignment (Map Designation 1.9). Therefore, the SEE determined that both routes warranted further study in the EIS.

B6.0 CONCLUSIONS

The proposed rail line with the Ashland NW and Ashland SE Alignments, the Tongue River Road, Moon Creek, and Colstrip alternative routes are studied in the DEIR/DEIS. All routes are presented on 7.5-minute maps, which delineate right-of-way boundaries and areas of impact. Table B-4 presents a summary of the disposition of each alternative or option as a result of the screening process.

TABLE B-4

DISPOSITION OF ALTERNATIVES DURING SCREENING PROCESS

MAP DESIGNATION AND ALTERNATIVE	ELIMINATED FROM FURTHER CONSIDERATION	INCLUDED IN EIS
n/a "No Action Alternative" n/a Coal Slurry Pipeline n/a Conveyor Belt System n/a Hauling by Truck n/a Mine-Mouth Generation	 x x x x	x
1. Proposed Action 1.1 Custer County/LARRS Option 1.2 IntraSearch/LARRS Option 1.3 LARRS/Tongue River Option 1.4 Initial Option through LARRS 1.5 IntraSearch, East of Miles City 1.6 Option in T4N, R47E 1.7 Ashland NW Alignment 1.8 Optional route through Ashland 1.9 Ashland SE Alignment 2. Decker 3. BLM 4. Tongue River Road 5. Moon Creek 6. Colstrip	 x x x x x x x x x	 x x x x x x

B7.0 FOOTNOTES

1. "National Energy Transportation Study," A Preliminary Report to the President by the Secretary of Transportation and the Secretary of Energy, July, 1980, p. 61.

2. [Studies conducted by Sverdup & Parcel]

3. Coal slurry is finely ground coal mixed with water or some other liquid medium.

4. U.S. Department of Transportation, "Transporting the Nation's Coal: A Preliminary Assessment," Report to the Secretary of Transportation from the Coal Transportation Task Force, January, 1978, p. 4-2. (Hereafter referred to as U.S. Dept. of Transportation, "Transporting the Nation's Coal".)

5. A. Sargent, Western Coal Transportation: Unit Trains on Slurry Pipelines (August, 1976).

6. See also U.S. Department of Transportation, "National Energy Transportation Study," Preliminary Report to the President by the Secretary of Transportation and the Secretary of Energy, July, 1980. (Hereafter cited as U.S. Dept. of Transportation, "National Energy Transportation Study".)

7. Ibid., p. 78.

8. U.S. Dept. of Transportation, "Transporting the Nation's Coal", p. 4-3.

9. Ibid., p. 2-3.

10. U.S. Dept. of Transportation, "National Energy Transportation Study" (1980), p. 79.

11. Ibid., p. 80.

12. Ibid., p. 81.

APPENDIX C

DRAFT ENVIRONMENTAL IMPACT STATEMENT,

MONTCO MINE

SUMMARY, MAY 1982

from: Montana Department of State Lands, Draft Environmental Impact Statement, Montco Mine, Rosebud County, Montana. Helena, MT, 1982.



SUMMARY

Action Under Consideration

Montco proposes to open a coal strip mine in the Tongue River Valley, Rosebud County, Montana. The Commissioner of State Lands must decide whether to approve the permit as applied for by Montco, deny the permit, or approve the permit subject to stipulations.

Brief Description of the Company's Proposal

Montco proposes to mine 186.1 million tons of coal over 24 years at a maximum rate of 12 million tons per year from both private and State coal leases. The entire mine plan area covers 10,171 acres, of which 5,455 would be disturbed for mining, roads, and soil and overburden stockpiles and 115 would be disturbed for facilities. The operation is scheduled to begin in 1982 (but will probably be delayed one year) and end after completion of reclamation in 2006 (or 2007 if delayed one year).

The current permit application covers only the first five years of the mine's 24-year life. Four hundred ninety acres would be disturbed by mining, roads, facilities, and soil and overburden stockpiles under the first permit.

Summary of Impacts

Geology. Following reclamation, some erosion of soil would be unavoidable. Special revegetation and soil/overburden replacement techniques could lessen this problem.

Adequate favorable overburden exists in the North King mining unit to cover the spoils to a depth of 8 feet. This would be adequate for successful reclamation; however, separation of favorable from unfavorable material could be difficult.

Hydrology. The mine would slightly increase total dissolved solids (TDS) in ground and surface waters of the mine plan area. Post-mining uses of the land would not be adversely affected by these changes. TDS would eventually contribute to dissolved solids loads in the Tongue River, although the increased loads would be negligible (less than 3 percent) and would not adversely affect agricultural water uses downstream. Occasionally, the mine could cause minor increased sedimentation in the Tongue River and its tributaries.

Soils. Some impacts on soils would be unavoidable, including loss of soil profile, structure, and organic matter. These impacts would make the area more sensitive to mismanagement and drought than prior to disturbance. In addition, the proposed plan calls for salvage of some unfavorable soil, and this could hamper revegetation in isolated areas.

Vegetation. Because of the potential problems with soils and overburden, revegetation failures could occur in areas up to several acres in size. Complete revegetation failure is unlikely.

Aquatic Ecology. Aquatic habitats within the North King mining unit would be removed without detrimental effects to regional aquatic ecosystems. No significant degradation of water quality or aquatic populations in the Tongue River is anticipated.

Wildlife. Wildlife habitat and big game travel lanes in the areas being mined would be temporarily destroyed. Habitat-type changes would result over the long term (100 years or more) in a loss of ponderosa pine cover for big game species. Additional hunting would reduce wildlife populations in areas near the mine open to hunting.

Climate. Climate would not be measurably affected.

Air Quality. Total suspended particulate (TSP) concentrations would increase significantly in Ashland and near the proposed permit area. The major source of these particulates would be traffic on FAS 566.

Employment and Income. At full production, the mine would employ 560 persons. As a result, employment in Rosebud County would become increasingly dominated by energy development. In Powder River County employment would expand significantly. Neither Custer County nor the Northern Cheyenne Indian Reservation would experience significant indirect employment effects.

Sociology. The population of the Ashland area near the proposed mine would increase as much as 83 percent during mine operations. This population influx would, over time, result in changes to the social organization of the Ashland-Birney area.

Community Services. The development of the mine would adversely affect the quality and strain the capacity of many community services in Rosebud and Powder River Counties. The Ashland community does not appear to be capable of responding to increased demand for services.

Fiscal Conditions. Two fiscal problems would result from the mine. First, revenues generated by the mine would not be available to all jurisdictions affected by the mine. This would upset the fiscal balance of Powder River County, Broadus, Broadus's schools, Colstrip's schools, and Forsyth. Second, revenues generated would not be available during the years the mine's effects required expenditures. This would cause revenue shortages in Rosebud County and the yet-to-be-built Ashland High School.

Land Use. The mine would not significantly affect the pattern of land uses in the region.

Transportation. The construction of the Tongue River Railroad from Miles City to the mine would be the most significant change in the transportation system resulting from the mine. In addition, increases in highway traffic would make improvements such as paving, widening, realigning, and bridge enhancement necessary on some road segments.

Recreation. Opportunities for recreation would not be adequate for the expanded population the mine would produce. Conflict may develop between newcomers and current residents as a result of increased use of the lands near the mine.

Cultural Resources. Eleven prehistoric sites eligible for listing on the National Register of Historic Places would be destroyed by the mine; however, all would be excavated, recorded, and analyzed prior to mining.

Aesthetics. The mine would replace a pastoral landscape with an industrial setting.

APPENDIX D

POWDER RIVER

FINAL ENVIRONMENTAL IMPACT STATEMENT:

COAL

SUMMARY, DECEMBER 1981

from: U.S. Department of the Interior, Bureau of Land Management,
Powder River Final Environmental Impact Statement: Coal
(Washington, DC: U.S. Government Printing Office, 1981)

SUMMARY

This Environmental Impact Statement (EIS) is intended to be a part of the decision-making process, providing information to the Secretary of the Interior and the public concerning the use of coal resources from the Powder River Region. It has been prepared to comply with the Council on Environmental Quality (CEQ) regulations issued November 29, 1978 (43 FR 55978-56007), which emphasize concentration on significant issues and impacts. This emphasis sharply defines the options and provides a clear basis for choice by the decision-maker and the public.

Tract Profiles, consisting of the tract delineation report, coal data summary and site specific analysis report, were prepared for each tract within the region. The Tract Profiles constitute the site specific analyses for the EIS although they are not physically attached to the document. These reports consider environmental, social and economic impacts that would occur on the individual tracts and may be obtained from the BLM District Office, Casper, Wyoming at no charge. Impacts identified in each of these tract profiles as well as those occurring from the No-Action Alternative are analyzed cumulatively in this EIS.

Four alternative courses of action, ranging from no new federal leasing, to offering 19 delineated tracts for lease are addressed in this document. The issue of primary concern is the impact of coal mine development and population increases to communities. Many other resource impacts are presented and analyzed here; water resources, reclamation, air quality, sociology, economics, and railroad transportation are of primary significance. Many other resource impacts are presented, but in nearly every case, they are either insignificant or are mitigated by existing regulations. Differences in impacts are mainly by degree, rather than by type.

The alternative selected by the Regional Coal Team (RCT) as the preferred alternative would offer for lease in mid-1982 15 tracts which would result in an average annual production of about 50 million tons. Eight of the 15 tracts are considered production maintenance (coal leased to sustain existing coal mines).

Other alternatives considered herein are:

Alternative 1 (No Action) includes the coal related actions that would occur with or without new competitive federal leasing. Actions within this alternative include 18 existing coal mines, 17 coal mines under construction, 67 Preference Right Lease Applications (PRLAs) organized into 15 groups, three I-90 Coal Exchanges and two non-competitive leases (Northern Cheyenne). The average annual production from this alternative would

be about 369 million tons in 1990. An estimated surface disturbance of 210,000 acres would result from this alternative (see Table 2-2).

Alternative 2 considers leasing 1.5 billion tons of recoverable coal reserves from 13 tracts. The average annual production from this alternative would be about 46 million tons. An estimated surface disturbance of 57,400 acres would result from implementation of this alternative.

Alternative 3 analyzes impacts from the proposed leasing of 14 tracts including 1.5 billion tons of recoverable coal reserves. Average annual production from this alternative would be about 50 million tons. Surface disturbance would total 64,200 acres. This alternative offers the most favorable ratio of coal produced to environmental impacts generated, and is the preferred alternative.

Alternative 4 is the maximum alternative and considers leasing 2.6 billion tons of recoverable coal reserves from 19 tracts. Average annual production from this alternative would be about 90 million tons. Surface disturbance associated with this alternative would amount to 83,500 acres. This alternative would produce the most widespread environmental impacts of all federal action alternatives. Impacts would be most severe to the unincorporated community of Ashland District, Montana, where population would increase eightfold by 1990.

GENERAL CONCLUSIONS

The No-Action Alternative includes existing coal mines, coal mines under construction, PRLAs, I-90 Exchanges and non-competitive leases. It must be understood that impact from new federal leasing would add to that from the No-Action Alternative. When impacts from the No-Action Alternative is compared to impacts potentially resulting from new federal leasing, it is obvious that the No-Action Alternative has the greatest magnitude. Impacts, which can be traced to new federal leasing, are similar to those already occurring and only magnify the total.

Impacts in Wyoming center around the urbanized community of Gillette in Campbell County. Gillette has been experiencing energy-related impacts over the past ten years. Impacts in Montana would center around the rural, unincorporated community of Ashland in Rosebud County. Unlike Gillette, Ashland has experienced very little growth over the past decade. Therefore, social and economic im-

SUMMARY

pacts, caused by increased population, would heavily affect Ashland.

All the alternatives, including the No-Action, would further diversify the economic base within the region. This trend is well established in Wyoming but would create a shift in economic base in Montana where agriculture has accounted for a significant part of the economic base to date.

HIGHLIGHTS

GEOLOGY AND OTHER MINERALS

Coal, oil and gas, and uranium in economic quantities exist within the region. Coal production would not generally interfere with extraction of other energy minerals due to land-use planning constraints that minimize resource development conflicts.

WATER RESOURCES

Impacts as a result of new federal leasing would be very small regionally. Loss of shallow local aquifers (the coal in many cases) is extensive and would reach 257,000 acres with the preferred alternative by 1990. Water from shallow aquifers is generally poor quality (3,000-5,000 mg/L DS) although water more suitable for human use is available and would be unaffected by the preferred alternative at the 1,000-1,600 foot level. Increased costs for greater pumping lifts and new well construction are associated with loss of shallow aquifers.

AIR QUALITY

Air pollution from mining and indirect development would be local and would not significantly affect air quality except in the vicinity of the coal lease tracts. Localized areas of impact would be near Colstrip and Decker, Montana, and throughout a 22-mile strip south of Gillette, Wyoming.

There are no significant impacts forecasted for the Ashland, Montana, area which adjoins the Class I air quality area on the Northern Cheyenne Indian Reservation.

SOILS, VEGETATION, AND RECLAMATION

Soils in the area are often shallow, although slopes are generally gradual on a rolling type terrain. Reclamation success has shown to be good (Packer, 1974), although some areas could require more intensive and costly management.

WILDLIFE

Leasing of all 19 tracts would have major effects on local populations of wildlife but minor effects on regional populations. Antelope would be affected heaviest south of Gillette, Wyoming, where existing mining facilities are restricting animal movement and disturbing habitat. Four hundred acres of crucial winter antelope habitat near Decker, Montana, would be lost. Populations of sharp-tailed and sage grouse would be impacted on a local basis.

CULTURAL RESOURCES

Federal and state regulations protect these resources. Historic and architectural resources on private lands may not be protected unless steps are taken by local governments and private citizens.

LAND USE

Lands within this region are administered and controlled by a variety of governmental jurisdiction, each of which exercises a different level of land-use planning, development, and resource-use control. Land ownership pattern is dominated (85 percent) by private surface ownership with federally controlled mineral estate (split-estate).

Land-use patterns are expected to shift from agriculture toward mining and urbanization without new federal coal leasing and implementation of the preferred alternative would change this very little. Forty-four ranch and farm operations would be affected. One operator would lose his total holdings and another would lose about 80 percent. All other operations would be affected to a lesser degree. Losses to the ranches that would be substantially affected would be offset by royalties or fees paid by the mines for the use of private land.

SUMMARY

RECREATION

Funding for urban recreation facility construction and maintenance would be available. Dispersed recreational opportunities, such as camping and fishing, are restricted somewhat throughout the region and the quality of these experiences may be diminished even further because of the expected increase in population under Alternative 1 (No Action). New federal leasing would not appreciably affect dispersed recreation.

Most of the mining considered in this EIS would severely alter the landscape. These lands are not given a high visual resource classification and in most cases are seldom seen by persons not involved in mining. Thus, degradation of visual quality would not be obvious.

There are no areas of wilderness within the region. The wilderness areas that adjoin the region would be able to absorb the additional use anticipated by population growth.

TRANSPORTATION

Wyoming has adequate highway capacity to handle the increase in traffic volume. Required

maintenance is expected to fall behind due to increased use by maximum-weight vehicles.

Montana's highway system is adequate in the Colstrip area but will require major upgrading in the Ashland/Decker areas. Highways of major concern include U.S. Highways 212 from Crow Agency to Ashland, and FAS 314 from Highway 212 to Decker.

Railroad traffic on the three main lines leaving the region would increase by 20 percent under the preferred alternative. This would equate to about 50 trains daily through Miles City, Montana, and about 100 each through Newcastle and Torrington, Wyoming.

SOCIOLOGY AND ECONOMICS

Increases in population are expected with or without new federal coal leasing. The fiscal impact to communities in Wyoming would not be significant. However, impacts to Montana communities, Ashland in particular, would be severe. Rosebud County would experience significant shortages of funds for county government and schools since the proposed mines are actually located across the county line in Powder River County. Most of these impacts could be mitigated but only through strong community commitment and assistance from both federal and state governments.



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