

CHAPTER IV
MITIGATING MEASURES

Air Quality

Proper compliance with all applicable state and federal air quality laws, regulations and standards will be stipulated in the right-of-way, easements and other granted permits. Inclusion and enforcement of these stipulations will minimize adverse impacts to air quality. (See Chapter VI, Part I, Air Quality.)

Topography

Mitigating actions required to reduce topographic alterations and impacts due to railroad construction will require the prevention of unnecessary earthwork and repair of the altered land surfaces. Minimizing secondary impacts to soils, vegetation, water and scenic values are also dependent on mitigating topographic changes. The following stipulations are designed to mitigate impacts resulting from topographic alterations and may be incorporated in similar form into Interstate Commerce Commission and Forest Service permits and BLM right-of-way grants.

1. All operation shall be conducted so as not to change the character or cause pollution of streams, ponds, seeps, and marshes. Topographic alteration which may induce soil movements, water pollution and/or objectionable landforms shall be corrected to the satisfaction of the appropriate government agency.
2. Activities employing use of wheeled or tracked equipment shall be conducted in such a manner as to minimize surface damages. The

railroad company shall effect a minimum of topographic alterations consistent with practical construction operations. Drainage bottoms and high erosion hazard areas shall be avoided for use as borrow areas, waste disposal areas or material excavation sites. Approval of these sites shall be obtained from the appropriate government agency.

3. The railroad and their contractors shall avoid construction activities outside of the right-of-way boundaries during muddy or wet ground conditions.
4. Existing roads and trails shall be used whenever possible for access to construction and other sites. Construction of steep hillside roads shall be avoided. Ridge tops or level sites usually offer the best access routes. Road locations shall be approved by the appropriate government agency. In order to reduce additional access road development due to blockage of existing trails and roads, suitable crossings deemed necessary by the appropriate government agency shall be provided at locations on the rail line.
5. Drainages shall not be blocked by roadbeds or railroad embankments. Installation of drainage crossings, culverts, or bridges shall not cause siltation or accumulation of debris or materially alter the drainage course. Culverts shall not be installed in large drainages but shall be bridged as determined necessary by the appropriate government agency.
6. Permanent service roads shall be constructed and maintained in good condition for automotive vehicles. Adequate water drainage shall be provided to minimize erosion. Erosion of borrow pits of both

permanent service roads and railroad embankments shall be prevented by diverting water from the borrow pits at frequent intervals by culverts or cutouts. Erosion of road surfaces shall be prevented by installation of culverts, broad-based drainage dips, gravelling or as determined by the appropriate government agency.

7. Temporary access roads shall be rehabilitated upon abandonment. Spoil banks, windrowed soil, debris and fill material shall be replaced in the roadbed and graded to conform to original topography to the degree possible. Cut slopes should be reduced to a gentle grade consistent with the adjacent topography, waterbarred and left in a condition susceptible to revegetation by mechanical means.
8. The railroad company shall prevent the creation of shortcut trails and roads. Access needs shall be properly constructed for such purposes.
9. All cut slopes shall be constructed to as gentle a grade as is practical and consistent with construction requirements. Deep vertical cuts shall be avoided. Construction slopes on cuts of 40 feet or less shall be on a 3:1 slope. Those cuts greater than 40 feet shall not exceed a 2:1 slope. All construction areas shall be smoothed and graded to conform as near as practical to the adjacent terrain. Where deemed necessary by the appropriate government agency, slopes shall be protected by installation of waterbreaks, terraces or diversion ditches or protected from erosion. Construction sites or other areas within the construction zone that present problems such as erosion or bank sloughing will be corrected

by either contour furrowing, terracing, reduction of steep cut and fill slopes to an acceptable grade or corrected by other means.

10. All excavation sites such as clinker (scoria) pits, borrow areas and other such sites shall be closed by filling and grading to conform to and be compatible with the adjacent terrain. Final grading of backfills shall be performed to present a surface susceptible to revegetation. Water breaks and/or terracing will be required to prevent erosion of these sites.
11. Drainage alterations shall not change the character or cause unnatural erosion of water courses. Suitable rip-rap shall be used whenever drainage channels are altered and is to be placed at locations necessary to prevent bank sloughing, cutting or headcutting of the existing channels.
12. After cessation of use of any construction site, storage areas, or other ancillary sites required for construction purposes, that site or portion thereof no longer in use shall be restored to its original condition to the degree possible. Final grading and backfilling shall be performed so as to present a surface susceptible to revegetation and conform to the adjacent terrain. Erosion control on such sites shall be installed as determined by the appropriate government agency.

Soils

Impacts to soils can be minimized by including and enforcing protective stipulations in the right-of-way and other granted permits of the Federal Government (ICC, U.S. Forest Service, and U.S. Bureau of Land Management). The application of certain land treatment practices will minimize loss of topsoil and productivity; disruption of physical, chemical and biological properties; and soil loss by wind and water erosion and compaction. Mitigating measures will include stockpiling topsoil for later replacement on disturbed areas, cuts and fills. Mechanized equipment such as scrapers will be used to minimize soil mixing.

Ripping and tilling the soil surface prior to seeding will be required to minimize soil compaction effects. Restriction of unnecessary off-road vehicle use by equipment operators and employees will minimize soil compaction.

Soil erosion will be minimized by mulching, revegetation and development of erosion structures including waterbars, terraces, contour furrows, grassed waterways and interceptor ditches to divert running water away from unprotected disturbed areas. Wind erosion will be minimized by roughing up smooth, exposed soil areas with a disk or harrow.

Detailed soils inventories will be provided by Burlington Northern Inc. in accordance with standards designated by BLM and Forest Service to locate and identify each soil series situated within the right-of-way. Soil samples will be collected down to 60 inches for physical and chemical analysis. Chemical tests will include organic matter, pH, exchangeable sodium percentage, boron, sodium, chloride, calcium, selenium, nitrogen, phosphorus, potash, sulfur, base saturation, cation exchange capacity, and conductivity. Physical tests will include soil mechanical analysis and engineering properties. Soil mineralogy

and moisture relationships will be determined. Additional soils information will be obtained after soil has been replaced and before seeding to determine profile, chemical, mechanical and mineralogy changes in the upper 60 inches. Results from current or past research studies on revegetation and reclamation of disturbed areas will be utilized.

Construction designs will include mechanical treatment practices such as contour furrows, terraces and mulches to retain moisture onsite to benefit revegetation and reduce soil loss. Design will include control measures such as diversion ditches, waterways and water spreaders to reduce sediment yield and runoff from compacted areas or concentration of runoff waters. Studies and investigations are necessary to identify productive downstream soil areas that are presently sustaining desirable vegetative communities from being deprived of soil moisture.

Suitable disposal areas that will not have detrimental effects upon the environment need to be selected and identified for solid and liquid wastes. Service haul roads; material sites for sand, gravel, and ballast; campsites; and equipment storage areas will be cleaned up, scarified, rehabilitated and revegetated. Contingency plans must include measures to cleanup accidental spillage of detrimental or toxic materials such as gasoline, oils and chemicals and restore damaged soil to a near natural condition.

Service and haul roads that are easily susceptible to producing dust and sediment will be surfaced or treated with a binder of water. Chemical binders and surfacing materials that meet state and federal approval must be used.

The edges or sides of all excavated material sites and borrow areas will be sloped to a minimum 3:1 slope to minimize sloughing and enable revegetation.

Water Resources

Proper compliance with state water laws and regulations will insure legal use and minimum consumption of water supplies along the railroad route.

Compliance with all applicable state and federal water quality standards and regulations will be stipulated in the right-of-way, easements and other granted permits (See Part I, Chapter VI). Inclusion and enforcement of stipulations will minimize adverse impacts to the quality of both ground and surface waters.

Through stipulations in granted easements and permits, specific requirements for protecting water quality will be effected. These include handling, storage and disposal of all wastes and the application of herbicides in a manner to keep them out of all waters; timely revegetation of all disturbed areas (excavation and embankment slopes, around bridge, underpass and culvert abutments, etc.); rip-rapping around bridge abutments; and restriction of equipment operations permitted in stream bottoms and in and around open waters.

Vegetation

Loss of vegetation will be minimized by including and enforcing protective stipulations in the right-of-way easements and other granted permits of the Federal Government (ICC, U.S. Forest Service, and U.S. Bureau of Land Management).

Rehabilitation of all disturbed areas (required by stipulation) on and adjacent to the right-of-way that are not covered by permanent facilities will provide replacement vegetation on 1,278 acres of right-of-way and up to 950 acres adjacent to the right-of-way. Revegetation plans will be subject to approval by the administering agency or surface owner.

On the National Grasslands, a revegetation plan including specific measures will be submitted in the easement application for approval by the Forest Service.

Control of off-road vehicles and other equipment during construction of the railroad will reduce damage to vegetation along the route.

Development and operation of a stipulated fire protection and fire rehabilitation program by the railroad companies to lower the incidence of vegetation damage from range fires will be required. Stipulated requirements for spark arrestors on all appropriate equipment operated on and adjacent to the right-of-way will decrease the chance of accidental range fires.

Archeological Preservation

Legislative authorities and obligations which guide issuance of a federal approval to develop the Powder River Coal Resources are the Antiquities Act of 1906, Wyoming Antiquities Act of 1957, Wyoming Environmental Quality Act of 1973, Reservoir Salvage Act of 1960, National Historic Preservation Act of 1966, National Environmental Protection Act of 1969, and Executive Order 11593, May 13, 1971. A brief description of the laws concerned with Archeological Preservation may be found in regional mitigation, Chapter VI, Part I.

Prior to granting the permit for construction of the railroad, which might effect cultural resources on federal or nonfederal lands, a program of inventory, evaluation and nomination of sites, districts, buildings and objects will be developed in cooperation with the Wyoming State Historic Preservation Officer.

No rights-of-way will be approved until the company has coordinated its archeological surveys with the Wyoming State Historic Preservation Officer. The company's survey report will be submitted to the State Historic Preservation Officer with a copy to agencies approving plans and permits. The report will be certified by the State Preservation Officer and forwarded to the approving agencies, with a statement that surveys have been conducted by competent, professional archeologists and a recommendation for required surveys before plans and permits are approved. These surveys may be necessary if significant surface evidence supports additional work.

It is recommended that the railroad companies share in the cost of establishing a full-time resident basin paleo-archeologist under the supervision of the State Historic Preservation Officer. The basin archeologist will aid in reducing lead time and development delays by performing advance surveys for support facilities, educating construction employees, sampling soils, responding to company discoveries and conducting salvage work. Pending the establishment of a basin paleo-archeologist, the railroad companies will be required to satisfy the requirements for a professional archeologist and surveys as described by the Wyoming State Historic Preservation Officer and if so stipulated by him, contracting the archeologist for examinations during construction.

Aesthetics

The right-of-way grant will contain stipulations guided by Departments of Interior and Agriculture visual resource standards contained in agency resource management guidelines.

Probably the most critical factor in reducing the impact of the lineal project is its location in relation to naturally occurring lines in the landscape. Therefore, the following stipulations will be made a condition of the approved permit.

Native grasses and shrubs will be seeded to hasten the return to natural unbroken patterns in the vegetation. Tilling and planting will be irregularly seeded into adjoining vegetation to break the unnatural lines of construction.

Nonreflective materials will be used on transmission lines, towers, and buildings located on federal lands and the right-of-way. Soil disturbance of the right-of-way and material sites will be the minimum necessary to meet the needs of construction. The tops of cut slopes and bottoms of fill slopes will be rounded and seeded to blend with adjoining natural slopes.

Wildlife and Fish

Reestablishment of a perennial grassland vegetative cover on disturbed areas occurring on federally managed surface will be required and would partially mitigate habitat losses for some species.

Right-of-way barriers (fencing) to wildlife movement must be minimized to the extent possible by constructing crossings or other structures which would encourage some degree of game movement. This is particularly true should right-of-way fencing be constructed to be "sheep-tight."

Engineering design of drainage facilities, such as culverts and bridge openings, must be sufficient to minimize modifications of existing drainage patterns and maintain or improve downstream water quality. Rapid revegetation of exposed cut and fill slopes will be accomplished to assist in reducing and checking soil erosion.

Proper control and disposal of maintenance wastes and protection of riparian vegetation and surface water from herbicides will be required to minimize surface water quality changes.

Recreation

In areas on National Grasslands where public access is minimal, existing truck trails with legal access will have crossings to allow recreationists and hunters a means of crossing the railroad.

Agriculture

Livestock grazing

All appropriate specifications for construction and rehabilitation will meet those required by local, state or federal authority. The local, state or federal official responsible for issuing and administering said permits, rights-of-way, etc., will be referred to as the authorized officer.

Mitigating measures should be undertaken during the construction of the proposed railroad since most measures taken will consist of additions or modifications to the railroad grade or attendant facilities.

Before fences between pastures are removed to facilitate clearing and construction activities, temporary fences will be erected parallel to both sides of the right-of-way, closing the pasture on each side of the right-of-way so that livestock cannot drift between pastures.

All ditches and canals will be bridged or culverted with pipes capable of transmitting total design volume in subgrade embankment areas. All ditch and canal flows in excavation areas will be transmitted via aqueduct or flume structures across the excavations.

All ephemeral and intermittent streams will be culverted to allow passage of normal streamflow. All diverted drainages will have drop structures installed along diversion sections to prevent headcutting.

All vegetative material and litter resulting from construction clearing operations will be disposed of in a manner to be specified by the authorized officer to guard against occurrence of wildfire or pollution of water sources. The method used shall comply with EPA regulations.

All waste materials, other than those resulting from the clearing operations, will be stored in containers which will prevent accidental spillage

or disposal and disposed of at a site and by a method to be determined by the authorized officer.

Water occurring on lands crossed will not be used for construction of railroad grade or attendant facilities or service of attendant facilities except in conformity with state water law and written authorization from the authorized officer or the land owner. Authorization to drill for water may be authorized by special permit when pertinent regulations of the State of Wyoming have been complied with. Provisions of special permits will require that completed wells capable of producing five gallons per minute or more will be permanently cased and appropriate measures taken to assure surface contamination cannot enter water-bearing strata. After construction use of any completed wells is terminated, the wells will be capped according to specifications. Unsuccessful well drilling attempts will be plugged according to specifications furnished by the authorized officer. Specifications used will equal or exceed the requirements of the State of Wyoming.

Any attendant facilities (corrals, loading chutes, etc.) that will be destroyed as a result of railroad construction activities will be replaced or the landowner reimbursed for the value thereof in a manner to be agreed upon before any permits, rights-of-way, etc., will be issued. The authorized officer will decide disputes commensurate with his authorities and normal appeals procedures.

The completed railroad will be fenced on the right-of-way boundaries according to specification furnished by the authorized officer. These specifications may equal or exceed the State of Wyoming fencing requirements.

Upon completion of all construction, the areas denuded by construction activities will be protected and revegetated in a manner and according to specifications furnished by the authorized officer.

The effect of blowing soil can be mitigated by watering denuded areas during all stages of construction. As a final step the denuded areas should be watered and disked to assure adequate penetration of water and given a final water sprinkling. This will tend to bind the soil into larger particles less susceptible to wind movement. Revegetation will slow soil movement.

Herbicides can be used to treat invader species that are poisonous to livestock or that may be classed as noxious weeds. Compliance with recommended use rates for chemicals recommended by EPA will mitigate possible harmful effects of certain herbicides.

Annual maintenance will be performed on the right-of-way fence to lessen the frequency of mortality to livestock drifting onto the rail line. This maintenance should commence as soon as practical each spring.

The construction permit should specify the above actions are taken with concurrences of the landowners.

Transportation Networks

Mitigative action will be taken to avoid locating road crossings of the railroad that may induce train-auto accidents due to poor visibility. All grade crossings will be located to provide adequate stopping distances for the speeds of travel on the railroad and highway. Road depressions at grade crossings should be avoided in favor of longer and gradual inclines and declines to avoid snow build up at road depressions. The existing railroad line will be upgraded to a standard comparable to that of construction on the new line to limit train accident probability.

Other

Statutory authority for imposing conditions or stipulations to mitigate potential adverse environmental impacts associated with the proposed railroad construction is contained in Section 1 (20) of the Interstate Commerce Act (49 Stat. 543; 49 U.S.C. 1 (20)). This section provides that the Commission shall have the power to attach to the issuance of a certificate authorizing the construction of a line of railroad such terms and conditions as in its judgment the public convenience and necessity may require. In addition, support for the imposition of environmentally related conditions may also be found under provisions of the National Environmental Policy Act of 1969 which has been held by various courts to make environmental protection a part of the mandate of every federal agency.

Unlike the other federal agencies participating in the preparation of this environmental impact statement, the mitigating authority of the Interstate Commerce Commission extends over the entire route of the proposed rail line. It is not restricted to those portions of the right-of-way with federal ownership of the surface estate, but extends to private and state land ownership as well. Utilization of the Section 1 (20) authority, therefore, would enable conditions and environmental control measures to be applied on a consistent basis over all portions of any authorized new construction.

While the Commission has authority to impose conditions, it is doubtful whether the Interstate Commerce Act grants the Commission any enforcement power or even the power to determine whether such provisions as may be attached to a certificate have in fact been violated. Instead, it provides that any construction, operation or abandonment contrary to the provisions of the Act may be enjoined by any court of competent jurisdiction at the suit of the United States, the Commission, any Commission

or regulatory body of a state or states affected, or any other party in interest. Thus, an involved land-management agency, landowners adjacent to a proposed rail line, or conservation groups which can demonstrate the requisite standing may sue to enjoin a railroad's noncompliance with imposed environmental conditions.