

# LOW LEVEL MANAGEMENT ALTERNATIVE

The Low Level Management Alternative refers to a lower level of BLM management and involvement than in the Continuation of Existing or High Level Management Alternatives. Depending on the specific issue, this alternative would mean fewer restrictions on development or a lesser degree of protection and enhancement of resource values.

## Minerals

Most of the activities proposed in this alternative have no impact on the management, exploration or development of mineral resources.

## Coal

All 9,360 acres of Federal coal currently found acceptable for further consideration for leasing pending further study would be made available under this alternative for activity planning. Offering coal tracts in the Bull Mountain Field for leasing for surface mining could result in increased industry interest and activity. In the long term, 4,350,000 tons would potentially be depleted. Leasing coal by application in the Joliet-Fromberg Field for underground mining would allow development of the coal resource not feasible to develop by surface mining methods. Local needs for coal would also be met. In the short term, 630,000 tons of coal would potentially be depleted through underground mining. In the long term, 2,550,000 tons would potentially be depleted.

## Oil and Gas Leasing

Industry would have a greater incentive to lease the PMWHR, since exploration activity would be permitted. Some leases would be issued more quickly, since all leases would be issued directly from the Montana State BLM Office with standard stipulations.

## Classifications

Revoking the C&MU Act classifications in the Pryor Mountains would significantly increase the opportunity (and the incentive) to explore for locatable minerals. The surface management regulations (43 CFR 3809) would be used to develop mitigation of mineral exploration and development activities.

## Wilderness

Mining claims located in the Burnt Timber WSU and Pryor Mountain WSA predate the passage of the Federal Land Policy and Management Act (FLPMA), and therefore may degrade wilderness quality (though activity must still be performed in a manner so as to prevent unnecessary or undue surface degradation). Dropping the wilderness study areas and units from wilderness consideration would permit mineral exploration to continue beyond a possible designation date.

Mining claims within the Twin Coulee WSA were located after the passage of FLPMA, and therefore may not impair wilderness suitability. Dropping this WSA from wilderness consideration would permit less restrictive mineral exploration and allow exploration to continue beyond the date of designation.

There are no oil and gas leases in any of the four study areas and units which predate FLPMA. Exploration may be restricted. Dropping these areas from consideration would permit less restrictive exploration to occur.

## Conclusion

Recommending to the Regional Coal Team that all areas within the resource area suitable for mining be leased may result in increased industry interest and development of the coal resource.

This alternative would significantly increase the area open to mineral exploration, and would allow less restrictive exploration and development techniques. Operations would be regulated by the surface management regulations (43 CFR 3809).

There would be an irreversible and irretrievable loss of coal, oil, gas and other non-renewable resources to the extent that these resources are developed in this alternative, however, the process could be halted at any time.

## Soils/Watershed (Erosion and Runoff)

### Grazing Management

Under this alternative there would be a slow improvement in vegetative cover due to the reduced numbers of livestock. The potential for erosion and runoff would therefore be reduced.

### Wild Horse Management

Should wild horse numbers increase beyond the carrying capacity of the Pryor Mountain Wild Horse Range, significant long-term increases in soil erosion would result. Erosion susceptibilities would be high for water and severe for wind. Runoff potentials on this poor condition range would be medium. Average annual runoff would increase from 7,057 acre-feet in the short term to 7,314 acre-feet in the long term.

### Timber Management

During and immediately following timber harvesting, erosion and runoff hazards would be the same as in the Continuation of Existing Management Alternative. Average annual runoff would increase by 0.8 acre-feet since a larger area is to be harvested is proposed. This amounts to 40 acres being harvested each year. Potential hazards such as increased runoff and erosion are minimal due to the small land areas being harvested. However, these impacts could increase substantially if larger sales occur in the Twin Coulee area. If 1 million board feet (MMBF) were harvested on 440 acres, average annual runoff would increase to 8.8 acre-feet contributing to downstream sedimentation.

## Coal

Impacts would be as described under general impacts but would potentially be more severe under this alternative. Stream sedimentation caused by storm discharges greater than sedimentation pond design capacities would be more likely to occur with some short-term significant consequences. Increased surface flows would be reduced during mining and areas with lower infiltration capacities would be potentially greater after mining. Significant impacts from cumulative effects would be more likely to occur.

## Oil and Gas Leasing

Impacts are the same as those described in the General Impact section.

## Classifications

Impacts would be the same as described in the General Impact section

## Off-road Vehicle (ORV) Use

Impacts would be the same as those described in the General Impact section.

## Soils/Watershed (Water Quality and Streambank Protection)

### Grazing Management

Reduction in livestock numbers alone would not alleviate watershed problems in I category allotments. Streambanks would continue to deteriorate, thus degrading water quality with increases in suspended and total dissolved solids, temperature and additional nutrients (i.e., nitrogen and phosphorus). The quality of watering sources on the Pryor Mountain Wild Horse Range would decrease due to trampling by horses as they concentrate around a limited number of waterholes.

### Conclusion

Grazing management, under this alternative, would slowly improve watershed conditions. Wild horse management would significantly deteriorate watershed conditions. Erosion susceptibility would be high for water and severe for wind, and runoff potential would be moderate. Due to the small area proposed for timber harvesting, impacts to watershed would be minor and insignificant. Average annual runoff could be increased by 0.8 acre-feet in the cutting areas. The average annual runoff could increase to 8.8 acre-feet if 1,000 MBF were harvested in the Twin Coulee area.

Water quality and streambanks would significantly deteriorate. There would be no monitoring of woody floodplain types. Therefore, adjustments in grazing treatments could not be done to mitigate damage.

The loss of soil in this alternative due to erosion would be irretrievable but not irreversible. There would be no irretrievable or irreversible loss of water resources.

## Vegetation

### Grazing Management

Actions proposed under this alternative would not impact any of the M and C allotments that are not already under implemented AMPs. These systems would be maintained and vegetative condition would continue to improve where the trend is upward. Actions proposed would apply only to the I category allotments.

The 2,621 AUM reduction proposed on 22 I allotments would stabilize range conditions but vegetative improvement would be slow. Areas currently in poor and fair range condition often occur in drainage bottoms and adjacent to other water sources. Without additional range facilities to improve livestock distribution, these areas would continue to receive concentrated use.

Range in poor and fair condition produces a greater proportion of non-forage species than range in good and excellent condition. Reduced stocking rates would reduce areas of concentration and improve range condition on fringe areas. Changes in vegetative composition on concentration areas would be slow, resulting in a small increase in available livestock AUMs.

The following is a summary of potential changes that may occur to vegetative composition as a result of actions proposed under this alternative.

#### I Allotments

Acres maintained in excellent condition: 3,553  
Acres maintained in good condition: 32,055  
Acres maintained in fair condition: 33,072  
Acres maintained in poor condition: 6,953  
Acres improved from fair to good condition: 3,089  
Acres unsuitable (rock outcrop): 3,839  
Crested wheatgrass: 5,118

The areas currently in good and excellent range condition would be maintained in this condition. The areas currently in less than good range condition would be maintained or improve slightly through the long term, assuming these sites had the capacity to respond to grazing management. There would be no improvement in vegetative composition and range condition on 18,000 acres containing dense stands of sagebrush or where soil capabilities limit response to grazing management.

### Wild Horse Management

Under this alternative, range conditions would decline drastically in the short term (8 years) due to increasing wild horse populations and overutilization of the available forage. In the long term these conditions would continue to decline and would result in the majority of the 44,296 acres of the Pryor Mountain Wild Horse Range in poor range condition.

### Timber Management

An average of 90 MBF, which includes 40 acres of the Twin Coulee Wilderness Study Area, would be harvested annually under this alternative. However, some sales may approach 1 MMBF and impacts to vegetation could be significant in the short term because of skid-

ding and road construction. In the long term, impacts would be mitigated through reforestation practices. Impacts to vegetation would be mitigated through stipulations limiting logging activity to slopes less than 30% and the reseeding of grasses and forbs on skid trails and roads. Refer to the Programmatic Environmental Assessment Review (EAR) #MT-060-06-8-18.

## **Coal**

Potential coal mining would disturb approximately 21 acres per year with a loss of three AUMs annually. If all 9,360 acres were mined, there would be a short-term loss of 1,400 AUMs. State and Federal laws require reclamation of mined lands, therefore this loss would not be permanent. Production would be lost for the time the area is disturbed, usually 2-4 years. Assuming 15 years for bond release, 270 acres would be affected at any one time with a potential loss of 40 AUMs. Current research shows that post-mining production is similar to premining in the short term (Sindelar, 1981). If the entire 9,360 acres suitable for further consideration were mined, 1,400 AUMs would potentially be lost over a more than 400 year life span. The most serious long-term effect on vegetation would be the loss of the natural vegetation mosaic and/or species diversity (Sindelar, Dr. Briarr, 1981: "Rate of Plant Succession on Mined Land in Montana", Society for Range Management Annual Meeting, Tulsa, Oklahoma, February, 1981).

## **Oil and Gas Leasing**

Oil and gas development and production would result in the disturbance of approximately 30 acres annually. Impacts to vegetation would be mitigated through standard stipulations placed on Applications for Permit to Drill (APDs).

## **Conclusion**

Reduction in livestock numbers is the only method considered to improve unsatisfactory range conditions. This action would result in the insignificant impacts listed in the Grazing Management section.

Range conditions on the Pryor Mountain Wild Horse Range would decline under this alternative resulting in poor condition on the majority of the range in the long term. This decline would be highly significant.

Timber management, coal leasing, and oil and gas development and production would have an insignificant impact on vegetation.

There would be no irreversible or irretrievable loss of vegetation resources in this alternative.

## **Livestock**

### **Grazing Management**

This alternative would result in an insignificant impact on the M and C allotments since all reductions would be directed to the I allotments. This action would be beneficial to livestock, primarily due to the reduced competition for available forage. Studies have indicated that

livestock returns per acre are higher under proper use grazing levels than under heavy use. Higher production per cow unit would offset fewer cows grazing at proper use levels (Huston and Woodward, 1966).

This alternative would initially impose a 2,621 AUM reduction. However, 1,121 of these AUMs would be recovered in the short term and 2,221 AUMs would be recovered in the long term as a result of increased vegetation production.

## **Conclusion**

This alternative would initially impose a 2,621 AUM reduction. However, 1,121 of these AUMs would be recovered in the short term and 2,221 AUMs would be recovered in the long term as a result of increased vegetation production. This would be insignificant in the long term.

There would be an irretrievable reduction in permitted AUMs in this alternative but this would not be irreversible.

## **Wild Horses**

### **Wild Horse Management**

Wild horse populations would increase in each of the herd areas. At the current reproduction rate, the population could double in 4 years.

During the fifth year, the population would begin to stabilize. A noticeable change would be evident in the physical condition and appearance of the horses due to diet deficiencies.

During years 5 through 10, forage production would severely decline causing severe diet deficiencies. In the long term, the diet deficiencies would cause the reproduction rate to drop below 10%. The wild horses would become emaciated, susceptible to disease and death losses would increase. A severe winter, epidemic disease or parasites could result in a drastic reduction of the herds.

Without selective culling of the wild horses, closer inbreeding would result. This would increase the probability of generating defective traits and the production of inferior horses.

The undesignated lands within the Mystic, Lost Water Canyon, and Sorenson areas, and all state lands would not be available for wild horse grazing under this alternative. Uncontrolled wild horse populations are not compatible with the management objectives for these areas.

### **Timber Management**

In the short term, timber harvest activity would cause the horses to move from the higher timbered elevations. This would cause heavier grazing pressure at the lower elevations and productivity due to wind and water erosion.

In the long term, selective cutting within the productive forest lands and other heavily timbered areas of the horse range would benefit wild horses and wild horse management. Thinning existing stands would provide an opportunity for growing additional forage for the horses. More open stands would reduce the horses' opportunity to hide; resulting in better observation of the horses.

### **Oil and Gas Leasing**

Exploration activities would alter normal wild horse behavior. Opening new access routes, establishment of drilling pads and the influence of additional human presence on the horse range would cause horses to seek undisturbed areas. These activities may also interfere with the capture processes if both are occurring simultaneously. This would be a short-term impact and not significant.

Mineral discovery, development and production would cause long-term significant impacts. The behavior of the wild horses would change to adapt to the developments. The intrusion of developments would degrade the open space, wild horse range atmosphere and environment.

### **Classifications**

Revoking existing classifications may result in increased mineral exploration activity. This increased activity would have short-term effects on the behavioral habits of wild horses.

Development and production, should it come about, could have long-term adverse impacts on wild horse behavior and management. The significance would be directly related to the magnitude of development.

### **Conclusion**

In this alternative, available forage for the wild horses would significantly decrease in both the short and long term. As wild horse populations increased and the habitat needed to sustain a viable breeding herd decreased, severe diet deficiencies would occur. This would result in a highly significant decrease in the reproduction rate. Drastic reductions in horse populations could occur from severe winter, epidemic diseases, parasites or a combination of the three. Herd health and viability would be reduced.

Timber harvesting would increase grazing pressure at lower elevations in the short term, but would increase overall forage available to the wild horses in the long term.

Oil and gas development and production would have long-term significant effects on the wild horses.

Revoking existing classifications may have significant adverse impacts on wild horses should mineral development and production occur.

There would be an irretrievable reduction of wild horses in this alternative, but this would not be irreversible.

## **Wildlife**

### **Grazing Management**

Proposals for reductions in livestock numbers would create minor favorable impacts to wildlife. Less livestock on the range would reduce the competition for forage between wildlife and livestock. No specific impacts to individual species can be accurately quantified, however, this alternative would result in an increase in spring and summer forage for deer and antelope and increased residual cover for upland game birds and waterfowl.

Reductions in livestock numbers would reduce livestock use along streams, channels and around reservoirs. However, these reductions probably would not result in a significant benefit to streambank vegetative communities.

### **Wild Horse Management**

Proposals to minimize man's influences on the wild horses would have significant adverse impacts to most wildlife species. The horse population would eventually exceed the vegetative carrying capacity. Vegetative resources critical to the subsistence and cover requirements of such wildlife species as mule deer, bear, bighorn sheep, upland game birds and small mammal populations would be drastically depleted, or eliminated. This would force the migration of the more mobile species from the horse range to areas of more suitable habitat. As the population of the horses naturally declines through starvation or winter kill and the vegetative resources would begin to regenerate, some migration of wildlife species back into the area could be expected. However, due to the climatic conditions of the area, this process would take 30 or more years.

Water quality along Crooked Creek could decline due to severely damaged watersheds, possibly destroying the existing fisheries.

### **Wildlife Management**

The potential to improve 3,800 acres of upland game habitat and some annual waterfowl production would be foregone with this alternative. The maintenance of existing projects, and the identification of Threatened and Endangered Habitat would not be accomplished.

Considering the total habitats available for wildlife, these losses would have a minimum impact on wildlife.

### **Timber Management**

Lifting protective designations and encouraging timber harvest on approximately 14,240 acres, including the Twin Coulee WSA, could have significant impacts to the wildlife resources if conducted during a short-term period. Displacement of some species would occur, but increased forage production would provide greater habitat diversity and promote greater variety of wildlife species in the long term.

Accelerated erosion and sedimentation, primarily from service roads to and from cutting units, could have a significant short-term impact on aquatic habitat. Slow recovery would reduce runoff and sedimentation, but channels damaged from increased flow would not recover in the long term.

## **Coal**

Coal reserves identified in the Bull Mountain coal field underlays a total of approximately 5,700 acres of elk winter range and approximately 22,800 acres of mule deer and turkey yearlong range. However, only approximately 2,460 acres of elk winter range and 4,800 acres of mule deer and turkey yearlong range overlays the coal reserves which are being carried forward pending further study and final application of the Federal coal unsuitability criteria. Future development of these reserves could affect a long-term maximum of 6% of the elk winter range and 2% of the mule deer and turkey yearlong range assuming an anticipated disturbance of 21 acres annually beginning the 12th year of this plan. Maximum total disturbance during the life of this plan could approach approximately 365 acres. This impact would have little significance to the total available habitat. However, there would be additional habitat disturbances occurring away from the mining site associated with development of access roads, movement of equipment and transportation of the coal.

Coal mining impacts to aquatic habitat in the Bull Mountains would be mitigated in the mining and reclamation plan developed under the authority of the Surface Mining Coal Reclamation Act.

Coal leasing and development in the Bridger/Fromberg area is not anticipated to have any significant adverse impacts to either terrestrial or aquatic wildlife resources due to the small acreage of disturbance and the limited number of aquatic habitats.

## **Classifications**

Partial revocation of the current protective classifications on 28,586 acres of the Pryor Mountain area could degrade some wildlife habitat due to the activities associated with mineral development. Due to the fragile nature of the soils and low average annual precipitation, recovery would be very slow.

Surface disturbance associated with mineral development could be a significant impact to the limited water resources in the area.

Sedimentation and increased surface runoff during intense storm events may result in serious impacts to Crooked Creek, the only perennial stream and fishery in the area, as well as ephemeral stream channels.

## **Off-road Vehicle Use**

Impacts from ORV use are the same as those described in the Continuation of Existing Management Alternative except that an additional 13 miles of existing roads would be opened to ORV use.

## **Wilderness**

Potential development, such as timber harvest, in these areas could create stress on some species due to human encroachment and a loss of habitat. However, some development such as timber harvest and reservoir construction could benefit some species such as deer and elk.

Opening WSAs and WSUs for development could have an adverse impact on existing water sources. However, under this alternative, management options would exist to develop new water sources where none presently exist.

## **Conclusion**

Reductions in livestock grazing would increase spring and summer forage for deer and antelope. Residual cover for upland game birds would increase where AUMs are reduced on grazing allotments. No improvement of streamside vegetation is expected. With increased wild horse populations, wildlife species in the Pryor Mountain Wild Horse Range would be forced to migrate to areas of more suitable habitat. Those less mobile species would significantly decline due to losses in cover and food sources. Fish populations in Crooked Creek could be severely reduced. The lack of water developments and nesting islands would result in waterfowl production being held at existing levels. Upland bird habitat would not expand by 3,800 acres. Timber harvesting would significantly increase production of grasses and forbs and provide a greater diversity of wildlife habitat. The potential for long-term degradation of aquatic habitat exists. Surface coal mining in the Bull Mountains, at this alternative level, would result in insignificant impacts to the wildlife resource in the long term within the mined area. However, there would be additional impacts associated with access roads and transportation of coal outside the actual mined area. Revoking of the current C&MU classifications in the Pryor Mountain Wild Horse Range could result in destruction of wildlife habitat due to activities associated with mineral development. Thirteen miles of existing roads would be opened to ORV use but would be an insignificant impact to wildlife.

Coal leasing and development in the Bridger/Fromberg area for underground mining purposes would result in insignificant impacts to wildlife due to the small acreage of disturbance involved.

There would be no irretrievable or irreversible loss of wildlife resources in this alternative.

## **Recreation**

### **Grazing Management**

Reductions in livestock AUMs would result in increased vegetation and a corresponding increase in hunting opportunities.

### **Wild Horse Management**

As habitat conditions decline, wild horse and wildlife populations would decline. Hunting opportunities in the Pryor Mountains would decrease correspondingly. Opportunities for recreational viewing of the wild horses would also be reduced.

### **Recreation Access**

As in the Continuation of Existing Management Alternative, the opportunity to enjoy areas without legal or physical access would not be provided to the public.

### **Off-road Vehicle Use**

Off-road vehicle use would be permitted on 13 miles of previously closed roads. This would increase the opportunities for motorized recreation into Red Pryor and East Pryor Mountains.

### **Conclusion**

Hunting opportunities would increase in the allotments where AUM reductions occur. Hunting opportunities would decrease in the Pryor Mountains with a decrease in vegetation. These impacts are considered insignificant.

Access needs to several tracts of public land would not be met.

There would be no irreversible or irretrievable loss of recreation resources in this alternative.

## **Visual Resources**

### **Grazing Management**

The long-term increase in vegetation under this alternative would create a positive effect on the scenic quality of public lands in the resource area.

### **Wild Horse Management**

The management of wild horses under this alternative would have a negative impact. In the short term, the increase in horse populations without controls would result in a significant negative impact due to loss of vegetation and increased erosion. The probability of drastic reductions in the horse herd could result in a high impact to the visual aesthetics of the area.

### **Timber Management**

The effects of timber management proposals, under this alternative, have the potential to be significant in the short term especially if a large sale, up to 1 MMBF, occurs. The removal of 14,457 acres from protected area status would result in an adverse impact to the visual resource if these areas were logged. With reforestation practices, the areas would revegetate in the long term.

### **Coal**

A maximum of 18 acres of annual surface disturbance would occur in the long term. Associated activities, such as haul roads, would also negatively affect the visual qualities. With proper reclamation practices to approximate original contour, the long-term impacts would be insignificant.

### **Oil and Gas Leasing**

Leases issued under this alternative could result in negative impacts since mineral activities on 49,870 acres would no longer be controlled with special stipulations.

### **Classifications**

Impacts would be the same as those described in the General Impact section.

### **Environmental Education**

The removal of current environmental education facilities at the Shepherd Ah-Nei site would create a positive effect on visual resources.

### **Conclusion**

The cumulative negative impacts to visual resources from the grazing and wildlife management programs would be insignificant.

Wild horse management would result in long-term significant negative impacts to the visual resources due to loss of vegetation, drastic reduction of the wild horses and erosional factors.

Timber management proposals would result in a significant short-term negative impact to visual resources.

Oil and gas leasing without the use of special stipulations would result in significant negative impacts to visual resources.

There would be irreversible and irretrievable losses to the visual resources under this alternative.

## **Cultural Resources**

### **Timber Management**

Cutting 40 acres of timber a year throughout the resource area would disturb 1,000 acres in the long term. One cultural resource site may be encountered, and would be avoided. In addition, if 400 acres of timber are harvested in the Twin Coulee WSA, there is a 41% probability of encountering one site. The site would be avoided.

### **Coal**

Twelve acres would be disturbed in the short term. There is less than 1% probability of encountering cultural resources. In the long term, 357 acres would be disturbed. There is a 56% possibility of encountering a site. Impacts to the site would be mitigated through either avoidance, stabilization of resource values or data recovery.

## **Oil and Gas Leasing**

Drilling 10 wells a year would disturb 500 acres in the long term. Two sites may be encountered, and both would be avoided.

## **Off-road Vehicle Use**

Designating the previously closed dead end road in Sections 18 and 19, T. 9 S., R. 28 E., as open may contribute to vandalism and looting of two sites. Opening the previously closed road in Sections 27, 28 and 34, T. 58 N., R. 95 W., may contribute to vandalism, looting, unwarranted excavation and unauthorized camping at Site 48BH460, which is eligible to the National Register of Historic Places. Opening the Cottonwood Spring, Burnt Timber Canyon, Sykes Ridge, Inferno Canyon, Timber Canyon, Bear Spring, Water Canyon and Demi-John Flat Roads may contribute to deterioration, vandalism and looting of 22 sites, 6 of which comprise a National Historic District.

## **Environmental Education**

The BLM is unable to quantify impacts to potential sites via environmental education uses throughout the resource area. However, vandalism, looting and ORV impact may occur.

## **Conclusions**

Anything less than 5% probability of encountering a cultural site has not been computed.

The proposals in this alternative would disturb or impact 2,257 acres. Five sites would be encountered of which four would be avoided and one mitigated. In addition, designating certain areas under this alternative as open to ORV use may contribute to vandalism, looting, unwarranted excavation and unauthorized camping impacts to 25 additional sites. Due to mitigating practices, these impacts would be insignificant. Any site inadvertently destroyed in this alternative would be irretrievably and irreversibly lost.

## **Wilderness**

### **Grazing Management**

Impacts in the Twin Coulee WSA, Pryor Mountain WSA, Burnt Timber Canyon WSU and Big Horn Tack-On WSU would be the same as those discussed under the Continuation of Existing Management Alternative.

### **Wild Horse Management**

Pryor Mountain WSA, Burnt Timber Canyon WSU, and Big Horn Tack-On WSU—Scenic quality would be diminished due to range damage from an increased wild horse population. Ultimately the drastic reduction of the wild horse population from starvation and disease would adversely impact one of the special values of the three areas.

## **Timber Management**

Twin Coulee WSA—Over 4,600 acres containing commercial timber would be available for harvest in the Twin Coulee WSA. The timber occurs on approximately 70% of the area with over 12 million board feet available. If this timber was harvested, wilderness values would be lost throughout the WSA.

Pryor Mountain WSA—There are 600 acres of productive forest land with 5 million board feet potential in this WSA. Harvesting of this timber would eliminate wilderness values in much of the northern 1/2 of this WSA.

Burnt Timber Canyon WSU, Big Horn Tack-On WSU—There is presently no productive timber in either of these areas. Both would be open to harvest under this alternative, but it's unlikely that any harvest would occur.

## **Oil and Gas Leasing**

Twin Coulee WSA—Impacts would be the same as those discussed in the Continuation of Existing Management Alternative.

Pryor Mountain WSA, Burnt Timber Canyon WSU, Big Horn Tack-On WSU—These areas would be available for oil and gas leasing with no special stipulations. Any oil or gas exploration activities would damage the fragile soils and vegetation in the areas and would reduce wilderness values. The BLM estimates that oil and gas potential is extremely low, so the probability of impact is low.

## **Wilderness Management**

Twin Coulee WSA—This alternative would mean the loss of wilderness protection for 6,870 acres of public land. The area would be available for timber harvest and mineral development. Both of these uses would have the potential to severely damage or eliminate wilderness values. As described in Chapter 3, Evaluation of Wilderness Quality, this area does not contain high wilderness values or special features which would add quality or diversity to the NWPS. Under this alternative, the wilderness resource would be foregone.

Pryor Mountain WSA, Burnt Timber Canyon WSU, Big Horn Tack-On WSU—Impacts would be the same as those described under the Continuation of Existing Management Alternative.

## **Conclusion**

In the case of the Twin Coulee WSA, the impacts of this alternative would be the same as in the Continuation of Existing Management Alternative, with the exception that timber harvest would occur. If timber were harvested, the WSA would lose much or all of its wilderness values. Because of the low quality of the wilderness resource, there would only be a minor insignificant loss to the quality and diversity of the NWPS.

In the case of the Pryor Mountain WSA, Burnt Timber Canyon WSU, and Big Horn Tack-On WSU, the overall impact of this alternative would be the same as the Continuation of Existing Management Alternative with the exception of oil and gas leasing. The opening of the areas to leasing with no special stipulations creates the possibility of the loss of wilderness values from exploration and development.

There would be an irreversible and irretrievable loss of some wilderness resources under this alternative if timber harvest were to occur.

## Social

### Grazing Management

The social well-being of the families dependent upon the 28 affected ranches would be decreased in the short and long terms. Ten of these operations fall into the small herd-size category, where the negative effects would be greatest. Attitudes of the affected ranchers toward this alternative would be unfavorable because of the losses of income and permit values.

### Coal

Population increases resulting from coal development are projected to be less than 1% for Yellowstone, Musselshell and Carbon Counties as well as the communities of Billings and Roundup (see Coal under Economic Impacts for this alternative). These small increases would not significantly affect social well-being or social organization in these areas.

The E/D model results predict that fewer than five mine workers would reside in the Roundup area. This figure includes in-migrants as well as current residents who may be hired at the mine. It is presumed that very few Roundup residents would directly benefit from employment at the mine. It's possible that some Musselshell County ranchers who lease BLM grazing or private grazing or cropland underlain by Federal coal may lose the use of that land without compensation (see Coal under Economic Impacts for this alternatives).

A 10-20% population increase in Fromberg from sub-surface mine development is estimated to potentially occur in the short and long terms. Some impacts to social organization may occur because of population increases. These impacts could include residents no longer knowing all their neighbors, greater diversity in resident lifestyles, changes in business transactions and government structures from casual to more formalized, and increases in the level of outside influences in the community. It is not anticipated that these impacts would be severe as population growth is moderate. Negative impacts to social well-being would be limited as major public services (water, sewer, police, fire and schools) currently, or in the near future, would have the capacity to absorb the projected increases. Some problems such as increases in noise, traffic and crime may occur. Benefits to social well-being would occur to those people who are able to acquire employment or who benefit from business expansion as a result of the increased income in the community.

Attitude information collected in 1978 (John Short & Associates) indicates support for new industry and growth in Carbon County. However, the attitudes of Carbon County and Fromberg residents toward this specific mine are not known.

### Attitudes Toward the Alternative

No specific information on attitudes toward this alternative has been collected. This alternative proposes fewer restrictions on development with less emphasis on protection and enhancement of resource values. Some individuals or groups may favor this alternative because they perceive it as less government interference in their lives. Other individuals may feel the adoption of this alternative would mean the BLM would inadequately protect some of its resources in the future.

Based on the attitudes toward specific issues (Chapter 3, Social and Economic Conditions) it appears that those concerned with environmental protection would oppose proposals made in this alternative. These include the lessening of restrictions on timber harvest and oil and gas leasing pending further study; the finding of no significant multiple use resource trade-offs in determining the land to be found acceptable for further consideration for coal leasing; and the removal of environmental education facilities at the Ah-Nei Site. Some of these individuals may oppose the failure to propose any land for wilderness designation. In addition, some individuals favoring environmental protection may favor the proposal not to pursue land sales or exchanges, while others might feel the opportunity to exchange lands of high recreation or wildlife values was being lost.

Individuals and groups concerned with resource development would approve of many aspects of this plan including the reduction of restrictions on logging and oil and gas leasing and the absence of environmental, economic and social planning steps in determining the land to be made available for coal leasing. Some of these individuals may support proposals for no wilderness designation. Some individuals concerned with economic development might feel land should be sold or exchanged, while others feel it would be easier to develop if it remained under Federal administration.

Ranchers would react negatively toward this alternative because it reduces the number of AUMs available for livestock. Some ranchers see coal development as a threat to their agrarian way of life. These ranchers would react negatively toward this alternative because they might feel coal development would be accelerated if environmental, social and economic concerns were eliminated. Ranchers not in a position to purchase land at this time might favor the lack of land tenure changes while others who wish to purchase public land would oppose the inability to do so under this alternative.

Recreationists may perceive the BLM as failing to respond to their demand for increased access in this alternative. The lost opportunity to exchange for high value recreation land and the lessening of wilderness values in the WSAs would also be perceived negatively by some recreationists. Some recreationists would support the increased ORV opportunities in the Pryor Mountains.

The physical deterioration of the wild horse herd and impacts to the soils and vegetation of the horse range would result in a negative perception of BLM's management. Some individuals would be disappointed if the wild horse interpretive overlook was not constructed.

### Conclusion

The social well-being of the families dependent upon the 28 affected ranches would be decreased in the short and long terms. Moderate impacts to the social organization in Fromberg could occur due to the development of the subsurface mine. Some individuals or groups may favor this alternative because they perceive it as less government interference in their lives while others may perceive implementation of this alternative to mean the BLM would inadequately protect some of its resources in the future.

### Economics

#### Grazing Management

**Ranch Related Economic Impacts**—In this alternative, there would be short- and long-term decreases in net ranch incomes because of decreases in the number of AUMs permitted. In the ranch budget analysis, it's assumed the affected operator would reduce his herd size to make up for the AUM loss. However, not all operators would react in this way. Some individuals would lease private grazing privileges. Other operators might have to resort to heavier stocking on their private lands (see Appendix 4.1 for an explanation of the methodology used in this section).

With the implementation of this alternative, 28 ranches would have a significant decrease in income due to a loss of 20% of their AUMs. These decreases are shown in Table 4.3 by representative size category. The average decline in net annual income for the categories ranges from \$551 on small operations (19% of their current income) to \$3,408 on very large operations (5% of their current livestock income).

By the end of the short-term period (8 years) the available forage would increase to within 11% of the original allocations. The same 28 ranches would still be affected; decreases are shown on Table 4.4. These losses range from \$305 (11% of their current income) on small operations to \$1,886 (3% of their current income) on very large operations.

After 25 years, these 28 ranches would show losses of about 3% from their original allocations (see Table 4.5 for decreases on representative ranches). These decreases range from \$87 (3% of the current income) on small operations to \$519 (less than 1% of the current income) on the very large operations.

Since a major source of income for most of the operators is ranching, any reduction in ranch income would cause an equivalent reduction in their personal income. Even with substantial reductions in income, most small commercial operators would probably continue ranching, at least in the short term. Data gathered in the study area and from independent research indicates that ranch operators would try to maintain their lifestyle (Smith and Martin, 1972). There are various actions that small operators might take to enable them to continue operating. These actions include not allowing for depreciation, deferring maintenance or using equity capital to meet short-term operating and family living expenses. Those individuals not now employed off the ranch might seek outside part-time or full-time employment.

Initial grazing permit value losses would range from \$3,800 on the small ranches to \$19,700 on the very large ranches. This represents a 20% decrease in permit value for each category (see Table 4.6). After 25 years, annual losses would decrease to \$600 on the small operations and \$3,000 on the very large operations. This represents a 3% decrease in grazing permit value for each category. These decreases in permit value would have a detrimental impact on ranchers' borrowing capacity and the sale value of affected ranches.

**TABLE 4.3: ESTIMATED IMMEDIATE IMPACTS OF LOW LEVEL MANAGEMENT ALTERNATIVE ON NET ANNUAL RANCH INCOME ON AFFECTED RANCHES**

Ranch Size Category	Size by # of Brood Cows	# of Ranches	Average Decrease BLM AUMs Per Ranch	Average Annual Net Income Per Ranch	Change in Income	
					\$	%
Small	1-100	10	38	\$2,846	-551	-19.4
Medium	101-250	6	98	\$10,662	-1,637	-15.3
Large	251-499	4	132	\$24,501	-1,993	-8.1
Very Large	500-up	8	197	\$65,341	-3,408	-5.2

Source: BLM, 1982

**TABLE 4.4: ESTIMATED SHORT-TERM IMPACTS OF LOW LEVEL MANAGEMENT ALTERNATIVE ON NET ANNUAL RANCH INCOME ON AFFECTED RANCHES**

Ranch Size Category	Size by # of Brood Cows	# of Ranches	Average Decrease BLM AUMs Per Ranch	Average Annual Net Income Per Ranch	Change in Income \$	Change in Income %
Small	1-100	10	21	\$2,846	-305	-10.7
Medium	101-250	6	54	\$10,662	-902	-8.5
Large	251-499	4	72	\$24,501	-1,087	-4.4
Very Large	500-up	8	109	\$65,341	-1,886	-2.9

Source: BLM, 1982

**TABLE 4.5: ESTIMATED LONG-TERM IMPACTS OF LOW LEVEL MANAGEMENT ALTERNATIVE ON NET ANNUAL RANCH INCOME ON AFFECTED RANCHES**

Ranch Size Category	Size by # of Brood Cows	# of Ranches	Average Decrease BLM AUMs Per Ranch	Average Annual Net Income Per Ranch	Change in Income \$	Change in Income %
Small	1-100	10	6	\$2,846	-87	-3.1
Medium	101-250	6	15	\$10,662	-251	-2.3
Large	251-499	4	20	\$24,501	-302	-1.2
Very Large	500-up	8	30	\$65,341	-519	-0.8

Source: BLM, 1982

**TABLE 4.6: CHANGES IN PERMIT VALUE FOR LOW LEVEL ALTERNATIVE**

Ranch Size Category	Ranches in Category	Immediate Decrease in Permit Value \$ Per Ranch	Short-term Decrease in Permit Value \$ Per Ranch	Long-term Decrease in Permit Value \$ Per Ranch
Small	10	3,800	2,100	600
Medium	6	9,800	5,400	1,500
Large	4	13,200	7,200	2,000
Very Large	8	19,700	10,900	3,000

Source: BLM, 1982

## Timber Management

Sales of up to 1 MMBF may occur in the resource area but the anticipated annual cut is 90 MBF. This would continue to meet the local demand for BLM timber. The increase in the annual harvest (45 MBF) represents less than 1% of the total volume received by sawmills in the resource area for 1981.

This increase in the annual cut is equivalent to the lumber required to build seven 1,500 square foot, three bedroom, frame, ranch style homes. There would be little or no impact on timber related earnings and employment with this alternative.

## Coal

A scenario for the development of two mines was analyzed under this alternative.

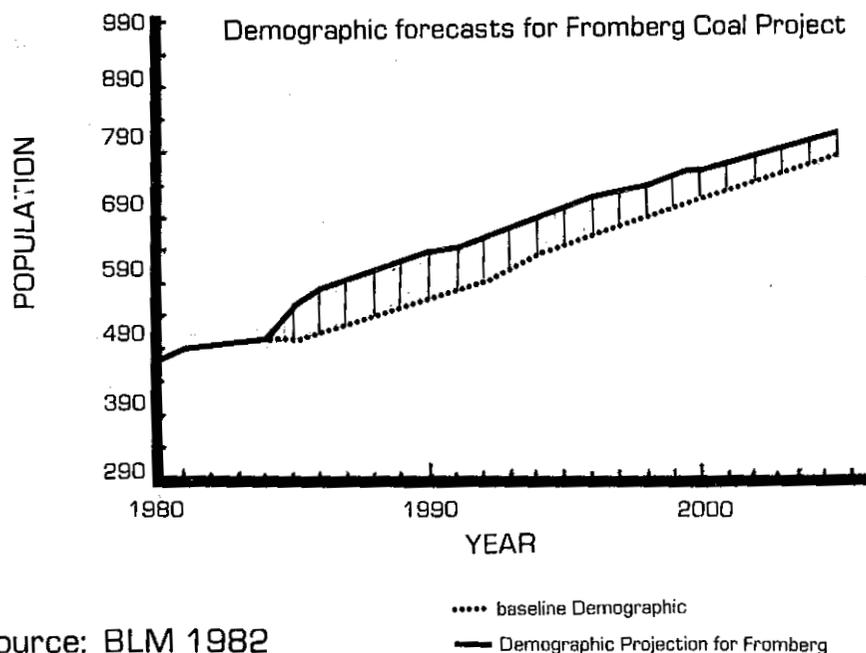
A surface mine in the Bull Mountains of Musselshell County would hypothetically employ an estimated construction labor force of 75 people for 1 1/2 years with a subsequent operating labor force of 25. The expected life of the deposit is 40 years with an annual production of 300,000 tons. This impact would remain constant under the assumed scenario, even though all 9,360 acres would be considered acceptable for further consideration for leasing pending further study.

A subsurface mine near Fromberg, in Carbon County, would employ approximately 75 people for a 2 year construction period and an operational labor force of 75 thereafter. The expected life of this deposit is 40 years with an annual production of 150,000 tons.

The E/D model was used to assess the effects if both hypothetical mines were developed. Based on projections from the E/D model, the increase in population due to coal development would occur primarily in Musselshell, Yellowstone and Carbon Counties. Development related increases in population are projected to be less than 1% for Musselshell, Yellowstone and Carbon Counties as well as the communities of Billings and Roundup. It is expected that Billings would absorb approximately 80% of the increase in population associated with coal development due to its proximity to the coal deposits and the amenities it offers. The size of Billings would enable it to absorb this increase without significant impacts.

Construction and operation of a potential subsurface mine near Fromberg would create impacts for this community as the result of population growth associated with employment opportunities. Fromberg is located approximately 2 miles east of the coal deposit. It is projected that 10% of the construction labor force and 30% of the operational labor force would reside in Fromberg. This would result in an increase in population due to coal development of approximately 12% above baseline (i.e. without development) forecasts. Comparison of the baseline forecast (dashed line) with the impact forecast (solid line) in Figure 4.1 shows the population impact for Fromberg. Fromberg would experience some long-term increases in economic activity as a result of employees and company expenditures for goods and services through the construction and operation phases. The Carbon County Clerk and School Superintendent were contacted concerning the impact of this population influx on community services. The sewage, water and school systems, and police and fire services could absorb this increase easily.

Figure 4.1. Population Impact to Fromberg.



Source: BLM 1982

The economic impact of possible surface mining in the Bull Mountains of Musselshell County can be assessed by expressing in dollar terms the agricultural production lost. The value of all agricultural production in Musselshell County was \$11,010,000 in 1978 (Census of Agriculture, 1978). Of this amount, \$8,066,000 was from livestock sales and \$2,944,000 from crops. It is estimated that the acreage within the coal deposit consists of winter wheat (6%), hay (3%) and the remainder (91%) primarily rangeland with some scattered timber tracts. Such a mine would disturb 3 acres per year initially, eventually reaching 18 to 21 acres per year at peak production levels. In the long term, based on a 15-year reclamation period, 315 acres would be unavailable for agricultural production each year; 19 acres of winter wheat, 9 acres of hay and 287 acres of rangeland. This would result in the annual reduction in the value of agricultural production of \$4,925; \$2,506 in receipts from winter wheat and hay and \$2,419 in livestock receipts (see Table 4.7). This represents about 0.04% of the value of Musselshell County's 1978 agricultural production.

Mine development located near the center of a ranch could interfere with movement of livestock, fencing and pasture arrangements, livestock water supplies and distribution, and in general disrupt the overall operation. Compensation to the farm and ranch operator would vary depending upon the type of landowner lease, land ownership pattern, and percentage of land owned versus land leased. The worst situation would be an operator who leased all the land which is removed from production since no compensation would be made for lost leases. The loss in total revenue to this hypothetical operator would be approximately \$4,670 per year over the long term.

### Land Tenure Adjustment

Maintaining the existing public land pattern would not create additional impacts to the economy of the resource area.

### Wilderness

With the Low Level Management Alternative, the four areas would not be recommended for wilderness designation and the present resource use and management direction would continue. There would be no impact to ranch related income and no additional timber or mineral values foregone with this alternative.

### Conclusion

In the long term 28 ranch operations would have decreases in income due to decreases in BLM AUMs. The magnitude of the decreases lessens until, in the long term, income changes range from an average of 3% on the small operations to less than 1% on the very large operations.

This alternative would impact the economy of the area due to coal development. The community of Fromberg would experience some increase in economic activity while other areas would experience little or no impact. It is expected that the impact of a population influx on community services in Fromberg would be minimal. Other resources would have little or no impact on employment and earnings in the resource area.

There would be an irretrievable loss of ranch income in this alternative due to reductions in AUMs, but there would be no irreversible loss.

**TABLE 4.7: ESTIMATED ANNUAL WINTER WHEAT, HAY AND LIVESTOCK RECEIPTS FOREGONE WITHIN THE BULL MOUNTAIN FIELD COAL TRACTS (1978 DOLLARS)**

Output	Yield Per Acre <sup>1</sup>	Price <sup>1</sup>	Receipts Per Acre <sup>2</sup>	Acres Removed Each Year <sup>3</sup>	Total Receipts
Winter Wheat	25.6 bu.	3.40/bu.	87.04	18	1,567
Hay	1.75 tons	54.12/tons	94.71	9	852
Livestock	—	—	8.43	267	2,419
Total Receipts					4,925

<sup>1</sup>Average for the years 1972 through 1980.

<sup>2</sup>Receipts per acre for livestock were estimated by dividing the average livestock receipts for the years 1972 through 1980 by the acres of rangeland and pasture.

<sup>3</sup>Assumes 294 acres would be removed from production each year; 18 acres of winter wheat, 9 acres of hay and 267 acres of rangeland.

Source: BLM, 1982.