divide grazing

draft environmental impact statement

United States Department of the Interior Bureau of Land Management Rawlins District, Wyoming

IN REPLY REFER TO

1792-D-EIS

United States Department of the Interior

BUREAU OF LAND MANAGEMENT

State Office
P.O. Box 1828
Cheyenne, Wyoming 82001

NOTICE

The Bureau of Land Management (BLM) proposes to allow livestock grazing on approximately 2,099,160 acres of public land in the Divide Resource Area, Rawlins District, Wyoming. The Proposed Action is to manage grazing allotments at various levels of intensity to maintain, improve, or prevent deterioration of present conditions. The Proposed Action includes changing grazing treatments and seasons of use, making adjustments in use levels, and providing additional grazing management facilities and land treatments pending the results of monitoring. Three alternatives are also analyzed in detail. They are Enhanced Livestock Grazing, No Action (Continuation of Present Management), and Enhance Watershed, Wildlife and Soil Resources. The No Livestock Grazing alternative was considered, but not analyzed in detail. The reasons for this are stated.

The final environmental impact statement (EIS) may be prepared in an abbreviated format consistent with the Council on Environmental Quality regulations. Therefore, please retain your copy of this draft EIS for reference purposes.

Comments must be received by June 22, 1983, and should be addressed to:

District Manager
Bureau of Land Management, Rawlins District Office
P.O. Box 670
Rawlins, Wyoming 82301
Telephone (307) 324-7171

All comments will be considered in the decisionmaking process. Those which raise questions or issues concerning the effects of the Proposed Action or alternatives, present new data, or question facts or analyses contained in this document will be responded to in the final EIS.

Sincerely yours,

Maxwell T. Lieurance
State Director

DRAFT

ENVIRONMENTAL IMPACT STATEMENT

PROPOSED GRAZING MANAGEMENT PROGRAM FOR THE DIVIDE EIS AREA

CARBON, NATRONA, AND SWEETWATER COUNTIES, WYOMING

Prepared By:

U.S. DEPARTMENT OF THE INTERIOR

BUREAU OF LAND MANAGEMENT

RAWLINS DISTRICT 1983

STATE DIRECTOR

WYOMING STATE OFFICE

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SUMMARY

This EIS is an analysis of the effects of proposed and alternative livestock grazing management on approximately 3,332,000 acres of public land administered by the BLM Rawlins District in Wyoming. This document will be used in determining future grazing management, based on the principles of multiple use and sustained yield.

MAJOR ISSUES

Prior to preparation of this EIS, a scoping process was conducted to identify significant issues. The scoping process involved consultation with all permittees; a mailing of both the grazing section of the Divide Management Framework Plan and the Proposed Action and alternatives for the EIS to 485 individuals or companies; and three public meetings, at the Wyoming towns of Baggs, Saratoga, and Rawlins. Based on contacts with organizations, individuals, federal, state, and local agencies, the following major issues were identified. They are generally listed in the order received.

1. Seasonal distribution of wildlife in regard to livestock seasonal use and wildlife use on private lands.
2. Length of time required before Category C options are implemented.
3. Lack of a specific time schedule and manner of implementing the Proposed Action on each allotment.
4. Energy development is making land unavailable for livestock use.
5. Unsatisfactory reclamation on energy development areas.
6. Not notifying permittees about oil and gas site examination.
7. Inadequate consultation, cooperation and coordination among ranchers, BLM and Wyoming Game and Fish Department concerning planning and management programs.
8. The need to establish a balance among numbers of grazing animals.
9. Excessive numbers of wild horses.
10. The "no grazing" alternative should not be included in the EIS (this issue received the most concern).
11. Opposition to eliminating the "no grazing" alternative from the EIS.
12. Wildlife recommendations being given more emphasis than livestock needs.
13. Considering the current situation when determining the climax ecological condition of vegetation.
14. The importance of adequate monitoring results.
15. Encouraging livestock grazing on public lands.
16. Planning for protection of wetlands, riparian, and aquatic areas.
17. Seasonal protection of raptors.
18. Planning as an end to itself; implementation is lacking.
19. Wild horses not being given same considerations as wildlife and livestock.
20. Inadequate mathematical models for livestock economics.
21. Ecological site conditions rating not reflecting range productivity; introduced plants may be very productive.
22. Grazing effects being positive as well as negative.
23. Enhancing livestock grazing as the preferred alternative.
24. SCS range site guide presently inadequate for livestock grazing management in some areas.

25. Opposition to use of the Soil Vegetation Inventory Method in the EIS analysis.

PROPOSED ACTION AND ALTERNATIVES

Proposed Action

In the rangeland management section of the Divide Management Framework Plan (MFP), the grazing allotments were grouped into Categories M, I, or C, after an evaluation of the multiple use characteristics of in a particular allotment. For each category, recommendations were made for: an intensity of grazing management, including specific, multiple-use objectives for management of the resources, range improvement and monitoring use, and actions needed to improve and maintain rangeland condition and productivity. Under the Proposed Action, present management, which includes actions that were planned previously, would continue until additional data from the monitoring program were available. Then, management actions based on all available data would be implemented.

Enhance Watershed, Wildlife, and Soil Resources

Allotments would be categorized as in the Proposed Action. Those allotments which now have significant conflicts among livestock grazing and watershed, soils, and/or wildlife will receive priority for intensified management. Present management would continue in most allotments and monitoring studies would be set up as in the Proposed Action. These watersheds with documented current or potential problems would receive priority for monitoring.

Grazing management actions (vegetative conversions or treatments, developments, grazing plans, etc.) would be designed to enhance wildlife habitat and the community it supports. Changes in the existing livestock management program, including livestock conversions and range improvement projects would not be allowed unless they were beneficial to or would not adversely affect the soils, water or wildlife habitat resources. As management actions were implemented, adjustments in livestock grazing rates and/or distributions might be made.

Enhanced Livestock Grazing

Under this alternative, allotments would be categorized as in the Proposed Action. Forage for domestic livestock would be increased through an accelerated program of range improvements. Suitable allotments would be placed under allotment management plans (AMPs), and livestock would have priority in forage allowances. Other resources would not be degraded. They would be protected by standard operating procedures, mutliple use regulations and law.

No Action

Under this alterantive, the existing range management program would remain static. AMPs in effect would continue, but there would be no new range improvement projects. Maintenance of existing improvements would be allowed. Changes in AUMs, seasons-of-use, or class of livestock from the present situation would not be allowed. Population objective levels for wildlife and wild horses would not change. Maintaining the present use of vegetation would allow BLM and the public to look at the consequences of continuing the existing rangeland uses in the Divide EIS area.

Preferred Alternative

The preferred alternative is the Proposed Action.

TIME SCHEDULE FOR RANGE MANAGEMENT ACTIVITIES

Figure S-1 is a time schedule for various range management activities and proposed activities discussed in this document.

LONG-TERM ENVIRONMENTAL CONSEQUENCES

In Table S-1, the projected long-term environmental consequences are compared. This information provides a basis for choice among the various options. For more detailed descriptions of the effects of the Proposed Action and alternatives, refer to the Environmental Consequences sections in Part 2 of this document.

FIGURE S-1

TIME SCHEDULE FOR RANGE MANAGEMENT ACTIVITIES

	4/83	9/83	2/84	6/84	9/84	2/85	2/85	3/89
Conduct monitoring and use supervision								
Final EIS published		X						
Develop Rangeland Program Summary								
Rangeland Program Summary Update issued						X		
Issue grazing decisions for Category M allotments[1]								
Issue grazing decisions for Category C allotments[1]								
Issue grazing decisions for Category I allotments[1]								
Make use adjustments[1]								
Build range improvements[1]								
Implement grazing treatments[1]								

[1] Not applicable to the No Action alternative.

TABLE S-1

COMPARATIVE SUMMARY OF PROJECTED LONG-TERM[1/] ENVIRONMENTAL CONSEQUENCES OF THE PROPOSED ACTION AND ALTERNATIVES
[0's indicate baseline data or no change, +'s indicate degree of increase, -'s indicate degree of decrease]

Resource	Present Situation	Proposed Action	Enhance Watershed, Wildlife and Soil Resources	Enhanced Livestock Grazing	No Action
Vegetation					
Production	0	++	++	++	-
Condition	0	+	+	+	-
Soil stability					
Best case	0	+++	++++	+	0
Worst case	0	0	+++	-	-
Water (Quantity/Quality)	0	+	++	0	0
Socioeconomics					
Direct impacts					
Net revenues	0	+	+	++	-
Indirect impacts					
Employment	0	+	+	+	-
Regional income	0	+	+	+	-
Social impacts	0	0	-	0	0
Average Benefit/Cost Ratio	0	6.65:1	6.05:1	6.05:1	3.1:1
Wildlife					
Nongame	0	+	+++	--	-
Small game	0	+	++	-	-

TABLE S-1--CONTINUED

COMPARATIVE SUMMARY OF PROJECTED LONG-TERM[1/] ENVIRONMENTAL CONSEQUENCES OF THE PROPOSED ACTION AND ALTERNATIVES

Resource	Present Situation	Proposed Action	Enhance Watershed, Wildlife and Soil Resources	Enhanced Livestock Grazing	No Action
Wildlife--Continued					
Big game					
Bighorn Sheep	0	0	0	-	0
Elk	0	0	0	-	0
Mule deer	0	0	0	-	0
White-tailed deer	0	+	+	-	0
Pronghorn	0	0	0	--	0
Upland game birds	0	+	++	--	0
Waterfowl	0	+	++	-	0
Wild horses	20,271 AUMs	+	-	-	0
Fisheries	0	++	+++	0	0
Cultural	0	+	+	-	0
Visual	0	-	+	-	0
Recreation					
Visitor days	41,500	+	+	--	0
Quality	0	0	++	---	0

[1/]The definition of long term varies, depending on the resource. For specific information, refer to the appropriate section on Environmental Consequences, Part 2 of this document.

PART 1

PROPOSED ACTION AND ALTERNATIVES

BACKGROUND

Purpose and Need for Management Actions

The purpose of a rangeland management program for public lands is to provide guidelines for managing rangeland resources and related ecosystems, including air, soil, water, vegetation, wildlife and fisheries habitat, wild horses, and livestock. A program is needed to enable BLM to properly manage the public land and resources under its jurisdiction; stabilize the livestock industry dependent on public land; and provide for orderly use, improvement, development, and reclamation of public lands for livestock grazing, consistent with multiple-use management objectives for these lands. This responsibility and authority evolves from a series of legal and judicial mandates, including the Taylor Grazing Act of 1934 (43 USC 315-315r), the Classification and Multiple-Use Act of 1964 (Public Law 88-6071), the National Environmental Policy Act of 1969 (Public Law 91-190), the Federal Land Policy and Management Act of 1976 (Public Law 94-579), the Public Rangelands Improvement Act of 1978 (Public Law 95-514), and the 1974 federal court action of the Natural Resources Defense Council et al. versus Morton et al.

The proposed rangeland management program for the EIS area was formulated through the BLM planning system, specifically the Divide MFP, covering the Overland and Divide Basin planning units. Resource problems and possible solutions were identified and analyzed to determine effects on other resources. The resulting multiple-use MFP recommendations for livestock are the basis for the Proposed Action. BLM lessees/permittees, the Wyoming Game and Fish Department, and other groups with an interest in rangeland management in this area were consulted during the process. The MFP recommendations were presented to the public for comment in November 1982. Throughout the scoping process the No Grazing alternative was criticized as an unreasonable alternative when applied to the entire EIS study area. Identifying local areas where livestock grazing would be eliminated (the Enhance Watershed, Wildlife, and Soils Resources alternative) was considered more responsive to the resource needs of the Divide EIS area than total elimination and would still provide a range of alternatives to be considered [40CFR1502. 2(e)] by the decision makers. The Rawlins District office decision to eliminate the No Grazing alternative was advocated by local ranchers and businessmen, the Divide EIS Monitoring Committee, and the Carbon County Stock Growers Association and Auxillary during the EIS scoping process. The Natural Resources Defense Council, Inc., supported analysis of the No Grazing alternative.

The following range management goals or objectives were identified through the planning system or are required by law:

1. Provide enough forage on a sustained-yield basis to satisfy at least the present demands of livestock, and the objective levels of wild horses.

2. Maintain ecological range condition at a level which would provide for an adequate, sustained yield of forage production.

3. Maintain and improve terrestrial, aquatic, and riparian ecosystems to provide wildlife with adequate amounts of forage and habitat to maintain Wyoming Game and Fish Department big game population objective levels as stated in the strategic plan.

BLM has adopted a grazing management policy which involves assignment of management priorities to groups of allotments, within the context of the existing planning system. The approach is called selective management. Selective management is based on the identification of allotments or areas sharing similar resource characteristics, management needs, and resource and economic potential for improvement. Allotments are identified as belonging to one of three categories: Category M allotments, for which our objective is to maintain the existing situation; Category I allotments, for which our objective is to correct significant problems; and

Category C allotments, for which our objective is manage them custodially, while still protecting existing resource values. Proposed actions for managing allotments within each category evolve from their current resource situation. The details of the policy are contained in BLM Instruction Memorandum No. 82-292, Final Grazing Management Policy.

Four possible actions are analyzed in this EIS. The Proposed Action is analyzed to show the results of implementing the new grazing management policy in the Divide EIS area, as part of the Divide MFP. The No Action alternative is analyzed to show the results of continuing present managment (this alternative also represents the No Action alternative required by Council of Environmental Quality regulations but does not reflect the current grazing management policy). The Enhance Watershed, Wildlife, and Soil Resources alternative provides another grazing management level which emphasizes protection of naturally occurring resource values. The Enhanced Livestock Grazing alternative is analyzed to illustrate the higher limits of livestock use and the effects of such action on other resource values. The latter two alternatives also reflect the BLM grazing management policy in that they utilize categorization of allotments.

Following the completion of this EIS, environmental assessments will be prepared prior to implementation of any actions which would have impacts not analyzed in the EIS. These environmental assessments will be prepared at the individual allotment level, as the situation requires.

Location and Setting of the EIS Area

The Divide EIS area generally extends from the Colorado state line on the south to the Natrona County line in Wyoming to the north (Map 1). Most of the area is in Carbon County, but some of the western portion is in Sweetwater County. The EIS area encompasses 3,332,000 acres. Public land administered by BLM accounts for 63 percent of the total acres, 33 percent is private land, and 4 percent is state land (Map 2). (The EIS area is largely intermingled with private lands.) The area is noted for its rich diversity of natural resources such as minerals, aquatic and terrestrial wildlife species, livestock grazing lands, watersheds, and scenic and historical features.

The specific boundary lines of this EIS area are:

1. The southern boundary is the Wyoming/Colorado state line.
2. The western boundary is the Rock Springs/Rawlins BLM District boundary.
3. The northwest boundary is the Seven Lakes EIS area and the northeast boundary is the Carbon/Natrona county line.
4. The eastern boundary is the North Platte River.

Application of the New Grazing Management Policy to the EIS Area

One hundred eighty-seven allotments in the EIS area have been categorized in accordance with the new BLM grazing management policy. The following is a discussion of the categorization process and other actions that would occur with implementation of the policy. The categorization applies to the Proposed Action, the Enhanced Livestock Grazing, and the Enhance Watershed, Wildlife, and Soil Resources alternatives. Categorization does not apply to the No Action alternative.

Allotment Categorization

To achieve the identified objectives and resolve resource problems, the first step in formulating the rangeland management, multiple-use recommendations for the Divide MFP was to place each of the grazing allotments into one of the three management categories (M, I, or C). Characteristics of these three management categories are described below.

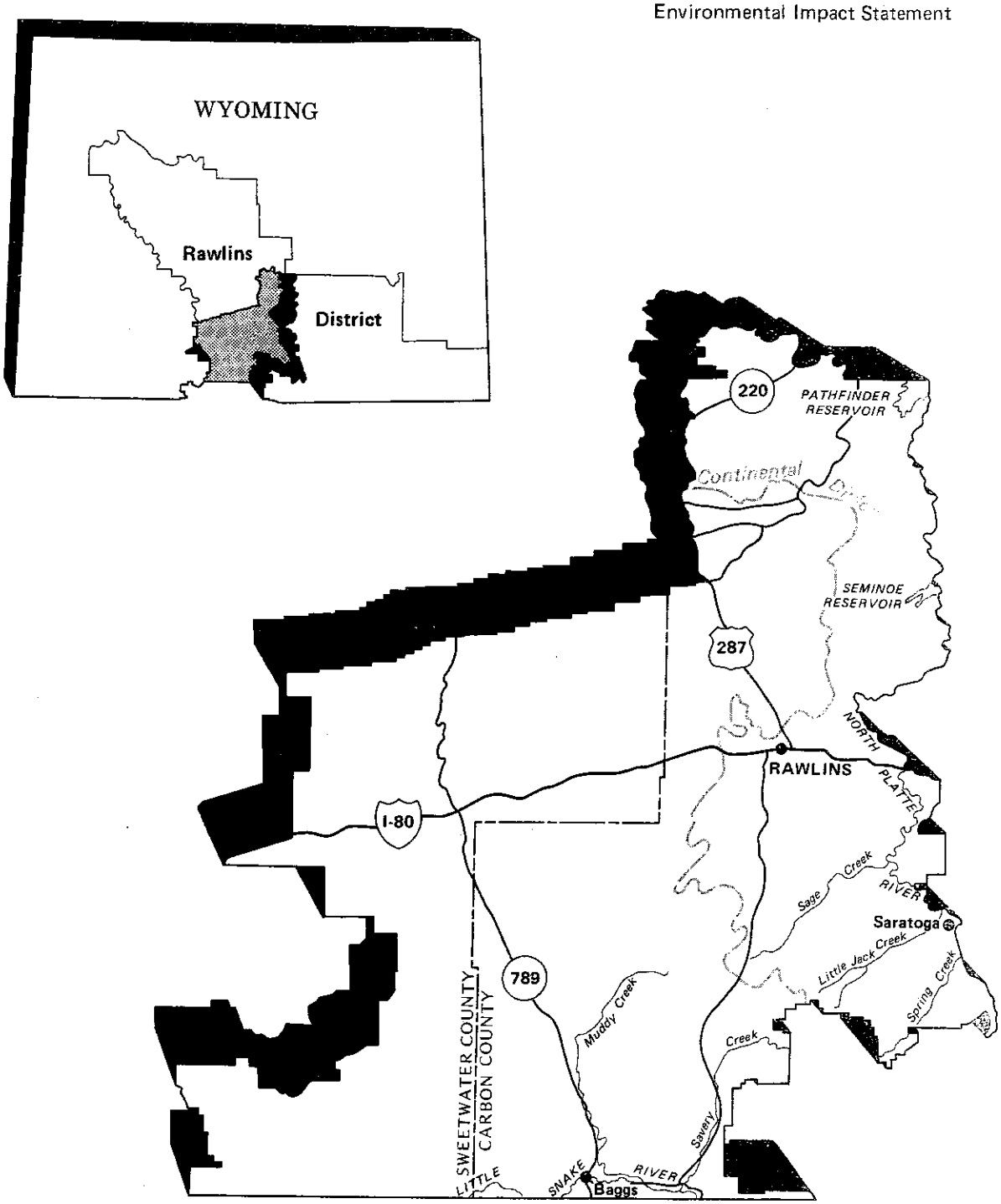
Category M Characteristics

Analysis of the allotment indicates there are no significant problems. If an allotment was characterized by one or more of the following factors, it was placed in the M category.

Figure 1-1

GENERAL LOCATION MAP

Divide Grazing
Environmental Impact Statement



Factor 1. The composition of desirable vegetative species on the allotment cannot be significantly improved.

Factor 2. Evaluation of utilization, trend, and condition data in the allotment indicates the vegetative resource cannot be significantly improved.

Factor 3. Allotment analysis shows no significant forage competition or other conflicts among grazing animals. Analysis is based on actual use records, wildlife and wild horse inventories, and utilization studies.

Factor 4. The distribution of grazing animals cannot be significantly improved. No significant problems exist around waters, wetlands, riparian areas, and meadows.

Factor 5. Turn-out dates and season-of-use are consistent with range readiness and provide for sound range management principles.

Factor 6. No significant grazing management problems are caused by incompatible land uses.

Factor 7. No significant suitability problems exist on the allotment. Analysis of the allotment's soil survey information indicates (using Soil Conservation Service Range Site Guides) potential for high productivity in the various range sites.

Factor 8. Analysis of vegetative composition from ecological condition ratings indicates productivity is near potential. There may be potential for positive economic return on public investment.

Table 1-1 shows the allotments in the M category.

Category I Characteristics

Analysis of the allotment indicates that one or more significant problems exist. These may be range condition, conflicts with other grazing animals, lack of water and poor distribution of grazing animals, other land uses which interfere with livestock operations, and present range management practices that will not resolve the significant problem(s). If an allotment were characterized by one or more of the following factors, it was placed in the I category.

Factor 1. The composition of desirable vegetative species in the allotment can be improved.

Factor 2. Evaluation of utilization, trend, and condition data in the allotment indicates the vegetative resource can be improved.

Factor 3. Present wild horse numbers may exceed BLM management objective levels.

Factor 4. Present wildlife numbers may exceed Wyoming Game and Fish objective levels.

Factor 5. The distribution of grazing animals could be improved. Significant problems exist around waters, wetlands, riparian areas, or meadows. Upland areas may be receiving little or no use.

Factor 6. Turn-out dates and season-of-use may not be consistent with range readiness and sound range management principles.

Factor 7. Significant conflicts with land uses other than grazing are evident. AUMs are being reduced or land use activity is interfering with livestock operations.

Factor 8. Significant range suitability problems exist on the allotment.

Factor 9. Analysis of the allotment's soil survey information indicates (using Soil Conservation Service Range Site Guides) potential for high productivity in the various range sites.

Factor 10. Analysis of range site data and ecological condition ratings indicates the present productivity is below potential.

Factor 11. There is potential for positive economic return on public investments.

Table 1-2 shows the factors that applied to each Category I allotment.

TABLE 1-1

CATEGORY M ALLOTMENTS

Allotment Number	Allotment Name
0521	Red Creek
0412	Deep Gulch
0531	George Dew
0609	Fillmore
0433	Sulpher Springs
0718	Sandstone
0423	Middlewood Hill
0205	Devils Gate
0445	H.R. Holding Pasture
0707	Haystack
1117	Mexican Meadows
0405	Beaver Dams
0711	Monument Lake
0610	LaClede
0623	Pinegrove
1110	Hell Canyon
0432	Snow Creek
0603	Bolten Ranch
0606	Doolittle
0515	Mexican Flats
0221	Stone
0612	North Pine Butte
0201	Buzzard
0722	Chain Lakes
0409	Cottonwood Draw
1112	Little Horse Mountain
0514	Little Robber
0602	Bull Canyon
0607	Echo Springs
0448	J.O. Pasture
0717	Ruby Knolls
0207	Ferris Mountain
0204	Desert Claim
1104	Cedar Ridge
0516	Mexican Graves
0425	Morgan Creek
1121	Pioneer Draw
0619	South Red Desert
0615	Riner
1107	Dolan
0601	Badwater
0508	Cottonwood Hill
0406	Boden
0441	North Pasture

TABLE 1—CONTINUED

CATEGORY M ALLOTMENTS

Allotment Number	Allotment Name
0503	Big Robber
0410	Coyote Draw
0525	South Barrel
0713	North Creston-West
0716	North Wamsutter
0436	Windmill
0714	Latham
0621	Tipton
0706	G.L.
0456	Deep Creek Pasture
0455	Sage Creek Ranch
0620	South Wamsutter
0420	Little Jack Creek
0522	River Bottom
0613	Platte River
0218	Seminoe
0721	D.O.

The Category I allotments were further divided into four monitoring/implementation priority groups (very high, high, moderate, and low), based on the categorization factors, input from affected parties, and the experience and knowledge of Divide and Medicine Bow Resource Area BLM personnel. (If permittees were to contribute funds for range improvements, the rate of construction of these improvements would be accelerated.) The allotments in each group are shown in Tables 1-3, 1-4, 1-5, and 1-6. The number of factors used in the process of assigning priorities was not a major element in the decision. For example, even though seven factors might have been used in placing an allotment in the Category I, perhaps only one critical factor was used to place that allotment in the very high priority group.

TABLE 1-2

FACTORS USED IN CATEGORIZATION OF CATEGORY I ALLOTMENTS

Allotment	Allotment Name	Factor 1 1/	Factor 2 2/	Factor 3 3/	Factor 4 4/	Factor 5 5/	Factor 6 6/	Factor 7 7/	Factor 8 8/	Factor 9 9/	Factor 10 10/	Factor 11 11/
0203	Cherry Creek		X			X						X
0209	Junk Creek					X						
0212	Long Creek					X			X			
0215	Pole Canyon		X			X			X			
0216	Sand Creek					X			X			
0219	Station 8	X	X			X						
0222	Wood Creek		X			X						
0401	Airport		X						X			
0402	Antelope		X						X			X
0403	Baggs Subunit				X	X			X			
0407	Centennial Creek				X	X						
0408	Cherokee			X	X							
0411	Cushing		X		X	X		X	X			X
0414	Dish					X						
0415	Doty Mountain				X	X						
0417	Grizzly		X									
0418	Hartt Creek		X			X						
0421	McCarty Canyon				X	X				X	X	
0422	Methodist		X		X							
0426	Morgan Ranch				X							X
0429	Rich	X			X			X				

TABLE 1-2--CONTINUED

FACTORS USED IN CATEGORIZATION OF CATEGORY I ALLOTMENTS

Allotment	Allotment Name	Factor 1 1/	Factor 2 2/	Factor 3 3/	Factor 4 4/	Factor 5 5/	Factor 6 6/	Factor 7 7/	Factor 8 8/	Factor 9 9/	Factor 10 10/	Factor 11 11/
0430	Sage Creek	X	X			X				X		
0435	Wild Cow				X	X			X			X
0440	Bartlett Isolated Tract		X									
0443	East Muddy				X							X
0447	Mountain Pasture				X	X	X					X
0450	Standard						X					
0451	Jim Berger	X	X		X							
0453	Thomas and Irma Ryan	X				X						
0457	West Wild Cow					X			X			
0502	Adobe Town		X	X					X	X	X	
0505	Cherokee Trail					X						
0506	Continental	X		X		X						
0507	Corson Springs			X		X						
0509	Cow Creek			X		X						
0510	Crook Wash			X		X						
0511	Espitalier			X		X						
0512	Grindstone Springs			X				X				
0513	Little Powder Mountain			X								
0517	Oppenheimer					X		X				
0518	Poison Buttes					X			X			
0519	Powder Mountain			X								

TABLE 1-2--CONTINUED

FACTORS USED IN CATEGORIZATION OF CATEGORY I ALLOTMENTS

Allotment	Allotment Name	Factor 1 1/	Factor 2 2/	Factor 3 3/	Factor 4 4/	Factor 5 5/	Factor 6 6/	Factor 7 7/	Factor 8 8/	Factor 9 9/	Factor 10 10/	Factor 11 11/
0520	Powder Rim					X		X				
0523	Rotten Springs			X		X						
0524	Sand Creek			X				X				
0527	V Spreaders		X								X	X
0528	Willow Creek			X		X						
0530	South Muddy				X	X						
0604	Coal Bank Wash	X										
0605	Daley Ranch				X	X						
0611	North Barrel			X		X						
0616	Sixteen Mile				X							
0626	44 Ranch					X			X			X
0701	Bell Springs		X			X	X				X	X
0703	East City Limits					X		X	X	X	X	X
0709	Jawbone		X			X			X	X	X	X
0710	Monument Draw					X			X	X		X
0715	North Tipton	X	X	X		X			X	X	X	X
0719	Separation Flats		X			X		X	X	X		X
0720	Shamrock Hills		X			X	X	X	X	X		X
1028	Plattoga Ranch	X	X		X	X	X	X				X
1030	V.T. Swanson					X		X	X			
1106	Cushing	X						X			X	

TABLE 1-2--CONTINUED

FACTORS USED IN CATEGORIZATION OF CATEGORY I ALLOTMENTS

Allotment	Allotment Name	Factor 1 1/	Factor 2 2/	Factor 3 3/	Factor 4 4/	Factor 5 5/	Factor 6 6/	Factor 7 7/	Factor 8 8/	Factor 9 9/	Factor 10 10/	Factor 11 11/
1109	Fly Creek	X										
1113	Little Sandstone				X			X				
1114	McCarger Draw	X			X			X				
1116	McIntosh Horse Mountain	X			X			X				
1118	Morgan-Boyer Subunit				X	X						
1120	North Rye Grass	X			X			X				
1123	Rasmussen Subunit	X			X							
1124	Reader	X			X							
1126	Road Gulch	X			X							
1128	Short	X			X				X	X	X	X
1129	South Baggs	X						X				
1131	South Rye Grass	X			X			X				
1132	Spring Gulch	X										

1/ The composition of desirable vegetative species in the allotment can be improved.
2/ Allotment evaluation indicates utilization, trend, and condition of the vegetative resource can be improved.
3/ Present wild horse numbers exceed BLM management objective levels.
4/ Present wildlife numbers exceed Wyoming Game and Fish Department objective levels.
5/ The distribution of grazing animals could be improved. Significant problems exist around waters, wetlands, riparian areas, or meadows. Upland areas may be receiving little or no use.
6/ Turnout dates and season-of-use are not consistent with range readiness and sound range management principles.
7/ Significant conflicts with land uses other than grazing are evident. AUMs are being reduced or activity is interfering with livestock operations.
8/ Significant range suitability problems exist on the allotment.
9/ Analysis of the allotment's soil survey information indicates (as per Soil Conservation Service Range Site Guides) potential for high productivity in the various range sites.
10/ Analysis of vegetative composition from ecological condition ratings indicates the present productivity is below potential.
11/ There is potential for positive economic return on public investments.

TABLE 1-3

VERY HIGH PRIORITY
CATEGORY I ALLOTMENTS

Allotment Number	Allotment Name
0506	Continental
0523	Rotton Springs
0709	Jawbone
0408	Cherokee
0403	Baggs Subunit
0520	Powder Rim
0407	Centennial Creek
0215	Pole Canyon
0219	Station 8
0415	Doty Mountain
0530	South Muddy
0435	Wild Cow
0417	Grizzly
0509	Cow Creek
0507	Corson Springs
0511	Espitalier
1114	McCarger Draw
1116	McIntosh Horse Mountain
1120	North Rye Grass
1131	South Rye Grass
0513	Little Powder Mountain
0519	Powder Mountain

TABLE 1-4

HIGH PRIORITY
CATEGORY I ALLOTMENTS

Allotment Number	Allotment Name
0457	West Wild Cow
0701	Bell Springs
0720	Shamrock Hills
0430	Sage Creek
0604	Coal Bank Wash
1132	Spring Gulch
1109	Fly Creek
0418	Hartt Creek
0401	Airport
0402	Antelope
0440	Bartlett Isolated Tract
0203	Cherry Creek

Category C Characteristics

There are no allotments in the Divide EIS area with such low potential or vegetative production and in such poor condition as to make attempts at improving that condition technically or economically infeasible. There are, however, allotments with land owernship patterns which negate the possibility for economic return on federal investments in range improvements. The criteria for placing allotments into this category have been applied in the following way: (1) the allotment was evaluated for the presence of critical resource conflicts and the public concern for the resources on the allotment; and (2) the land ownership pattern was evaluated as to whether federal investment in range improvements is cost effective and in the public interest or benefit.

Factor 1. There are no legislatively protected or mandated resources such as endangered species, wetland riparian, or wild horses in the allotment.

Factor 2. There has been no significant expression of public concern for the resources in the allotment.

Factor 3. The land ownership and use pattern within or surrounding the allotment negates effectiveness and profitability of public land investment.

TABLE 1-5

MODERATE PRIORITY
CATEGORY I ALLOTMENTS

Allotment Number	Allotment Name
0703	East City Limits
0524	Sand Creek
0527	V Spreaders
0443	East Muddy
0626	44 Ranch
0719	Separation Flats
0411	Cushing
0429	Rich
0451	Jim Berger
0422	Methodist
1128	Short
1123	Rasmussen Subunit
0447	Mountain Pasture
0414	Dish
0510	Crooked Wash
0216	Sand Creek
0209	Junk Creek
0715	North Tipton
0605	Daley Ranch
0616	Sixteen Mile
0505	Cherokee Trail
0710	Monument Draw
0528	Willow Creek
1118	Morgan-Boyer Subunit

TABLE 1-6

LOW PRIORITY
CATEGORY I ALLOTMENTS

Allotment Number	Allotment Name
0517	Oppenhiemer
0450	Standard
0222	Wood Creek
0421	McCarty Canyon
0502	Adobe Town
0611	North Barrel
0518	Poison Buttes
1124	Reader
1028	Plattoga Ranch
1030	V.T. Swanson
0426	Morgan Ranch
1113	Little Sandstone
0512	Grindstone Springs
0453	Thomas and Irma Ryan
1126	Road Gulch
1106	Cushing
1129	South Baggs
0212	Long Creek

a. The public land pattern is isolated and/or noncontiguous tracts.

b. Existing or imminent nonconforming land use (such as subdivisions) borders the public land.

Factor 4. The allotment has little or no potential for vegetative improvement.

Table 1-7 shows the C category allotments.

BLM would conduct use supervision and monitoring on the Category I allotments first. The order in which the Category I allotments would be monitored and the intensity of monitoring would be based on the priority groups (i.e., very high and high priority allotments would be monitored first and would receive the most intense monitoring). If money and personnel were available after monitoring the Category I allotments, the allotments in the M and C categories would be monitored as the need became apparent. BLM would conduct low to high intensity monitoring on the Category M allotments, depending on the values of all resources in each specific allotment. On Category C allotments, BLM would conduct low intensity monitoring.

TABLE 1-7

CATEGORY C ALLOTMENTS

Allotment Number	Allotment Name
0202	Buzzard Ranch Meadows
0217	Sand Creek Ranch Pasture
0220	Tapers
0223	Wood Creek Ranch Pasture
0413	Dirtyman
0419	Jack Creek
0427	North Spring Creek
0428	Cherokee Creek
0431	Savery Creek
0434	Twingroves
0437	Hill Isolated Tract
0438	Spring Creek Isolated Tract
0442	Horse Pasture
0444	Truck Drivers Creek
0446	Antelope Isolated Tract
0449	Sierra Madre Ranch
0501	Adams Ranch
0529	Headquarters Ranch
0608	Emigrant
0614	Olson Ranch Pasture
0624	Daley Ranch Pasture
0625	South Pine Butte
0702	Bell Springs Ranch Pasture
0704	East Sinclair
0708	Haystack River Pasture
0723	Shamrock Pasture
1012	Silver Spur North
1037	Lazy River Ranch
1101	Airheart Pasture
1102	Big Gulch
1103	West Brown's Hill
1108	Etherington
1111	Hill Pasture
1115	McCary
1122	Poling Isolated Tract
1125	Reader Basin Pasture
1127	Sheep Mountain
1130	South Pasture
1133	Standard
1134	State Line 40
1135	Willow Creek
1136	Battle Mountain Isolated Tract
1137	C.A. McKee Isolated Tract

TABLE 1-7—CONTINUED

CATEGORY C ALLOTMENTS

Allotment Number	Allotment Name
1138	M.J. Anderson Isolated Tract #1
1139	Cobb Cattle Company Isolated Tract
1140	Grieve Reservoir Pasture
1141	M.J. Anderson Isolated Tract #2
1142	East Brown's Hill
1143	L.U. Grieve Pasture
1144	Coal Bank Draw

Because characteristics of allotments may change as a result of management actions or natural phenomena, allotments may be moved among the three categories. Category changes would not occur until monitoring data indicate a need for change and affected parties were consulted.

Short-term monitoring would be conducted to determine utilization of key forage plants, estimates of current annual use for all grazing animals, and plant phenology and range readiness. Long-term monitoring would be conducted to study range trend in ecological condition, exclosures on riparian areas, climate (precipitation and temperature), water and forage quality and quantity, soil movement, threatened and endangered plants, wild horse populations, and wetlands.

Implementation of Management Actions

Under the Proposed Action and Enhance Watershed, Wildlife, and Soil Resources alternatives, the existing management situation (as shown in Appendix 1; Step 3 of the unit resource analysis (URA-3) for the Divide Basin Planning Unit, and the URA-3 for the Overland Planning Unit available in the Rawlins District Office)

would continue until monitoring indicated that changes were needed, then implementation of management actions would begin. For the Enhanced Livestock Grazing alternative, management actions would begin as soon as adequate data for planning and implementation were available.

Under the Proposed Action AMPs, Habitat Management Plans, Herd Management Area Plans, etc., would be developed; environmental assessments would be done; and range improvements would be made. The funding for range improvements would be allocated to the Category I allotments first. Range improvements would be done on the M and C category allotments as personnel and funds permit. Although range betterment funds could be used for range improvements in M and C category allotments, most of this funding is scheduled for Category I allotments. M and C category allotment funding for range improvements would rely primarily on money contributed by permittees. If adjustments in grazing preference were found to be necessary, the initial adjustment would be in the first year and the balance of the adjustment would be taken in the third and fifth years following the initial adjustment. However, prior to implementation of the third and fifth year adjustment, a review of available information would be made to determine whether the amount of adjustment should be modified. Adjustments in turn-out dates and seasons of use would be phased in over a period not to exceed five years. Where possible, adjustments would be implemented by mutual agreement with the permittee. If agreements cannot be negotiated, adjustments will be made by decision.

Rangeland Program Summary

A Rangeland Program Summary (RPS) of the planning objectives and proposed decisions for all rangeland uses will be developed within 5 months after the final EIS is published. The RPS will contain a description of planning decisions that affect livestock grazing and the economic efficiency of the rangeland program. The RPS will also contain a summary of the monitoring program as planned for the area. A schedule for issuing grazing decisions by allotment and a description of the procedures and time available for all affected parties to express their views will be included in the RPS.

Following publication of the RPS, grazing decisions would be made in accordance with the following schedule. For Category M allotments, this would be in 5 to 9 months after the final EIS is published; for Category C allotments, in 5 to 12 months after the final EIS is published; and for Category I allotments, in 5 to 17 months after the final EIS is published.

DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

The Proposed Action for rangeland management in the EIS area and three alternatives to the Proposed Action are described below.

Proposed Action

In the rangeland management section of the Divide Management Framework Plan (MFP), the grazing allotments were grouped into categories, and for each category recommendations were made for: an intensity of grazing management, including specific multiple-use resource management objectives; range improvement and monitoring needs; and actions needed to improve and maintain rangeland condition and productivity. Under the Proposed Action, present management (as shown in Appendix 1, Appendix 2, and the Overland and Divide Basin Planning Units [URAs]) would continue. Management actions (Appendix 3) to alleviate known problems in the I category allotments would be implemented as soon as BLM resources were available. Other management actions would be initiated as monitoirng data became available.

Management Actions of Category M Allotments

Category M allotments compose 33 percent of the allotments and 57 percent of the acreage in the EIS area. For Category M allotments, the

principal objective is to maintain or if possible improve present management. It is recommended in the Divide MFP that the management actions for these allotments would be:

1. Existing livestock use (numbers, class, season-of-use) would be permitted under a grazing permit/lease.

2. Increases in use would be allowed when consistent with multiple-use objectives.

3. Prescribed flexibility in livestock operations through consultation would be encouraged.

4. Range improvements would be authorized to meet multiple-use objectives established for an allotment.

Management Actions for Category I Allotments

Category I allotments compose 40 percent of the allotments and 40 percent of the acreage in the EIS area. The principal objective for management of Category I allotments is to implement management actions that will resolve problems that are presently evident on the allotment and to enhance multiple use goals and objectives. Specific management actions proposed for Category I allotments depend on the categorization factors affecting each individual allotment.

Factor 1. The composition of desirable vegetative species in the allotment can be improved.

The management action for this factor is manipulation of the vegetation by grazing management systems, burning, spraying, chaining, contour furrowing, or seeding. Areas which are identified from monitoring data, livestock operator input, and multi-resource analysis as having undesirable vegetation would be manipulated to establish desired vegetation.

Factor 2. Evaluation of utilization, trend, and condition data for the allotment indicates the vegetative resource can be improved.

The management action for this factor would be to establish management objectives for the allotment through consultation with affected parties. After establishing objectives, a monitoring program would be developed to evaluate the effectiveness of the present management situation in achieving those objectives. If the monitoring data indicated the management objectives were not being achieved, a grazing management system would be established and adjustments in grazing use and/or stocking levels of any or all grazing animals would be made, or in the case of wildlife recommended to the Wyoming Game and Fish Department. Monitoring is considered a continuing process to assure that adjustments and other changes in use accomplish the multiple-use objectives.

Factor 3. Present wild horse numbers may exceed BLM management objective levels.

The management action for this factor is removal of all wild horse excess to the population management objectives as discussed below. Current and proposed population levels are shown in Table 1-8.

TABLE 1-8

WILD HORSE POPULATION LEVELS

Herd Management Area or Herd Area	Inventory Count and Date of Inventory	Proposed Management Level
Adobe Town (area 1)	830 (8/3/82)	500
Flat Top (area 1)	112 (8/3/82)	100
Checkerboard (area 2)	25 (8/3/82)	0
Doty Mountain-Cherokee (area 3)	259 (8/2/82)	0
Checkerboard (area 4)	97 (8/2/82)	0
Stewart Creek-Chain Lakes (area 5)	141 (7/15/82)	0

Note: See Map 3.

Adobe Town (Area 1)

A herd management area plan (HMAP) which provides for the systematic and coordinated management approach for the wild horses has been developed for the Adobe Town herd management area. Population objective levels established for this area are:

Minimum—300

Average—400

Maximum—500

The maximum number of horses to be managed (500) was based upon public input, forage demands by other grazing animals, wild horse movement patterns due to weather conditions, and existing agreements concerning the checkerboard land pattern within the management area (see Map 3).

Flat Top (Area 1)

The Flat Top herd management area does not have an HMAP to guide its management; however, population objective levels proposed are:

Minimum—40

Average—70

Maximum—100

Development of an HMAP for the Flat Top area is proposed.

Checkerboard Land Pattern (Areas 2 and 4) and Doty Mountain-Cherokee Area (Area 3)

Wild horse population objective levels of zero have been proposed for the area east of Wyoming Highway 789 and the checkerboard land pattern for several reasons. The area east of highway Wyoming 789 contains such a large amount of fencing that the wild horses within this area cannot be considered free roaming. Conflicts with other resources or private lands has resulted in verbal and written requests for removal of the horses from private lands, especially in the checkerboard land pattern. Management of a wild horse population under these conditions is not possible.

Stewart Creek-Chain Lakes Herd (Area 5)

The wild horses within the Stewart Creek-Chain Lakes herd move between the Seven Lakes and Divide EIS areas, and would be managed as specified in the Seven Lakes HMAP, which is available for public inspection in the Rawlins BLM district office.

Following the removal of the excess horses, a monitoring program as outlined in the herd management area plan for Adobe Town would be established in conjunction with the monitoring program discussed in Factor 2.

Factor 4. Present wildlife numbers may exceed Wyoming Game and Fish objective levels.

The management action for this factor is the coordination with the Wyoming Game and Fish Department to ensure that big game populations are not in conflict with habitat conditions. BLM can only recommend changes in the numbers of big game animals.

Factor 5. The distribution of grazing animals could be improved. Significant problems exist around waters, wetlands, riparian areas, or meadows. Upland areas may be receiving little or no use.

The management actions for this factor would vary depending on whether the distribution problem was caused by lack of water or concentration of grazing animals on riparian areas. On allotments where lack of water is the problem, additional water sources would be developed. Once additional water sources have been developed, the monitoring would indicate whether the problems have been corrected or additional development is needed.

On allotments where sufficient water is available but the livestock are concentrating too heavily on riparian areas, grazing systems and/or fencing would be implemented. Total exclusion of livestock grazing for several years might be required to improve the condition on some crucial wildlife areas.

Factor 6. Turnout dates and season-of-use may not be consistent with range readiness and sound range management principles.

The management action for this factor would be to establish monitoring studies for range readiness in problem allotments.

Following the collection of range readiness information, an average range readiness date for livestock grazing would be derived. Adjustments in turnout dates and/or seasons of use would be made as needed. Operator involvement throughout the monitoring program and the development of the average date would be necessary. The adjustments in the turnout dates and/or the season-of-usewould be phased in over a period not to exceed five years, thereby allowing the affected permittees to adjust their spring operation.

If through the consultation process, an operator willingly agrees to make adjustments in his turnout date to improve the range, operator flexibility to vary the turnout date annually based upon range readiness, should be negotiated. This flexibility would be considered on a case-by-case basis.

Ongoing range readiness studies would be continued to reevaluate the average turnout date and to account for yearly fluctuations in range readiness.

Factor 7. Significant conflicts with land uses other than grazing are evident. Available forage is being reduced or land-use activity is interfering with livestock operations.

The management actions for this factor would vary depending on the type of land-use conflicts on the allotment.

Where the land-use conflict is causing a loss of forage production due to surface disturbance, rehabilitation efforts would be conducted and monitored for effectiveness. An enhancement measure to the rehabilitation effort is the fencing of a portion or the entire rehabilitated surface. Continual loss of forage production coupled with unsuccessful rehabilitation efforts would result in two possible actions: (1) elimination of the surface disturbing activity within the allotment, and/or (2) temporary or permanent adjustments in stocking levels of livestock.

Where the land-use conflict is causing damage to structural improvements or causing a livestock trespass situation, the management action would be to identify the agent causing the problem and require a correction of the situation. An example of this situation would be to require oil and gas companies to clean cattleguards.

Other land-use conflicts involve the degradation of the public and private land by off-road vehicle use during periods of wet weather. The management action for this factor would be the development of a sign program and/or seasonal site-specific road closures.

Factor 8. Significant range suitability problems exist on the allotment.

The management actions for this factor would vary depending on whether the suitability problems were associated with a lack of water, slope, or production. The primary methods for correction of suitability problems would be: (1) developing structural improvements such as windmills, pipelines, springs, reservoirs, or fences, (2) implementing nonstructural improvements such as spraying, burning, chaining, or contour furrowing, and/or (3) developing a rotation grazing system. The type of management action taken would depend upon the specific conditions on the allotment.

A monitoring program should be established in order to determine whether or not the management actions taken have corrected the suitability problem.

Factor 9. Analysis of the allotment's soil survey information indicated (using Soil Conservation Service Range Site Guides) potential for high productivity in the various range sites.

Factor 10. Analysis of range site data and ecological condition ratings indicates the present productivity is below potential.

The management action for factors 9 and 10 would be to establish a monitoring program designed to collect productivity information, species composition, utilization of key species, vegetative cover, and distribution of livestock for those allotments in which a potential for high vegetative productivity has been identified and the present productivity is below that potential. Following the collection of the monitoring data,

management objectives would be established through consultation with the affected permittee(s)/lessee(s) for the allotment. Methods of obtaining those objectives would then be developed. Depending upon the severity of the problems, the method might vary from a simple grazing system or range improvement to adjustments in grazing use and an intensive grazing system.

Factor 11. There is potential for positive economic return on public investments.

Benefit/cost ratio analyses would be conducted on AMP development, grazing system plans, and related range improvements before they are implemented. The benefit/cost ratio would, in most cases, have to be favorable (greater than one) for these plans and improvements before they would be approved for federal funding.

The management actions for several factors recommend establishing a monitoring program. The monitoring programs would be coordinated within an allotment and on similar allotments where possible.

Management Actions for Category C Allotments

Category C allotments compose 27 percent of the allotments and 2 percent of the acreage in the EIS area. For Category C allotments, the principal short-term objective would be to prevent deterioration of current resource conditions by managing the lands in a custodial manner. In the Divide MFP, it was recommended that the management actions for these allotments would be to conduct low intensity use supervision and monitoring. Monitoring would focus on changes in ownership or livestock operations.

The long-term objective would be to eliminate the situation causing the lack of a positive return on public investment. This objective would be accomplished by:

1. Changing fence locations to consolidate several small, individual allotments into one common use allotment large enough to have management objectives.
2. Land exchanges to consolidate public lands into manageable size units and/or provide contiguous land ownership for cost-effective improvement practices.
3. Public sale of land to eliminate small tracts that are unmanageable and where continued ownership is not in the public interest.

Enhance Watershed, Wildlife, and Soil Resources

Allotments would be categorized as in the Proposed Action, with conflicts among livestock grazing and watershed, soils, and/or wildlife already identified receiving priority for intensified management. Levels of use and management actions would remain unchanged in most allotments unless needed changes were determined through monitoring. Watersheds with current or potential soil and water conservation problems would receive increased priority for monitoring.

New AMPs would be designed and old AMPs modified to include provisions that would meet natural resource conservation and improvement objectives, and also to resolve livestock/natural resource conflicts within an allotment. Allotment specific range improvements would be identified after monitoring.

It would be the goal of the range program to provide sufficient habitat and forage for the maintenance of the Wyoming Game and Fish Department's Strategic Plan population objectives on public lands and for the overall enhancement of the habitat and the wildlife community it supports. Grazing management actions (treatments, conversions, developments, grazing plans, etc.) would be designed to meet these objectives. Livestock grazing might be temporarily eliminated from specific critical areas, or livestock might be used seasonally for vegetative manipulation. If necessary, wild horse populations would be reduced or removed. Predator control conducted by the U.S. Fish and Wildlife Service would be allowed only upon operator demand. Preventive control would be restricted to lambing areas and seasons.

Livestock conversions and range improvement projects would not be allowed unless they were beneficial to or would not adversely impact soils, water, or wildlife habitat resources. Management of streams and other critical areas, such as Sage Creek Basin and the Muddy Creek Drainage, would be accelerated to protect and improve these areas, especially when these areas are important to wildlife, watershed, and soil conservation collectively. As management was implemented, there might be adjustments in livestock and wild horse grazing rates and/or distributions.

Enhanced Livestock Grazing

Under this alternative, allotments would be categorized as in the Proposed Action. Forage available for domestic livestock use would be increased through an accelerated program of management activities and would be allocated to increased numbers of livestock. Potential range management actions under this alternative are shown for the Category I allotments in Appendix 4 and would be implemented after decisions are made. Suitable allotments would be placed under AMPs. If wildlife population objectives could not be met, reduction in the herd unit objectives would be recommended to the Wyoming Game and Fish Department. Wild horse numbers would not be allowed to increase from their present objective levels.

Other resources would not be degraded, but would be protected by standard operating procedures and multiple use and/or legal constraints.

No Action

Under this alternative, the existing range management program would remain static. AMPs in effect would continue, but no new AMPs would be developed. There would be no new range improvement projects. Maintenance of existing improvements (Overland Planning Unit URA-3 and the Divide Planning Unit URA-3 and Appendix 2) would be allowed. Changes in AUMs, seasons-of-use, or class of livestock from the present situation would not be allowed. Wildlife would be maintained at objective populations levels through coordination with the Wyoming Game and Fish Department. Wild horse numbers would be held at present objective levels, through roundups as necessary. Analysis of this alternative would allow BLM and the public to look at the consequences of continuing the existing rangeland uses in the Divide EIS area.

INTERRELATIONSHIPS WITH OTHER PROGRAMS

BLM's programs and proposals are closely related to those of other agencies and individuals. Interrelationships are discussed below.

U.S. Environmental Protection Agency

The U.S. Environmental Protection Agency (EPA) has been given initial responsibility for implementing Section 208 of the Federal Water Pollution Control Act Amendment of 1972. Under this act and Executive Order 12088, EPA is working through area-wide water quality management agencies and local Soil Conservation Service offices to complete plans for controlling water pollution in problem areas. Once the requirements of these plans are finalized, BLM will take the measures necessary to comply with them.

U.S. Fish and Wildlife Service

The U.S. Fish and Wildlife Service conducts animal damage control in Sweetwater and Natrona counties under joint agreement with BLM and the Wyoming Game and Fish Department. The control consists of aerial shooting and limited trapping of coyotes, mostly during the fall, winter, and early spring. The U.S. Fish and Wildlife Service is also the consulting agency under the Endangered Species Act of 1973 and has responsibility for migratory birds.

U.S. Soil Conservation Service

The U.S. Soil Conservation Service (SCS) is involved with permittees and the Wyoming Department of Lands in preparing cooperative or integrated ranch plans. SCS may become more involved in allotments that include significant

portions of private and state land. This may be particularly true in Category M and Category C allotments, where BLM will be spending less effort in plan preparation. BLM will be cooperating with SCS to upgrade some of the range site guides in this resource area.

U.S. Forest Service

Some of the livestock operators on BLM lands also hold U.S. Forest Service permits. Changes in seasons on either BLM or U.S. Forest Service lands often create a demand for change on the other agency's lands. Much of the wildlife use also occurs on U.S. Forest Service and BLM lands, and cooperation between the two agencies and the Wyoming Game and Fish Department is ongoing. The U.S. Forest Service was consulted in development of the Divide MFP and will continue to be included in the decision-making process for specific operations.

Wyoming Game and Fish Department

The Wyoming Game and Fish Department has established goals and objectives for wildlife populations and management active on all lands within the Divide EIS area. Because wildlife habitat would be affected by the proposed grazing management (especially the stocking rates), there has been coordination between BLM and the Wyoming Game and Fish Department in developing the Proposed Action. Specifically, the Game and Fish Department has cooperated with BLM in determining existing big game numbers and projecting 1990 desirable herd sizes. Continuing joint studies are being conducted on big game winter ranges and migration routes, as well as sage grouse strutting grounds. The Wyoming Game and Fish Department would also review all proposals for land treatments and cooperate in projects, pursuant to the Sikes Act of 1974.

Wyoming Department of Environmental Quality

BLM has an informal agreement with the Wyoming Department of Environmental Quality which provides for information exchange and agency coordination in solving water and air quality problems in the state. Department of Environmental Quality also approves industry plans for reclamation of mined land.

Wyoming Land Commission

The Wyoming Land Commission administers about 133,000 acres of land within allotments in the Divide EIS area. These lands are leased by livestock operators for grazing on 10-year terms. Most of the state lands are intermingled with BLM-adminstered lands, making separate management impractical.

Wyoming State Engineer's Office

Permits are issued by the State Engineer's Office for any water developments—springs, stock ponds, and reservoirs. BLM would comply with all Wyoming state water laws and regulations.

Wyoming State Historic Preservation Officer

The Divide Resource Area objectives and the guidelines for implementation of range improvements have been designed to comply with the Programmatic Memorandum of Agreement between the Department of the Interior, Bureau of Land Management, the Advisory Council on Historic Preservation, and the National Conference of State Historic Preservation Officers regarding the Livestock Grazing and Range Improvement Program. A copy of every cultural resources inventory report is submitted to the Wyoming State Historic Preservation Officer.

Wyoming State Department of Agriculture

BLM and the state of Wyoming cooperate on weed control programs.

County Government

Portions of Carbon and Sweetwater counties are included in the Divide EIS Area. The county planning commissions; county commissions; the city councils of Baggs, Dixon, and Rawlins; and the Mayor of Bairoil were consulted during the land use planning process prior to development of this EIS.

Livestock Industry

All livestock grazing permittees in the EIS area were consulted regarding the Management Framework Plan and the EIS.

STANDARD OPERATING PROCEDURES

Monitoring

Any monitoring that would occur under the Proposed Action or alternatives would be conducted in accordance with the following standard operating procedures. Existing trend studies would continue.

1. The BLM Manual, Section 4430.56, would be used as a general guide in developing trend-monitoring procedures. Plant frequency and ground cover would be sampled to evaluate vegetation and soil erosion trends. Other parameters, such as canopy, seedling, or shrub characteristics would be considered on unique areas such as riparian zones, aspen stands, and bitterbrush and mahogany thickets.

2. During and after grazing of each allotment, forage utilization would be measured by the height-weight method or the key forage plant method described in the BLM Manual, Section 4430.47 C and G. This would aid in determining whether existing stocking levels were providing proper use and what adjustments, if any, would be needed. These studies would also help determine a schedule for seasonal use.

3. Meadows would be monitored to determine impacts from livestock grazing activities.

4. Rain gauges would be used to take measurements of precipitation to help interpret vegetation production variations resulting from climatic changes.

5. Water quality and quantity would be monitored as necessary to determine problem areas.

6. Soil movement would be assessed in conjunction with trend and utilization studies. Changes in gully development along transects would be documented. Clay-mineral analysis of sediment would be used to monitor changes in sediment and erosion sources.

7. Where actual use information is required, it would be used to evaluate allotment management plans (AMPs), areas where management is being planned, or problem areas. Direct and indirect methods (BLM Manual 4412.22A) would be used to collect this information.

8. Wild horse numbers and location could be monitored annually to assess the effects of horse removals, fencing and other range improvements on the herds. A similar monitoring program is explained in the Cal-Neva EIS (Susanville District, 1981), which is available from the BLM.

Grazing Administration

Grazing administration under the Proposed Action or alternatives would be conducted in accordance with the following standard operating procedures:

1. Permits specifying the allotments, season-of-use, and number and kind of livestock would be issued to each operator. Operators would have to obtain BLM approval prior to changing the grazing specifications outlined in their permits.

2. Livestock operators may be required to file actual-use reports showing how many and how long cattle grazed in each allotment and/or pasture. Use on the allotments would be supervised by BLM throughout the grazing year.

3. If necessary, trespass actions would be initiated as described in 43CFR Subpart 4140. The trespass would be eliminated and payment retrieved from those responsible for damage and consumption of forage.

4. Each AMP would incorporate site-specific objectives for maintaining or improving livestock, wildlife, and fish habitat within the allotment. The grazing system implemented under the AMP would be designed to achieve those objectives.

Range Improvements

Any range improvements that would occur under the Proposed Action or alternatives would first be subjected to economic and environmental analyses. Adequate information to determine the economic benefits and environmental consequences would be collected before improvements were constructed.

General

1. Before construction of range developments and vegetative manipulations, cultural resources would be inventoried and evaluated, and attempts to avoid sites of significant cultural resources and high site density areas would be made. If this were not possible, consultation would be made with the State Historic Preservation Officer and the Advisory Council on Historic Preservation to develop acceptable mitigative strategies. Locations of cultural sites would not be disclosed to the public.

2. Endangered Species Act, Section 7 consultations would be conducted, if deemed necessary and appropriate mitigative or avoidance actions taken.

3. New range developments and maintenance of existing developments within Wilderness Study Areas would be consistent with the BLM's Interim Management Policy and Guidelines for Land Under Wilderness Review.

4. In accordance with the BLM Manual, Section 8341, visual resource management contrast ratings would be used in the project planning stages of all proposed land management activities that would disturb the soil, change or remove vegetation, or place a structure on the landscape. These ratings would be used to determine the amount of contrast between a proposed activity and the existing landscape. Assessing the amount of contrast would indicate the severity of impact and serve as a guide in determining what would be required to reduce the contrast (visual impact) to the point where it would meet the visual management class requirements for the area where the project would be located.

5. Cooperative agreements with range users would outline maintenance responsibilities for range improvement projects.

Fences

Fences would be installed according to spacing, height, and other specifications described in the BLM Manual, Section 1737, for the protection of wildlife. An example would be spacing the bottom wire of a 3-wire fence at 16 inches above the ground in pronghorn ranges.

Water Developments

1. Federally funded livestock watering developments would be available and safe for identified wildlife and wild horse needs.

2. After the excavation of a spring, a metal headbox would be installed. The water would be piped into a trough with an overflow pipe leading back into the original drainage or into a new pit. The meadow complex around the spring would be fenced.

3. All water troughs would be either circular rings with concrete bases or metal troughs. Wildlife escape ramps would be installed to prevent birds and small animals from drowning.

Land Treatments

1. Brush control would be done by applying herbicides from aircraft or by burning. Noxious weeds would be controlled by herbicide application or burning. Chemicals would be cleared by the U.S. Department of the Interior. Burning plans would be cleared by the Wyoming Department of Environmental Quality. A 200- to 250-foot buffer on live

streams and other water sources would be observed for aerial application of treatments, and setbacks from water and timber would be required when chemicals were applied. Aerial spraying would be done when wind speed is less than 6 miles per hour.

2. Following the manipulation of vegetation as discussed for Factor 1 of Category I, allotments would require proper management of the affected area to ensure the maximum opportunity for success. Proper management might include, but not be limited to: (1) resting from livestock grazing for a minimum of two growing seasons, (2) fencing of the area for protection of vegetation, and (3) establishing a grazing system to ensure proper use of the area following manipulation. Wildlife use would be considered. Vegetative treatments would not be undertaken in areas where erosion could be a problem.

3. To prevent erosion, land treatments would not be done on slopes greater than 15 percent.

4. Wildlife habitat needs would be considered for all land treatments. No treatment would be done within ¼ mile of identified sage grouse strutting grounds, and treatments would be restricted in crucial habitat areas (big game winter ranges, sage and sharp-tailed grouse nesting areas, etc.).

5. Reclamation of areas disturbed by energy and mineral activities would involve seeding or planting a mixture of plants representative of the major species present within the habitat type.

UNAFFECTED ASPECTS OF THE ENVIRONMENT

The following items were analyzed to determine whether the Proposed Action or any of the alternatives would have an impact on them.

1. Wilderness values
2. Areas of Critical Environmental Concern (ACECs)
3. Forestry
4. Air quality
5. Wild or scenic rivers (designated or recommended)
6. Topography
7. Climate
8. Geology

None of these items would be affected by the Proposed Action or alternatives, and they will not be further analyzed for impacts from grazing in this EIS.

PART 2

AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

INTRODUCTION

The format of this EIS was designed so that the affected environment, environmental consequences, mitigation measures, unavoidable adverse impacts, short-term versus long-term productivity, and irreversible and irretrievable commitments of resources could be described in one section, and the account of BLM's analyses could be more easily followed and understood. The affected environment subdivision describes the resource. The environmental consequences subdivision describes the impacts that would result from the implementation of the Proposed Action or any one of three alternatives. The mitigation measures, as approved by management, suggest ways in which impacts could be made less severe. The remaining subdivisions, unavoidable adverse impacts, short-term use versus long-term productivity, and irreversible and irretrievable commitments of resources describe the effects that would probably occur if management actions from a given alternative plus the mitigation measures were implemented. These effects are final, and under the existing situation, could not be mitigated further. Impacts on ten resources are analyzed in Part 2 of this EIS. The resources are: vegetation, soils, hydrology, socioeconomics, wildlife, wild horses, fisheries, cultural, recreation, and visual.

A Proposed Action and three alternatives are considered in this EIS. In this part, the anticipated impacts that would result from the Proposed Action, the Enhance Watershed, Wildlife, and Soil Resources alternative, the Enhanced Livestock Grazing alternative, and the No Action alternative are discussed. For an explanation of the Proposed Action and these alternatives, see Part 1 of this EIS. The following assumptions are being made for the purpose of analyzing the Proposed Action and alternatives.

1. Because the length of short-term and long-term impact varies for each resource value, no general assumption has been made for the lengths of short-term or long-term impacts. Assumptions are stated in each analysis section.

2. Management of wildlife populations would continue through harvesting authorized by the Wyoming Game and Fish Department, and the maximum population levels would remain as they are in the Wyoming Game and Fish Department's strategic plan (Draft 1981).

3. All necessary funding and manpower would be available to implement the Proposed Action and alternatives as stated in Part 1 of this EIS.

4. Where magnitude and location of management actions are unknown, the worst-case impacts have been analyzed for each resource, except where otherwise indicated. Only significant impacts and impacts to certain important items such as threatened or endangered species, and cultural and historical values were documented.

5. If site-specific grazing management plans were initiated after this EIS, an environmental assessment would be prepared by an interdisciplinary team to analyze the impacts of specific management systems and improvements.

VEGETATION

Affected Environment

Within the Divide EIS area there are four climatic zones which have an important effect on the development of the vegetation resource. These zones are: 7- to 9-inch precipitation Green River, 7- to 9-inch precipitation Great Divide Basin, 10- to 14-inch precipitation foothills and basins west and southeast of the Continental Divide, and 15- to 19-inch precipitation foothills and mountains west of the Continental Divide.

Climatic conditions within these zones in conjunction with other environmental factors produce distinct ecological sites commonly called range sites. These range sites within the Divide EIS area can be grouped into 10 major vegetation types. Table 2-1 depicts the precipitation zone, major range sites, standard habitat types, and the common vegetative species within each vegetation type.

This vegetation discussion has been coordinated with the standard habitat sites within the Wildlife section (Appendix 5). Within the discussion of each vegetation type, the associated habitat type(s) are mentioned.

Vegetative Types

Grass

The grass vegetation type is important in terms of forage for livestock and wild horses. Wildlife also utilize the grass vegetation type during the spring season.

The standard habitat type included within this vegetation type is the short grassland.

Sagebrush

The majority of the forage for livestock and the most preferred, when accessible, is the herbaceous understory vegetation. During the winter season, the sagebrush vegetation type is considered an important habitat for livestock, mule deer and pronghorn. Standard habitat types which were included within the vegetation type were sagebrush-mixed grass and big sagebrush-rabbitbrush steppe.

Greasewood

The vegetation associated with this type is characterized by plants which can tolerate saline and/or alkaline conditions. Various vegetation species such as Gardner saltbush or bottlebrush squirreltail are considered valuable as forage for livestock.

Saltbush

Vegetation species within this type are very similiar to those found in the greasewood vegetation type because the species are tolerant of a high salt concentration. The sites on which the saltbush vegetation exist are normally in a more upland position than the greasewood type and do not endure long periods of time under water. One standard habitat type associated with the saltbush vegetation type is saltbush steppe. The saltbush vegetation type is an important source of forage for livestock and wildlife.

Mountain Shrub

The mountain shrub vegetation type normally occurs on rolling to steep slopes and ridges. This type is considered excellent habitat for mule deer because of the species available: antelope bitterbrush, big sagebrush, mountain mahogany, and western snowberry. The two standard habitat types are bitterbrush-sagebrush steppe and mountain shrubland.

Meadow

The meadow vegetation type can be divided into two basic subtypes; wet meadow and dry meadow. The meadow vegetation type is actively used by numerous species of wildlife as well as livestock and wild horses. The wet meadow subtype includes those areas where the vegetative species are directly influenced by water. The standard habitat types which are associated with the wet meadow subtype include open aquatic-emergent wetland, riparian grassland, greasewood-sagebrush riparian shrubland, willow-waterbirch riparian shrubland, aspen riparian woodland, and cottonwood riparian woodland.

The dry meadow subtype normally occurs in upland positions and is not so directly influenced by water as the wet meadow subtype and are normally grass-forb dominated communities. Upland meadow is the standard habitat type associated with the dry meadow subtype.

Broadleaf Trees

The standard habitat type which falls into this vegetation type is quaking aspen woodland. This vegetation type is considered important habitat for livestock, mule deer and elk particularly during the spring through fall seasons.

TABLE 2-1

MAJOR VEGETATION TYPES BY PRECIPITATION ZONES

Major Vegetation Type	Precipitation Zone	Major Range Sites	Standard Habitat Types	Vegetation Species
Grass	All	Shallow clayey	Short grassland	Thickspike wheatgrass[1/]
				Western wheatgrass[1/]
				Streambank wheatgrass[1/]
		Clayey		Bluebunch wheatgrass[1/]
				Bottlebrush squirreltail[1/]
				Indian ricegrass[1/]
				Needleandthread[1/]
				Prairie junegrass
				Three-awn
				Aster
				Biscuitroot
				Eriogonum
				Big sagebrush
				Birdfoot sagebrush[1/]
				Black sagebrush[1/]
				Low sagebrush
				Gardner saltbush
				Winterfat
				Rabbitbrush
Sagebrush	7-9 inch	Sandy	Sagebrush-Mixed grass Steppe	Needleandthread[1/]
				Thickspike wheatgrass[1/]
		Loamy		Sandberg bluegrass[1/]
				Bottlebrush squirreltail[1/]
		Shallow sandy	Big sagebrush-Rabbitbrush Steppe	Indian ricegrass[1/]
				Eriogonum
		Shallow loamy		Paintbrush

TABLE 2-1--CONTINUED

MAJOR VEGETATION TYPES BY PRECIPITATION ZONES

Major Vegetation Type	Precipitation Zone	Major Range Sites	Standard Habitat Types	Vegetation Species
Sagebrush (continued)				Big sagebrush[1/] Rabbitbrush[1/] Shadscale[1/] Spiny hopsage[1/] Winterfat Birdfoot sagebrush Black greasewood[1/]
	10-14 inch and 15-19 inch	Sandy Loamy Shallow sandy Shallow loamy Overflow	Sagebrush-Mixed grass Steppe Big sagebrush-Rabbitbrush Steppe	Western wheatgrass[1/] Thickspike wheatgrass[1/] Letterman needlegrass[1/] Needleandthread[1/] Basin wildrye Prairie junegrass[1/] Bottlebrush squirreltail[1/] Canby bluegrass[1/] Indian ricegrass[1/] Idaho fescue[1/] Aster Eriogonum Fleabane Western yarrow Big sagebrush Chokecherry Rabbitbrush[1/] Saskatoon serviceberry Western snowberry Antelope bitterbrush

TABLE 2-1--CONTINUED

MAJOR VEGETATION TYPES BY PRECIPITATION ZONES

Major Vegetation Type	Precipitation Zone	Major Range Sites	Standard Habitat Types	Vegetation Species
Greasewood	7-9 inch and 10-14 inch	Saline lowland	Greasewood steppe	Thickspike wheatgrass[1/] Alkali sacaton[1/] Basin wildrye Indian ricegrass[1/] Bottlebrush squirreltail Inland saltgrass[1/] Nuttall alkaligrass Sandberg bluegrass[1/] Phlox Milkvetch Black greasewood[1/] Fourwing saltbush Gardner saltbush Rubber rabbitbrush[1/] Shadscale
Saltbush	7-9 inch and 10-14 inch	Impervious clay Shale Saline upland	Saltbush steppe	Thickspike wheatgrass[1/] Bottlebrush squirreltail[1/] Indian ricegrass Sandberg bluegrass Aster Biscuitroot Milkvetch Gardner saltbush[1/] Birdfoot sagebrush[1/] Winterfat Black greasewood[1/] Rubber rabbitbrush[1/]

TABLE 2-1--CONTINUED

MAJOR VEGETATION TYPES BY PRECIPITATION ZONES

Major Vegetation Type	Precipitation Zone	Major Range Sites	Standard Habitat Types	Vegetative Speices
Mountain shrub	15-19 inch	Loamy Shallow loamy	Bitterbrush-Sagebrush Steppe Mountain shrubland	Bluebunch wheatgrass[1/] Idaho fescue[1/] Spike sedge Big bluegrass Bottlebrush squirreltail Letterman needlegrass Sandberg bluegrass Indian ricegrass[1/] Western wheatgrass[1/] Balsamroot Buckwheat Lupine Penstemon Western yarrow Big sagebrush[1/] Antelope bitterbrush[1/] Serviceberry Western snowberry[1/] Mountain mahogany[1/]
Meadow/Riparian	All	Subirrigated Saline subirrigated Wetland Lowland	Open aquatic-Emergent Wetland Riparian grassland Greasewood-Sagebrush Riparian	Basin wildrye[1/] Nebraska sedge[1/] Tufted hairgrass[1/] Western wheatgrass[1/] Bluejoint reedgrass Mat muhly Nuttall alkaligrass Alkali sacaton Baltic rush[1/]

TABLE 2-1--CONTINUED

MAJOR VEGETATION TYPES BY PRECIPITATION ZONES

Major Vegetation Type	Precipitation Zone	Major Range Sites	Standard Habitat Types	Vegetation Species
Meadow/Riparian (continued)		Very shallow	Greasewood-sage brush Riparian Shrubland	Bluegrass[1/]
				Inland saltgrass
				Alkali muhly
				Arrowgrass
				Aster
			Willow- Waterbirch Riparian Shrubland	Horsetail
				Iris
				Violets
				Western yarrow
				Willow[1/]
			Aspen- Riparian Woodland	Buffaloberry
				Rose
				Shrubby cinquefoil
				Black greasewood
			Cottonwood- Ripairan Woodland	Aspen[1/]
				Big sagebrush[1/]
				Waterbirch[1/]
				Narrowleaf cottonwood[1/]
			Upland- Meadow	Bluebunch wheatgrass[1/]
				Buttercups
				Sedges
				Eriogonum
				Common yarrow[1/]
				Fringed sagebrush[1/]
Broadleaf trees	7-9 inch and 10-14 inch	No major range site identified	Quaking- Aspen Woodland	Needleandthread[1/]
				Basin wildrye
				Thickspike wheatgrass

TABLE 2-1--CONTINUED

MAJOR VEGETATION TYPES BY PRECIPITATION ZONES

Major Vegetation Type	Precipitation Zone	Major Range Sites	Standard Habitat Types	Vegetation Species
Broadleaf trees (continued)				Bottlebrush squirreltail King spiked fescue[1/] Big bluegrass[1/] Eriogonum Penstemon Narrowleaf cottonwood Common snowberry[1/] Buffaloberry Current Willow Boxelder Black common chokecherry Quaking aspen[1/]
Juniper	7-9 inch and 10-14 inch	Shallow breaks	Juniper-Woodland	Bluebunch wheatgrass[1/] Indian ricegrass[1/] Needleandthread[1/] Thickspike wheatgrass[1/] Prairie junegrass Aster Eriogonum Goldenweed Stonecrop Juniper[1/] Big sagebrush[1/] Low rabbitbrush Antelope bitterbrush Mountain mahogany[1/]

TABLE 2-1--CONTINUED

MAJOR VEGETATION TYPES BY PRECIPITATION ZONES

Major Vegetation Type	Precipitation Zone	Major Range Sites	Standard Habitat Types	Vegetation Species
Conifer	10-14 inch	No major range site identified	Limber Pine-Woodland	Western wheatgrass[1/] Elk sedge[1/] Bluegrass
			Aspen-Conifer-Woodland	Needleandthread Idaho fescue Western yarrow Aster Big sagebrush[1/] Serviceberry[1/]
			Ponderosa Pine Douglas fir Forest	Thermopsis Limber pine[1/] Engelmann spruce[1/] Lodgepole pine[1/]
			Mixed Conifer-Forest	Subalpine fir[1/] Aspen[1/] Black common chokecherry[1/]
			Early-Successional Conifer	Ponderosa pine[1/]
Waste		Badland	Rockland	
		Rock outcrop	True sand dune	
			Badland	

1/Major vegetative species

Juniper

This vegetation type normally occurs in an upland position on gently sloping to very steep topography.

Use of the juniper vegetation type by livestock does occur but is limited due to the roughness of the terrain. The standard habitat type is juniper woodland and is considered important mule deer habitat, particularly during the winter.

Conifer

The conifer vegetation type is located primarily in the Ferris Mountains area and in those areas bordering the Medicine Bow National Forest in the Sierra Madres.

Livestock and wildlife use this vegetation type for cover, shade, and forage. Five standard habitat types have been identified as part of the conifer vegetation type; limber pine woodland, aspen conifer, ponderosa pine-Douglas fir forest, mixed conifer forest, and early successional conifer. The species within the over and under stories depends upon the habitat type.

Waste/Barren

This vegetation type includes those areas which contain very minimal or no forage vegetation and/or where forage is unaccessible, such areas as rock outcrops, active sand dunes, dry lake beds, extremely steep or rocky badlands, extremely dense timber or brush, etc. There are three standard wildlife habitat types which qualify for this vegetation type: rockland, sand dune, and badland.

Poisonous Plants

Poisonous plants are a normal component of the range ecosystem. Most poisonous plant species kill animals only if eaten in large amounts—often almost a straight diet of poisonous plants (Stoddart, Smith, and Box 1975). Several factors such as the animal's seasonal susceptibility to the poisonous plant, the formation of the poisonous portion of the plant, and the susceptibility of certain kinds of animals to poisoning from a particular plant, play an important role in the affect of poisoning of livestock. A deficiency or shortage of minerals within the diet of livestock can be a factor in the consumption of poisonous plants by livestock. For example, a shortage of salt may cause animals to eat plants not normally eaten. Shortages of other minerals such as phosphorus induces abnormal appetites causing the animal to consume low-value vegetation such as poisonous plants. Although poisonous plants do occur throughout the EIS area, no areas of extremely large concentrations occur. Poisonous plants could affect turn-out dates; some plants are not toxic after they have matured. Turn-out dates might change, depending on the development state of the plant.

Twelve species of poisonous plants are known to exist in the Divide EIS area. Table 2-2 depicts the poisonous species, dangerous season, and the grazing animal endangered. There are sufficient quantities of quality forage available for livestock; therefore, the intake of poisonous plants is minimal.

Condition

Range condition is the present state of vegetation of a range site in relation to the climax (natural potential) plant community for that site. It is an expression of the relative degree to which the kinds, proportions, and amounts of plants in a plant community resemble that of the climax plant community for the site. Range condition is basically an ecological rating of the plant community (Soil Conservation Service 1976).

Ecological range condition was calculated on 171 allotments within the EIS area using vegetation and soil information collected during the 1980-1981 range site inventory and applying this information to the Soil Conservation Service's method of calculating range condition. Analysis of the information indicates that of the public land, 13 percent (298,400 acres) is in excellent condition, 57 percent (1,312,700 acres) is in good condition, 21 percent (498,800 acres) is in fair condition, and 1 percent (12,600 acres) is in poor condition. Eight percent (193,700 acres) was placed in an unclassified category, which did not receive a condition rating. Areas that were placed in this category include roads, dry

TABLE 2-2

POISONOUS PLANTS WITHIN THE DIVIDE EIS AREA

Species	Dangerous Season(s)	Class of Livestock Endangered
Arrowgrass	All	All
Chokecherry	All	All, especially sheep
Death camas	Early spring	All, especially sheep
Greasewood	Spring	All, but mostly sheep
Halogeton	Fall and winter	All, but mostly sheep
Horsebrush	Spring	Sheep
Horsetail	Haying season	All, especially cattle and horses
Low larkspur	Early spring	Cattle
Tall larkspur	Early summer	Cattle
Loco	All, especially spring	All
Lupine	Most when in fruit	Sheep
Senecio	Spring and summer	All

Source: Stoddart, Smith, and Box, 1975.

lakebeds, corrals, etc. Ecological range condition information was not collected on the remaining 16 allotments because of problems with access and soil mapping information.

Trend information has been collected on 9 AMPs within the EIS area; however, the information collected cannot be used to determine the overall vegetative trend of the entire EIS area. Comprehensive vegetative trend information for the entire EIS area is not available.

Threatened or Endangered Species

There are no threatened or endangered plant species known to exist in the Divide EIS area; however, two species have been proposed for threatened and endangered status. Gibben's beardtongue has been proposed for the endangered status while persistent sepal yellowcress is proposed for the threatened status (Robert Dorn, personal communication 1982).

Gibben's beardtongue is apparently restricted to a single slope of selenium soil in the N½N½ of section 10 of T. 12 N., R. 94 W., in the vicinity of Cherokee Creek. The selenium soil is a sandy-clay derived largely from a sandstone formation, yellowish in color and mostly devoid of vegetation.

Grazing of the Gibben's beardtongue population does occur by cattle and/or mule deer. Fencing of the population to enhance protection has been proposed for the spring of 1983. Gibben's beardtongue is considered endangered because of the low population number, significant grazing on the plants, and the lack of vigor in the population.

Persistent sepal yellowcress is a species restricted to old shorelines of rivers, ponds, and lakes. Fifteen populations of persistent sepal yellowcress have been located along Seminoe Reservoir in the northeast portion of the EIS area.

Habitat requirements for this species were derived from its apparent specificity for sandy areas along rivers, ponds, and reservoirs. The species is found to be most abundant where the area has not been disturbed recently, i.e., along littoral edges of reservoirs constructed in the past 20 years. The soils may range from alkaline to nonalkaline and from loose to tight sand and

clay. The largest populations are found in loose, nonalkaline, sandy littoral edges.

Even though large populations of persistent sepal yellowcress occur at Seminoe Reservoir, this species still remains on the threatened list. Increased volumes of water at Seminoe in the future may eradicate it. The U.S. Fish and Wildlife Service intends to study this species further (Jim Miller, personal communication 1982).

Environmental Consequences

The discussion of impacts to the vegetation resource will consider the predicted changes in the short term (1 to 5 years) and the long term (5 to 20 years) time frames based upon implementation of a management action. Analysis of the impacts of the Proposed Action and alternatives in relation to the threatened and endangered species assumes the fencing of Gibben's beardtongue will be constructed in the spring of 1983.

Proposed Action

Category M

There were no significant management problems identified within the Category M allotments; therefore, the management actions generally recommend a continuation of the present grazing management as specified in the Grazing Permit/Lease. Management problems considered insignificant on an allotment basis do occur within the Category M allotments and should be watched; however, they are not addressed within this narrative.

In the short-term and long-term time frames there would not be any significant change in the vegetation resource as compared to the existing situation.

Category I

Deferring management actions pending the collection of monitoring data in the short-term time frame would result in continuation of current levels of grazing use and management. In those areas where the present management is considered unacceptable, situations such as improper distribution of livestock or excess wild horses would also continue. During the monitoring phase, the vegetative vigor, production, seed production, and seedling establishment would continue in the present trend. Those areas with declining trend would continue a downward trend while those with static or upward trend would continue in their respective direction.

The predicted change or response of the vegetation to a management action depends upon the severity of the problem being addressed and the management action being implemented. The following discussion considers each management action independently, stressing the predicted changes to the vegetation. Any management action may be used to correct more than one factor. For example, burning and seeding may be used to improve the vegetative species composition or to increase the productivity of an allotment. In order to avoid unnecessary duplication, the beneficial and adverse impacts of the management action to the vegetation resource will be discussed once.

To aid in analysis, a brief description of each factor being analyzed is listed, followed by a discussion concerning the response of the vegetation as a result of the management action.

Factor 1. Composition of desirable vegetation can be improved.

Factor 8. Significant range suitability problems exist.

Factor 10. Present vegetation productivity is below potential.

Manipulation of the vegetation to obtain a desirable vegetation composition or to correct a range suitability problem such as lack of production can occur by a variety of methods such as burning, spraying, chaining, contour furrowing and/or seeding. Within the Divide EIS area, the majority (95 percent) of the manipulation has and would involve eradication of sagebrush within the sagebrush vegetation type. Within the past 85 years, the majority of the sagebrush control has been by burning and spraying.

Shrubs which do not sprout from the root, such as big sagebrush, sometimes can be com-

pletely eradicated by a single fire when there is adequate ground fuel of dry grass to carry the fire. However, the success of burning sagebrush is determined by the climax status of the area (Stoddart, Smith, and Box 1975). The response of the herbaceous vegetation after a fire depends upon: (1) the type of herbaceous vegetation present prior to the fire, (2) the intensity or temperature of the fire at ground level, (3) the season of burning, and (4) the phenological stage of growth at the time of burning. Plants normally resistant to fire are those having rhizomes, which grow more deeply, and, in the mineral soil, those with taproots able to regenerate below their root crowns and those plants which quickly reestablish from seed (Valentine 1971). Significant increases in the production of the herbaceous species have been observed following wildfires within the EIS area. Even though there are no studies to quantify the amount of increase of herbaceous species, estimates of 50 to 75 percent would be considered realistic.

Results of previous sagebrush eradication by spraying within the EIS area have indicated up to 85 percent removal of big sagebrush, which were accompanied by an increase in the production of the herbaceous species. Increases in production of the herbaceous species can be attributed to the opening of the canopy and increased moisture available to the herbaceous species (Stoddart, Smith, and Box 1975).

Contour furrowing has not been a common practice within the EIS area in the past. However, it should be considered as a viable option to increase vegetative production on low-value ranges. Rainfall may percolate into the ground 15 to 45 centimeters deeper on furrowed land. Native grasses increased in both ground cover and production based upon tests conducted in Texas (Stoddard, Smith, and Box 1975).

Chaining is also a practice rarely used in the EIS area, but is considered a viable option. Chaining gives a fair kill of old sagebrush plants but rarely kills young, flexible plants. Late summer and early fall are most effective for chaining sagebrush.

Seeding of the range is most effective when used in conjunction with the methods previously discussed. Establishing desirable vegetation, which leads to increased vegetative production and increased grazing capacities, protection of the soil from erosion, and increased ground cover are some of the benefits from seeding.

Factor 2. Utilization, trend, and condition can be improved.

Factor 5. Distribution of grazing animals can be improved.

Factor 6. Turn-out dates and season-of-use are not consistent with range readiness and sound range management principles.

Factor 8. Significant range suitability problems exist.

Several reasons could contribute to the need for improvement in utilization, range condition, distribution of grazing animals, and correction of range suitability problems. These reasons include improper distribution of grazing animals, defoliation of the vegetation during susceptible periods, and stocking of the range by livestock, wildlife, and wild horses in excess of the grazing capacity.

Improper distribution of grazing animals results in the concentration of animals in specific areas, such as the meadow vegetation type, while adjacent areas receive little or no grazing pressure. On cattle ranges, the most accessible areas such as valley bottoms, low saddles between drainages, areas around water holes, and level mesas are utilized first. Steep areas and areas far from water are less well-utilized or are not utilized (Stoddart, Smith, and Box, 1975). Concentration of grazing animals results in a decline in the vegetation vigor, seed production, litter accumulation, range condition, and vegetative trend if continued for 10 or more years.

Defoliation of plants during susceptible periods can reduce their ability to maintain growth and vigor (Buwai and Trlica 1977). The time of defoliation is very important in determining the ability of the plant to recover. Stoddart, Smith, and Box (1975) identified two critical periods in the growth of forage grasses: (1) the

period of active reproduction, from flower-stalk formation to and including seed ripening; and (2) the forepart of the normal carbohydrate-storage period.

Management objectives would be established and monitoring data would be collected during the short-term time frame, while present management continued. The situations which are in need of improvement will continue in their presently unacceptable state or may possibly decline.

If the monitoring data collected indicated that the established management objectives were not being achieved, management actions such as adjustments in grazing use and/or stocking rates of all grazing animals or development of range improvements would be implemented. Adjustments in grazing use could include establishing grazing systems, modifications of grazing methods, adjustments in turnout dates and/or the season-of-use.

The long-term impacts to the vegetation would depend upon the management actions taken. Grazing systems based on the phenological stages of the vegetation would improve composition, diversity, vigor, production, seed production, and litter accumulation. Deferred grazing or total rest of a pasture has proven to be beneficial to the vegetation. Not grazing the vegetation during the growing period is very important to the plant in terms of the carbohydrate reserve levels. The carbohydrate reserves are used during periods of rapid herbage growth, such as initial growth, subsequent regrowth, and for respiration and slight growth during the winter (Coyne and Cook 1970). Allowing growth without grazing pressure during portions of the growing season would permit the plant to have ample carbohydrate reserves available for normal growth and development.

Adjustments in turn-out dates for livestock is a second management option. The start of the growing season is the most critical period for plant growth. The date at which spring grazing should begin must be based upon the stage of plant growth where grazing would not cause permanent damage to the vegetation or soil. This is commonly called range readiness. Plant species vary greatly in their ability to withstand early grazing (Heady 1975). The determination of range readiness dates will depend on: (1) key species within an allotment, (2) the management objectives for the allotment, (3) monitoring studies, and (4) consultation with interested parties.

Deferring grazing until range readiness allows the plant to restore the carbohydrate reserves drained during dormancy and also provides sufficient quality forage for the grazing animal. Continual protection of the vegetation until range readiness would improve the vigor, production, ground cover, and seed production of the vegetation previously grazed early in the spring.

Developing water and constructing fences to improve the distribution of livestock over the entire area could be used to promote a more even utilization of forage. Proper utilization of the forage is important in maintaining or improving the vegetative vigor, production, and range condition. Properly placed water developments, combined with grazing systems, would cause the livestock to move from the existing, overused water sources, allowing these areas to improve in vigor and production. Although the vegetation around the proposed improvements would be adversely affected, the overall impact to vegetation of the area would be beneficial.

Factor 3. Present wild horse numbers may exceed BLM objective levels.

Removal of wild horses to the population management objective levels would result in reduced grazing pressure on the vegetation, particularly in areas of horse concentration. The reduction in grazing pressure would result in improved vigor, seed production, seedling establishment, production, and density. The improvement would be more noticeable in areas where horse distribution is dependent on reliable water sources than areas where horse distribution is dependent upon summer thunderstorms, as in Adobe Town. This is particularly true for the vegetation within the immediate vicinity of the water sources.

Factor 4. Present wildlife numbers may exceed Wyoming Game and Fish Department objective levels.

As discussed in the wildlife section, present population levels of elk and mule deer coincide closely with the management objectives. However, present pronghorn populations exceed management objectives in several areas. This analysis of the effects of a reduced pronghorn population on vegetation will center on (1) vegetation response on an EIS area-wide basis, and (2) vegetation response in areas which are classified as winter pronghorn areas and serve as traditional winter-sheep bed grounds.

During the summer season, pronghorn primarily use the sagebrush, grass, and riparian vegetation types. A reduction in the number of pronghorn utilizing these types would benefit the vegetation. Vegetation response would include improved vigor, thereby increasing leader length, seed production and vegetation production. The degree of response would vary depending upon the severity of the use received prior to the reduction.

The overlapping of traditional winter-sheep bed ground and areas classified as winter pronghorn range has caused areas of decline in the vegetative condition, production, species vigor and seedling establishment. A reduction in the number of antelope would not substantially improve the vegetation where continual long-term bedding practices occur year after year. A change in the methods of use of winter-sheep bedding grounds would also be necessary.

Factor 7. Significant conflicts with other land uses other than grazing are evident.

Three land-use conflicts are readily visible within the EIS area: (1) activities, such as extensive oil and gas development, which reduce the carrying capacity of the range or interfere with livestock operations, (2) damage to structural improvements is occurring and/or is creating a livestock trespass situation, and (3) degradation is occurring to public and private land by off-road vehicle use during wet weather and in sand dune areas. The impacts to vegetation would depend upon the type of action taken to correct the land-use conflict.

The rehabilitation effort practiced most commonly in the EIS area is seeding. Seeding of the range after a disturbance is preferable to natural revegetation. Natural revegetation is a slow process requiring 25 to 50 years under favorable conditions for climax vegetation to reoccupy the site (Stoddart, Smith, and Box 1975). Annual grass and forbs succession normally occurs during natural revegetation and delays the establishment of perennial vegetation.

Short-term impacts of seeding include initial establishment of vegetative species and minimal ground cover to decrease the erosion potential.

Impacts to the vegetation in the long term due to seeding include an increase in productivity, establishment of desirable forage species, improved seedling establishment, litter accumulation, and partial reinvasion of adjacent vegetation. Quantification of the amount of increase is not possible due to (1) different types of seeding practices, i.e., drilling versus broadcasting; (2) the uncertainty of revegetation due to lack of rainfall and/or poor soils; (3) different species used; and (4) no previous collection of vegetation data on seedings.

Identifying the cause of damage to structural improvements or a livestock trespass situation would not significantly benefit or adversely affect the vegetation resource. Trespass problems within the EIS area are considered minor.

During periods of wet weather, degradation of public and private land by off-road vehicles involves the widening of existing trails and two-track roads, as well as damage to structural range improvements such as fences. Normally, the widening of existing trails, etc. destroys plants in the immediate area. Impacts to the vegetation as a result of the widening of one existing trail would be considered insignificant. However, the cumulative impacts of widening many trails can have a severely adverse effect on vegetation. Indirect impacts to the vegetation include compaction of the soil which leads to decreased water infiltration, damage to seedlings and seedling establishment.

Degradation of public and private land from off-road vehicle use is also occurring in areas of stabilized sand dunes. Vegetation is considered

to be the key element in the stabilization of sand dunes and loss of this stabilizing element increases the impacts of wind and water erosion. At any time during the development of its plant cover, sand may be set in motion again if the vegetation is destroyed even in part (Daubenmire 1968). Continual off-road vehicle use would destroy the vegetation within the tracks of the vehicle and allow erosion to eventually jeopardize the stability of the sand dune. During the long-term time period and beyond, movement of sand dunes may cause the loss of vegetation, as well as other items. Moving dunes result in much economic loss. They override forest, pasture, cropland, highways, railways, buildings, and other valuable properties (Daubenmire 1968). The management action of developing a signing program and/or seasonal site-specific road closures, if observed by the public, would reduce or eliminate the above problem.

Factor 9. Potential for high vegetative productivity exists in the allotment.

Factor 10. Condition ratings indicate the present productivity is below potential.

Establishing a monitoring program as the management action for factors 9 and 10 would not signficantly impact the vegetation resource. The methods of improving the present productivity of an allotment and the impacts of those methods were discussed in Factors 1, 2, 5, 6, and 8.

Factor 11. There is a potential for a positive economic return on public investments.

Analyzing the benefit/cost ratio on planned AMPs, grazing system plans and related range improvements would not directly impact the vegetation resource. Indirect impacts to the vegetation as a result of analyzing the benefit/cost ratio may occur. For example, if the benefit/cost ratio were significantly less than one, implementation of the AMP might be delayed until the ratio became more favorable. Delay of the AMP would result in continued problems.

Category C

The short-term and long-term management actions proposed for Category C allotments would not significantly impact the vegetation resource more than the existing situation.

Threatened or Endangered Species

There would not be any impact to the two endangered species within the EIS area as a result of the Proposed Action. Although cattle use of the Gibben's beardtongue at the present time is possible, it is assumed that the fencing of the population as proposed for the spring of 1983 would eliminate cattle usage.

Summary

There would not be any significant vegetative change in the Category M and C allotments compared to the existing situation. In the short term for Category I allotments, the existing situation would continue while monitoring programs collect the information needed to develop appropriate management actions. During the long-term, management actions would result in overall improved vigor, seed production, seedling establishment, production, and condition of the vegetation resource.

Enhance Watershed, Wildlife, and Soil Resources

Deferring management actions pending the collection of monitoring data in the short-term time frame would result in continuation of current levels of grazing use and management. In those areas where the present management is considered unacceptable, situations such as improper distribution of livestock or excess wild horses would also continue. During the monitoring phase, the vegetative vigor, production, seed production, and seedling establishment would continue in the present trend. Those areas with declining vegetative trend would continue a downward trend while those with static or upward vegetative trend would continue in their respective direction.

Designing new AMPs and modifying old AMPs to meet natural resource conservation and improvement objectives and to resolve conflicts between livestock and the natural resources

would improve the vigor, production, seed production, and seedling establishment of the vegetation. Those areas such as the wet meadow vegetation subtype, which are currently receiving excessive grazing pressure by all herbivores, would show the greatest improvement in the shortest period of time. Vegetation in the upland positions (grass, sagebrush, mountain shrub, and juniper vegetation types) would show an improvement, but at a much slower rate than those areas influenced by abundant water.

Sufficient habitat and forage is presently available to support the established big game population objective levels. Impacts to the vegetation resource as a result of grazing management actions (treatments, conversions, developments, grazing systems, etc.) would be the same as discussed in the Proposed Action.

The effect of temporarily closing a specific critical wildlife area to livestock grazing would vary, depending on: (1) the characteristics of the critical area, (2) the length of time the closure would be enforced, and (3) the intensity of the livestock grazing pressure before the closure. Closure of areas in an upland position for a period of less than 5 years would not show a dramatic change in species composition. The vigor, seed production, and seedling establishment would improve slightly.

In areas where the influence of water is strong, such as wet meadows which have received excessive grazing pressure by livestock, the elimination of livestock grazing for even a period as short as two to three years would improve the production, vigor, seed production, and seedling establishment of the available species. It has been shown that livestock can use mule deer and pronghorn winter ranges heavily in spring and early summer without greatly affecting subsequent production of shrubs, because at this season livestock subsist primarily upon herbaceous forage. The use of shrubs may be compensated for by increased browse production as a result of reduced competition from herbaceous plants (Stoddart, Smith, and Box 1975). For example, a 40 to 60 percent increase in twig growth on bitterbrush resulted from continuous summertime clipping of herbaceous plants that were adjacent to bitterbrush plants (Smith and Doell 1968).

An accelerated management scheme to protect and improve streams and critical areas would improve the vegetation of those areas by increasing the production, vigor, and seed production in the long term. Specific impacts to the vegetation would depend upon the management actions implemented and cannot be quantified at this time.

Impacts to the Category M and C allotments as a result of implementation of this alternative would be the same as discussed in the analysis of the Proposed Action.

Threatened or Endangered Species

There would not be any impact to threatened or endangered species within the EIS area as a result of this alternative.

Summary

Deferring the implementation of management actions pending the collection of monitoring data in the short-term time frame would result in the vegetative vigor, production, seed production, and seedling establishment continuing in the present trend.

In the long-term time period, implementation of measures to Enhance the Watershed, Wildlife, and Soil Resources would generally improve the vegetation resource, particularly in the riparian zones.

Enhanced Livestock Grazing

Implementing the management actions as depicted in Appendix 4 would have the same beneficial and adverse impacts to the vegetation resource as discussed for the Proposed Action. Fulfilling these plans as soon as adequate data is available would have the beneficial impact of correcting the management problem(s) at the earliest possible time and halting any further degradation of the vegetation resource.

In those areas where it is necessary to defer management actions pending the collection of monitoring data in the short-term time frame would result in continuation of current levels of grazing use and management. In those areas where the present management is considered unacceptable, situations such as improper dis-

tribution of livestock or excess wild horses would also continue. During the monitoring phase, the vegetative vigor, production, seed production, and seedling establishment would continue in the present trend. Those areas with declining trend would continue a downward trend while those with static or upward trend would continue in their respective direction.

Threatened or Endangered Species

This alternative could seriously affect the Gibben's beardtongue species if the fencing proposed for the spring of 1983 were not initiated. Any increase in livestock numbers increases the probability of livestock utilizing the site on which this specie occurs. This alternative would require protection of the species to ensure its existence. There would be no noticeable affect on the persistent sepal yellowcress.

Summary

Impacts of this alternative on the vegetation resource within the Category I allotments would, in general, be the same as the Proposed Action. In the short term, the general direction of the current vegetative trend (upward, static, or downward) would continue in its respective direction. Implementation of management actions designed to enhance livestock forage would result in a grass dominated vegetation community in the long term.

No Action

Grazing of the Divide EIS area by livestock has occurred for approximately 100 years. Under this alternative, the vegetative trend would be expected to remain the same as is now occurring. Although quantitative trend data are not presently available for the entire EIS area, there are areas that are believed to be in a declining vegetative trend. The trend within those areas would be expected to remain downward. Likewise, there are areas in an upward or static vegetative trend and they would continue in their respective directions.

During the short- and long-term, vegetative production, vigor, seedling establishment, condition, and litter accumulation would continue in the same direction as present.

Threatened or Endangered Species

There would be no significant impacts to the proposed threatened or endangered species.

Summary

Overall, this alternative would cause no change in the direction of the vegetative parameters. Those which are presently declining would continue to decline and those which are improving would continue to improve. Current utilization would cause a reduction in the vegetative production and condition in areas of overuse.

Mitigation Measures

Proposed Action

1. Following the manipulation of vegetation as discussed for Factor 1 of Category I, allotments would require proper management of the affected area to ensure the maximum opportunity for success. Proper management will include, but not be limited to: (1) resting from livestock grazing for a minimum of two growing seasons, (2) fencing of the area for protection of vegetation, and (3) establishing a grazing system to ensure proper use of the area following manipulation.

2. For those Category I allotments in which information on management problems is presently adequate, implement actions to alleviate these problems prior to collecting monitoring data. This measure will mitigate those adverse impacts which were presently occurring and which would continue to occur during the collection of monitoring data.

Enhance Watershed, Wildlife, and Soil Resources

None.

Enhanced Livestock Grazing

Fencing of the proposed endangered specie, Gibben's beardtongue, will protect the species from livestock utilization, trampling, and possible extinction.

No Action

None.

Unavoidable Adverse Impacts

Proposed Action and All Alternatives

An unavoidable adverse impact to the vegetation would be the loss of vegetation immediately around water developments because of trampling. This area of loss is commonly referred to as a sacrifice area.

During the collection of monitoring data during the short-term time frame, a continuation of the existing situation would occur. The situations that are in need of improvement would continue in their presently unacceptable state or may possibly decline.

Short-Term Use Versus Long-Term Productivity

For analysis purposes, the short-term is defined as the amount of time required to conduct monitoring studies, establish management objectives, and implement management actions, approximately 1 to 5 years. The long-term time frame is defined as that time period after implementation of management actions, approximately 5 to 20 years.

Proposed Action

The short-term use of the land would, in general, result in the continuation of the present situation. Those areas which have problems would remain unchanged, while those areas with acceptable management would remain satisfactory. However, the long-term productivity of the range would increase as a result of implementing management actions and proper management.

Enhance Watershed, Wildlife, and Soil Resources

The short-term use of the land would remain basically the same as the existing situation during the collection of monitoring data. The long-term productivity of the land would increase slightly as a result of decreased grazing pressure overall, particularly in riparian areas.

Enhanced Livestock Grazing

The long-term productivity of the land would increase as the benefits of the management actions occurred. Refer to adverse impact identified for the Enhance Watershed, Wildlife, and Soil Resources alternative.

No Action

The short-term use of the land would remain unchanged. The long-term productivity would remain essentially the same, except in those areas which receive excessive grazing pressure. The productivity in those areas would decrease.

Irreversible and Irretrievable Commitments of Resources

Continuation of the presently unacceptable situations identified during the collection of monitoring data as discussed in the Unavoidable Adverse Impacts section would result in decline of certain habitats to such a point that it would not be economically feasible to restore. For example, continual overgrazing of an aspen stand by herbivores in conjunction with a temporary change in edaphic conditions might result in the lack of young tree development. The lack of young trees within the stand would eventually lead to the loss of the stand altogether.

SOILS

Affected Environment

Soils information available for the Divide EIS area consists of preliminary, third-order soil surveys. Soils were mapped by BLM and Soil Conservation Service soil scientists, and by private consultants working under two BLM contracts. Third-order soil surveys are used for general planning purposes.

Soils vary in their chemical and physical properties and also vary due to climate. This variability has an affect on the potential productivity of individual soils. Chemical and physical properties include soil texture, color, structure, salt content, and pH. Climatically, the soils in the Divide EIS area are in two temperature regimes and three precipitation zones. One temperature

regime is warmer than the other during the summer and has a longer growing season. The precipitation zones are the 7- to 9-inch zone, 10-to 14-inch zone, and the 15- to 19-inch zone. The higher precipitation zones have the higher potential productivity.

When specific information is required, soil maps should be used in conjunction with soil series descriptions, soil map unit descriptions and soil interpretation tables. This information is available in the Rawlins District office.

Soil Erosion

Soil erosion is a naturally occurring process in the Divide EIS area. It is generally occurring at near natural rates. Soil erosion on watersheds in the Divide EIS area is generally characterized by the natural process of valley trenching (Figure 2-1). Valley trenching is a normal consequence of erosion in a semiarid environment (King 1968) and is dynamic over long periods of time. Localized areas such as dirt roads, livestock watering areas, salt licks, and areas intensively used for energy exploration and development are producing accelerated rates of erosion, i.e., accelerating the process of valley trenching.

Certain soil characteristics cause some soils to erode more easily than others. Soils with high salt contents are generally more subject to erosion because of their low productivity (i.e., vegetative cover) and the soil dispersion properties of some salts. They also form a soil surface crust which reduces infiltration and produces excess runoff. A high sand content makes soils more conducive to wind erosion. Soils on steeper slopes are more erosive than soils on gentle slopes. Soils with high clay contents and shallow depths produce more water runoff, because of reduced infiltration rates, which results in higher sediment yields.

Erosion condition of the EIS area was estimated by allotment using the soil surface factor method found on BLM form 7310-12. Sediment yield was estimated by allotment using the Pacific Southwest Interagency Committee method (Water Management Subcommittee 1968). On the whole, the EIS area is in a stable to slight erosion condition and yields negligible (less than 0.58 tons per acre) to slight (0.58 to 1.45 tons per acre) amounts of sediment. Two exceptions to this are allotments 0451 which has a moderate erosion condition as determined by soil surface factor and sediment yield (2.03 tons per acre), and allotment 0707 has a moderate erosion condition, as determined by soil surface factors. In addition, the Sage Creek watershed has been identified as a major contributor of sediment to the North Platte River and contains typical examples of the erosional process of valley trenching. Little sediment yield data has been collected in this watershed. Soil boundaries in this watershed, which determine where sediment yield data are collected, are subject to major changes. Sediment yield data will be collected after soil boundaries have been more accurately determined. In addition, portions of the Muddy Creek watershed are also suspected of producing high amounts of sediment, which enter the Little Snake River. Sediment in the Sage Creek and Muddy Creek watersheds are probably the result of the presence of naturally erodible soils in portions of these watersheds. However, additional information is needed to isolate the problem areas.

Environmental Consequences

General Effects of Management Actions

Impacts to soils can vary considerably, depending on the extent and location of actions proposed for each alternative. In Table S-1 (located in the Summary section of this EIS) the long-term, best-case and worst-case effects on soil are compared for the Proposed Action and alternatives. Short-term effects are expected in the first year of implementation and during the monitoring period and before management actions are fully established. Long-term effects result after management actions are fully established.

In the Divide EIS area it is difficult to separate natural changes (climate fluctuations) in erosion rates, from man-induced changes (management actions) in erosion rates (Kirby 1980). Most semiarid areas are naturally close to a critical point of deterioration (Satterlund 1972), that is, deterioration of stable soil conditions to unstable soil conditions. These critical points of deterioration may be exceeded by small natural changes in climate or changes in management

4

A deep narrow gully is incised in the unconsolidated valley fill by excessive runoff.

3

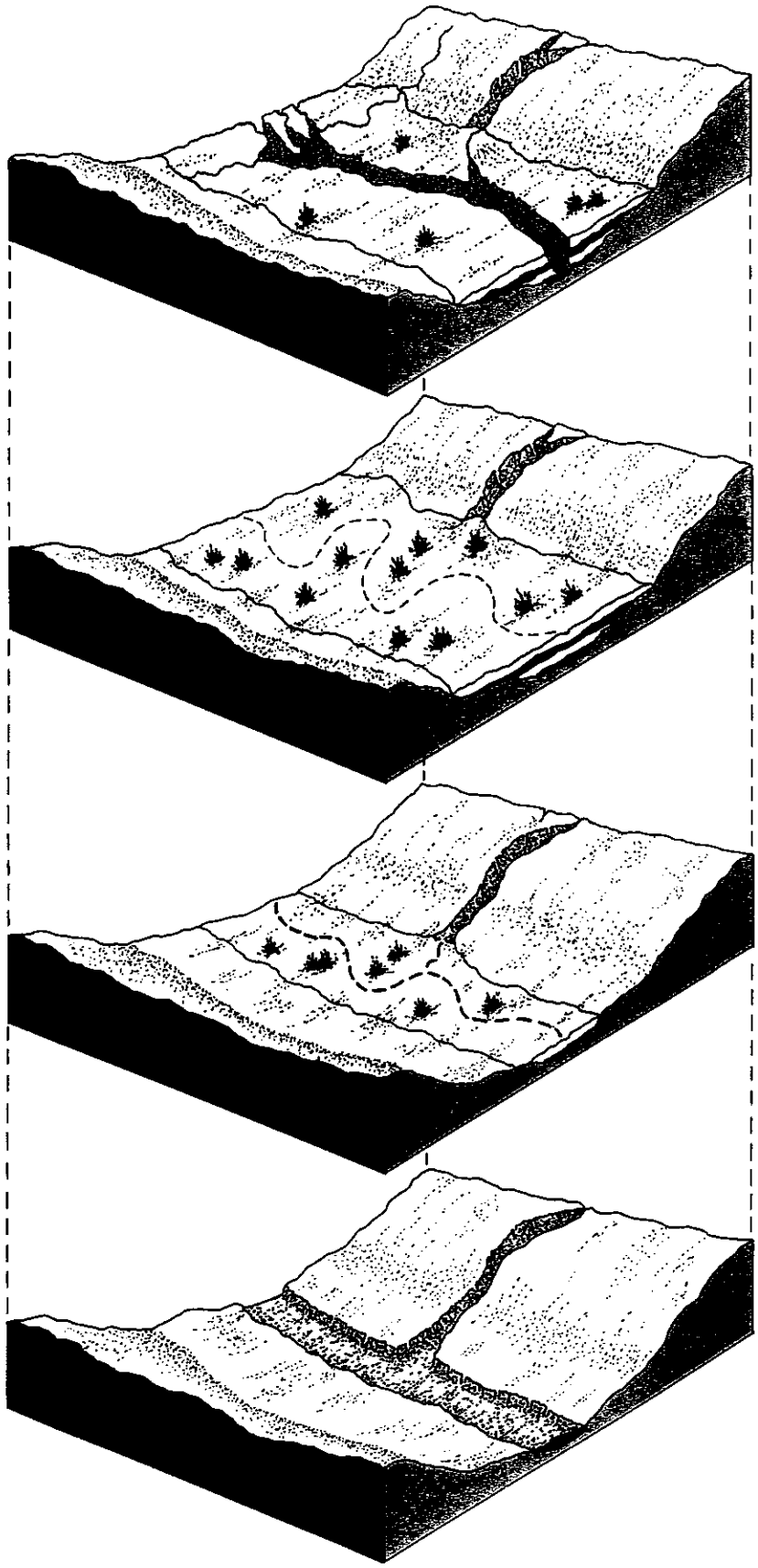
As the flood plain grows in width, flows spread over broader areas. Natural irrigation supports a vigorous plant cover which promotes further aggradation and protects the accumulating sediments from local scour.

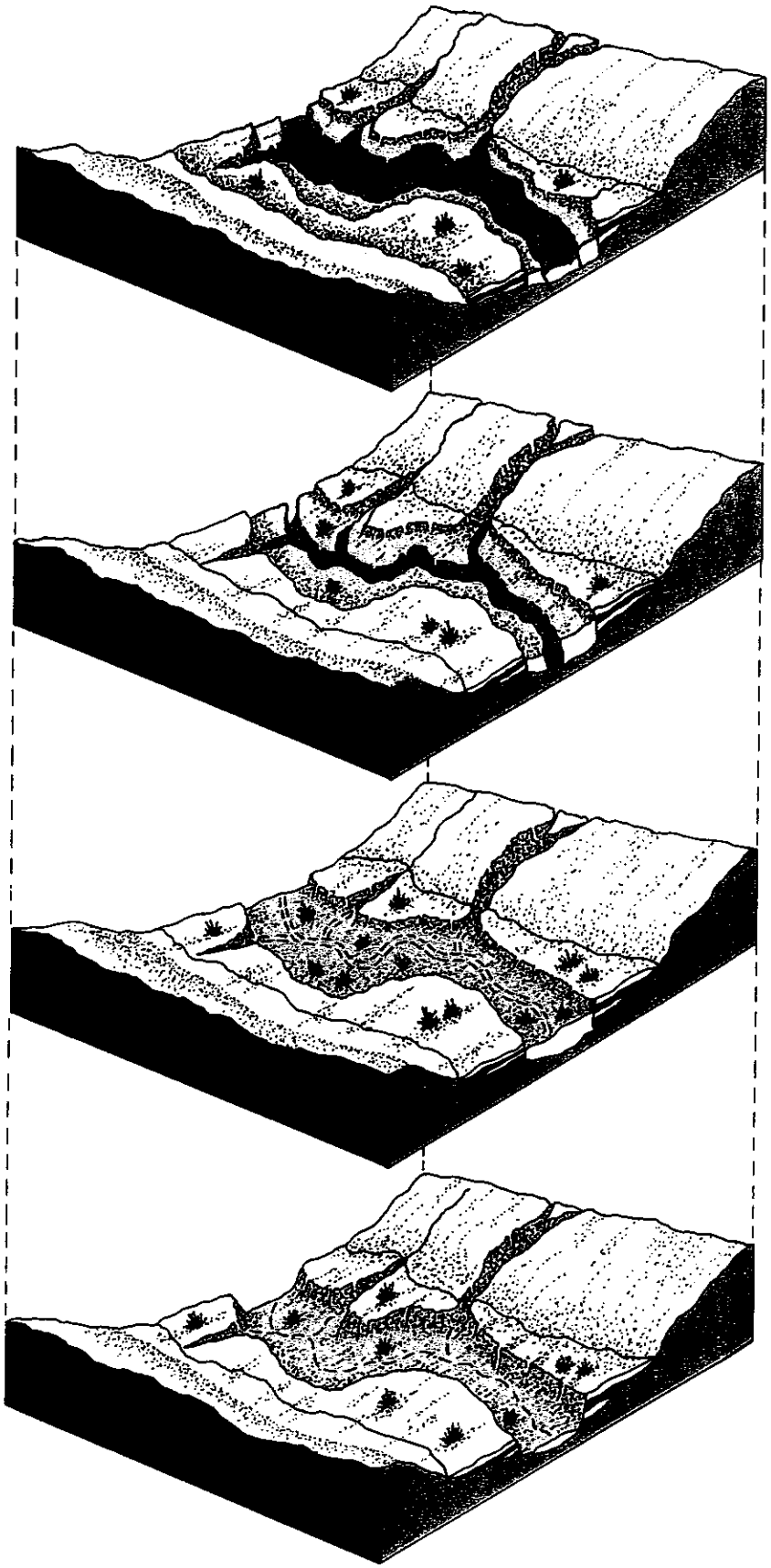
2

Aggradation occurs as ephemeral flow spreads across the broad channel that once carried much higher discharges. Eventually the old channel is buried and flows spread over the aggrading flood plain.

1

Initial channel cut in bedrock by high flows during Pleistocene Epoch. Runoff diminished and became ephemeral after close of Pleistocene Epoch.





8

The second gully widens progressively by eroding its banks until eventually another period of aggradation begins.

7

Valley trenching interrupts aggradation before the old channel is completely filled. For the second time a gully is incised the full length of the valley reach.

6

As aggradation continues, flows spread across the full width of the gully bottom affording natural irrigation to the developing plant cover which induces further aggradation.

5

As the gully meanders and widens progressively by eroding its banks, the depth and mean velocity of flow decrease until the stream drops the coarser fraction of its load and aggradation begins.

Figure 2-1
DIAGRAMMATIC SKETCH SHOWING THE DEVELOPMENT OF CUT AND FILL TERRACES IN A HYPOTHETICAL VALLEY REACH

by man, both of which may accelerate the process of valley trenching. By the time accelerated erosion becomes obvious it may be too late for control within acceptable limits of cost. Early measures to maintain site protection are almost invariably cheaper, faster and more effective, and permit the continued harvest of forage (Satterlund 1972). Generally, early measures to maintain site protection include managing for maximum vegetative cover, reducing disturbance by trampling, fencing of some riparian areas, and other measures which improve the soil condition.

Quantitative estimates of projected sediment yields could not be made, because data collected in the EIS area do not include percentages for vegetative cover, and specific management actions are not available by allotment. Reductions in sediment yield could result from implementation of management action for Category I allotments. Rangeland production in the EIS area may be naturally low where it is limited by soil or climatic conditions, or it may have been reduced by overgrazing. Where productivity has been reduced by overgrazing, management for rangeland improvement should lead to an increase in vegetative cover. Thompson (1968) indicated that elimination of grazing in arid climates adds little protective vegetation to rangelands. Slightly more new growth would be expected in the EIS area, which has more rainfall. According to Packer (1961), cover is the main factor in sediment yield reduction. An increase in plant cover would reduce sediment yield in the following ways:

1. Splash erosion would decrease, with correlated decrease in sediment yield (Branson and Owen, 1970).

2. A decrease in sheet erosion would result, especially on medium and fine textured soils (Packer 1961).

In allotments where management actions would be required to improve range condition, soil erosion and, therefore, sediment yield would be reduced due to a decrease in soil compaction. Decreasing livestock trampling from large herbivores would have the following effects on soils:

1. A reduction in soil compaction (Lull 1959, and Packer 1961) resulting in decreased bulk density and increased soil porosity (Rauzi and Hanson 1966).

2. Increased soil structure stability (Rauzi and Fly 1968).

3. Increased soil infiltration (Woodward 1943).

4. Increased plant litter accumulation by as much as 2.5 times on lightly grazed areas compared to heavily grazed areas (Rauzi and Hanson 1966) and a long-term increase in organic matter and fertility.

Trampling has its maximum effect on medium and fine textured soils when moisture is between field capacity and wilting point, when soils have low organic matter, and on bare soils where splash erosion contributes to compaction (Lull 1959). According to Lull, compaction is confined mainly to the top 6 inches of soil. There is evidence of soil recovery from the effects of compaction after 7 years in the 0- to 2-inch layer and full recovery after several decades on some sites.

Other management alternatives which might improve range condition are redistribution of livestock by fencing, establishing new water developments, and vegetation conversions. The short-term effect of these actions on soils would be an increase in sediment yield. The long-term effect would be a reduction in sediment in the allotment as a whole, due to improved livestock distribution. In allotments where vegetation conversions were used to establish desired range conditions, soils would be affected. Conversion would cause an increase in sediment yield in the short term. Of the conversion methods available, spraying would be the least detrimental to soils and would cause the least increase in sediment yield. Other methods of vegetation conversion are plowing and burning. The main effects of these methods on soils would be:

1. Elimination of all cover and increased erosion and sediment yield (Packer 1961).

2. Significantly reduced water infiltration into the soil (Gifford 1972).

3. Increased sediment yield the first year following plowing (Gifford 1972).

The long-term impact on soils from vegetation conversion would be a decrease in sediment yields, not only on the revegetated area but on adjacent areas where grazing pressure would be reduced due to increased forage availability and better distribution of livestock.

Livestock turnout dates and seasons of use, where not consistent with range readiness, might be altered. Soil moisture levels are the main factor in determining proper turnout dates and therefore correlate with range readiness. Altering turnout dates and seasons of use based on range readiness would lead to a reduction in sediment yields.

Proposed Action

Implementation of the Proposed Action would not significantly affect soil resources in Category M and C allotments. There would be a significant reduction in sediment yield in the Category I allotments in the long term because:

1. Deferment of grazing, rest rotation, and other management actions would be used to improve productivity and soil conditions.

2. Plant communities would be managed for improvement in productivity by redistribution of total grazing, vegetation conversions, adjustment of turnout dates, and other methods.

3. Better livestock grazing distribution and, to a smaller degree, wildlife distribution would occur due to improved water distribution.

4. In riparian and other areas, where fencing would be established to eliminate or reduce grazing, there would be increased vegetative cover and improved soil conditions.

In the best case, selection of the Proposed Action would be beneficial, and in the worst case would have a neutral effect. The actual long-term effects of the Proposed Action would depend on the location and extent of range improvements that were implemented.

Enhance Watershed, Wildlife, and Soil Resources

Intensifying management in allotments where conflicts between livestock grazing and watershed, wildlife and soils have been identified would be most beneficial to soil resources. In the short term no significant changes in soil resources would occur since present management would continue until monitoring efforts identified priority areas. In the long term, once monitoring efforts identified conflict and problem areas, measures to maintain or improve soil conditions would be implemented. Since the objectives required to enhance watershed, soils, and to some degree wildlife, are not only similar but in some instances dependent upon each other, management actions to improve one resource might collectively enhance the others. In addition, management for enhancement of soil resources would not only improve conditions in problem or conflict areas but also in all downstream areas of that watershed. As upstream improvements in soil conditions were made, downstream areas would have less soil erosion, reduced runoff, and a corresponding reduction in sediment yields.

In this alternative, conflict areas identified through monitoring might fall into the three general management groups, identified below, along with some management techniques specific for each group.

1. Areas at or near their point of deterioration, that is, soils are stable but are trending toward unstable conditions. In these areas maintaining or improving vegetative cover and reducing or eliminating disturbance by trampling might be the main management techniques.

2. Areas which have surpassed their point of deterioration, that is, are now in an unstable soil condition leading to accelerated erosion and sediment yields or an acceleration of the natural valley trenching erosional process. In these areas an increase in vegetative cover and reduction of disturbance by trampling would be important, especially on those sites which still have the potential to return to their original soil and vegetative

conditions. In addition, further measures to retain sediment before it reaches surface waters-sediment traps, water bars, and improving riparian vegetative cover to serve as buffer zones between sediment sources and surface water-would improve soil, watershed, and in some instances wildlife resources.

3. Areas where animals tend to concentrate for forage are particularly susceptible to erosion damage. Examples of these areas are some riparian zones, reservoirs, and springs. In these areas temporary or permanent fencing may be required to enhance soils, watershed, and wildlife resources. Also, measures to trap sediment originating form these or upstream areas may be recommended to improve conditions in these conflict areas and downstream areas.

In summary, this alternative would be the most beneficial to soil conditions in the long term, since management actions would be designed to collectively enhance watershed, soil, and wildlife resources.

Enhanced Livestock Grazing

A short-term effect of this alternative on soils and sediment yield would be a temporary increase in sediment yield on areas affected by vegetation conversions and on areas disturbed by new fencing or water developments. Increased livestock numbers could also cause an increase in sediment yield in riparian, water development, and heavy use areas until proper livestock distribution was achieved.

Under this alternative, improvements in soil condition and vegetative cover could occur in some areas that are presently overgrazed. In other areas, which now experience limited use, levels of sediment yield could increase. The effect of these changes in sediment yield would range from slightly beneficial to slightly detrimental on soil resources and sediment yield over the whole EIS area. However, they could be very significant on specific areas.

The long-term effect of this alternative would be a return to present sediment yield levels, or, in the best case, lower sediment yields, as livestock use was adjusted to estimated grazing capacity. In the worst case, increased livestock numbers could accelerate deterioration of overgrazed and riparian areas if range improvements were not extensive enough or were improperly located.

No Action

No significant changes from the existing situation would be expected under this alternative. Some heavy use areas now affected by excessive grazing intensity and poor distribution of livestock would continue to deteriorate; however, soils and sediment yields over the entire EIS area would remain relatively unchanged. Since erosion levels are presently below the rate of soil formation, a freezing of new management programs would not significantly affect sediment yield in the EIS area as a whole. This alternative would have a neutral effect on soils in the best case and because continued deterioration would occur in some areas a deterimental effect in the worst case.

Mitigation Measures

1. Mitigation measures will be determined on a site specific basis through various management plans that were developed in the Divide Resource Area.

2. See number 2 in the Vegetation section.

Unavoidable Adverse Impacts

Proposed Action and Enhance Watershed, Wildlife and Soil Resources Alternative

In those areas where soil erosion and sediment yields have been accelerated by improper management, the accelerated rates would continue until proper management actions are implemented following monitoring. The losses in soil productivity and decline in soil condition on localized areas of accelerated erosion and sediment yield would be an unavoidable adverse impact.

Enhanced Livestock Grazing

In those areas where present management has accelerated soil erosion and sediment yield rates, enhanced livestock grazing without ade-

quate consideration of soil resources would accelerate those rates even more. In areas where erosion rates and sediment yields are near natural rates, enhanced livestock grazing without consideration of soil resources would accelerate erosion rates and sediment yields above the present natural rates. A decline in soil condition and productivity would be expected where soil resources were not considered in adjusting grazing rates, or when implementing most management actions such as fencing, vegetative conversions, and water developments.

No Action

In areas where soil erosion and sediment yields have been accelerated by present management, these rates would continue to accelerate because there would be no change in management. Some examples are areas in and adjacent to water sources or eroding trails initiated by large herbivore movements. In those areas of accelerating soil erosion and sediment yield a significant decline in soil condition and productivity would occur. Without changes in management, a cumulative increase of adverse impacts to soils resources could parallel accelerated erosion and sediment yields.

Short-Term Use Versus Long-Term Productivity

Proposed Action and Enhanced Watershed, Wildlife, and Soil Resources Alternative

Management in the short term would remain unchanged until monitoring is complete. Productivity would remain the same on those areas now receiving proper management. Productivity will continue to decline on areas presently receiving improper management. Long-term productivity would improve in most areas as proper management is implemented following monitoring.

Enhanced Livestock Grazing

In the short term, intensified range improvements and vegetative conversions would reduce productivity on localized areas. In addition, areas where productivity is presently declining would continue to decline unless soil resources were adequately considered in management actions. Long-term productivity would be reduced in most areas with enhanced livestock grazing unless soil resources were adequately considered. Long-term productivity might be increased in some localized areas (vegetation conversion areas where management for increased forage increases vegetative productivity).

No Action

Short-term and long-term productivity would be reduced on areas that are presently being improperly managed. In those areas, a significant reduction in production might occur as soil erosion continues unchecked. The deterioration of productivity is a cumulative process so that long-term declining productivity would far exceed short-term declining productivity. In those properly managed areas, a significant improvement of soil resources will occur where the soils have the potential, ecologically, to improve. Areas presently at potential will not change.

Irreversible and Irretrievable Commitments of Resources

Proposed Action and Enhance Watershed, Wildlife, and Soil Resources Alternative

Until monitoring is complete and proper management actions are implemented soil erosion would continue at present rates. This would result in soil losses on some areas and sediment deposition in others, permanently affecting soil resources. Where more fertile topsoil is lost by erosion, lower soil productivity would result in localized areas. Where more fertile topsoil is deposited, following erosion, soil productivity might increase. In some areas of deposition productivity might decline due to excess deposition over plant growth.

Enhanced Livestock Grazing

Soil erosion and sediment yields would continue at present or higher levels. In areas where fertile topsoil loss is accelerated by this alternative, a permanent loss in soil productivity and condition would be seen. In some areas soil productivity might be improved with the deposition of fertile topsoil. Overall, without adequate consideration of soil resources, losses in productivity and reduced soil condition would continue at higher than present levels.

No Action

Since all parts in the EIS area have some level of erosion, without corrective measures those rates will not reduce, but will continue until the proper conservation measures are implemented. No action implies minimal to no implementation of conservation measures. Therefore, soil erosion and sediment yields would continue at present or higher rates with this alternative. This would result in soil losses in some areas and sediment deposition in others, permanently affecting soil resources. Where more fertile topsoil is lost by erosion, lower soil productivity would result in localized areas. Where more fertile topsoil is deposited, following erosion, soil productivity might increase. In some areas of deposition production might decline due to excess deposition over plant growth. Overall, the loss of fertile topsoil on areas now receiving improper management would result in cumulative increases in erosion rates and sediment yields that far exceed present rates.

HYDROLOGY

Affected Environment

General Description

Parts of three major drainages occur in the EIS area. They are: the Great Divide Basin, the Little Snake River drainage and the North Platte River drainage. The Little Snake drainage forms part of the Colorado River system, the North Platte is part of the Missouri River system, while the Great Divide Basin is a closed drainage from which no surface water escapes.

Watersheds in the EIS area consist almost entirely of rangeland, as opposed to crop land, urban-industrial land, forest land, or barren land. Most of the EIS area is termed water deficit land, with few perennial streams and intermittent runoff. Runoff originates from both spring snowmelt and intense rainstorms. Most of the area's perennial streams originate above 8,000 feet in the mountains, which are water surplus zones where snowmelt is the major source of runoff. Because the BLM lands in the EIS area are mostly water deficit, semiarid lands, the water contribution from BLM lands to the major streams the EIS area is not great. Most precipitation on BLM lands is lost through evapotranspiration and sublimation instead of creating runoff or entering groundwater aquifers.

The major use of surface and groundwater in the EIS area is for livestock and wildlife watering. The primary downstream use of surface water is for irrigation. Other important uses of water from the EIS area water include industrial use, domestic and municipal water supply, recreation, and hydroelectric power generation.

Natural waters which provide dependable, year-round watering for livestock and wildlife are poorly distributed, especially in the Great Divide Basin. As a result, hundreds of stock ponds and other water developments have been constructed within the EIS area (Appendix 2). These developments provide a very significant percent of the total water available for livestock and wildlife. Evaporation losses from these developments are large and far exceed the amount utilized by livestock and wildlife combined. In addition, natural springs are important sources of water in the area. Nearly every water source in the EIS area is open to and used for watering by livestock and wildlife.

Water Quantity and Quality

Water Quantity

Potential water yield in the EIS area is estimated to be 488,233 acre-feet from about 3,332,000 acres of land, or approximately 0.15 acre-feet of water per acre of land. This is approximately 1.6 inches of runoff, which is typical of water deficit regions where precipitation is low and the evaporation-transpiration rate is high (Satterlund 1972).

Water Quality

Surface and groundwater quality is generally suitable for rangeland uses, although high levels of dissolved solids (TDS) in a few springs, wells, and presumably in a number of playa lakes make them marginal water sources for livestock. Concentrations of dissolved solids in excess of 3500 ppm are considered marginal for cattle watering.

Besides TDS, the two other major water quality parameters of special concern in rangeland hydrology are the levels of fecal contaminants and sediment in surface waters within and leaving rangeland watersheds. Fecal contamination of EIS waters is primarily caused by livestock and wildlife. Levels of fecal coliform bacteria are used as indicators of the presence of infectious agents. Fecal coliform information is limited, but available data indicate that many perennial and intermittent streams of the EIS area may be unsuitable for human consumption, especially during the months of June through September. However, these waters are generally suitable for other uses.

Two watersheds containing highly erodible soils have been identified as drainages which produce undesireable water quality downstream. The Sage Creek drainage near Saratoga has been identified as a very significant contributor of turbidity-producing sediment to the North Platte River. Sage Creek also contributes undesireable amounts of sulphate and dissolved solids to the North Platte. The Muddy Creek drainage, which enters the Little Snake River at Baggs, contributes heavy sediment and dissolved solid loadings, which eventually reach the Colorado River system. Sediment loads in both Sage Creek and Muddy Creek are elevated, to an unknown extent, by livestock grazing. Through heavy use of sensitive streambanks, channel stability has been substantially reduced along a number of headwater streams in both drainages. The result is increased suspended sediment loads. Direct relationships between channel stability and suspended sediment load have been established (Rosgen 1975; Karanka, Hawthorn, and Chamberlin 1981). Cooper (1978) reports that this relationship has also been demonstrated in Colorado and Wyoming. Lusby (1970), in western Colorado, showed that grazing in drainages very similar to the Sage and Muddy drainages increased total sediment production by 50 percent. At present, this figure represents the best estimate of the effects of grazing on sediment loads in Sage and Muddy creeks.

Environmental Consequences

Variables, Assumptions, and Rationales for Analysis

Grazing management actions discussed in this document which are considered to have potential to significantly affect the water resources of the area are:

1. Vegetative conversions
2. Construction of water developments
3. Rehabilitation of disturbed land surfaces
4. Fencing or other actions to reduce damage to streamsides and riparian areas
5. Altering turnout dates and seasons-of-use
6. Implementation of grazing systems

Both quantity and quality of surface water resources could be affected through changes in erosion rates, infiltration rates, runoff rates, and livestock pressure along intermittent and perennial streams. Groundwater resources should not be affected and will not be considered in this analysis.

Specific quality parameters for surface water which could be altered in localized areas include sediment load, total dissolved solids (TDS), fecal contaminant levels, and stream temperatures. The quantity of water available could be altered through changes in stream flow duration, quantity of flow, and surface storage capabilities.

When grazing animals affect water resources, it is usually through heavy use around water sources or through modification of upland soils and vegetation. Around water sources where grazing animals, especially cattle, tend to spend a great deal of time, water quality is affected due to concentration of fecal material in or in close proximity to water. Also, accelerated channel erosion and increased sediment loading often occurs along streams due to trampling and sloughing of banks. Removal, destruction, or competition with channel-stabilizing, sediment-trapping plants and animals (such as riparian plants and beaver) may also increase sediment loads. Livestock grazing on stream sides may in some cases lead to reduction in stream flow during the summertime or intermittency of the stream (Winegar, personal communication

1982). Removal of streamside vegetation commonly causes elevated stream temperatures.

Grazing animals exert two primary impacts on uplands; they remove organic material (litter and vascular plant cover), and trample vegetation, which tends to compact the surface of the soil and destroy vascular and nonvascular plant cover (Satterlund 1972). The health of the nonvascular plant community (lichens, moss, soil algae) can be an important factor in semiarid, naturally erosive watersheds, especially those with silty, saline soils and low vascular plant cover. Good nonvascular plant cover can exert a stabilizing influence against wind and water erosion by forming a soil crust (Anderson et al. 1982; Anderson et al. 1982; Branson et al. 1981). Through increased soil compaction and the removal or suppression of upland vegetation and litter, overland runoff may be increased. Increased runoff represents more water available for erosion and sediment transport.

Whether the grazing of upland range results in significant erosion depends on grazing intensity and drainage conditions. In sensitive drainages, sediment yield can be greatly increased by grazing at low stocking rates (Lusby 1970) while in other more stable drainages, accelerated erosion may only occur if heavy grazing pressures are reached (Branson et al. 1981).

By increasing overland runoff, and by the destabilization of ephemeral, intermittent, and perennial stream channels, livestock grazing and grazing management activities may initiate or contribute to gullying. This involves deep channel incision and loss of floodplain water tables (Figure 2-1). Once initiated, gullying commonly spreads throughout the basin upstream, until the entire watershed has reached equilibrium with the new base level (Lowham et al. 1982). Gullying results in exposure of unleached soils and increases inflow of shallow groundwater into stream channels. The result is an accumulation of dissolved solids within the stream channel. Subsequent flows periodically flush accumulated salts downstream (Lowham et al. 1982) and cause elevated TDS level. Gullying throughout a drainage is perhaps the most severe water resources impact which can be associated with livestock grazing in arid areas. Once initiated, natural recovery may take hundreds of years.

Range management actions, such as water development, range conversion projects, range rehabilitation projects, development of grazing systems and adjusting turnout dates may affect surface water resources indirectly through changes in or redistribution of livestock use, or directly by using range management techniques to modify soils, vegetation, or topography.

Since water resource trends in the EIS area are unknown, effects are defined as follows:

1. A positive effect is an improvement over the existing situation such as:

    a. A reduction or reversal of the rate of watershed degradation.

    b. An increase in the rate of watershed improvement.

    c. The creation of new storage.

    A positive effect does not necessarily mean that water quality or quantity would be increased in the future, even in watersheds where livestock grazing is the only land use causing degradation.

2. A neutral effect is when the rate of watershed degradation or improvement remains the same.

3. A negative effect is an increase in the rate of watershed degradation or a decrease or reversal in the rate of improvement.

In this analysis, short-term effects are those that would be realized in less than ten years. Long-term effects would be realized after ten years. In Table S-1 (located in the Summary section of this EIS), the long-term effects are compared for the Proposed Action and alternatives.

Proposed Action

Effects on water resources would be neutral for M and C category allotments. In those Category I allotments where fencing or other

means would be employed to improve riparian areas, positive effects on surface water resources would be expected. Water developments would do little to affect water quality, but would increase the quantity of surface water available for beneficial use. Vegetative conversions and surface rehabilitations would probably have some short-term negative effects on surface water quality, but neutral or positive effects over the long term. Grazing systems might increase vegetative cover and reduce soil compaction in localized areas, thus reducing sediment production. Altering turnout dates and seasons of use based on range readiness would lead to reduced trampling of moist soils and would be expected to lead to some reduction of erosion. Overall, localized, positive effects would be realized in the long term as a result of selection of the Proposed Action.

Enhance Watershed, Wildlife, and Soil Resources

Effects would be similar to the Proposed Action, but there would be additional long-term positive effects on water resources in areas with identified livestock/watershed conflicts, or where range projects or management actions could prove detrimental to water resources. Additional reservoirs would be constructed for watershed improvement and water storage as a primary purpose. Construction standards would be improved to prevent reservoir breaching and consequent flood damage downstream. Reservoirs would be built larger for improved silt retention and longevity. Riparian/livestock conflict resolution would lead to improved water quality through decreased concentrations of livestock along stream channels.

Enhanced Livestock Grazing

Under an accelerated program of management activities, water quality in localized areas would be negatively affected over the short-term, as a result of increased surface disturbance. Increased livestock numbers could also increase sediment in localized areas over the short term. The long-term effects of selection of this alternative would include positive effects on surface water availability and localized positive effects on sediment yield in areas included under AMPs. In some cases, long-term increases in sediment yield would occur in areas currently receiving limited use by livestock. Once implementation effects wore off, there would probably be an overall neutral effect upon water resources. However, it is possible that actions resulting from this alternative would involve more risk of serious water resource degradation than those of the other alternatives. The reason for this concern is that grazing lands found in harsh environments lie naturally close to their critical point in deterioration (Satterlund 1972) and the margin of safety, before deterioration exceeds acceptable limits for water quality control, is small. Therefore, increases in livestock numbers and accelerated management activities in sensitive drainages where gullying potential is high could rapidly cause conditions to exceed thresholds, and severe, unmanageable watershed degradation could occur.

No Action

The effects of this alternative on water resources would be neutral.

Mitigation Measures

To reduce risk of serious water resources degradation, comprehensive hydrological evaluations, intensive range trend and condition studies, and soils evaluations will be performed in erosive drainages to determine advisability of intensified management activities or increased livestock use.

Unavoidable Adverse Impacts

Any increase in surface disturbance in the vicinity of stream channels or standing waters, even as a result of those activities meant to aid in soil and water conservation, would be likely to result in minor adverse impacts to water quality. As a result, unavoidable adverse impacts would occur under all alternatives, including the No Action alternative, over both the short and long term due to surface disturbance (that is from management activities, monitoring, shifts in livestock distributions, increases in livestock numbers, etc.). Since water resource trends and the impacts of current grazing practices remain largely undocumented, unavoidable adverse impacts cannot be accurately predicted. The En-

hanced Livestock alternative has the highest potential to produce unavoidable adverse impacts.

Short-Term Use Versus Long-Term Productivity

Short-term use of the land in the EIS area would remain essentially unchanged over the short-term under all alternatives. Over the long term, water resource conditions could be changed to the extent that both aquatic and terrestrial productivity would be affected. Although effects are difficult to predict under the various alternatives, because of a lack of data, selection of Enhanced Watershed, Wildlife, and Soils Resources alternative would undoubtedly have a positive effect on long-term productivity through increases in water quantity and quality.

Irreversible and Irretrievable Commitments of Resources

Once gullying in a drainage has started, the spread of gullies throughout the drainage upstream is essentially irreversible (from an economic standpoint). Natural recovery can take hundreds of years and rehabilitation on a large scale would be economically unfeasible. There is the potential, under the Enhanced Livestock alternative, that irreversible and essentially irretrievable loss of soil and water resources could occur in erosive drainages of the EIS area.

SOCIOECONOMICS AND LIVESTOCK GRAZING

Affected Environment

The following sections discuss socioeconomics as it relates to livestock grazing and the livestock industry in the Divide EIS area.

Regional Economy

The major communities in Carbon County that are located in the EIS area include Savery, Dixon, Baggs, Rawlins, and Saratoga. Wamsutter and Creston Junction, in Sweetwater County, also lie within the EIS area. Other communities that would be affected to some extent but are not within the EIS area include Riverside and Encampment, both of which are also in Carbon County. Rawlins is the county seat of Carbon County and also functions as the major trade center for the region. Table 2-3 shows population figures for these communities.

TABLE 2-3

POPULATION (As of 1980)

Community	Population	Percent of County
Carbon County	21,896	-
Rawlins	11,547	53.0
Saratoga	2,410	11.0
Riverside	55	.2
Encampment	611	3.0
Savery	25[1]	.1
Dixon	82	.4
Baggs	433	2.0
Sweetwater County	41,723	-
Wamsutter	681	1.6
Creston Junction	25[1]	.06

[1]BLM, Rawlins District estimates.
Source: Bureau of the Census, 1981.

The analysis of impacts in this section will be restricted to those that affect the livestock sector and the regional economy because employment and income statistics and data are compiled on a county basis, not on individual communities.

Employment and earnings statistics for Carbon and Sweetwater counties are shown in Table 2-4, which shows employment by sector, and Table 2-5, which shows income by sector. As shown in these tables, mining is the leading industry in Carbon and Sweetwater counties. This sector generates the most employment and has the highest total income. Furthermore, mining generates the highest tax base for county and state government revenues. Agriculture ranks eighth of the ten major sectors in employment and tenth in total earnings.

TABLE 2-4

EMPLOYMENT BY SECTOR FOR CARBON AND SWEETWATER COUNTIES (As of 1980)

Industrial Sector	Employment	Percent of Total Employment
Agriculture	938	3
Mining	10,675	29
Construction	3,925	11
Manufacturing	878	2
Transportation	2,933	8
Trade	5,713	15
Finance, Insurance, Real Estate	728	2
Services	3,857	10
Government	5,114	14
Others	2,345	6
Total	**37,106**	**100**

Source: Wyoming Department of Administration and Fiscal Control, June 1981.

Note: Percentages may not total to 100 because of rounding.

TABLE 2-5

EARNINGS BY SECTOR FOR CARBON AND SWEETWATER COUNTIES (As of 1980)

Industrial Sector	Income (in thousands of dollars)	Percent of Total Income
Agriculture	7,944	1
Mining	312,132	41
Construction	98,216	13
Manufacturing	21,571	3
Transportation	70,736	9
Trade	71,048	9
Finance, Insurance, Real Estate	11,586	2
Services	56,152	7
Government	69,174	9
Others	37,213	5
Total	**755,772**	**100**

Source: Wyoming Department of Administration and Fiscal Control, June 1982.

Note: Percentages may not total to 100 because of rounding.

According to the Wyoming Crop and Livestock Reporting Service (1981), Carbon County is ranked second in the state in cattle production and fourth in the state in sheep production. Sweetwater County is twenty-second in cattle production and eighth in sheep production. Wyoming accounts for approximately 1.2 percent of the nation's cattle production and 8.6 percent of its sheep production. The EIS area supplies approximately .04 percent of the nation's cattle production and 0.6 percent of its sheep production.

Another important aspect of the regional economy concerns revenues generated by hunting and fishing recreation expenditures. Hunting and fishing in the EIS area has state and national importance. In 1981, the EIS area generated approximately 6.7 million dollars (approximately 4 percent of Wyoming's hunting and fishing revenues) from this type of recreation.

Livestock Operations

Size of Operations

Domestic cattle, horses, and sheep are authorized to graze on public lands within the Divide EIS boundaries. Presently, 108 operators are licensed to graze livestock on 187 allotments and utilize up to 254,679 AUMs of forage on public lands. Table 2-6 summarizes preference and number of allotments utilized by kind of livestock.

Operations entirely or partially within the EIS area vary in size from five to 13,311 AUMs of public forage utilized: 23 of the operations have fewer than 200 AUMs authorized use, 18 operations have 200 to 500, 14 operations have 500 to 1,000, 37 operations have 1,000 to 5,000, and 16 operations have 5,000 or more AUMs authorized use.

TABLE 2-6

PREFERENCE AND NUMBER OF ALLOTMENTS UTILIZED BY KIND OF LIVESTOCK

	Preference[1]				
	AUMs Active Preference[2]	Percent Active Preference	AUMs Suspended Preference[3]	AUMs Total Preference	Number of Allotments Utilized
Cattle	176,299	69%	2,555	178,854	167
Sheep	76,897	30%	2,338	79,235	61
Horses	1,483	1%	—	1,483	24
Total	**254,679**	**100%**	**4,893**	**259,572**	

[1]The total number of animal unit months of livestock grazing on public lands, apportioned and attached to base property owned or controlled by a permittee or lessee. The active preference and suspended preference are combined to make up the total grazing preference.

[2]That portion of the preference for which grazing may be authorized.

[3]That portion of the preference which is placed in a suspended category because the preference exceeds the present amount of forage available and allocated for livestock grazing.

The number of AUMs used and the kind of livestock grazed may vary from week to week within the EIS area, depending on operator preference. Appendix 1 shows use during the 1982 grazing season.

Types of Operations

Cattle grazing accounts for approximately 69 percent of the authorized grazing use made on public lands within the EIS area, while sheep (30 percent) and domestic horses (1 percent) make up the remainder.

The most common cattle operation in the area consists of a cow-calf operation. Cow-calf production refers to the breeding of cows and the raising of calves. In this system cows are bred during the early summer and have their calves late the following winter or early spring. The calves run with their dams until they are weaned early the following fall. Most of the calves are sold shortly thereafter, although some may be retained for herd replacement. Some operators may elect to speculate on market conditions and hold the calves over the winter as stockers, selling them as yearlings the following summer or fall. This practice is rare in the EIS area.

Another type of cattle operation common in the area is the yearling operation. In this type of operation cattle are purchased when they are approixmately one year old (during the spring following their birth) and graze the range as stockers until the following fall when they are marketed.

A few operators lease cattle from an out-of-state or out-of-area corporation, run them on the range for the grazing season, and then return them to the owner in the fall.

Some of the operations are based in other states. Cattle are shipped in to graze on BLM range for the grazing season and then shipped back to feedlots for conditioning after the grazing season.

The most common sheep ranch in the area is a ewe-lamb operation. In this type of operation, meat production is the primary source of revenue for the rancher with wool production a lesser source of revenue. In this system ewes are bred during the late fall/early winter and have their lambs the following spring. The lambs stay with their dams until they are weaned and marketed the following late summer/early fall. Some

of the ewes/lambs are kept by their ranches for herd replacement.

Another type of sheep operation is the yearling operation, which, in theory, is similar to the yearling cattle operation explained earlier. A few operators will contract sheep from another area or state and graze the sheep on public lands during the summer and return the sheep the following fall.

Approximately 17 percent of the operators in the EIS area run both cattle and sheep on public lands. The proportion of cattle and sheep production for these enterprises vary from operator to operator.

Grazing use made by domestic horses is very light. There are no horse operations within the EIS area where the horses are the primary source of revenue for the operator. Most operators keep a few horses for working livestock and recreational use.

Average Operation. For the purposes of the economic analysis, a representative budget was developed for both a sheep and a cattle enterprise. In this manner, an estimation could be made of the impacts on the livestock sector that have been brought about by changes in grazing plans.

The typical budgets were constructed using information from the Economics, Statistics, and Cooperatives Service of the USDA, University of Wyoming Agricultural Economics Department, and local agricultural finance specialists. Costs and returns were based on 1980 estimates. Forage requirements were derived from coefficients estimated by the National Research Council. These budgets are shown in Table 2-7.

TABLE 2-7

SUMMARY OF RANCH ECONOMIC PROFILES

Class Description	Cattle Enterprise	Sheep Enterprise
Typical herd size	322	3,018
Gross revenue	$79,435	$144,894
Total cash costs	$74,029	$101,933
Value of family labor	$5,347	$11,450
Depreciation	$9,222	$9,715
Interest on investment other than land	$19,755	$20,906
Return above cash costs	$5,406	$42,961
Return above cash costs and family labor	$59	$31,511
Return to land, management, and risk	$ – 9,163	$21,796

The average cattle ranch in the EIS area is a cow/calf operation with 322 AUs. A ranch of this size uses 4,911 AUMs of feed plus 4 tons of protein supplement. Of the total AUMs used, BLM lands provide 1,718 AUMs (35 percent) of this forage; 687 AUMs (14 percent) are provided through state and U.S. Forest Service (USFS) leases; 579 AUMs (12 percent) are supplied by deeded lands; irrigated pasture and crop residue supply 94 AUMs (2 percent); and 1,833 AUMs (37 percent) are provided by hay. Of these 1,833 AUMS of hay, the average ranch produces 549 AUMs (30 percent) and purchases 1,282 AUMs (70 percent). The ranch is assumed to be the primary source of income for the operator of an enterprise of this size.

The average cattle ranch grosses $79,435 and has total costs of $74,029, for a net return of $5,406. This return does not include family labor, depreciation, or interest on investment other than land. When these noncash costs are subtracted, net revenue is reduced to $-28,918.

Sheep operations in this area are typically ewe/lamb oriented. The average sheep ranch runs 3,018 head and uses 8,256 AUMs. This total forage requirement is comprised of 4,331 BLM AUMs (53 percent); 2,067 USFS, state, and private lease AUMS (25 percent); 1,693 deeded range AUMs (21 percent); and 165 AUMs (1 percent) of purchased hay.

The average sheep enterprise brings in a gross revenue of $144,894. Operating costs are estimated at $101,933, resulting in a net revenue

of $42,961. After family labor, depreciation, and interest costs are deducted, net revenues are reduced to $-890.

The last several years have been marginally profitable times for cattlemen. These conditions have not only been brought about by the current economic situation, but also by a phenomenon termed the "cattle cycle." This cycle is based primarily on beef cattle market conditions. It is best explained in a publication entitled *Beef Cycles: A Clue to the Current Cattle Outlook* (Agricultural Extension Service, University of Minnesota 1976).

> The cyclical nature of the beef industry stems from man's economic characteristics and the beef industry's physical characteristics. The key characteristics are: (1) the price of beef is determined largely by its relative supply; and (2) beef producers—both cattle feeders and feeder producers—tend to base their price expectations on current prices; but (3) it takes 2 to 3 years to reflect an expected price change into the desired change in livestock marketing; and (4), meanwhile, beef marketings actually move in the direction opposite from that desired.

These cycles tend to last about 10 years. Presently, the cycle appears to be on the upturn, having bottomed out during 1979.

By analyzing these cyclic movements (due to differences in market influences, these cycles do not affect sheep production), a better understanding of the eocnomic situations faced by cattlemen can be found for any point in time. Changes in methods of operation imposed on operators during low points in the cycle may force many individuals out of business.

Earnings

Livestock Sector. The 108 operators in the EIS area produce an estimated 126,500 AUs. Earnings for the average cattle and sheep ranch were estimated at $79,435 and $144,894, of which public lands contributed approximately $26,213 (33 percent) for the cattle enterprise and $76,794 (53 percent) for the sheep enterprise. Livestock enterprises in the EIS area are an important segment of the livestock industry in Sweetwater and Carbon counties.

Government Sector. BLM's current grazing fee in 1982 was $1.86. During that year, an estimated $483,548 was collected from operators in the EIS area. Grazing fees collected for permits issued in accordance with Section 3 of the Taylor Grazing act of 1934 are distributed as follows: 50 percent to range betterment projects, 37.5 percent to the U.S. Trestury's general fund, and 12.5 percent returned to the state where collected. Grazing fees collected for leases issued in accordance with Section 15 of the Taylor Grazing Act of 1934 are distributed as follows: 50 percent to range betterment projects and 50 percent returned to the state where collected.

Value of Public Lands to Livestock Production. Public land forage is important to livestock operations in the area. The value of a BLM AUM of forage consists of its capital value and its value to production, both of which are affected by the demand for the AUM and its productivity. BLM AUMs add to the capital value of a ranch and therefore affect not only the ability of a rancher to borrow money, but the resale value of the rancher's property as well. The capital value of BLM AUMs varies, depending on the type of land involved and its proximity to the homestead.

Sociocultural Attitudes. Families of ranch operators in the EIS area are characterized by a set of distinct attitudes and values. Ranching families have retained the outlook that is usually associated with rural, agrarian populations. They emphasize the importance of independence, self-reliance, and outdoor work, while distrusting government regulations, urban interdependence, and industrial occupations. Ranch families cling to what they conceive as a western way of life, one which they inherited from pioneer settlers. Despite rather low financial returns from ranching, they persist in ranch lifestyles. In doing so, ranchers express what has been labled ranch fundamentalism, the belief that ranching leads to a higher state of well-being than an alternative way of life (Smith and Martin, 1972).

Environmental Consequences

AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

General Information and Assumptions

In this section, the Proposed Action and alternatives are analyzed for their impacts to the local, regional, and national economy. The analysis will cover three types of impacts: direct, indirect, and social. Direct impacts deal specifically with the livestock industry. Indirect impacts are those which would affect the regional economy (Carbon and Sweetwater counties). Social impacts deal with lifestyles and attitudes.

The livestock industry would experience the full, direct impacts of any changes in allotment use. The intensity of the impacts would be consistent with the dependency of an individual operation on public land for its economic viability. Impacts to the livestock industry are analyzed based on 1980 ranch budget data.

The indirect impacts are pertinent to employment in the support activities, regional income, population, and general economic well-being. They will be analyzed through the use of an input-output (I/O) model developed for south-central Wyoming. The region characterized by this model includes Carbon, Albany, and Fremont counties.

Direct impacts are assessed based on average-sized cattle and sheep ranches characteristic of the area, using a linear program model. (For an explanation of this technique, see Appendix 6.) The impacts could be more or less than estimated, depending on the size of the operation, its dependency on public land, and the percentage of M, I, and C category allotments on that public land.

The analysis in this section is based on the following assumptions:

1. On-ranch hay production is in fixed supply.

2. The operator may elect to purchase public land AUMs out-of-state and/or purchase additional hay.

3. The operator uses all of his AUMs.

Proposed Action

For purposes of this analysis of the effects of the Proposed Action, the short term is defined as the first 5 years following implementation of management decisions. The long term extends from that point to approximately 20 years after implementation. The analysis uses data compiled from several scenarios depicting various changes in BLM AUMs. The scenarios used in this analysis are hypothetical situations, based on recommended stocking levels for certain ecological classes from the Soil Conservation Service (SCS) range site guidelines.

Category M Allotments

In the Category M allotments, there would be very little or no impact on livestock operators in the short term. Livestock numbers would probably remain the same or increase. Since these allotments have very few problems, very few reductions would be expected to occur. In the long term, operators might benefit from increased forage for livestock grazing and increased flexibility in methods of operation.

Category I Allotments

In Category I allotments, impacts resulting from implementation of management actions would continue to occur during the short-term while additional monitoring studies were being conducted and decisions made. These impacts to the operators would diminish over the long-term as problems were corrected.

If monitoring studies showed the need for adjustments in livestock use the affected operators would be impacted over the short-term. These hardships would be experienced until range conditions improved.

Some of the operators in the EIS area would be impacted by varying the turnout dates, because advance commitments must sometimes be made as to the exact number and date of delivery for livestock shipments. Delivery dates of livestock trucked in from other areas could not be made until a turnout date was established.

Since BLM's manpower and funds would be expended in the highest priority allotments first, other Category I allotments could continue to deteriorate, which could result in the need for more severe corrective measures later. Larger reductions in herd size and more radical management actions (later turnout dates) might be necessary to resolve the conflicts in these lower priority allotments.

Grazing treatments to be established in the Category I allotments might temporarily exclude some areas from grazing, thereby causing operators to shift livestock to other areas or reduce herd sizes. Areas that would be sprayed for sagebrush or burned to increase grass and forb production would have to be rested for a period of time to establish desired plants. Other sources of forage or reduction in herd size would be required by the operator during this time.

Category C Allotments

Livestock operators with Category C allotments would experience many of the same impacts as those for Category M allotments. However, increases in forage available for livestock would probably not occur in this category. Operators might be adversely affected if Category C lands were altered by changes in fence locations, land exchanges, or elimination of parcels by public sale.

Direct Impacts

Under hypothetical situations of varying degrees of increases and decreases in BLM AUMs, the direct impacts to each type of operation and the regional economy are shown in Table 2-8. These estimates were derived from several scenarios, from which the impacts of incremental increases and decreases in BLM AUMs were analyzed. Percentages in parentheses represent the change from the existing situation. These percentages were chosen to serve as analytical tools in analyzing the impacts to the livestock sector.

The five scenarios shown in Table 2-8 depict hypothetical situations and are not designed to represent any proposed reductions or increases. Their purpose is designed to indicate the impacts to the regional economy (Carbon and Sweetwater counties) and to the livestock industry that would occur with changes in public grazing leases. Scenarios 1 and 2 are anticipated long-term effects, whereas scenarios 3, 4, and 5 represent short-term effects.

Realistically, the Proposed Action could result in a short-term reduction in AUMs followed by an overall long-term increase. Therefore, it is feasible to assume that under normal, profit-making conditions short-term losses could be mitigated through long-term gains. The ability to offset any short-term loss is directly related to the economic viability of the ranch with regard to debt, the operation's dependency on public grazing, and market prices. Presently, even short-term losses to the livestock industry could pose hardships because of the economic burdens that many operators are under.

Assuming that operators would choose the least costly method for meeting the short-term reduced forage supply, the adverse impacts to the individual operator would be minimal because of the time frame involved in implementing the management actions. Operators would have the option to adjust gradually over a period of time, thus minimizing losses. Under the conditions presented above, the long-term impacts to livestock operations are shown in Figure 2-2.

Indirect Impacts

The impacts to the regional economy from the Proposed Action would be minimal in either the short or long term. Any losses in regional employment or revenues in the short term would be offset from the gains which could result in the long term. Through long-term increases in AUMs available in Category I allotments, government revenues might increase as well.

Social Impacts

Depending on the individual operator's reliance on public lands for his livelihood, social impacts could range from minimal to severe. Under present economic conditions, many livestock operators are faced with marginal profits. This situation is fostered by relatively low market prices for livestock commodities and increasing production costs.

TABLE 2-8

ECONOMIC IMPACTS OF THE PROPOSED ACTION

Scenarios	Gross Revenue ($$)	Cash Costs ($$)	Return Above Cash Costs ($$)	Employment	Region Income ($$)
Scenario 1 (15% increase in BLM AUMs)					
Cattle Enterprise	86,101	79,799	6,302 (17% increase)		
Sheep Enterprise	147,798	104,004	43,794 (2% increase)		
Change in Regional Economy				+18 (.04% increase)	+1,431,617
Scenario 2 (35% increase in BLM AUMs)					
Cattle Enterprise	94,754	87,287	7,467 (30% increase)		
Sheep Enterprise	151,671	105,764	45,907 (7% increase)		
Change in Regional Economy				+42 (.10% increase)	+3,291,500
Scenario 3 (5% reduction in BLM AUMs)					
Cattle Enterprise	77,101	72,009	5,092 (6% decrease)		
Sheep Enterprise	143,925	101,575	42,350 (1.5% decrease)		
Change in Regional Economy				−7 (.02% decrease)	−478,543
Scenario 4 (10% reduction in BLM AUMs)					
Cattle Enterprise	74,924	70,125	4,799 (11% decrease)		
Sheep Enterprise	142,957	101,217	41,740 (3% decrease)		
Change in Regional Economy				−13 (.04% decrease)	−957,434

TABLE 2-8—CONTINUED

ECONOMIC IMPACTS OF THE PROPOSED ACTION

Scenarios	Gross Revenue ($$)	Cash Costs ($$)	Return Above Cash Costs ($$)	Employment	Region Income ($$)
Scenario 5 (25% reduction in BLM AUMs)					
Cattle Enterprise	68,079	64,201	3,878 (28% decrease)		
Sheep Enterprise	140,053	100,142	39,911 (7% decrease)		
Change in Regional Economy				−31 (.10% decrease)	−2,393,629

Although the Proposed Action indicates the possibility of short-term losses for those operators holding any percentage of Category I lands, to implement reductions under these stressful conditions could force some to seek additional income sources and/or alteration of a traditional lifestyle; examples might be postponing of family expenditures for health needs, education, and job training, vacations, etc. Additional hardships could be seen as a strain on family ties or neglect of family responsibilities. In general, there stands a good chance that any short-term losses might not be mitigated through long-term gains from a social standpoint if economic conditions were in a recessed state.

However, the overall social effects of the Proposed Action probably would be minimal, and regional lifestyles and attitudes would be altered very little, because most ranchers would continue operations much as they have before. It is expected that this action would change the historical pattern of this area very little.

Enhance Watershed, Wildlife, and Soil Resources

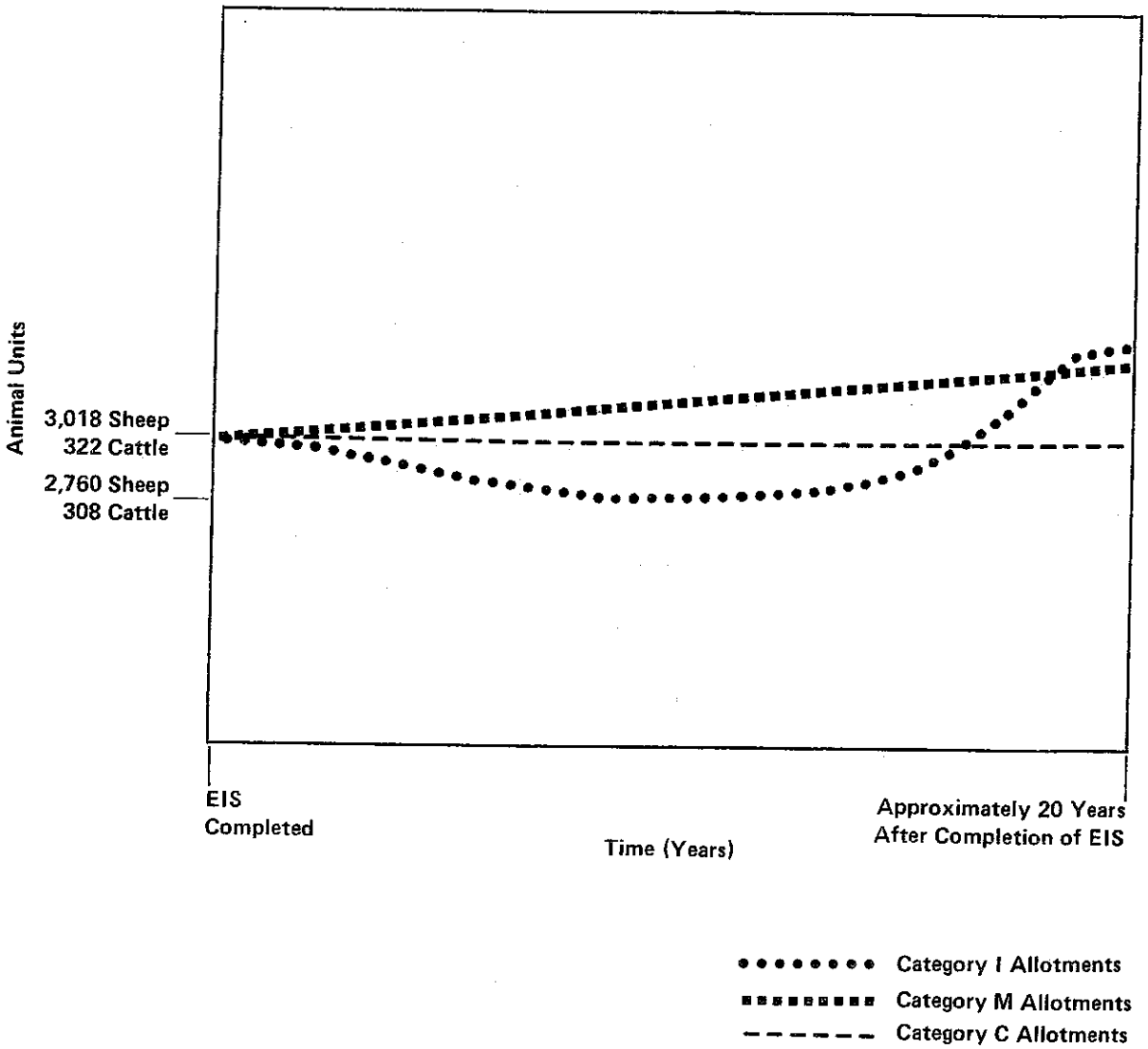
For purposes of analysis of the effects of this alternative, the short term is defined as the first 5 years after implementation of management decisions. Long-term impacts would occur from that point to approximately 20 years after implementation.

Category M Allotments

In the Category M allotments, there would be very little or no impact on livestock operators in the short term. Livestock numbers would probably remain the same or increase. Since these allotments have very few problems, very few reductions would be expected to occur. In the long term, operators might benefit from increased forage for livestock grazing and increased flexibility in methods of operation.

Category I Allotments

In Category I allotments, impacts resulting from implementation of management actions would continue to occur during the short-term while additional monitoring studies were being conducted and decisions made. It is expected that the impacts under this alterntive would be



NOTE: This graph is based on the assumption that available forage on Category I lands would increase over the long-term resulting in an increase in the number of AUs the range could support. In the short-term, the average ranch would experience a decline in AUs on Category I Allotments while management actions were implemented and range condition was improving. In the long-term, AUs would be expected to increase on these allotments. Estimates are based on a 10% reduction in BLM AUMs.

Figure 2-2
ESTIMATED LONG-TERM IMPACTS TO AN AVERAGE RANCH UNDER THE PROPOSED ACTION

similar to the impacts of the I category allotments in the Proposed Action alternative but that the impacts would be more severe under this alternative. Livestock operators would experience increased hardships in terms of numbers of livestock authorized to graze on public lands and areas which could not be grazed.

Category C Allotments

Livestock operators with Category C allotments would experience many of the same impacts as those for Category M allotments. However, increases in forage available for livestock would probably not occur in this category. Operators might be adversely affected if Category C lands were altered by changes in fence locations, land exchanges, or elimination of parcels by public sale.

Direct Impacts

Reducing public forage in some areas for livestock use from federal lands within the EIS area would not have a significant adverse impact on the national livestock industry. Any reductions might result in some hardships to local livestock operators through possible increases in operational costs or reductions in herd sizes.

Depending on the extent to which management actions affected livestock use on BLM lands and the individual operators need for the forage, the scenarios analyzed in Table 2-7 of the Proposed Action are appropriate. In some instances, this alternative might enhance livestock grazing, whereupon the livestock sector would receive some benefits in the form of increased revenues.

Indirect Impacts

The regional impacts which would occur under the scenarios brought forth in the Proposed Action (Table 2-7) are relevant to this alternative. Although sufficient information is unavailable to analyze the regional impacts accurately, any alterations in the economic structure of the regional agricultural industry would result in some fluctuation of the area economy. In fact, changes in the regional economy could become significant from any reductions in use placed on the livestock sector, and losses in this sector of the area economy would probably not be offset by the gains in others. Recreation contributes substantially to the local economy. However, although wildlife forage may increse under this alternative, from a strictly regional income standpoint, present policy dictates that wildlife numbers will be maintained at present Wyoming Game and Fish Department objective levels. Therefore, little, if any, increases in hunting revenues would be realized from additional hunting, which would offset any regional economic losses from the agricultural sector.

Social Impacts

In a region where the land use is predominantly agrarian, forced reductions in livestock use would be significant. if operators were forced out of business, their families would have to make social adjustments. They might need to borrow additional funds to carry them over short-term economic reverses; however, it is questionable whether they could acquire such loans if foreclosures were imminent. Relocation and alteration of lifestyle could break-up families and/or impair the health of family members. Career and retirement goals might be unachievable. These individual social problems, if they were to occur, would aggregate to include the affected communities, possibly causing lower incomes to agricultural retail businesses or even resulting in their going out of business.

Although this social analysis presents a rather grim picture, it would become reality if major reductions were employed, or even if minor reductions were imposed, given current economic conditions.

Enhanced Livestock Grazing

Under this alternative, allotments would be categorized as in the Proposed Action. The emphasis on forage production for domestic livestock use would benefit the livestock operators in the EIS area. In each category of allotments (M, I, or C) available forage for domestic livestock use should increase. In turn, livestock operators would be able to graze more livestock on the public lands. The difference in the three categories would be in the order of priority for

receiving management activities. Category I allotments would have the first priority, Category M allotments the second priority, and Category C allotments the third priority.

Direct Impacts

In the short term, some livestock operators might experience a slight decline in available AUMs, due to implementation of the management proposals. This situation would change as range and forage yields were increased and sufficient production improvements were made. There would be an upward trend in positive economic returns in the long term until the range reached its full potential, at which point positive returns would level off. Short-term and long-term impacts would be expected to be similar to those indicated for the Proposed Action (Table 2-8), with the exception that anticipated increases in long-term net revenues are based solely on the assumption that the additional forage would immediately be available to livestock.

Indirect Impacts

The regional economy would probably experience little change in employment, income, or population due to the short-term impacts of this alternative. Long-term regional economic conditions would show little significant change directly attributable to the livestock industry.

As pointed out in the Wildlife section, detrimental effects to big game populations might occur in some situations where reductions in grazing capacities were necessary from energy development. Since livestock grazing would have priority, big game objective levels might be reduced with resultant economic losses to the region brought about by reduced hunting-related expenditures. No information is currently available to show the anticipated loss in hunter days.

Social Impacts

This alternative would enhance the ranchers' social well being, stabilize his existence in the long term, and preserve the ranching tradition. This betterment of individual operators' well being is carried forward to the areas' social structure. Local businesses would be generating greater revenues from the need for goods and services of ranchers.

No Action

For purposes of this analysis, the short term is assumed to be the next 5 years, and the long term extends to approximately 20 years beyond that. The analysis is made on a probable-case basis.

Direct Impacts

Under this alternative, allotments that would have been placed in the M or C categories and are in good condition would be expected to remain in good condition, but no increases in livestock use or changes in kind would be allowed. Allotments that would have been placed in the M category and are improving in condition would continue to improve, and livestock would benefit as well.

Allotments that would have been placed in the I category because of one or more significant resource problems such as poor condition or a downward trend would continue to deteriorate. Livestock production in these allotments would decrease accordingly. In the most severe cases, undesirable and noxious plants would increase, causing health problems in livestock herds. Voluntary reductions in herd size and decreasing reproduction rates could occur as the range deteriorated. There are very few allotments that fall into this category. Conditions on these allotments could be improved if operators in the area participated in voluntary nonuse.

In the long term, some marginal operations could undergo economic hardships. These hardships would be precipitated by deteriorating range conditions on some allotments causing herd reductions or increased operating costs.

If individual operators did not have the option of changing livestock use on public lands, economic diversification would be constrained or unachievable. Presently, several operators have diversified their enterprise by producing both cattle and sheep. Employing this technique

reduces drastic changes in revenues due to fluctuating market prices of agricultural commodities. By diversifying, an operator increases his costs to some extent, but his revenues remain more stable over time.

Indirect Impacts

The regional impacts from this alternative would be minor in the short term; however, in the long term, the economy could be moderately affected. If regional agricultural incomes were reduced, regional employment would be reduced as well, possibly adding to the state's unemployment rate. Regional incomes associated with the livestock sector would decline proportionately, thus reducing the government revenues generated from that sector.

Social Impacts

The long-term social impacts from this alternative would probably be significant. If those allotments that are presently deteriorating continue to do so, individuals having licenses to run livestock on those allotments could find themselves making adjustments in their operation out of necessity. This situation would bring about conditions similar to those identified in the Proposed Actions and the Enhancement of Watershed, Wildlife, and Soil Resources alternative.

Conclusions

From a socioeconomic standpoint, the alternative which seems to optimally suit multiple use goals would be the Enhancement of Livestock Grazing alternative. Direct and indirect impacts are beneficial to the resources affected and may serve to better environmental conditions overall, which directly contribute to the economic base of the region.

The least optimal alternative would be the No Action alternative. Agriculture plays a major role in the EIS area and the state. To purposely allow a viable resource to deteriorate is not in the best interests of society and the implications of adopting that alternative would have some serious long-term negative impacts.

Analysis of Investment Opportunities

Introduction

The Proposed Action and alternatives in this EIS offer differing levels of range investment. Range investment projects provide benefits not only to individual operators, but also to society in general. Direct or primary benefits (those accruing to individual operators and the livestock industry in the EIS area) come about from increased forage availability which usually translates to a greater carrying capacity of the range. Range improvements (stock tanks, windmills, spring developments, etc.) can also be constructed at strategic points, and would distribute livestock grazing patterns better, thereby utilizing forage not otherwise available.

Many of the improvements designed to benefit livestock also benefit wildlife. Unless the improvement was specifically constructed with wildlife benefits in mind, these benefits would be construed as secondary, i.e., those occurring over and above the specific goal of the project.

Under most AMPs, big game/wildlife benefits are not counted because the state game and fish department would hold objective levels at a predetermined constant. However, there are also many unquantifiable benefits associated with wildlife and wild horses and environmental quality benefits in general (watershed protection, soil stabilization, etc.). Although there are no market values associated with aesthetic benefits, there are certainly economic and social values which accrue with habitat enhancement. Many individuals and interest groups place a preservation value on environmental qualities, and express concern when these qualities are degraded. Therefore, when a range investment creates primary and secondary benefits, it is believed that in some way, environmental quality is enhanced, increasing the preservation value of many species, thereby bettering society.

Other secondary benefits which can occur are those which benefit the regional economy, i.e., several counties, the state, or the nation. Most often, regional benefits are defined as changes

in employment and income in the service sectors (agribusinesses, veterinary services, feed lots, etc.) associated with the various livestock enterprises. These benefits are easily quantifiable by identifying the changes in the economic positions of segments of the livestock industry.

Methodology

To portray the economics associated with range improvement investments, information from the budgets constructed for the economic analysis was used. This budget information, which characterized typical livestock operations in the area, was further analyzed to estimate whether additional public investment (BLM expenditures on range improvements) would yield a positive dollar return on each dollar invested.

In order to use the information in the budgets, several assumptions are necessary.

1. There is no nonuse practiced, i.e., all AUMs are used.

2. All range improvements increase AUMs, and these AUMs are made available to and used by the livestock operators.

3. Market prices, production costs, and technology are fixed (held constant).

Costs per BLM AUMs were defined as those costs associated with the construction, annual maintenance, and reconstruction of range improvements. Benefits were defined as changes in income from livestock operations accruing to the area as a result of incremental increases in BLM AUMs. Both benefits and costs were discounted over a 50-year period.

Benefit/Cost Analysis

Using information based on existing AMPs to determine discounted costs/AUM and the budgets developed for this EIS, benefits and costs were derived to address the relative cost effectiveness of the Proposed Action and each of the alternatives.

Proposed Action

Basing this analysis on the scenarios that used a 15 percent and a 35 percent long-term increase in BLM AUMs, the benefit cost ratio ranged from 6.5 to 6.8. These ratios would indicate positive economic returns on investments made under management decisions in the Proposed Action.

Enhance Watershed, Wildlife, and Soil Resources

An accurate benefit/cost analysis is dependent on more information than is currently available. It is not known which allotments would be managed for which resource. On those allotments where livestock grazing is the highest valued resource, the benefit/cost ratio would be positive, ranging from 5.6:1 to 6.5:1.

Since environmental quality benefits are difficult to measure, those benefits are not included in this analysis. The extent to which the trade off of resource values would be under this alternative is not currently known either. Whether any losses in the level of livestock grazing would be offset by gains in other resource values is an important factor and should be closely analyzed.

Enhanced Livestock Grazing

Assuming no other benefits above those that accrue to the livestock sector, this alternative carries a benefit/cost ratio of 5.3:1 to 6.8:1.

With incremental increases in groups of range improvements beyond current levels, benefit/cost ratios increase to an approximate 35 percent increase in BLM AUMs then begin to decrease. This indicates that diminishing marginal returns to investment occur above a 35 percent increase.

No Action

Assuming that no further investment in new range improvement construction would occur, the benefit/cost analysis accounts for average annual maintenance costs and benefits in the form of a reduction in the loss of current levels of BLM AUMs.

The benefit/cost ratio associated with the alternative was calculated at 3:1.

Conclusions

From an overall analysis of the investment potential of the Divide EIS area, it is concluded that the benefits of range investment outweigh the costs of implementing those improvements. This is true to the point where marginal returns are equal to zero. In short, this EIS area is an area where investment of appropriated monies would prove socially profitable up to the point where diminishing returns occur.

Mitigation Measures

Proposed Action

Those management decisions which indicate a need for reductions in forage use will be implemented in such a manner so as to reduce the magnitude of short-term adverse impacts to individual operators. This would best be served by implementing such decisions over a period of time allowing the operator to adjust his enterprise accordingly.

Downward adjustments in an individuals operation will be made during a time when his economic situation dictates that short-term losses would be minimal and not pose any long-term problems. Flexibility in implementation of management actions is paramount so that an operator can adjust with as little hardship as possible.

Enhance Watershed, Wildlife, and Soil Resources

Mitigation measures will be similiar to those described in the Proposed Action.

Enhanced Livestock Grazing and No Action

No mitigation measures.

Unavoidable Adverse Impacts

Proposed Action

If any reductions in livestock numbers were recommended to improve range conditions in Category I allotments, short-term losses in net revenues to those affected operators are unavoidable adverse impacts. Those operations that would experience bankruptcy and cease production would present an unavoidable adverse impact to society.

Enhance Watershed, Wildlife, and Soil Resources

Impacts would be similiar to those described in the Proposed Action; however, the impacts could extend into the long term if studies indicated the need to reduce livestock numbers or enhance other resources.

Enhanced Livestock Grazing

None.

No Action

Unavoidable adverse impacts would occur to society and the region's economy in the long term from gradually deteriorating range conditions in some allotments, which would result in a decrease of ranch numbers and a traditional lifestyle.

Short-Term Use Versus Long-Term Productivity

Proposed Action

In the short term, those allotments where livestock reductions might be proposed to allow range conditions to improve, the net revenues for the affected operators might be reduced. This reduction is expected to be offset by the long-term gains in net revenues associated with increases in forage productivity.

Enhance Watershed, Wildlife, and Soil Resources and Enhanced Livestock Grazing

Similar to the Proposed Action except long-term productivity of forage may not be beneficial to livestock operators if that forage were not available.

No Action

Short-term use indicates present conditions would continue; however, this continuation may be at the expense of long-term productivity. That is, if range conditions on some allotments con-

tinued to pose problems, an operators economic viability could be adversely affected in the long term, thus affecting both the individuals' and the regions' social well-being.

Irreversible and Irretrievable Commitment of Resources

None for the Proposed Action or any alternatives.

WILDLIFE

Affected Environment

Wildlife Communities

Twenty-four standard habitat types have been identified within the Divide EIS area (see Tables 2-1 and Appendix 5). Delineation of these types was based on vegetative composition and structure, combined with observed animal species occurrence and relative abundance.

Three hundred seventy-four species of vertebrate animals, including amphibians (5), reptiles (6), mammals (65), and birds (298) have been documented within the EIS area using sampling transects, casual observations, information from other agencies, and literature sources. A computer listing of the vertebrate species occurring within the EIS area and the use of the habitat types is presented in the Divide Basin Planning Unit URA-3 and the Overland Planning Unit URA-3. Parts 1, 2 and 3 in Appendix 5 illustrate species observed in each by standard habitat type.

Habitat types that provide a diversity of structural layers—woody riparian, shrublands, and woodlands—support a great diversity of wildlife species due to increased numbers of sites for reproduction and/or feeding.

The importance of free-standing water is illustrated by the number of wildlife species that utilize the open aquatic and riparian habitat types. The open aquatic type, consisting of the open water area and the associated emergent and shoreline vegetation zones, provides suitable habitat for a large number of migrants, as well as a diverse population of seasonal residents. Riparian habitats are defined as a vegetation zone that requires free water or conditions that are more moist than normal (Thomas et al. 1980). Although most riparian areas are associated with perennial waters, intermittent streams or shallow subsurface moisture can provide favorable growing conditions for riparian plants to thrive.

Riparian communities are considered among the most critical wildlife habitats (Carothers 1977; Hubbard 1977; American Fisheries Society 1980; Hehnke and Stone 1978; and Thomas et al. 1980). They provide a variety of plant composition and structure that supports wildlife numbers and diversity several times greater than the surrounding upland sites. All riparian habitat types share the following characteristics, which promote special management considerations: (1) they create well defined habitat zones within the drier surrounding areas; (2) they make up a minor proportion of the surrounding area; (3) they are more productive in terms of plant and animal biomass; and (4) they are a critical source of diversity within the rangelands (Thomas et al. 1980).

The woodlands provide many of the same types of structural layers as the riparian types. However, due to the absence of free-standing water in most of these areas, the wildlife species diversity is usually less than that found in the riparian areas. The Utah juniper habitat type, although not possessing the structural diversity of some of the other woodland types, is important because of its juxtaposition on the periphery of two biomes, Pinyon Pine-Juniper and Northern Cold Desert. This habitat type supports wildlife species that are found in both biomes.

The shrublands lack the tree canopy of many of the other types, thereby reducing the total number of wildlife species utilizing these types. These vegetative types support a fairly diverse population of wildlife species, while also providing key wintering habitat for a large number of big game animals. The big sagebrush-rabbitbrush, bitterbrush, and mountain shrub habitat types compose a large percentage of the big game wintering habitat.

The 24 standard habitat types within the EIS area have been ranked by management priority into three categories (Table 2-9). The habitat types that commonly support a large number of wildlife species are not common in the EIS area.

TABLE 2-9

RANKING OF STANDARD HABITAT TYPES[1]

High Priority[2]	
Open aquatic	Mountain shrub
Riparian grassland	Utah juniper
Willow-waterbirch riparian	Quaking aspen
Aspen riparian	Aspen conifer
Cottonwood riparian	Ponderosa pine
Moderate Priority[3]	
Greasewood-sagebrush riparian	Lodgepole pine
Big sagebrush-rabbitbrush	Mixed conifer
Bitterbrush	Early successional conifer
Sagebrush-mixed grass	Rockland
Low Priority[4]	
Short grasslands	Badland
Saltbush steppe	True sand dunes
Greasewood	Upland meadows

[1]Ranking is based on the wildlife communities (total species, number of breeders, number of rare species) combined with the availability of each type.

[2]High priority habitats are defined as those habitats that require intensive management actions (data collection, enhancement, protection) in order to maintain their productivity as diverse wildlife communities.

[3]Moderate priority habitats are defined as those habitats that require less intensive management to maintain their productivity as wildlife communities.

[4]Low priority habitats are defined as those that can be more heavily used by conflicting resources in order to maintain the more important (higher priority) wildlife habitats.

The moderate priority habitat types are usually of lesser importance to wildlife and normally are in greater supply than the high priority habitats. These types require sound management to ensure maintenance or improvement of the vegetation composition and/or structure.

The low priority habitats usually have a reduced vegetative diversity with only one or two structural layers. These types are less susceptable to alteration or influences from other multiple uses and are generally more widely available.

Featured Species

The featured species within the EIS area include the small game and big game mammals, upland game birds, waterfowl, and threatened and endangered species.

Small Game Mammals

Small game species in the EIS area include the desert cottontail, mountain cottontail, snowshoe hare, and red squirrel. The desert cottontail is abundant in the drier lowland areas, while the mountain cottontail is abundant primarily in the woodland and riparian types of the foothill region. The snowshoe hares and red squirrels are found in varying population levels within the higher elevation coniferous habitat types.

Big Game Mammals

Five species of big game mammals—bighorn sheep, elk, mule deer, white-tailed deer, and pronghorn—are yearlong residents of the EIS area. Current Wyoming Game and Fish Department population objectives and present population estimates for these species are presented in Table 2-10, along with the acreage of the seasonal ranges used by these species.

Bighorn Sheep

The Seminoe-Ferris herd unit is the only area where bighorn sheep occur within the EIS area. The habitat requirements for bighorn sheep seem to be keyed to good foraging sites near escape cover (rough terrain). Studies conducted by Haas (1978), Oldemeyer et al. (1971), and Shannon et al. (1975) have shown that these animals prefer open grassy ridgetops, slopes, or benches within 100 meters of rocky outcrops, precipitious cliffs, or steep rocky slopes. Habitat types most commonly used are sagebrush-

TABLE 2-10

BIG GAME POPULATIONS, ACRES OF SEASONAL RANGES, AND ACRES OF SEASONAL RANGES DISTURBED[1/]

Species	Herd Unit	Current Population[2/]	Population Objective[2/]	Acres of Seasonal Range							
				Summer	Acres Disturbed	Winter	Acres Disturbed	Winter/ Yearlong	Acres Disturbed	Crucial Winter	Acres Disturbed
Bighorn Sheep	Seminoe/Ferris	No estimate	150	7,700	0	2,960	2	37,000	0	3,000	26
Elk	Ferris	275	350	11,084	0	90,083	48	100,213	55	0	0
	Shamrock Hills	60	None	0	0	0	0	50,650	455	0	0
	Baggs	4,378	4,200	12,177	18	53,670	91	38,621	265	108,660	458
Mule Deer	Ferris	3,000-5,000	5,000	27,800	0	23,300	127	254,596	426	33,250	12
	Chain Lakes	200	200	0	0	0	0	172,973	1,175	0	0
	Table Rock	---	3/	24,200	350	0	0	0	0	0	0
	Black Butte	250	3/	0	0	0	0	101,837	18	0	0
	South Wamsutter	2,211	2,700	0	0	0	0	834,284	9,128	79,994	405
	Baggs	13,498	13,000	273,379	1,059	0	0	392,350	2,775	148,551	724
	Platte River	1,250	3/	120,824	477	0	0	229,358	559	35,489	132
White-tailed Deer[4/]	Ferris	No estimate	None	---		---		---		---	
	Baggs	No estimate	None	---		---		---		---	
	Platte River	No estimate	None	---		---		---		---	

TABLE 2-10--CONTINUED

BIG GAME POPULATIONS, ACRES OF SEASONAL RANGES, AND ACRES OF SEASONAL RANGES DISTURBED[1/]

Species	Herd Unit	Current Population[2/]	Population Objective[2/]	Acres of Seasonal Range							
				Summer	Acres Disturbed	Winter	Acres Disturbed	Winter/ Yearlong	Acres Disturbed	Crucial Winter	Acres Disturbed
Pronghorn	North Ferris	7,700	3,500	130,900	149	0	0	71,150	30	0	0
	South Ferris	11,400	4,200	148,714	475	0	0	151,876	1,440	93,055	822
	Red Desert	11,800	10,000	829,009	6,388	0	0	439,293	3,924	105,442	320
	Black Butte	470	3/	0	0	0	0	101,837	18	0	0
	South Wamsutter	6,988	7,000	14,482	162	0	0	828,939	9,012	85,339	503
	Baggs	11,085	7,200	173,056	421	0	0	315,017	3,001	79,986	717
	Iron Springs	5,041	3/	318,167	826	0	0	226,842	759	0	0

1/Current areas disturbed by oil and gas development.
2/Current population and population objectives are the post-harvest estimates.
3/Only a small percentage of the herd unit is within the EIS area, therefore, population objectives are not included.
4/White-tailed deer are known to inhabit portions of these herd units. No population or seasonal range information data is available.

mixed grass, big sagebrush-rabbitbrush, and mountain shrub. Winter habitat is characterized by south facing slopes, benches, and ridgetops near escape cover (Geist 1971; Oldemeyer et al. 1971).

Within the Seminoe Mountains the summer ranges are at elevations above the winter ranges. Most ewes, lambs, and younger males remain on the summer and yearlong ranges, while the mature rams have been observed to spend the summer on the top of Ferris Mountain and upper Bradley Peak. The south-facing hogbacks on the south side of the Seminoe Mountains and the south slopes of Morgan Creek and Marking Pen drainages have been identified as wintering areas. During lambing, the ewes and lambs are restricted to rugged, rocky outcrops and cliff areas that provide security against predators. No known, annually-used lambing areas have been identified within the herd unit.

Yearly food habits of bighorn sheep, as determined by Haas (1978), varied seasonally. Forbs and grasses made up the majority of the diet of sheep on the low elevation range from late fall to early summer. Needleandthread and sedges appeared in greater quantities in the diet than the more abundant bluebunch wheatgrass. Sagebrush was the principal winter browse plant; true mountain mahogany and bitterbrush were heavily used in summer and early fall. Other studies have shown similar results (Oldemeyer et al. 1971; Todd 1975).

Water requirements are met by open water sources during the summer and consumption of snow during the winter (Haas 1978). In the mountains, bighorn populations are generally not limited by snow or available water. Water quality requirements are similar to those for livestock.

Elk

The seasonal ranges for the three elk herds within the EIS area are shown on Map 4. A variety of standard habitat types provide the seasonal requirements for the different populations. Habitat selection varies from season to season, with the elk being most restricted in the selection of suitable habitat within the crucial winter ranges. Elk require a combination of feeding sites (upland meadow, sagebrush-mixed grass, and mountain shurb) and security and thermal cover (aspen and conifer woodlands) for their daily activities.

The Ferris-Seminoe herd occupies the woodland types during the summer for security and thermal cover and uses the upland meadows and sagebrush-mixed grass foothills for foraging. The elk herd that occupies the summer and yearlong ranges located off the Medicine Bow National Forest within the Baggs herd unit is found within the foothill transition zone. The aspen woodland habitat type provides security and thermal cover, and the associated, more open habitat types are used for foraging (Ward 1982). The desert elk herd northwest of Rawlins occupies a large sagebrush-grassland area on a yearlong basis.

With the onset of winter, the elk migrate into the lower elevation winter ranges, concentrating on the crucial winter ranges during periods of severe weather. Snow depths limit the elk to the more open, windswept areas, which are usually ridges with a south to west exposure. The major habitat types found in these areas are sagebrush-mixed grass and big sagebrush-rabbitbrush, along with some available mountain shrub communities.

Parturition areas are usually located in the transition zones between winter and summer ranges, where there is woodland cover for cows, shrubs or downed log cover for the calves, succulent forage, water available within 1,000 feet, and gentle terrain (Thomas et al. 1979). One parturition area has been delineated along the boundary of the Medicine Bow National Forest.

Extensive migrations have been documented within the Baggs herd unit (Comptom 1975; Ward 1982). The onset of the spring migration corresponds to spring greening of the vegetation and melting of snow. Fall migration to lower elevations is initiated by snow build up on the fall ranges.

The food habits of elk are very similar to those of livestock and wild horses; however, forage availability is a significant factor affecting the composition of elk diets. Generally, grass and

grasslike plants are preferred, with forbs being taken during the summer, and shrubs being consumed in signficant amounts during all seasons except summer (Hansen and Reid 1975). Compton (1975) found that elk prefer the grass community, using the forb and shrub communities in varying degrees from season to season.

Water does not appear to limit elk distribution.

Deer

Mule deer are distributed at various population levels throughout the seasonal ranges within the EIS area (Map 5). In general, mule deer prefer habitat types which are in the early stages of plant succession and contain a large quantity of shrubs (Longhurst et al. 1977; Wallmo 1978). Within the EIS area the mule deer use the woody riparian, shrublands, Utah juniper woodland, and aspen woodland habitat types extensively during spring, summer and fall. These type provide adequate forage areas with security cover, and also provide cover for fawning and succulent vegetation for lactating females.

With the onset of winter, the deer are more restricted in their habitat selection; the aspen woodlands and portions of the mountain shrub types are unavailable because of snow accumulation. Compton (1975) stated that during winter, mule deer concentrated at lower elevation near river bottoms and along southern exposed ridges. The wintering mule deer are quite often found in conjunction with juniper stands. The big sagebrush-rabbitbrush and bitterbrush habitat types receive extensive use during the winter. Extensive migrations and Baggs herd units (Springer and Wenger 1981; Compton 1975; and the Wyoming Game and Fish Department 1979.

Browse plants are an important yearlong component of mule deer diets (Compton 1975; Constan 1972; and Dusek 1975). Grass and forbs are used to a lesser amount during the year, with the heaviest use occurring during the spring.

Usually, water does not limit mule deer distribution (Mackie 1970), although it does influence the local distribution of deer in more arid areas. The availability of palatable and digestable forage is the primary factor limiting population size and distribution (Wallmo 1981).

White-tailed deer utilize the willow-waterbirch and cottonwood habitat types along the Little Snake and North Platte rivers and the creek bottoms north of the Seminoe Mountains. The deer occur in low populations and no management objectives have been established for these isolated populations.

Pronghorn

Pronghorn are the most abundant and visible big game species occurring within the EIS area (Map 6). Pronghorn inhabit open rangelands that have a variety of habitat types rather than monotypic vegetative communities. These types have a high density of grass, forbs, and shrubs that produce an abundance of succulent vegetation. Preferred habitat types have an average ground cover of 50 percent (18 percent) and used least in the summer and winter (2 percent). The most heavily utilized plant was Wyoming big sagebrush, which received use during all seasons.

Game Birds

Sage Grouse

Sage grouse are the most common and widespread game bird in the EIS area (Map 7). During most of the year these birds are dependent on sagebrush for food and cover. Patterson (1952) observed that decreases in sage grouse populations are directly related to the decrease in quantity and/or quality of the sagebrush habitat.

During the spring, sage grouse concentrate on traditional strutting grounds for breeding. These arenas are usually in openings within a sagebrush stand where the adjacent feeding and loafing sites have an average sagebrush canopy of 32 percent (Wallestad and Schladweiler 1974). Sage grouse nests are usually found under sagebrush (Patterson 1952) on drier sites in preference to the dense, tall sagebrush found along stream courses and on moist areas (Call 1979). The majority of the nests are located within 2 miles of the strutting ground, with occasional nests occurring 5 to 6 miles away (Wallestad and Pyrah 1974). Brood-rearing areas are usually in

relatively open sagebrush vegetation types; sage grouse avoid large tracts of dense sagebrush (Klebenow 1972; Wallestad 1971). Summer movements are directed toward drainage bottoms, moist meadows, and riparian areas where the succulent vegetation persists later in the growing season. During the winter, the grouse prefer large expanses of sagebrush that have greater than 20 percent canopy coverage (Eng and Schladweiler 1972; Wallestad 1975). Open, windswept ridges are used as wintering areas, with areas of taller sagebrush being utilized as snow accumulates.

Sagebrush leaves are the major, yearlong food item for sage grouse. Juveniles prefer insects for the first few weeks, but later they shift to a diet of succulent forbs (Klebenow 1969; Wallestad 1971). As the forbs become dessicated in late summer, a shift back to feeding on sagebrush leaves.

Water and associated moist vegetation are key components of good sage grouse habitat, with water distribution limiting the overall sage grouse distribution. Call (1979) reported that sage grouse are usually found within 1 to 2 miles of free water.

Sharp-Tailed Grouse

A population of Columbian sharp-tailed grouse inhabits the area along the periphery of the Medicine Bow National Forest. The majority of sharptail observations have occurred within the big sagebrush-rabbitbrush and mountain shrub habitat types (Bredehoft 1981). The aspen-shrub ecotones are also utilized by sharptails.

Blue Grouse

Blue grouse inhabit the lands adjacent to the Medicine Bow National Forest, as well as the Ferris and Seminoe mountains. The aspen woodland, aspen riparian, mountain shrub, and conifer habitat types are used by blue grouse. The succulent vegetation and large number of insects in the aspen and willow-waterbirch riparian types make these types high quality, brood-rearing habitats.

Waterfowl and Shorebrids

Waterfowl production varies across the EIS area and occurs along streams, natural ponds (Sand Dune Ponds and Chain Lakes) and stock-water reservoirs. Shorebird use is greatest during the spring and fall migration periods. Some breeding occurs on suitable mudflats and exposed shorelines.

Threatened or Endangered Wildlife Species

Endangered wildlife species that occur within the EIS area are bald eagles, peregrine falcons, and black-footed ferrets. An estimated 20 to 30 bald eagles winter along the North Platte River, and approximately the same number winter along the Little Snake River. Cottonwood trees are used extensively by the birds as hunting/roosting perches. The eagles also utilize the adjacent big game winter ranges as sources of carrion for food. Peregrine falcons have been seen migrating through the area during spring and fall. Although no eyries have been documented, occasional observations of birds during the summer suggests the areas may be used by breeding pairs. Skeletal evidence and unconfirmed observations of black-footed ferrets from within the area indicate that they may inhabit portions of the EIS area (Clark 1977; USFWS, BLM contract 1981).

No critical habitat has been designated for any threatened or endangered species in the EIS area. A detailed analysis of threatened and endangered species occurrence and possible impacts will be contained in the biological assessment.

Environmental Consequences

General Environmental Consequences

Within the variety of possible management actions, as described in the Proposed Action and other alternatives, there are potential beneficial and detrimental impacts on the wildlife communities in the EIS area. Most livestock grazing practices and associated vegetative cultural practices are neither inherently good nor bad, but generate acceptable or unacceptable results based on their application within a given environment. As an example, summer-long cattle use may be proper on some allotments and detri-

mental on others, depending on stocking rates, distributions, vegetative condition, and vegetative community composition and diversity. The impacts on the wildlife communities often depend on the application of the practice in a given situation rather than the practice itself (Autenreith 1979; Call 1981).

Grazing management research conducted by both range and wildlife managers has provided a foundation for analyzing beneficial or adverse impacts on both vegetation and wildlife communities. The following is a summary of some pertinent research to aid in understanding the impacts described in this section.

In the EIS area, and throughout the west, many riparian habitats have been greatly impacted by livestock grazing. Considering the high animal species diversity and high management priority associated with these habitat types, such impacts are significant and are key issues to be resolved. Crouch (1982), Knopf and Cannon (1982), and Masconi and Hutto (1982) all documented the detrimental effects of intensive livestock grazing on riparian communities. Usually these impacts center around excessive use of herbaceous and shrub species, soil compaction, and trampling. The result is often a loss of woody cover species (aspen, willow, cottonwood) which are important as lifeforms for reproducing and feeding for many wildlife species. However, negative impacts can be minimized or often eliminated when livestock utilization rates, season-of-use, and amount of rest are keyed to the riparian zones within an allotment (May and Davis, 1982). Class of livestock can also have both beneficial or detrimental effects on riparian vegetation. Platts (1982) demonstrated that properly herded sheep could graze a watershed without exerting direct, significant influences on riparian habitat.

Grazing impacts on upland habitat types center around direct and indirect interspecific competition between livestock and big game animals for forage, water, and/or space. Species with similar forgage preferences have greater potential for adverse competition when forage becomes limited. Within the EIS area, heavy-use allotments containing combinations of these animals such as cattle and elk, cattle and bighorn sheep, sheep and pronghorn, feral horses and elk, or sheep and mule deer may require intensive monitoring due to high dietary overlaps and the potential for overuse and competitive exclusion.

Social interaction between livestock and big game species has been documented for elk and cattle in the Baggs Herd Unit (Compton 1975) and for other areas of the west (Nelson and Burnell 1976; Mackie 1970; Knowles and Campbell 1982) for pronghorn and sheep in the Red Desert (Taylor 1975), and for deer and cattle (Dusek 1975; Firebaugh 1969; and Knowles 1975) in other western states. Such relationships should be considered when change of kind of livestock is being analyzed on crucial winter ranges.

Cultural practices which alter vegetative structure and composition can be either beneficial or detrimental, depending on project design. Diverse mosiacs of treated and untreated areas are preferred over large-block conversions of vegetative types. Large vegetative conversions would potentially eliminate the habitat of 16 species in the sagebrush community, (Divide Overland habitat relationship matrix), potentially reduce winter forage and cover for elk, mule deer, and pronghorn, and reduce the cover and forage for sage grouse, Columbian sharp-tailed grouse and blue grouse. However, the mosiac patterns of vegetative type conversions may often improve habitat for many wildlife species, including big game, by creating diverse vegetation communities.

Range improvement structures (i.e., fences, reservoirs, windmills) may again be detrimental or beneficial depending on design and application. Woven wire fences caused significant pronghorn mortality in the Red Desert (Riddle and Oakley 1974). However, properly designed fences with or without let-down panels are often important tools in habitat management and improvement when big game requirements are integrated into project design.

Water retention reservoirs have improved the habitat of many wildlife species, especially waterfowl and shorebirds in the EIS area. However, heavy grazing around these ponds removes

shoreline cover and reduces the quality of nesting (Kirsch 1969) and brood rearing habitat (Smith 1953). Proper grazing systems and/or protective structures (fences, islands) can alleviate these problems and create improved habitat. Big game animals may be adversely impacted by such structures if they are constructed where there is seasonal and interspecific competition for forage.

Windmills and troughs may provide valuable watering places for many species if designed with overflow pits for wildlife and left available throughout the summer season. However, many small animals have been found drowned in troughs without escape latters. Turning off available water during the dry summer months may be very harmful for nonmobile species.

Surface disturbance caused by energy and mineral exploration and development has resulted in a reduced availability of wildlife habitat. The loss of this habitat has reduced the food, cover, and space available to wildlife and livestock, thereby increasing the interspecific competition within areas of intense exploration and development. Table 2-10 summarizes the acres disturbed in each management unit within the EIS area.

Although no bald eagle critical habitat has been designated within the EIS area, the long-term impacts on wintering bald eagles using cottonwood/riparian and aspen/riparian habitats for roosting and loafing would depend on the continued availability of these habitat types. A biological assessment will be conducted to clarify these impacts. No other threatened or endangered species are believed to be impacted by the Proposed Action or any of the other alternatives.

Proposed Action

The assumptions used in development of the wildlife impact analysis for the Proposed Action are:

1. The short-term time frame lasts until 5 years after implementation of management action.

2. The long-term time frame is 6 to 25 years after implementation of management action.

3. Current big game population objectives are considered to be within the grazing capacities of the seasonal ranges. Additional range improvements may produce minor changes in seasonal distribution. However, they are not needed to maintain current population objectives.

Category M Allotments

The following is an analysis of the effects of the Proposed Action on wildlife habitat in Category M allotments.

In general, the Category M allotments contain good stands of diverse vegetation, which provide the structural diversity needed to support abundant wildlife communities. Because of the lack of adequately designed grazing systems, many of these allotments have areas of wetland and riparian habitat types that are below their potential to support a more abundant and diverse wildlife community. These areas may remain below their potential until adequate measures are taken to alleviate the problem (grazing systems, better water distribution, etc.).

Within the Category M allotments there are areas of intense livestock grazing on high priority habitat types. Pasture and allotment boundaries are not aligned to create a fairly uniform distribution of habitat types within the grazing unit, thereby causing overuse of some areas of high priority habitat, with resultant loss of vegetation and structural diversity.

Category I Allotments

Factor 1. Composition of desirable vegetation can be improved.

Many of the shrubs that are undesirable for livestock support relatively diverse wildlife communities. Removal of large blocks of shrubs would adversely affect the majority of the wildlife species that are dependent on the shrub canopy for reproduction and/or foraging. In addition, shrublands provide valuable seasonal habitat requirements for many of the featured species, including elk, mule deer, pronghorn, bighorn sheep, and sage and sharptailed grouse.

Vegetation manipulations could be used to the advantage of both livestock and wildlife. These treatments could be used to provide more high quality upland forage that would improve big game summer range and attract some of the grazing pressure from the higher priority riparian habitats. The design of the treatments could greatly influence future use by wildlife and should be considered in specific project designs.

Factor 2. Utilization, trend and condition can be improved.

The monitoring period provided for this factor would allow continued deterioration or nonimprovement of many areas of high priority habitat. However, as adjustments in grazing use and/or stocking levels were made, short-term and long-term benefits would be derived. As the vegetative resource was improved, the increased species composition and structure would permit a more diverse wildlife community. Some species that prefer a more open, heavily grazed condition, such as the mountain plover, might be adversely affected by the improved vegetative condition. However, these impacts would be minimal when compared to the overall advantages proper grazing levels would provide.

Factor 3. Present wild horse numbers may exceed BLM objective levels.

The reduction of excessive wild horse numbers would have beneficial effecs when the vegetation responded from the decreased grazing pressure. The reductions would provide improved vegetative cover and reduced interspecific competition for food, water, and space.

Factor 4. Present wildlife numbers may exceed Wyoming Game and Fish Department objective levels.

Currently, more liberal hunting seasons are in effect in those herd units where the population numbers exceed the Wyoming Game and Fish Department's population objectives. The reduction of the excess wildlife numbers would reduce the grazing pressure on the vegetation community. It is anticipated that this reduction would improve the vegetation community and might produce increased species abundance and/or diversity within the wildlife community.

Factor 5. Distribution of grazing animals can be improved.

Current utilization rates and distribution patterns are having an adverse impact on the potential of the wildlife community. High priority riparian habitat types do not contain the vegetative structural diversity and cover that are necessary for the associated wildlife community to express its full potential for diversity. Shifts in utilization rates and livestock distribution might alleviate some of the pressure on these sites. Reduced utilization of big game crucial ranges would be beneficial in maintaining these important habitats within grazing capacities.

The development of additional water sources could have a beneficial effect on the total wildlife community. These sources would alter the distribution of the livestock and thus, utilization of the vegetation. The result would be improvement of the vegetative structure and diversity and the dependent wildlife community. By providing additional water sources within the upland areas, the riparian zones might improve because of the decreased grazing use. However, the degree of decreased use might depend more on a grazing system rather than just water in the uplands.

The additional water might create a localized shift in the big game populations. However, water is not considered an overall factor limiting the size of the present populations. Upland game birds, waterfowl, and shorebirds will readily use these new developments, and some localized increases in breeding populations might occur.

The implementation of grazing systems and/or fencing would produce long-term benefits to the wildlife community by allowing more uniform grazing patterns and/or protection of important wildlife habitats. Properly designed grazing systems would allow a positive vegetation response and thus support a more abundant and diverse wildlife community.

Increased fencing might produce barriers to animal migrations and result in heavy winter mortality of migrating populations. Fences could be used to exclude livestock from important wildlife areas, i.e., riparian zones, springs, seeps, etc.). Rest from grazing might stimulate the vegetation and produce a beneficial impact to the wildlife community.

Factor 6. Turnout dates and season-of-use may not be consistent with range readiness and sound range management principles.

Because of the time needed for monitoring, the short-term effects of this action would be limited. Long-term benefits to wildlife could be substantial. Proper turnout dates and season-of-use would produce a positive response in the vegetative community. The added cover and structural diversity would provide added abundance and species diversity within the wildlife communities. After sufficient data have been collected to determine adjustments in turnout dates and/or season-of-use, it would take a number of growing seasons before the advantages (increased vegetative structure and diversity) to the wildlife community were realized.

Factor 7. Significant conflicts with other land uses other than grazing are evident.

The land-use conflicts under this factor are significantly impacting the wildlife communities through loss of forage, cover, and the presence of additional human intrusion. Table 2-10 contains the acreage within the various management units that have been disturbed by energy and mineral exploration and development within the EIS area. The habitat disturbance created by these actions has had an adverse effect on the wildlife communities and must be considered in the cumulative impacts to the resources.

Factor 8. Significant range suitability problems exist on the allotment.

The short-term and long-term impacts under this criterion would be the same as those in Factors 1 and 5. Areas that are unsuitable for livestock grazing because of slope are usually available for wildlife use. This type of use of the range provides better forage utilization and reduces the interspecific competition for food, cover, and space. Development of range improvements to increase livestock utilization of presently unsuitable habitat would increase the interspecific competition among livestock and wildlife.

Factors 9 and 10. Potential for high vegetative productivity exists in the allotment and condition ratings indicate the present productivity is below potential.

The short-term and long-term impacts under these criteria would be the same as those discussed in Factors 1 and 5.

Factor 11. There is a potential for a positive economic return on public investments.

The big game animals within the EIS area are managed by the Wyoming Game and Fish Department on a herd unit basis. These herd units encompass private, state, and federal lands with population objectives considering the impacts of big game populations to all the lands. Although additional forage production might result in increases in the number of big game animals on the federal lands, these additional animals may adversely impact adjacent private and state lands during certain seasons. Therefore, it is unlikely the big game population objectives would be increased, and no economic benefit to big game would occur from range improvement projects. Slight changes in local distributions might occur as range improvement are developed. An increase in nongame wildlife, upland game birds, and/or waterfowl might achieve a slight economic benefit. The improvement of a riparian zone or other priority habitat would have a much larger beneficial impact to wildlife.

Category C Allotments

The consolidation of several small individual allotments into one large allotment would produce overall beneficial impacts to wildlife. The short-term impacts would be minimal because of the time frame for establishing these consolidated allotments. The beneficial impacts could include reduction in the number of fences wildlife have to negotiate and improvement in

the diversity and structure of the vegetative community, resulting in an increase in abundance and diversity of the wildlife community.

Land exchanges would be beneficial where federal lands were blocked and comprehensive management plans implemented. Where priority wildlife habitat was traded or sold, the opportunity for intensive management would be lost. The conversion of these lands to intensive agricultural uses or urban expansion would cause an overall degradation of the wildlife habitat. This trend has been demonstrated in Wyoming and other western states (Patterson 1952; Rippe and Rayburn 1981).

Enhance Watershed, Wildlife, and Soil Resources

The short-term benefits to the wildlife community would be limited because of the monitoring period that would be required to determine the current range conditions. Where problem areas are known to exist (Muddy Creek winter range for domestic sheep, mule deer and pronghorn, and severely degraded riparian areas), benefits would be realized sooner because of the initiation of intensive management actions.

The long-term impacts would be related to the overall improvement of the vegetative community, thus allowing it to support a larger and more diverse wildlife community. Grazing systems, grazing treatments, range improvements, and cultural practices would be designed and utilized for the enhancement of the wildlife community as a whole. Those standard habitat types that are more important to the wildlife community would receive accelerated management and would show rapid improvement. The high priority standard habitat types would be used as the key areas within an allotment, thereby allowing grazing practices to be designed for their long-term improvement. In addition, there would be an associated increase in species abundance and diversity within the associated wildlife community. Where specific conflicts among livestock grazing and one or more featured wildlife species were identified, the livestock grazing would be altered to produce a beneficial impact to the featured species and the total wildlife community.

The population objectives established by the Wyoming Game and Fish Department are considered to be below the wildlife grazing capacity. However, because of the potential adverse impacts to private and state lands within a herd unit, the population objectives would be maintained since they are based on user and landowner concerns as well as the overall grazing capacity. As a result, there would be no population increases above the big game herd unit objectives and no improvement in the economic benefit from wildlife. However, if crucial big game ranges were improved significantly for the benefit of these species, large population lesses may be minimized in severe winters because of improved forage availability and condition.

The nongame wildlife populations would be the main beneficiaries of the alternative. The increased vegetative structure, cover, and forage would allow larger and more diverse populations of the nongame portion of the wildlife community. Upland game birds and waterfowl would also receive some beneficial impacts. However, only minimal increases in their populations would be expected.

Enhanced Livestock Grazing

The impacts from this alternative would be similar to those described for the Proposed Action since the allotment categorization, management actions, wild horse objectives, standard operating procedures, and AMP implementation procedures are the same. The major difference would be in those allotments where livestock numbers would be increased as a result of new range improvements and cultural practices.

The impact of increasing livestock numbers (or longer seasonal use) would vary between allotments, depending on the resulting distribution of those animals. If new range improvements on upland sites attracted livestock away from the high priority riparian habitats onto moderate or low priority habitat types, then significant benefits to the wildlife communities would be realized. Reduced ungulate use of the riparian zones would improve the existing situation by allowing plants to retain more vegetative matter as residual cover and successfully produce young growth. Over a given time period,

these types would maintain or improve their vegetative structural diversity, and their wildlife difersity as different age classes of woody plants mature. However, if increased livestock numbers result in more animals using the bottoms at a level greater than the existing situation, then these areas would be expected to decline at a greater rate. Woody plant reproduction would not have the opportunity to replace old, decadent plants, which would result in a long-term loss of the canopy species. As structural diversity of the vegetation declined, animal diversity would also decline.

Similar beneficial or detrimental impacts would be expected for the big game animals, depending on the location of the range improvements in relation to the seasonal ranges. Changes in livestock distributions that would reduce forage competition on crucial winter ranges would be of great benefit, regardless of increased livestock numbers. However, if the increased numbers resulted in greater forage competition and crucial range condition decline, then, under this alternative, big game objectives would have to be reduced to be within grazing capacities.

If energy related impacts reached a cumulative level (with or without changes in livestock distributions) that would require lower adjustments in grazing capacities, then the big game population objectives would be expected to take the brunt of that reduction, while livestock numbers would be held at present or increased levels. This would have the potential to significantly reduce big game populations over the long term, especially if crucial winter ranges were impacted. If the Wyoming Game and Fish Department implemented such recommendations, the result would be significant recreational and economic loss from the reduction in harvest generated from these populations. Thus, this alternative would not maintain multiple-use objectives between energy related activities and wildlife objectives.

No Action

Essentially, this alternative would result in a continuation of the existing situation for wildlife as shown in Table 2-10. Many high priority habitat types would continue to be overutilized, resulting in a deteriorated state of vegetative structure and diversity. The abundance and species diversity of the wildlife community would remain below the full potential of the habitat types.

Limited areas of habitat within allotments under certain existing grazing systems would continue to show some improvement. This improvement would produce a beneficial response within the wildlife community. Some areas of habitat would continue to deteriorate because of excessive use by grazing animals, thereby producing greater interspecific competition for food, cover, and space. The continued deterioration of these habitats might result in their long-term loss and/or reduced grazing capacities.

Beneficial range improvements would not be implemented under this alternative, neither would changes in season-of-use and kind of livestock. Without many of these improvements, the full potential of the wildlife community would not be realized.

Mitigation Measures

Range improvement projects will be used to ease some of the grazing pressures on the high priority habitat types. Water developments will be established to obtain better forage utilization patterns. These developments will be located within lower priority habitats to allow reduced grazing of the high priority habitats types. However, part of an allotment may be left undeveloped to provide areas of lighter utilization. These areas will be associated with strutting/nesting complexes, parturition areas, and other crucial wildlife habitats.

Water impoundments will be designed to maximize waterfowl and shorebird use. Lokemoen (1973) suggested that impoundments be stock ponds of at least 1.5 surface acres in gently rolling terrain where large volumes of sediment do not collect in the reservoir. Evans and Kerbs (1977) suggested that mudflats on smaller reservoirs will encourage shorebird use, and that larger reservoirs will have lush emergent and shoreline vegetation for waterfowl use. Where

possible, islands or spit-cutoffs will be built at the time of reservoir construction. These developments receive extensive use by waterfowl and provide secure nesting and loafing habitat. Where possible, overflows to water developments will be designed with an area of subirrigated grassland, which will provide lush forage for many species of wildlife (sage grouse, shore birds, small rodents) and will be built in locations that will minimize water fluctuations.

In order to maintain the desired summer distribution of big game animals, water wells will be left on during the driest portion of the summer when water can limit animal distribution. This will help to obtain a more uniform utilization of wildlife forage. Within crucial winter ranges water developments will be kept at the minimum needed to provide sound livestock management. When livestock are not present, water developments will be shut off when possible to help ensure minimal wildlife grazing of these areas during noncrucial time periods.

Vegetation manipulations will be used to the advantage of both livestock and wildlife. These treatments will provide more high quality upland forage, which may reduce grazing pressure on the higher priority habitat types. The design of the treatment will greatly affect future use by wildlife. Treatments will be in random, wandering patterns, avoiding treatment of regular blocks and strips. These patterns will yield increased edge effect and interspersion of type, which in turn will provide greater utilization by wildlife populations (Leopold 1933). Where shrub treatment is used to rehabilitate big game winter range, the treatments will be large enough to provide suitable areas of use by livestock, and to prevent concentrations of browsing animals (Medin and Ferguson 1971). Where upland game birds utilize an area, the treatments will be no more than 100 yards across. Approximately equal untreated areas will be left adjacent to provide foraging openings and adequate security cover. To ensure adequate availability of important wildlife habitat (crucial winter ranges, nesting cover, etc.) no more than 15 percent of any one identified area will undergo alteration at any one time. This percentage will include habitat lost to other developments.

Prescription grazing will be used to shift or maintain plant communities, and interspecific competition will be avoided by regulating the seasons of livestock use. Season-of-use by livestock will be planned to provide minimal forage and spacial competition with important wildlife use. Season-of-use will also be used to improve big game winter ranges. Spring concentration of livestock will be utilized to provide the shrubs with a competitive advantage for reestablishment (Longhurst et al. 1977, and Neal 1982). This treatment will be combined with shrub treatments on crucial winter ranges to aid in reestablishing viable shrub stands. This method will also be used to improve domestic winter sheep ranges, since shrubs are an important forage plant for winter sheep.

Fencing will be used as a temporary method to eliminate livestock grazing and allow a period of rest for the improvement of high priority habitats. Springs, seeps, and selected riparian zones may have to be fenced to achieve management objectives. Fences will also be used to achieve better livestock distribution within an allotment.

The use of grazing systems will probably be the best long-range solution to improving the vegetative condition of the standard habitat types. When establishing such systems, the riparian areas will receive special consideration as key management area (May and Davis 1981). Utilization rates greatly influence the vegetative and wildlife response to grazing. Hormay (1970) stated that 60 percent utilization approaches heavy grazing. Platts (1982) stated that habitat alteration occurs at utilization rates of 65 percent or more, while insignificant alteration occurs at 25 percent utilization rates. His research also indicates that with proper livestock intensity and distribution, the forage in high elevation meadows can be utilized without placing undue stress on the stream and its riparian environment. A utilization rate of 50 percent for the key species within the riparian areas will allow these areas to improve and the problems as noted in the Affected Environment will be alleviated.

Season-of-use and amount of rest which is allowed will also be important considerations when establishing a particular system. Martin

(1978) indicated that cattle begin to browse tree seedlings or sprout reproduction late in the spring, and recommended that cattle be removed by this period for several consecutive years. Kauffman et al. (1982) compared the effects of late season grazing to total exclusion of grazing and found no significant differences in avian communities. Also, after an initial decrease, small mammal populations recolonized to essentially the original species composition and densities. Dahlem (1978) found that on a riparian system in Nevada, two years' rest provided excellent results. Davis (1982) found that a four pasture rest rotation system with back to back spring-summer rest to be the best system for rehabilitation of riparian areas in the arid southwest. Myers (1981) recommended that a system should be designed to include not more than one hot season of grazing treatment in four years. The following systems shown in Tables 2-11 and 2-12 address many of these concerns. In order for these or any other properly designed system to produce beneficial habitat improvements for wildlife, the pastures must be stocked properly and the formula has to be followed. Adjustments in the system can be made only after a complete cycle. In addition, there can be a complete cycle between additional adjustments.

TABLE 2-11

THREE PASTURE SYSTEM

	Pasture 1	Pasture 2	Pasture 3
Year 1	Rest	Spring-early summer grazing	Late summer-fall grazing
Year 2	Late summer-fall grazing	Rest	Spring-early summer grazing
Year 3	Spring-early summer grazing	Late summer-fall grazing	Rest

TABLE 2-12

FOUR PASTURE SYSTEM

	Pasture 1	Pasture 2	Pasture 3	Pasture 4
Year 1	Rest	Spring grazing	Summer grazing	Fall grazing
Year 2	Fall grazing	Rest	Spring grazing	Summer grazing
Year 3	Summer grazing	Fall grazing	Rest	Spring grazing
Year 4	Spring grazing	Summer grazing	Fall grazing	Rest

Unavoidable Adverse Impacts

Proposed Action

Because the range improvements and establishment of better grazing systems would occur primarily in the high priority allotments, many areas within the low priority allotments would remain untreated. The result would be that these areas would remain in a continued state of degradation or nonimprovement. Since the diversity and structure of the vegetative community would not be improved in these areas, the abundance and diversity of the wildlife community would not increase, and might decrease.

Enhance Watershed, Wildlife, and Soil Resources

Unavoidable adverse impacts would be the same as those for the Proposed Action. However, they would be of shorter duration because management actions would emphasize the watershed, wildlife and soil resources.

Enhanced Livestock Grazing

The impacts from this alternative would be similar to those described in the Proposed Action. Untreated allotments with high priority habitats in a presently declining trend or in a condition below wildlife ocmmunity potential would continue to decline or remain in a nonimproved condition. Areas with additional livestock use that would not be compatible with wildlife objectives (game or nongame) would result in poorer quality habitat or increased forage competition. Increased energy impacts on crucial big game under ranges might result in reduced habitat or grazing capacities. The result might be the reduction of big game population objectives in order to maintain ungulate use within lower grazing capacities.

No Action

Under this alternative, no new grazing systems or cultural treatments, which would produce a beneficial impact to the wildlife community, would be initiated. No changes in current AMPs would be allowed, and as a result, the continued degradation of priority and important habitat types and a loss in the abundance and diversity of the wildlife community would occur in areas that are in a negative trend in vegetative condition.

Short-Term Use Versus Long-Term Productivity

Proposed Action

Monitoring

This action would produce no immediate changes in the wildlife community. However, management actions based on the monitoring would consider the wildlife concerns and should provide beneficial impacts to the wildlife community.

Vegetation Manipulations

Implementation of properly designed treatments could have an overall beneficial effect on the wildlife community. The creation of more habitat diversity and associated edge and the rejuvenation of deteriorated habitat types would promote the enhancement of the wildlife community.

Reduction of Wild Horse Numbers

This action would decrease the interspecific forage and spatial competition among the wild horses and various wildlife species. There would be a beneficial impact to the long-term maintenance of the big game populations.

Adjusting Utilization Rates and/or Livestock Distribution

This action would alleviate some of the grazing pressure on the priority habitat types and would produce a positive response in the vegetative community. The associated wildlife community would then respond with an increase in species abundance and diversity. Allotments lacking grazing systems and/or improvements with cottonwood, willow, and/or aspen stands in a declining trend might result in the long-term loss of these woody canopy species if plant vigor and reproduction were not improved by changes in livestock distributions.

Development of Additional Water Sources

This action would produce localized shifts in big game populations, and some habitats might be subjected to a lower grazing itensity. Nongame species, upland game birds, and waterfowl would show localized increases as the water developments were constructed.

Grazing Systems and/or Fencing

Properly designed systems would produce long-term benefits to the wildlife community by allowing more uniform grazing patterns and/or protection of important wildlife habitats. Properly designed systems would produce a positive vegetative response and thus support a more abundant and diverse wildlife community. Fences designed along bureau standards would have a minimal impact to migrating wildlife species. Allotments lacking such systems with high priority cottonwood, willow, and/or aspen communities might continue in a downward trend, resulting in the loss of these habitats if plant vigor and reproduction were not at a level that would maintain long-term production of the canopy species. This would affect the loss of the canopy life form for 40 to 48 percent of the animal species inhabiting these habitats. The long-term loss of these species would result.

Proper Turnout Dates and Season-of-Use

Implementation of these would produce a positive response in the vegetative community. The additional cover and structural diversity would provide added abundance and species diversity within the wildlife communities.

Development of Range Improvements

Developing range improvements to increase livestock utilization of unsuitable habitat would increase the interspecific competition between livestock and wildlife in existing unsuitable areas. Projects which consider wildlife concerns would produce a beneficial response from the priority habitats.

Increased Vegetative Production and Composition

Any increase in production and/or composition of the vegetative community would produce an increase in species abundance and/or diversity of the wildlife community.

Land Exchanges

These would be beneficial where federal lands were blocked and comprehensive wildlife management plans implemented. Where priority wildlife habitat was traded or sold, the opportunity for intensive management would be lost. The conversion of these lands to intensive agricultural uses or urban expansion would cause an overall degradation of the wildlife habitat.

Enhance Watershed, Wildlife, and Soil Resources

The long-term productivity would be related to the overall improvement of the vegetative community, thereby allowing it to support a larger and more diverse wildlife community. Grazing systems, grazing treatments, range improvements, and cultural practices would be designed and utilized for the enhancement of the wildlife community as a whole. The nongame wildlife populations would be the main benefactors of this alternative. The increased vegetative structure, cover, and forage would produce larger and more diverse populations of the nongame portion of the wildlife community.

Enhanced Livestock Grazing

The long-term impacts from this alternative would be similar to those described in the Proposed Action. The most significant long-term loss would center around the loss of the deciduous tree and shrub overstory plants in the high priority habitat types in those allotments that would be untreated, unimproved, or experience additional livestock use in the bottoms. The long-term reduction in the production of these types would mean the loss of nesting/reproducing habitat or 40 to 48 percent of the species in these types.

The potential reduction of big game population objectives in order to remain within grazing capacities as livestock numbers and/or energy related impacts increased, would reduce the long-term harvest of those populations.

Although acceptable herd productivity would be maintained, an economical and recreational loss from existing herd unit harvest levels would result.

No Action

Limited areas of habitat within allotments under certain existing grazing systems would continue to show some improvement. This improvement would produce a beneficial response within the wildlife community. Some areas would continue to deteriorate because of excessive use by grazing animals, thereby producing greater competition for food, cover, and space. If range improvements and changes in season-of-use and/or kind of livestock were not implemented, the full potential of the wildlife community would not be fully realized. High priority habitat and animal communities would decline where the tree/shrub canopy would be lost due to a lack of reproduction. From 40 to 48 percent of the canopy nesting wildlife species would be lost from these habitats as the old, decadant canopy plants died and were not replaced.

Irreversible and Irretrievable Commitments of Resources

Proposed Action and the No Action Alternative

Within the high priority allotments there would probably be no irreversible or irretrievable commitments of resources. However, within the moderate to low priority allotments there are possible commitments of resources. Because of the lack of implementation of range treatments or grazing practices, increased head-cutting of streams would probably occur. The water table would then drop, causing a deterioration of the associated riparian zone. Reduction in the riparian vegetative community would cause an associated decline in the wildlife community. Canopy tree and shrub species may not be able to replace old, decadent plants due to a loss of vigor, edaphic conditions, or viable reproduction, resulting in the loss of those animal species that depend on the canopy vegetation for nesting or feeding requirements.

The lack of cultural treatment and/or grazing practices might allow shrub stands and/or aspen stands to deteriorate to the point where they could not be rejuvenated. Aspen stands that reach a certain age without seedling production might be unable to produce seedlings when they are treated. The loss of the wildlife communities that are associated with these habitat types could not be mitigated.

Enhance Watershed, Wildlife, and Soil Resources

The commitments would be the same as for the Proposed Action. However, the shorter implementation of beneficial practices would reduce the total amount of resources that are committed.

Enhanced Livestock Grazing

The commitments would be similar to those in the Proposed Action. However, they would probably be more extensive as a result of intensified grazing. In addition, if big game population objectives have to be reduced because of the lowered wildlife grazing capacity, the reductions would be irretrievable until a more beneficial management practice is initiated.

WILD HORSES

Affected Environment

Population and General Information

There are an estimated 1,464 wild, free-roaming horses in the Divide EIS area. There are no wild burros in the area. Wild horses occur throughout the EIS area, except for the portions east of highway U.S. 287 and east of the Sage Creek Road. Table 2-13 summarizes the wild horse inventory information for the EIS area. Map 3 shows, by herd management area, where wild horses exist.

The general condition and health of the wild horses appears to be good. Injured, sick or emaciated horses are rarely seen. Wild horses in the EIS area can generally be viewed in a natural setting unmarred by manmade intrusions. These horses probably are descendents of horses that escaped from or were released by local ranchers. Since the early 1900s, the population of horses has continued to increase. Additional in-

TABLE 2-13

SUMMARY OF WILD HORSE INVENTORIES

Date of Inventory	Area 1 1/	Area 2 2/	Area 3 3/	Area 4 4/	Area 5 5/	Employer of Observer	Comments
August 1964	215	215	387	387		Wyoming Game and Fish Department	The number of horses observed (215) includes Areas 1 and 2. The number of horses observed (387) includes Areas 3 and 4.
August 1972	853	853				Wyoming Game and Fish Department	The number of horses observed (853) includes Areas 1 and 2.
March 2, 5, 6, 1974	612	145	181	330		BLM	
February 13, 27, 1975	489	479	275	377		BLM	
February 28 and March 1, 1975						BLM	
March 13, 1975					46	BLM	
February 2, 3, 4, 1976	1,002	1,002	687	687		BLM	The number of horses observed (1,002) includes Areas 1 and 2. The number of horses observed (687) includes Areas 3 and 4.
September 19, 1977		230		330			
September 25, 26, 27, 1977	876		240			BLM	
October 16, 1978		152	279			BLM	
October 30, 1978		209				BLM	
December 19, 1978					71	BLM	

TABLE 2-13--CONTINUED

SUMMARY OF WILD HORSE INVENTORIES

Date of Inventory	Area 1 1/	Area 2 2/	Area 3 3/	Area 4 4/	Area 5 5/	Employer of Observer	Comments
January 9, 1979	373	59				BLM	Only counted the North Barrel Allotment in west checkerboard. The number of horses observed (373) only includes the Sand Creek, Cow Creek, Adobe Town, Willow Creek, Espitalier, Little Powder Mountain, Crooked Wash, and Corson Springs allotments.
January 31, 1979			161			BLM	
October 3, 1979	1,178	156	336	353		BLM	
October 22 and 23, 1979					83	BLM	
March 17, 1980					85	BLM	
May 28 and 29, 1980	659	28	195	87		BLM	
July 8, 1980					163	BLM	
September 22, 1980	1,131	169	160	300		BLM	
November 28, 1980					79	BLM	
March 9, 1981					172	BLM	
April 9 and 10, 1981			152	304		BLM	
July 1981	493	105				BLM and Wyoming Game and Fish Department	Excludes area west of the Bitter Creek Road.

TABLE 2-13--CONTINUED

SUMMARY OF WILD HORSE INVENTORIES

Date of Inventory	Area 1 1/	Area 2 2/	Area 3 3/	Area 4 4/	Area 5 5/	Employer of Observer	Comments
March 3, 1982					117	BLM	
July 15, 1982					141	BLM	
August 2 and 3, 1982	942	25	259			BLM	

1/ Area south of the checkerboard and west of Highway 789.
2/ Checkerboard south of Interstate 80 and west of Highway 789.
3/ Area south of the checkerboard and east of Highway 789.
4/ Checkerboard south of Interstate 80 and east of Highway 789.
5/ Checkerboard north of Interstate 80.

Note: See Map 3 for these locations.

formation on inventories, characteristics, and history of wild horses in the Divide EIS area is contained in the Divide Basin Planning Unit URA-3 and Overland Planning Unit URA-3.

Habitat

No crucial habitat for wild horses has been identified in the EIS area. Grazing by horses occurs on all the vegetation types of their range. Horses prefer to feed along draws, ravines, and other protected areas such as north- or east-facing slopes and basins. However, in winter the horses feed on exposed ridges that have blown free of snow. The wild horses in the Divide EIS area consume approximately 15,810,000 pounds of forage (air dry) and 5,340,000 gallons of water annually.

Distribution and Movement

The wild horses within the Adobe Town and Flat Top herd management areas (area 1) are considered free-roaming because of the open spaces. Movement of the wild horses within the checkerboard land pattern (areas 2 and 4) and the Doty Mountain/Cherokee area (area 3) is so severely restricted by the large amount of fencing that they cannot be considered free-roaming. The horses of the Stewart Creek/Chain Lakes herd (area 5) mix with the horses in the Seven Lakes area to the north and should be considered free-roaming. The horses are generally concentrated in the areas shown on Map 3.

Movement for each band within the general distribution areas is normally confined to a 4- or 5-square mile area in which the animals forage and water. Areas of horse use are dependent on water supplies. During late summer, when water supplies are limited, horse movements are also limited. Areas of concentration during the late summer depend on rainfall patterns, mainly afternoon thunderstorms, and reliable water sources. Thunderstorms fill collection basins, making water available to the horses. As these water sources begin to dry up, horses move to other areas that have received rainfall and contain better forage. During extended periods of no rainfall, reliable water sources become the centers of concentration. As winter approaches and snow begins to accumulate, the horses tend to concentrate on wind-blown areas where forage is more readily available. Vegetative species available for consumption and forage conditions seem to play a minor role in the movement of horses. Areas that may be considered marginal in terms of forage availability may still be utilized by horses if water is nearby.

Movement of horses between herd management areas or horse areas does occur. Horses from the Adobe Town herd management area migrate back and forth into the Rock Springs BLM District. Limited movement occurs between the Adobe Town herd management area, the checkerboard land pattern, and the Flat Top herd management area. Movement of horses from the Flat Top herd management area into the Doty Mountain/Cherokee area is restricted by Wyoming Highway 789.

Environmental Consequences

General Information and Assumptions

For purposes of this analysis, the short term is defined as occurring from the time the grazing decision are issued until 5 years after. The long term is defined as 5 to 20 years after issuance of the grazing decisions. In Table S-1 (located in the summary section of the EIS), the long-term effects on wild horses are compared for the Proposed Action and alternatives.

Proposed Action

The Proposed Action identifies management actions for three different categories in which allotments are placed. The means by which an allotment would be managed depends on whether it were in the M, I, or C category (see Part 1 of this EIS on categorization). Wild horses cannot be managed on an allotment basis because they move among allotments. They must be managed on an area basis if management is to be effective. Table 2-13 shows the number of horses counted, the date of the count, and the proposed management level for each herd area within the EIS boundaries. A wild horse herd area could include allotments that were not all in the same category. The following is a discussion of how management of each of the three categories would impact the wild horses.

Category M

Within the Category M allotments, there are no significant forage competition or other conflicts among wild horses and other grazing animals nor are there significant problems concerning the vegetative condition and trend or utilization.

Since management actions for the Category M allotments generally recommend a continuation of the present management, the wild horses would be managed as specified in an HMAP or to meet population objective levels.

Category I

Management actions for two factors (Factors 2 and 3) would have impacts to the wild horses.

Factor 2. Evaluation of utilization, trend, and condition data for the allotment indicates the vegetative resource can be improved.

If utilization, trend, and condition could be improved on an allotment containing wild horses, objectives would be developed and a monitoring program implemented to evaluate the effectiveness of present management in achieving those objectives. If the monitoring data indicated that the objectives were not being achieved, adjustments in grazing use, including wild horse use, could be made. Horse numbers would be managed at objective levels over the short term, while monitoring data was being collected. If monitoring results indicated overuse of the range, wild horse numbers would be adjusted downward accordingly. If monitoring results indicated satisfactory use and forage production, wild horse numbers would remain at objective levels as indicated in Table 1-8. Managing horse numbers in balance with the vegetative resource should improve both the wild horses' health and condition as a result of the improved forage conditions.

Factor 3. Present wild horse numbers may exceed BLM management objective levels.

If current wild horse use exceeded BLM management objective levels, they would compete for forage and water with other grazing animals and with members of their own herd. This competition would produce emaciated horses, and the health of the herd would begin to deteriorate. Managing wild horse numbers at the appropriate levels would allow sufficient water and forage for proper maintenance of the horse herds.

Category C

No Category C allotments contain wild horses.

Enhance Watershed, Wildlife, and Soil Resource

Implementing actions to enhance watershed and soil resources would also generate an improved vegetative resource (see Vegetation section). This would lead to additional quality forage that wild horses could use, which in turn would improve the overall condition of the horses. As long as wild horses were not a factor preventing enhancement of the identified resources, the horses should benefit, and the management levels would be maintained as indicated in Table 1-8. However, if monitoring data showed that the horses were a factor preventing enhancement of the resources, the population of horses would be reduced or removed as needed to accentuate the identified resources. Also, if the horses were in competition with wildlife and the wildlife numbers were below the Wyoming Game and Fish Department's Strategic Plan objective levels, the horses would be reduced in order to meet these objectives.

Fencing of streams and other water sources to accelerate their rate of improvement would leave fewer water sources available for the horses to utilize. The result would be that the horses would move to different areas where water was available or would remain around existing water sources. If horse use continued and became excessive around the remaining available watering areas, the horse numbers would have to be reduced to prevent resource deterioration.

If a substantial number of horses were removed from the area, there would be less genetic variability within the population and there would be fewer opportunities for the public to view the wild horses in their natural setting.

Enhanced Livestock Grazing

Under this alternative, the number of wild horses to be managed would be maintained at the management objective levels indicated in Table 1-8.

The summer months are the major breeding time for wild horses. During these months, considerable mixing of herds occurs. Newly constructed fences would limit the mixing of the various herds, thereby increasing the possibility of genetic drift and decreasing variability within each herd.

With an accelerated management program, additional water developments would be constructed. In dry areas the wild horses would no longer have to rely on thunderstorms to fill collection basins or on the few scattered, reliable water sources. Through the accelerated range improvement program, the horses would benefit by being able to utilize new water developments.

No Action

No significant changes from the existing situation would be expected under this alternative. Since livestock and wild horse numbers would remain at their present levels, forage competition would also continue at its present level. Without additional water sources, there would be increased competition for water among livestock, wild horses, wildlife, and energy drilling companies, especially in the long term as energy demands on water increased.

Mitigation Measures

When livestock are not using adjacent, public land allotments, gates will be left open to allow mixing of horse herds and help prevent fence destruction.

Water wells in various locations will be turned on or off at certain times to encourage the horses to move to different areas. This will help prevent excessive use around water sources.

Unavoidable Adverse Impacts

Proposed Action

If monitoring data indicated overuse of the range, wild horse numbers could be adjusted.

Where present wild horse numbers exceed BLM management objective levels the horse numbers would be reduced to meet these levels.

Enhance Watershed, Wildlife, and Soil Resources

If wild horse use was in conflict or competition with one or more of the resources identified by this alternative, the number of horses would be reduced or removed as needed.

Where present wild horse numbers exceed BLM management objective levels the horse numbers would be reduced to meet these levels.

Enhanced Livestock Grazing

Where present wild horse numbers exceed BLM management objective levels the horse numbers would be reduced to meet these levels.

No Action

If forage competition became severe and damage began occurring to the vegetative resource the horse numbers would be reduced as needed.

Short-Term Use Versus Long-Term Productivity

Proposed Action

In areas where wild horse numbers exceed objective levels, the short-term use by wild horses would decrease as a result of the reduction of horses to meet management objective levels. The long-term productivity of the wild horses should benefit with respect to the improved health and condition of the wild horse population.

If monitoring data indicated that resource objectives were not being achieved, adjustments in grazing use, including horse use, could be made. Short-term use would continue while monitoring data was being collected. Long-term productivity would decrease at first and then benefits such as improved health and condition of the horses would be realized as a result of improved forage conditions.

Enhance Watershed, Wildlife, and Soil Resources

In areas where wild horse numbers exceed objective levels, the short-term use by wild horses would decrease as a result of the reduction of horses to meet management objective levels. The long-term productivity of the wild horses should benefit with respect to the improved health and condition of the wild horse population, but might decrease with respect to numbers.

If monitoring data indicated that resource objectives were not being achieved, adjustments in grazing use, including horse use, would be made. Short-term use would continue while monitoring data were being collected. Long-term productivity would decrease as a result of reductions in the horse numbers and probably would be maintained at the depressed levels.

Enhanced Livestock Grazing

In areas where wild horse numbers exceed objective levels, the short-term use by wild horses would decrease as a result of the reduction of horses to meet management objective levels. The long-term productivity of the wild horses should benefit with respect to the improved health and condition of the wild horse population, but might decrese with respect to numbers.

No Action

Short-term use would remain unchanged. Long-term productivity would also remain relatively unchanged, with the exception that the health and condition of the horses might decline slightly.

Irreversible and Irretrievable Commitments of Resources

Proposed Action and No Action Alternative

None.

Enhance Watershed, Wildlife, and Soil Resources Alternative and Enhanced Livestock Grazing Alternative

If the genetic variability within a herd management area decreased, the variability would remain at the depressed level.

FISHERIES

Affected Environment

Streams

Thirty-three trout streams in the Divide EIS area flow for part of their lengths on public land (Table 2-14). Brook trout, rainbow trout, brown trout, cutthroat trout, and mountain whitefish are the important game fish present in EIS area streams. The Colorado River cutthroat trout is present in two streams on public land; the status of this trout is best termed as sensitive (Binns 1977). Colorado River cutthroat trout and mountain whitefish are the only salmonids native to the EIS area and are found in the Little Snake drainage. No other important game fish or rare, threatened, or endangered fish are present in EIS area streams.

Grazing by livestock occurs along each segment of trout streams that cross BLM public land. Damage to these stream segments by livestock ranges from light to heavy. Most streams receive only light to moderate damage, but in a few cases heavy damage occurs.

The North Platte River, which is not considered part of the EIS area for purposes of this analysis, is an important fishery that is affected by livestock grazing within the EIS area. This effect comes from Sage Creek in the form of clay turbidity, which results partly from livestock grazing in the erosive Sage Creek drainage.

Approximately 57 map miles of trout stream cross public lands in the EIS area. Taking into account stream meander not measurable on maps, there are approximately 87 miles of stream channel on public land that contain trout (Table 2-14). These waters are all creek-sized waters, less than 15 feet wide. None of these streams are of more than regional importance, according to a Wyoming Game and Fish Department classification, and in general the streams do not receive heavy fishing pressure. Most of the trout stream mileage in the EIS area is found on private lands. However, streams flowing on BLM-administered lands contribute significantly to stream fishing opportunities available in the EIS area, since vehicular access is generally bet-

TABLE 2-14

SUMMARY OF DIVIDE EIS AREA BLM TROUT STREAM HABITAT

	BLM[1] Channel Miles	Average[2] Trout Habitat Condition	Game Fish[3] Present
Eastside Drainages (Saratoga vicinity)			
Sage Creek[4]	5.7	Poor	BK,BR,RB
Trapper Creek[5]	0.2	Fair	BK
Jack Creek	0.5	Good	BR,BK
McLain Creek	0.4	Good	BK,BR
North Spring Creek	0.7	Good	BK,BR,RB
South Spring Creek	1.5	Excellent	BK,BR
Centennial Creek	5.0	Good	BK
East Fork South Spring Creek	2.8	Good	BK,BR
Heather Creek	1.5	Good	BK,BR
North Heather Creek	2.0	Poor	BK
South Heather Creek	2.0	Good	BK
Shingle Creek	0.6	Good	BK
Southside Drainages (Baggs to Continental Divide vicinity)			
Savery Creek (Upper)	5.0	Fair	BK,RB
Savery Creek (Middle)[4]	0.9	Fair	RB
North Fork Savery Creek	6.0	Fair	BK,RB,WF
East Fork Savery Creek	1.2	Good	BK
Little Savery Creek	6.5	Fair	BK,RB
Big Sandstone Creek	0.3	Good	CT,RB,BK,WF
Little Sandstone Creek	1.3	Poor	RB
Hell Canyon Creek	0.8	Fair	CT
Dirtyman Fork Savery Creek	0.3	Fair	CT
McKinney Creek[4]	7.5	Fair	BK
Muddy Creek	0.7	Fair	BK
Grove Creek	3.0	Fair	BK
Stoney Creek	1.4	Fair	BK

TABLE 2-14--CONTINUED

SUMMARY OF DIVIDE EIS AREA BLM TROUT STREAM HABITAT

	BLM[1] Channel Miles	Average[2] Trout Habitat Condition	Game Fish[3] Present
Southside Drainages (continued)			
Littlefield Creek[4]	6.8	Fair	BK
Northside Drainages (Ferris/Seminoe vicinity)			
Sand Creek	2.0	Fair	BK
Muddy Creek	2.2	Fair	BK
Pete Creek[4]	5.2	Good	BK
East Fork Pete Creek	5.5	Fair	BK
Cherry Creek	3.4	Good	BK
East Fork Cherry Creek	1.8	Fair	BK
Long Creek	2.6	Fair	BK

1/ BLM channel miles equals sinuosity times map miles.
2/ Average trout habitat conditions (refer to Aquatic Files in District Library).
3/ Game fish speices: BK = brook trout; BR = brown trout; CT = cutthroat trout; RB = rainbow trout; and WF = whitefish.
4/ Sections of these streams have been identified as having sustained heavy livestock damage to the detriment of BLM trout habitat.
5/ Indentation denotes tributary status. (For example, Trapper Creek is a tributary to Sage Creek.)

ter than on U.S. Forest Service land, and, unlike private streams, it is not necessary to obtain permission or to pay fees to fish on public land.

A typical segment of trout stream flowing on public lands in the EIS area would be found in the foothills and would provide a fair fishery for wild brook trout. Only a few miles of streams crossing public lands in the Savery Creek drainage are stocked with hatchery trout.

EIS area streams were surveyed in 1976-1981, utilizing BLM survey techniques (Duff and Cooper 1978). Each stream was evaluated only once; therefore, no trend data are available. Trout stream habitat conditions have been rated based on pool-to-riffle ratio, spawning habitat, pool habitat, ungulate damage to banks, channel stability, and other factors. Streams in the EIS area are generally in fair to good condition.

Lakes, Ponds, and Reservoirs

Standing waters on public lands with game fish potential are scarce in the Divide EIS area. In the northern portion of the EIS area there are a few lakes and ponds associated with sand dune areas that have been or could be successfully stocked with trout. Although these waters are grazed along their banks, livestock grazing probably has little effect on them. The major problems with these lakes is shallowness and a fluctuating climate, which enables these waters to support trout only during favorable periods when water tables remain high.

In the south there are only two small reservoirs on public land (Little Robbers Gulch reservoir and Little Sage detention reservoir) that support trout and are grazed by livestock. Grazing probably has little effect on their fish populations. Teton Reservoir, which is fenced from grazing, may be affected by livestock grazing upstream.

In general, standing waters on public lands in the Divide EIS area do not have the capability to support self-sustaining trout populations and only contain trout when they have been stocked.

Environmental Consequences

Variables and Assumptions

Since game fish habitat trends in the EIS area are unknown, in this analysis the following definitions are made.

A positive effect is: (1) a reduction or reversal of the rate of habitat degradation, (2) an increase in the rate of habitat improvement, or (3) the creation of new habitat.

A positive effect would not necessarily mean that habitat quality or quantity would be increased in the future. The term positive effect only means improvement over the existing situation.

A neutral effect is when there is no change in rate of habitat degradation or improvement.

A negative effect is an increase in the rate of habitat degradation or a decrease or reversal in the rate of habitat improvement.

The game fish habitat of standing waters on public lands in the EIS area is probably not significantly affected by any type of grazing animal. Wild horse distribution is such that trout streams are not presently affected by these animals. On public lands in the Divide EIS area, it has not been demonstrated that wild ungulates cause significant (greater than 5 percent) damage to stream banks and therefore wild ungulate numbers have not been considered an important variable in this analysis.

In order to analyze the consequences of the Proposed Action and alternatives, changes in five variables and the effects of such changes on game fish habitat were predicted. The variables are:

Variable 1. The number of miles or acres of game fish habitat under special management for improvement (under activity plans)

Variable 2. The number of cattle on the range

Variable 3. The number of sheep on the range

Variable 4. The number of stock-watering reservoirs with game fish stocking potential

Variable 5. The number of watershed acres in good condition

These variables could be increased or decreased by the range management actions discussed in this document. These variables were selected as those which, if changed, could affect fish habitat at a level of implementation described in the Proposed Action or alternatives.

Variable 1 is the most important. With special management (temporary or permanent fencing and implementation of special grazing systems), ungulate-damaged aquatic habitat could be very significantly improved. Without management specifically designed to protect and improve ungulate-damaged aquatic habitat, little could be done to upgrade these areas. Conventional grazing systems, which are tailored to upland forage plant production, have rarely been demonstrated to be beneficial to riparian and aquatic habitat condition. The effect of selecting the Proposed Action or one of the alternatives on the amount of habitat under special management in the EIS area would probably be dependent on changes in the numbers and objectives of AMPs. Results of intensive monitoring studies might also lead to inclusion of some ungulate-damaged aquatic habitat under a Habitat Management Plan (HMP).

Adjustments in numbers of cattle and sheep could affect aquatic habitat. Minor to moderate adjustments in the numbers of cattle alone will generally not affect the level of aquatic habitat damage, because cattle movements are uncontrolled and cattle tend to use the water's edge heavily at almost any population level. Large reductions in numbers or removal of cattle could be very beneficial to cattle-damaged aquatic habitat. Sheep movements are usually much more controlled than cattle movements, and sheep are usually directed away from the water's edge by herders. As a result, sheep tend to do less bank damage than cattle. Therefore, conversion to sheep could significantly decrease ungulate damage to aquatic habitat.

Reservoirs, if constructed with fishery benefits in mind, could increase the amount of habitat present. Construction of reservoirs larger than needed for livestock watering is not currently an accepted practice; however, the positive effects of creating new fisheries on benefit-cost ratios for range improvements could result in larger reservoirs being constructed in the future. Larger reservoirs would have increased longevity, which would also improve benefit-cost ratios.

A watershed in good condition produces less stream turbidity and less siltation of stream, lake, and reservoir bottoms. Siltation and turbidity are important factors affecting the quality of game fish habitat. In addition, flooding and stream channel erosion are held to a minimum by well-vegetated watersheds. Watershed conditions affect sediment yield, which in turn affects the longevity of reservoir habitat. Therefore, the better the watershed condition, the longer a reservoir can support fish. Range management actions described in this document would generally not affect the condition of entire drainages, especially large drainages, because of broken land ownership patterns. However, some actions could affect habitat through changes in watershed condition.

In this analysis, short-term effects are those that would be realized in less than 10 years. Long-term effects would be realized after 10 years. In Table S-1 (located in the Summary section of this EIS), the long-term, effects on fisheries are compared for the Proposed Action and alternatives.

Proposed Action

The environmental consequences for game fish habitat in the EIS area would be positive in the long term. In the short term, the effects would be largely neutral because of the time needed for monitoring and implementation of management actions.

About 43.5 miles of trout stream channel, or approximately one-half of the trout stream channel present in the EIS area, is contained in Category I allotments showing Factor 5 (distribution of grazing animals could be improved). Since livestock/riparian conflicts would be addressed in these allotments, substantial improvement would eventually be expected on this amount of stream. In addition, new reservoirs with fish

stocking potential could be constructed in any of 43 Category I allotments showing Factor 5 (see Table 1-2). Part of the Sage Creek watershed erosion problem could be addressed under this alternative to the benefit of the North Platte River. Changes in livestock numbers alone would probably be insufficient to affect the overall long-term condition of trout stream habitat. In Category M and C allotments, a neutral effect would be expected.

Enhance Watershed, Wildlife, and Soil Resources

The effects of this alternative would be similar to the Proposed Action, but with additional positive long-term effects on fisheries. Emphasis on soil and water conservation and wildlife would lead to additional streamside protection and improved trout stream habitat and water quality. Livestock/fisheries conflicts would be resolved on a larger scale. Larger, better, and longer-lasting reservoirs would be built to improve watersheds, and fisheries habitat would be created. Reduced erosion in localized areas would improve trout production.

Enhanced Livestock Grazing

This alternative would probably be neutral over the long-term. Increases in livestock numbers alone would not, in most cases, greatly increase current levels of streambank and woody vegetation damage on trout streams. However, other livestock/forage manipulations under this alternative could lead to increased concentrations of livestock on stream sections that are currently lightly grazed. This would have a negative effect. AMPs would be developed and some consideration for livestock-damaged trout stream would be given. New reservoirs with game fish potential could be constructed.

No Action

The environmental consequences of this alternative would be neutral in effect.

Mitigation Measures

Currently, some stream-riparian areas are lightly grazed. If implementation of management actions resulted in changes in livestock distribution that caused increased grazing pressure in these areas, fencing or other protective actions could be undertaken to mitigate impacts to trout stream habitat.

If construction or repair of water developments would degrade existing fisheries habitat through dewatering, reservoirs large enough to support new fisheries could be built or rebuilt in the vicinity.

Unavoidable Adverse Impacts

Some minor, short-lived adverse impacts to EIS area trout habitat would unavoidably occur under each alternative, because of localized disturbances of soil and vegetation. Trout habitat would be impacted primarily through increased sediment loads. These impacts would be greatest under the Enhanced Livestock alternative. Because of the lack of trend information, unavoidable adverse impacts are largely unpredictable.

Short-Term Use Versus Long-Term Productivity

Short-term use of the lands important to fisheries habitat would remain essentially unchanged under all alternatives. Over the long term, the probable effects on fish habitat would be the same as shown in Table S-1.

Irreversible and Irretrievable Commitments of Resources

Only the initiation of gullying has the potential to irreversibly eliminate trout stream habitat. Such losses would be irretrievable because the cost prohibitive.

CULTURAL

Affected Environment

Because of the size of the area included in the Divide EIS area, a comprehensive survey to identify all historical and cultural properties that might be eligible for inclusion in the National Register of Historic Places was not possible. However, the BLM has completed an existing data (Class I) inventory of the entire area. In addi-

tion, a field sample (Class II) inventory was conducted in the Overland Planning Unit. Cultural resource inventories have been conducted on approximately 162,702 acres within the Divide EIS area (approximately 4.3 percent of the area). Two thousand six hundred and nine cultural resource sites have been recorded as a result of these inventories. Twenty-nine cultural sites have been evaluated as eligible for inclusion on the National Register of Historic Places (Rawlins District Office Cultural Resource Files, Nov. 1981). These inventories have been conducted for project-specific goals primarily related to energy development projects. The cultural resource sites recorded include both prehistoric and historic sites. More information about these inventories can be obtained upon request from Rawlins District Archeologists; however, specific site location information on archeological sites is confidential.

Prehistoric

The EIS area includes portions of three culture areas: the Great Plains, the Great Basin, and the Northwest Plateau. Each of these culture areas has its own distinct cultural traditions. The cultural resource studies conducted in the past have not established when or whether any one cultural tradition dominated the area. Probably no single cultural tradition has dominated the area throughout the 12,000+ year history of human occupation in the area. All three cultural traditions in the area share some characteristics, including, but not limited to: small social units for the majority of the year; seasonal migration to increase the availability of resources; hunting of a variety of animals including big game animals, fowl, and rodents; and gathering or foraging for plant foods. The technologies employed to perform specific tasks might have varied from one cultural tradition to another but the results were the same. The cultural resource studies within the area were intended to provide clearance for construction projects, not to answer questions concerning the culture history of the area. This orientation of the previous work and the nature of the area as a zone of culture contact and interaction precludes the possibility of any simplistic description of the culture history of the area.

The geographic locations of prehistoric sites in the Divide EIS area were influenced by environmental factors such as availability of food plants and animals, water, raw materials, and climatic characteristics. The density of prehistoric sites known within the area varies with these factors as well as others, such as the amount and intensity of recent development, cultural resource inventories, hobby collection, and the degree of soil deposition or erosion. The types of sites known in these locations also varies depending upon the number of people present and the length of occupation. These sites include lithic scatters, stone circles or teepee rings, kill sites with the remains of mammoths, bison, deer, or antelope present, and long term camps with evidence of structures. A breakdown of the number and types of sites in relation to their geographic locations appears in the Divide Basin and Overland URAs.

Historical

The EIS area has played an important role in the history of the region and the nation. The area was intensively utilized by fur traders in the early 19th century, both as a source of furs and as an access route. This period lasted from about 1810 to 1840. A large scale, overland, westward emigration began in 1841 following routes that had been identified by the fur traders and other explorers. This emigration increased in size every year, and in the 1850's as many as 50,000 people per year were enroute to California and Oregon. The majority of these people followed the Oregon Trail to the north of the EIS area, but the Cherokee Trail, Overland Trail, Rawlins to White River Reservation Trail, and Rawlins to Fort Washakie Stage Road, located within the area, were also important in this emigration. The Overland Trail replaced the Oregon Trail as the primary route of travel during the 1860's. The remains of a number of stage stations and army forts are located along this route within the study area. The majority of these locations are in private ownership, some exceptions being the Duck Lake and Washakie Stage Stations located within the EIS area.

The first transcontinental railroad was constructed through the area in the late 1860's by the Union Pacific Railroad. The railroad lessened

the importance of the trails for long distance travel but did not completely replace them. The trails also continued to provide access for local traffic and to connect the railroad route to surrounding areas. The railroad provided access to markets outside of the region and resulted in a boom for the minerals and livestock grazing industries in the area. The minerals exploration resulted in several attempts at mining, but, in general, declined when significant deposits of ore were not located. The livestock grazing proved successful with cattle, horses, and sheep. The cattle grazing operations were most important initially, with sheep and horses increasing in importance later. However, horses have been grazed primarily for local use on ranches and recreation during the past 50 years, since their primary use was eliminated by automobiles and mechanized farm machinery. The livestock grazing industry continues to be one of the most important and possibly the most stable segment of the areas social and cultural life.

The late 19th century marked the beginning of interest in the area's energy resources. The initial interest was primarily in coal, but in the early 20th century the development of the oil and gas resources also became important. This interest continues today following the traditional boom and bust cycle.

The types of historic sites known in the EIS area includes short-term camps related to livestock grazing; water developments, primarily for livestock; construction camps related to railroad construction; stage stations; town sites; forts; ranches; homesteads; oil and gas fields; and mines. These historic site locations were influenced in most cases by the same or similiar geographic and environmental factors as were prehistoric site locations.

Environmental Consequences

General Effects of Livestock Operations

Livestock grazing involves slight ground disturbance over vast areas and more intensive disturbance on small areas. This basic quality of livestock grazing results in levels of effect varying from slight to adverse. The factors of the environment and geography which influenced the location of prehistoric and early historic sites are also factors which influence the effects of livestock grazing. These factors, including availability of water and diverse plant resources, while increasing the probability for a cultural resource, also increase the intensity of livestock grazing.

Livestock use which affects cultural resources over the largest area is trampling, with its resultant soil compaction and churning, and the reduction of vegetative cover. These effects on cultural resources are slight when the livestock are dispersed on open range. However, these effects become severe when livestock and other grazing animals concentrate in a small area such as a spring or drainage. The adverse effects experienced include alteration of cultural site integrity and breakage of individual artifacts. These effects can be direct or indirect as a result of erosion or other processes which have been accelerated as a result of grazing.

Some of the activities involved in implementation of the rangeland management program could affect historic and cultural properties. Because of this fact, the BLM would conduct intensive field (Class III) inventories of specific areas that would be impacted by implementing ground disturbing activities prior to approval. If historic or cultural properties were identified every effort would be made to avoid adverse effects. However, where that is not possible the BLM would consult with the State Historic Preservation Officer and the Advisory Council on Historic Places in accordance with the Programmatic Memorandum of Agreement by and between the Bureau and the Council, dated January 14, 1980. This agreement sets forth a procedure for developing appropriate mitigative measures to lessen the impact of adverse effects on cultural resources.

Proposed Action

Category M Allotments. The effect of this alternative would be no change from the existing situation.

Category I Allotments. The cumulative effects of this alternative would probably be minimal to cultural resources. The continuation of present management until monitoring is completed would result in no change in the existing situation. The increase or reduction of grazing capacities following the completion of the monitoring would probably result in a balance which would maintain the present overall rate of grazing impact on cultural resources. The implementation of grazing and riparian improvement projects could result in the location and protection of previously unknown cultural resources that would be considered eligible for inclusion on the National Register of Historic Places.

Category C Allotments. The effects of this alternative would be no change from the existing situation. Land exchanges or sales would require Class III (intensive field inventories) and the mitigation of any adverse effects to cultural resources considered eligible for inclusion on the National Register of Historic Places.

Enhance Watershed, Wildlife, and Soil Resources

The effects of this alternative would be an enhancement of the survivability of archeological cultural resources. Trampling and erosional effects in some areas would be reduced or eliminated by this action, which would be beneficial to cultural resources. This beneficial effect would be slight in most areas, but in the vicinity of streams the effect could be very beneficial.

Enhanced Livestock Grazing

The cumulative effect of this action would be to increase trampling and erosion on cultural resource sites to a certain extent, but probably not significantly higher than the present situation. The increased number of range improvements associated with this alternative could result in the location and protection of additional cultural resource sites.

No Action

The effect of this alternative would be no change from the existing situation.

Mitigation Measures

The same types of mitigation measures could be implemented regardless of the alternative chosen. These mitigation measures include:

1. Inventories and monitoring in heavy-use areas could be increased to identify endangered cultural resources and determine needs for immediate site protection.

2. If removal of fences occurred some fences could be left where it was necessary to protect cultural resources.

3. Historic trails could be fenced to prevent impacts to existing ruts.

4. Impacts from planned projects could be mitigated by implementation of the Programmatic Memorandum of Agreement by and between the Bureau and the Advisory Council on Historic Preservation. Public awareness and appreciation of cultural resources and the need for their protection could be encouraged.

Unavoidable Adverse Impacts

Trampling and erosion would cause an impact to cultural resources regardless of which alternative is chosen.

Short-Term Use Versus Long-Term Productivity

The nonrenewable nature of cultural resources means that any consumptive use or destruction of cultural resources results in a loss. The availability of scientific data concerning cultural resources may be increased by consumptive use such as scientific excavation, but this results in a reduced availability of the actual resource. This situation, created by the nonrenewable nature of cultural resources, would be the same no matter which alternative is chosen.

Irreversible and Irretrievable Commitments of Resources

The nonrenewable nature of cultural resources means that any commitment of cul-

tural resources is irreversible and irretrievable. This situation, created by the nonrenewable nature of cultural resources, would be the same no matter which alternative is chosen.

RECREATION

Affected Environment

The Divide EIS area provides hunting and fishing opportunities of regional and national importance. Opportunities to hunt big game (mule deer, elk, and pronghorn antelope) are outstanding. Small game and birds (cottontail rabbits and grouse) are hunted throughout the area. Recreational hunting and trapping of fur bearers and predators such as beavers, coyotes, bobcats, and red foxes has increased greatly in recent years.

Many other recreational activities occur in the Divide EIS area. Examples include rock and mineral collecting, sightseeing and pleasure driving. However, they would not be affected by any of the alternative forms of management and are therefore not included in this analysis.

The North Platte River is the major fishing attraction near the EIS area; there are numerous small streams and lakes throughout the area. Trout is the principal game fish.

Pronghorn antelope are found throughout the area. Hunting opportunities for these animals are outstanding because of very large populations, limited competition from other uses of the land (oil and gas production, mining, etc.), and large expanses of public land, where access is available. Mule deer hunting opportunities are concentrated around more rugged parts of the area such as the Ferris Mountains, Atlantic Rim and the lands surrounding the Medicine Bow National Forest. Elk are hunted in the Ferris Mountains, Atlantic Rim, and land surrounding the Medicine Bow Forest (Savery Creek, McCarty Canyon, Cow Butte, etc.). Other hunting opportunities are found throughout the area.

Reliable visitor-use statistics for the Divide EIS area are available only for big game hunting. For the year 1981, pronghorn antelope hunting accounted for approximately 15,000 hunter days, mule and whitetail deer hunting for 21,000, and elk hunting for approximately 5,500 (Wyoming Game and Fish Department, 1982). Other forms of hunting and recreational activities account for substantial amounts of use but no data are presently available.

Environmental Consequences

General information and Assumptions

For purposes of this analysis, the short term is defined as occurring from the time the final EIS is published until 5 years after. The long term is open ended.

Impacts to recreation from the Proposed Action and the No Action alternatives would be minor. Basic patterns of recreation use would be unaffected, and the volume of recreation use would be relatively unchanged.

Proposed Action

This action would have a minimal overall impact on recreation. Use patterns and opportunities would remain unchanged from present ones. Volume of use would be relatively unaffected, unless range improvements resulted in increased wildlife populations. Increased populations would translate into increased hunting opportunities and increased opportunities to view wildlife. If mule deer populations increased to Wyoming Game and Fish Department strategic plan levels, some increase in hunting opportunities and hunting quality would result.

Increases in the number of fences under the Proposed Action could decrease man's mobility and freedom of movement for recreation activities in the area. With more fencing, some people would perceive the area as less wild and natural with less open space. This alternative would have little or no impact on activities such as rock collecting, camping, and picnicking.

Enhance Watershed, Wildlife, and Soil Resources

This alternative would have a minimal overall impact on recreation. Existing opportunities and patterns of recreational use would remain un-

changed. If increased wildlife populations resulted from the actions called for by this alternative, increased opportunities to hunt and view wildlife would result. Increases directly attributable to this alternative probably would be minor.

Enhanced Livestock Grazing

Impacts under this alternative would be much the same as under the Proposed Action with recreation being affected only to a minor degree. If range management activities resulted in increased wildlife populations increases in hunting opportunities would result. If wildlife numbers decreased, hunting opportunities would decrease as well.

The overall pattern of recreation use of the area would remain unchanged. Activities such as sightseeing, collecting, and picnicking would be unaffected.

No Action

This alternative would have little impact on recreation. In all probability, hunting opportunities would remain essentially unchanged. If wildlife populations increased, some slight increase in hunting opportunities and quality would result. It is expected that no impacts to open space would occur.

Mitigation Measures

Proposed Action and Enhanced Livestock Grazing Alternative

If fencing projects were implemented in the EIS area care should be taken to insure that gates and/or cattleguards were installed at all points where the fences cross existing roads and/or vehicle routes used for recreation. Doing this would insure that access to public lands was not decreased.

No mitigation measures have been identified for the other alternatives.

Unavoidable Adverse Impacts

No unavoidable adverse impacts were identified for any of the alternatives.

Short-Term Use Versus Long-Term Productivity

Proposed Action and Enhanced Livestock Grazing

No action proposed for the short term would adversely affect long-term productivity of the area.

Enhance Watershed, Wildlife, and Soil Resources

Although minor, there would be long-term benefits resulting from this alternative. They would occur in the form of increased hunting opportunities for pronghorn antelope and mule deer.

No Action

Actions taken during this short term would have no effect on long-term productivity.

Irreversible and Irretrievable Commitments of Resources

None of the alternatives would cause an irreversible and irretrievable commitment of resources.

VISUAL RESOURCES

Affected Environment

Public lands in the Divide EIS area exhibit a high degree of diversity. They include gently rolling hills, high bluffs and plateaus, high rims, desert badlands, and small rugged mountain ranges. A large part of the area consists of rolling, sagebrush covered hills. Atlantic Rim and Red Rim are notable examples of rims, and the Adobe Town area is an example of desert badlands. The Ferris Mountains are an outstanding example of a small but rugged mountain range. Major vegetation types include grass, meadow/riparian, sagebrush, greasewood/saltbush, mountain shrubs, juniper, and conifer.

Landscape character is determined by the relationship between four basic elements: color,

line, form, and texture. The dominant colors in the EIS area are the browns, reds, and greys of soils and rocks, and the greens, yellows, and browns of vegetation. These colors vary with changes in season and weather. Lines are distinct in the stratification of soil and rock outcrops, changes in vegetation, and along various topographic features. Form (topography) varies from gently rolling hills (near Wamsutter) to rugged mountains (Ferris Mountains). Texture results from different vegetation types, erosion patterns, and surface rock and soil features. These four basic elements combine to give the EIS area the overall apperance of being a large expanse of open, rugged, relatively natural lands.

Most of the area is largely free of cultural modifications. Examples of manmade features are oil and gas fields and various range improvements such as fences and reservoirs. The overall impact of these intrusions on the visual resources of the area is quite low in comparison to the total area and the large number of acres of undeveloped public lands.

Environmental Consequences

General Information

The overall effects on visual resources from the Proposed Action or any of the alternatives would be minor. The appearance of the landscape would remain essentially unchanged. There would be no significant impact to form, line, or color of the landscape. A general discussion of the impacts associated with each of the alternatives follows.

Proposed Action

In general, windmills, fences, and livestock are a part of the western rangeland landscape. They are not normally thought of as intrusions; however, range improvement projects associated with this action could cause some minor impacts to the visual resource. For example, if new fences or water developments were located on ridges or hilltops, they would be quite noticeable and would detract somewhat from the natural appearance of the landscape. If, on the other hand, they were located so that they were not silhouetted against the sky, their impact would be relatively unnoticeable.

Enhance Watershed, Wildlife, and Soil Resources

Enhancing these resources would constitute a positive impact. Some range improvements would gradually disappear, resulting in a more natural appearing landscape. Some roads used strictly for livestock management would begin to revegetate. Some habitat improvement projects, if not done without consideration for visual resources, could cause adverse impacts. The overall impacts would be beneficial to visual resources.

Enhanced Livestock Grazing

The increase in the number of range improvements such as fencing, water development, and vegetative manipulation would adversely affect visual resources. Vegetative manipulation projects in particular could have an adverse impact if they created sharp lines of contrast on hillsides facing travel routes. As with the Proposed Action, if all range improvement projects were implemented in a manner which took into consideration visual resources, the impact would be minimized.

No Action

Under this alternative, there would be no impact to the visual resources, because no new range management projects would be implemented in the EIS area and no change in the landscape would occur.

Mitigation Measures

Proposed Action, Enhanced Watershed, Wildlife, and Soil Resources Alternative, and Enhanced Livestock Grazing Alternative

If efforts were made to locate range improvement projects so that they blend into the environment most of their impact to visual resources would be mitigated. Locating windmills so that they do not create a silhouette against the skyline or painting the windmills so their blend into the surrounding landscape would be two examples of mitigating measures. Maintaining an irregular shape to vegetative manipulation projects would retain more natural form and line in the landscape.

No Action

None.

Unavoidable Adverse Impacts

Proposed Action, Enhance Watershed, Wildlife, and Soil Resources, Enhanced Livestock Grazing, and No Action Alternatives

None.

Short-Term Use Versus Long-Term Productivity

Proposed Action and Enhanced Livestock Grazing Alternative

No actions proposed for the short term would effect long-term productivity in terms of visual resources.

Enhance Watershed, Wildlife, and Soil Resources

No short-term actions would adversely affect long-term productivity in terms of visual resources. Under this alternative visual resources would be slightly enhanced in the long term.

No Action

Actions taken in the short term would have no effect on long-term productivity of the EIS area.

Irreversible and Irretrievable Commitment of Resources

None of the alternatives would cause an irreversible and irretrievable commitment of resources.

APPENDIX 1

CURRENT USE IN THE EIS AREA

Allotment Number	Class of Livestock and Season of Use	Active	Federal AUMs Suspended Nonuse	Total	Permit/ Lease[1]/
0201	Cattle 04/01 to 09/30	11,413	0	11,413	3
0201	Horses 06/01 to 08/31				
0202	Cattle 12/01 to 02/28	339	0	339	3
0203	Cattle 05/01 to 10/10	4,842	0	4,842	3
0204	Cattle 07/03 to 07/09	75	0	75	3
0204	10/10 to 10/16				
0207	Cattle 03/01 to 02/28	4,711	0	4,711	3
0207	Horses 04/01 to 11/30				
0209	Cattle 06/01 to 11/30	2,095	0	2,095	3
0212	Cattle 01/01 to 10/31	1,453	0	1,453	3
0215	Cattle 07/10 to 10/17	750	0	750	3
0216	Cattle 05/01 to 05/31	402	0	402	3
0216	12/01 to 12/15				
0217	Cattle 03/01 to 02/28	108	0	108	3
0218[2]/	Cattle 03/01 to 02/28	10,589	0	10,589	3
0218	Horses 03/01 to 02/28				
0219	Cattle 05/21 to 07/02	804	0	804	3
0219	10/17 to 11/30				
0220	Cattle 06/01 to 10/11	99	0	99	3
0221	Cattle 03/01 to 02/28	12,899	0	12,899	3
0221	Sheep 03/01 to 02/28				
0221	Horses 03/01 to 02/28				
0222	Cattle 10/01 to 06/30	282	0	282	3
0223	Cattle 05/01 to 10/15	9	0	9	3
0401	Cattle 06/01 to 06/30	249	0	249	3
0402	Cattle 05/10 to 08/10	319	0	319	3
0403	Cattle 05/01 to 06/15	24	0	24	3
0403	Cattle 05/01 to 06/15	71	0	71	3
0403	Cattle 05/01 to 06/15	150	0	150	3
0403	Cattle 05/01 to 06/15	70	0	70	3
0403	Cattle 08/12 to 10/19				
0405	Sheep 06/01 to 09/30	682	0	682	3
0406	Cattle 06/01 to 09/30	189	0	189	3
0407	Cattle 06/01 to 09/30	501	270	771	3
0407	Cattle 06/01 to 09/30	293	158	451	3
0407	Cattle 06/01 to 09/30	611	329	940	3
0408	Cattle 05/01 to 10/31	681	0	681	3
0408	Sheep 05/01 to 05/31				
0408	Sheep 05/01 to 10/31	294	0	294	3

CURRENT USE IN THE EIS AREA ON PUBLIC LAND--CONTINUED

Allotment Number	Class of Livestock and Season of Use	Active	Federal AUMs Suspended Nonuse	Total	Permit/ Lease[1/]
0408	Sheep 11/01 to 11/30	61	0	61	3
0408	Cattle 04/16 to 12/15	615	0	615	3
0408	Sheep 10/01 to 02/28				
0408	Horses 06/15 to 12/25				
0408	Cattle 06/01 to 10/31	3,352	0	3,352	3
0408	Sheep 11/01 to 05/31				
0408	Cattle 07/21 to 10/31	198	0	198	3
0408	Sheep 05/01 to 06/15	490	0	490	3
0408	Cattle 07/01 to 10/31	455	0	455	3
0408	Cattle 06/16 to 10/31	450	0	450	3
0408	Sheep 03/01 to 03/31	1,946	0	1,946	3
0408	Sheep 05/09 to 07/10				
0408	Sheep 09/11 to 09/25				
0408	Sheep 10/24 to 10/31				
0408	Cattle 09/13 to 10/29	359	0	359	3
0409	Cattle 06/01 to 09/18	360	0	360	3
0410	Cattle 06/01 to 09/15	472	0	472	3
0411	Cattle 05/10 to 07/01	1,167	0	1,167	3
0412	Cattle 05/01 to 10/31	3,336	0	3,336	3
0412	Sheep 05/05 to 06/24				
0413	Cattle 06/25 to 10/04	20	0	20	3
0414	Cattle 05/25 to 09/30	4,262	0	4,262	3
0415	Cattle 05/01 to 11/30	5,643	0	5,643	3
0415	Cattle 04/01 to 12/01	1,243	0	1,243	3
0417[2/]	Sheep 05/01 to 09/30	1,162	0	1,162	3
0417[2/]	Cattle 06/01 to 09/15	11,515	0	11,515	3
0418[2/]	Cattle 06/01 to 09/30	641	0	641	3
0418[2/]	Cattle 05/01 to 09/30	40	0	40	3
0419	Cattle 03/01 to 10/30	416	0	416	3
0420	Cattle 06/01 to 08/30	307	0	307	3
0420	Sheep 07/08 to 09/07				
0421	Sheep 05/01 to 09/30	821	0	821	3
0422	Cattle 06/10 to 10/15	490	0	490	3
0422	Cattle 06/10 to 10/15	986	0	986	3
0423	Sheep 05/01 to 10/31	2,962	0	2,962	3
0425	Cattle 06/01 to 10/31	1,180	0	1,180	3
0425	Sheep 05/01 to 09/30				
0426	Cattle 05/01 to 09/30	157	0	157	3
0426	Sheep 05/01 to 10/31				

APPENDIX 1

CURRENT USE IN THE EIS AREA ON PUBLIC LAND--CONTINUED

Allotment Number	Class of Livestock and Season of Use	Active	Federal AUMs Suspended Nonuse	Total	Permit/ Lease[1]
0427	Cattle 03/01 to 02/28	414	0	414	3
0428	Cattle 03/01 to 02/28	239	0	239	3
0429	Cattle 05/01 to 06/20	1,186	0	1,186	3
0430	Cattle 05/10 to 09/25	4,552	0	4,552	3
0431	Sheep 05/01 to 10/16	436	0	436	3
0432	Cattle 06/15 to 07/20	1,278	0	1,278	3
0433[2]	Cattle 05/01 to 09/30	2,096	0	2,096	3
0433	Horses 05/01 to 11/30				
0434	Cattle 03/01 to 02/28	50	0	50	3
0435	Cattle 06/16 to 11/01	1,100	0	1,100	3
0435	Horses 06/16 to 12/15				
0435	Cattle 06/16 to 09/12	660	0	660	3
0436	Cattle 05/16 to 09/15	600	0	600	3
0437	Cattle 07/01 to 07/31	30	0	30	3
0438	Cattle 10/01 to 02/28	30	0	30	3
0440	Cattle 06/01 to 10/25	71	0	71	3
0441	Cattle 05/05 to 06/04	57	0	57	3
0441	Cattle 09/01 to 11/30				
0442	Cattle 05/05 to 06/04	24	0	24	3
0442	Cattle 09/01 to 11/30				
0443	Sheep 11/15 to 04/10	270	31	301	3
0444	Cattle 05/15 to 10/14	30	0	30	3
0445	Cattle 05/01 to 10/31	90	0	90	3
0446	Cattle 03/01 to 02/28	23	0	23	3
0447	Cattle 05/16 to 10/31	403	0	403	3
0448	Cattle 05/01 to 10/31	399	0	399	3
0448	Sheep 05/01 to 10/31				
0449	Cattle 06/01 to 10/31	5	0	5	15
0450[2]	Cattle 05/01 to 06/30	3,530	0	3,530	15
0450	Sheep 10/10 to 03/20				
0450	Sheep 05/01 to 06/15				
0451	Cattle 05/10 to 07/10	91	0	91	15
0453	Cattle 03/01 to 02/28	53	0	53	15
0455	Sheep 07/01 to 09/10	112	0	112	3
0456	Cattle 06/16 to 09/30	163	0	163	3
0456	Sheep 05/16 to 09/30				
0456	Cattle 05/01 to 06/20	52	0	52	3
0456	Sheep 09/01 to 10/31				
0457	Cattle 06/15 to 11/01	437	0	437	3

APPENDIX 1

CURRENT USE IN THE EIS AREA ON PUBLIC LAND--CONTINUED

Allotment Number	Class of Livestock and Season of Use	Active	Federal AUMs Suspended Nonuse	Total	Permit/ Lease[1]
0501	Cattle 03/01 to 02/28	6	0	6	3
0502	Sheep 11/01 to 03/30	1,820	114	1,934	3
0503	Cattle 05/01 to 06/30	1,445	217	1,662	3
0503	Sheep 04/15 to 04/30				
0503	Sheep 05/23 to 06/30				
0503	Sheep 08/28 to 10/15				
0505	Cattle 03/01 to 03/31	1,338	121	1,459	3
0505	Cattle 05/01 to 06/15				
0505	Horses 03/01 to 03/31				
0506[2]	Cattle 05/01 to 11/03	2,830	576	3,406	3
0508	Cattle 05/01 to 06/30	1,088	0	1,088	3
0508	Sheep 11/01 to 12/15				
0509	Cattle 05/01 to 11/30	2,629	0	2,629	3
0509	Sheep 10/16 to 04/20				
0510	Cattle 06/01 to 07/31	754	137	891	3
0510	Sheep 03/01 to 04/15				
0511	Cattle 05/02 to 11/30	2,420	286	2,706	3
0511	Cattle 06/01 to 10/31	355	0	355	3
0512	Sheep 11/01 to 04/30	413	49	462	3
0513	Cattle 06/01 to 10/31	193	0	193	3
0513	Cattle 04/01 to 11/05	508	59	567	3
0513	Sheep 03/01 to 04/30				
0513	Sheep 03/16 to 04/30	1,341	175	1,516	3
0513	Sheep 11/11 to 12/15				
0514	Cattle 05/01 to 08/31	250	0	250	3
0514	Horses 03/01 to 06/15				
0515	Cattle 05/01 to 10/29	1,061	634	1,695	3
0515	Sheep 11/01 to 02/28				
0516	Sheep 11/15 to 04/10	1,443	50	1,493	3
0517[2]	Cattle 05/01 to 09/30	1,084	98	1,182	3
0518	Cattle 05/01 to 10/31	159	0	159	3
0518	Cattle 04/16 to 10/31	596	0	596	3
0518	Horses 06/01 to 09/30				
0519	Cattle 04/01 to 10/31	855	68	923	3
0519	Sheep 04/01 to 04/15				
0520[2]	Cattle 05/01 to 10/31	714	0	714	3
0520[2]	Cattle 11/01 to 04/31	1,637	0	1,637	3
0520[2]	Cattle 05/01 to 10/31	1,065	0	1,065	3
0520[2]	Sheep 11/01 to 04/25	2,339	0	2,339	3

APPENDIX 1

CURRENT USE IN THE EIS AREA ON PUBLIC LAND--CONTINUED

Allotment Number	Class of Livestock and Season of Use	Active	Federal AUMs Suspended Nonuse	Total	Permit/ Lease[1]/
0520[2]/	Sheep 11/11 to 11/30	347	0	347	3
0520[2]/	Cattle 05/01 to 10/31	450	0	450	3
0521	Sheep 10/01 to 05/22	3,329	282	3,611	3
0521	Cattle 05/01 to 10/31	754	0	754	3
0521	Cattle 06/11 to 09/30	209	19	228	3
0521	Cattle 04/16 to 10/31	836	81	917	3
0522	Cattle 05/01 to 10/31	220	61	281	3
0523	Sheep 12/01 to 03/31	732	170	902	3
0523	Cattle 05/01 to 10/17	562	0	562	3
0523	Cattle 05/01 to 10/17	145	0	145	3
0524	Sheep 11/15 to 04/10	2,839	538	3,377	3
0525	Cattle 05/01 to 09/30	583	0	583	3
0525	Cattle 04/15 to 10/29	195	0	195	3
0527	Cattle 06/06 to 10/30	150	0	150	3
0528	Sheep 09/01 to 02/28	5,362	336	5,698	3
0529	Cattle 03/01 to 02/28	25	0	25	3
0530	Cattle 04/01 to 05/31	80	0	80	3
0530	Cattle 04/01 to 06/03	23	0	23	3
0531	Cattle 11/15 to 02/28	62	0	62	3
0601	Cattle 05/01 to 09/30	1,127	0	1,127	3
0601	Sheep 05/01 to 09/30				
0602	Cattle 04/15 to 10/31	373	0	373	3
0602	Sheep 04/15 to 10/31				
0603	Cattle 03/01 to 02/28	6,402	0	6,402	3
0603	Sheep 11/01 to 04/05				
0603	Horses 03/01 to 02/28				
0604	Cattle 06/01 to 10/31	480	0	480	3
0605	Cattle 04/01 to 06/30	1,589	0	1,589	3
0606	Cattle 05/01 t0 10/31	90	0	90	3
0606	Sheep 05/01 to 10/31				
0607	Cattle 05/01 to 10/31	2,303	0	2,303	3
0607	Sheep 04/01 to 11/15				
0608	Cattle 03/01 to 02/28	85	0	85	3
0609	Cattle 05/15 to 09/15	2,913	0	2,913	3
0609	Sheep 05/01 to 10/31				
0609	Horses 05/01 to 10/31				
0610	Sheep 11/01 to 04/30	1,236	0	1,236	3

APPENDIX 1

CURRENT USE IN THE EIS AREA ON PUBLIC LAND--CONTINUED

Allotment Number	Class of Livestock and Season of Use	Active	Federal AUMs Suspended Nonuse	Total	Permit/ Lease[1]
0610	Sheep 11/20 to 05/31	2,058	0	2,058	3
0610	Cattle 06/01 to 06/30	1,119	0	1,119	3
0610	Sheep 11/15 to 04/10				
0610	Cattle 04/15 to 11/30	1,118	0	1,118	3
0611	Sheep 11/01 to 06/30	2,930	0	2,930	3
0612	Cattle 05/01 to 10/31	116	0	116	3
0613[2]	Cattle 05/01 to 02/28	1,577	0	1,577	3
0614	Cattle 06/01 to 09/17	50	0	50	3
0615	Cattle 04/16 to 09/30	3,134	0	3,134	3
0615	Sheep 10/01 to 04/20				
0616	Cattle 04/01 to 10/31	3,114	0	3,114	3
0616	Sheep 04/16 to 11/10				
0616	Horses 03/01 to 02/28				
0616	Cattle 05/01 to 10/01	514	0	514	3
0619	Cattle 05/01 to 07/31	756	0	756	3
0619	Cattle 11/01 to 11/22				
0619	Horses 03/01 to 06/10				
0620	Cattle 05/01 to 11/30	1,115	0	1,115	3
0621	Cattle 03/01 to 02/28	4,752	0	4,752	3
0621	Sheep 10/16 to 03/31				
0621	Horses 03/01 to 02/28				
0623	Cattle 06/16 to 10/31	4,417	0	4,417	3
0623	Sheep 03/01 to 02/28				
0624	Cattle 04/01 to 09/30	207	0	207	3
0625	Cattle 03/07 to 02/28	34	0	34	3
0626	Cattle 05/06 to 11/15	1,317	0	1,317	3
0626	Sheep 03/05 to 10/31				
0701	Cattle 04/01 to 11/20	925	0	925	3
0702	Cattle 12/01 to 03/31	12	0	12	3
0703	Cattle 03/01 to 02/28	140	0	140	3
0704	Cattle 03/01 to 02/28	83	0	83	3
0704	Sheep 03/01 to 02/28				
0706	Cattle 03/01 to 05/30	1,268	0	1,268	3
0706	Cattle 10/01 to 11/30				
0706	Sheep 03/01 to 05/30				
0706	Horses 03/01 to 05/30				
0707	Horses 03/01 to 02/28	40	0	40	3
0707	Cattle 03/01 to 02/28	3,709	34	59	3
0707	Horses 03/01 to 02/28				

APPENDIX 1

CURRENT USE IN THE EIS AREA ON PUBLIC LAND--CONTINUED

Allotment Number	Class of Livestock and Season of Use	Active	Federal AUMs Suspended Nonuse	Total	Permit/ Lease[1/]
0708	Cattle 03/01 to 02/28	59	0	59	3
0709	Cattle 05/15 to 11/15	1,942	0	1,942	3
0710	Cattle 05/01 to 08/30	1,834	0	1,834	3
0710	Sheep 04/15 to 05/07				
0711	Cattle 03/01 to 02/28	6,327	0	6,327	3
0713	Cattle 03/15 to 06/15	1,682	0	1,682	3
0714	Cattle 03/01 to 02/28	1,782	0	1,782	3
0714	Sheep 03/01 to 02/28				
0714	Horses 03/01 to 02/28				
0715	Cattle 11/01 to 03/31	3,294	0	3,294	3
0715	Sheep 11/11 to 04/15				
0716	Cattle 05/01 to 09/30	2,684	0	2,684	3
0716	Horses 03/01 to 02/28				
0717	Cattle 05/01 to 09/30	1,625	0	1,625	3
0718	Cattle 05/01 to 06/30	3,682	0	3,682	3
0718	Sheep 10/23 to 06/13				
0718	Horses 11/01 to 06/15				
0718	Cattle 05/01 to 10/31	390	0	390	3
0719	Cattle 03/01 to 02/28	5,028	0	5,028	3
0719	Sheep 11/01 to 06/30				
0719	Horses 11/13 to 05/26				
0720	Cattle 05/01 to 12/31	2,397	0	2,397	3
0721	Cattle 04/01 to 09/30	566	0	566	3
0722	Sheep 09/15 to 03/31	1,620	0	1,620	3
0723	Cattle 03/01 to 03/31	2	0	2	3
1012	Cattle 05/15 to 09/30	177	0	177	15
1028	Cattle 05/01 to 10/31	393	0	393	15
1030	Cattle 06/01 to 11/30	176	0	176	15
1037	Cattle 05/01 to 12/31	23	0	23	15
1101	Cattle 05/01 to 07/31	45	0	45	3
1102	Sheep 05/06 to 09/30	30	0	30	3
1103	Cattle 06/22 to 08/28	162	0	162	3
1104	Cattle 04/16 to 05/05	164	0	164	3
1104	Horses 07/01 to 08/31				
1106	Cattle 06/16 to 09/15	51	0	51	3
1107	Cattle 05/11 to 06/10	60	0	60	3
1108	Cattle 05/15 to 10/24	16	0	16	3
1109	Cattle 05/01 to 09/30	100	0	100	3
1110	Cattle 06/01 to 09/30	148	0	148	3

APPENDIX 1

CURRENT USE IN THE EIS AREA ON PUBLIC LAND--CONTINUED

Allotment Number	Class of Livestock and Season of Use	Active	Federal AUMs Suspended Nonuse	Total	Permit/ Lease[1]/
1111	Cattle 05/01 to 10/31	31	0	31	3
1112	Cattle 05/01 to 06/24	220	0	220	3
1113	Cattle 06/01 to 10/12	148	0	148	3
1113	Sheep 06/20 to 06/30	14	0	14	3
1114	Cattle 05/01 to 06/30	92	0	92	3
1115	Cattle 05/01 to 11/30	71	0	71	3
1116	Cattle 07/01 to 10/02	241	0	241	3
1117	Cattle 05/01 to 11/30	69	0	69	3
1118	Cattle 05/01 to 10/15	160	0	160	3
1118	Sheep 05/01 to 10/15				
1118	Horses 05/01 to 10/17				
1118	Cattle 05/16 to 09/15	288	0	288	3
1118	Cattle 06/01 to 08/31	29	0	29	3
1118	Cattle 05/16 to 10/31	700	0	700	3
1118	Sheep 05/01 to 10/10				
1118	Cattle 05/01 to 09/30	132	0	132	3
1118	Cattle 05/15 to 10/31	393	0	393	3
1118	Cattle 09/14 to 10/31	39	0	39	3
1120	Cattle 05/01 to 06/15	102	0	102	3
1121	Sheep 05/01 to 07/20	55	0	55	3
1122	Sheep 03/01 to 04/30	20	0	20	3
1123	Cattle 05/01 to 11/30	141	0	141	3
1123	Cattle 10/15 to 11/14	83	0	83	3
1123	Sheep 05/01 to 11/30	707	0	707	3
1123	Cattle 06/01 to 10/29	248	0	248	3
1124	Cattle 05/01 to 05/31	30	0	30	3
1125	Cattle 05/01 to 09/30	60	0	60	3
1126	Cattle 05/01 to 06/20	213	0	213	3
1127	Cattle 05/16 to 09/15	53	0	53	3
1128	Cattle 05/01 to 06/30	240	0	240	3
1129	Sheep 05/01 to 05/31	30	0	30	3
1129	Sheep 10/01 to 11/30				
1130	Cattle 04/16 to 06/15	89	0	89	3
1130	Horses 05/01 to 09/30				
1131	Cattle 05/01 to 06/30	58	0	58	3
1132	Cattle 05/01 to 09/30	110	0	110	3
1133	Cattle 06/15 to 09/30	92	0	92	3
1134	Cattle 05/01 to 05/31	4	0	4	3
1135	Sheep 05/01 to 10/31	12	0	12	3

APPENDIX 1

CURRENT USE IN THE EIS AREA ON PUBLIC LAND--CONTINUED

Allotment Number	Class of Livestock and Season of Use	Active	Federal AUMs Suspended Nonuse	Total	Permit/ Lease[1/]
1136	Cattle 05/01 to 06/18	13	0	13	3
1137	Cattle 05/01 to 09/30	30	0	30	3
1138	Cattle 06/01 to 10/15	9	0	9	3
1139	Cattle 05/16 to 09/15	34	0	34	3
1140	Cattle 10/10 to 11/15	31	0	31	3
1141	Cattle 06/01 to 09/30	8	0	8	3
1142	Cattle 06/01 to 10/31	106	0	106	3
1143	Sheep 03/01 to 04/30	49	0	49	3
1144	Cattle 05/01 to 07/02	64	0	64	3

1/Permit (section 3) - Livestock use of the public lands within grazing districts authorized under section 3 of the Taylor Grazing Act of June 28, 1934.

Lease (section 15) - Livestock use of the public lands outside grazing districts authorized under section 15 of the Taylor Grazing Act of June 28, 1934.

2/Allotment Management Plan.

NUMBER OF EXISTING RANGE IMPROVEMENTS ON PUBLIC LAND BY ALLOTMENT

Allotment Number	Allotment Name	Fences (miles)		Reservoirs/ Pits	Windmills/ Wells/Pumps	Springs	Pipelines	Troughs
		Interior	Exterior					
0201	Buzzard	39	47	4	10	0	2	0
0202	Buzzard Ranch Meadows	NA	NA	0	0	0	0	0
0203	Cherry Creek	23	14	1	0	0	0	0
0204	Desert Claim	1	5	0	0	0	0	0
0205	Devil's Gate[1/]	27	30	8	6	10	0	0
0207	Ferris Mountain	27	31	7	1	5	0	0
0209	Junk Creek	8	19	1	0	1	1	0
0212	Long Creek	15	18	2	0	3	0	0
0215	Pole Canyon	0	9	0	0	3	0	0
0216	Sand Creek	0	9	1	0	0	0	0
0217	Sand Creek Ranch Pasture	0	10	0	0	0	0	0
0218	Seminoe	101	59	30	7	10	0	0
0219	Station 8	0	16	1	3	1	1	0
0220	Tapers	2	1	2	0	0	0	0
0221	Stone	54	83	0	3	1	0	0
0222	Wood Creek	0	7	0	0	1	0	0
0223	Wood Creek Ranch Pasture	0	4	0	0	0	0	0
0401	Airport	0	5	0	0	0	0	0
0402	Antelope	NA	NA	1	0	0	0	0
0403	Baggs Subunit	NA	NA	5	0	0	0	0
0405	Beaver Dams	NA	NA	0	0	0	0	0
0406	Boden	NA	NA	0	0	0	0	0
0407	Centennial Creek	NA	NA	0	0	0	0	0
0408	Cherokee	NA	NA	53	6	0	0	0
0409	Cottonwood Draw	NA	NA	1	0	0	0	0
0410	Coyote Draw	NA	NA	3	0	0	0	0
0411	Cushing	NA	NA	5	0	0	0	0

NUMBER OF EXISTING RANGE IMPROVEMENTS ON PUBLIC LAND BY ALLOTMENT--CONTINUED

Allotment Number	Allotment Name	Fences (miles)		Reservoirs/ Pits	Windmills/ Wells/Pumps	Springs	Pipelines	Troughs
		Interior	Exterior					
0412	Deep Gulch	NA	NA	17	0	0	0	0
0413	Dirty Man	NA	NA	0	0	0	0	0
0414	Dish	NA	NA	5	2	0	0	0
0415	Doty Mountain	NA	NA	31	7	0	0	0
0417	Grizzly	NA	NA	28	0	0	0	0
0418	Hartt Creek	NA	NA	1	0	1	0	0
0419	Jack Creek	NA	NA	0	0	0	0	0
0420	Little Jack Creek	NA	NA	NA	NA	NA	NA	NA
0421	McCarty Canyon	NA	NA	1	0	0	0	0
0422	Methodist	NA	NA	1	0	0	0	0
0423	Middlewood Hill	NA	NA	10	0	0	0	0
0425	Morgan Creek	NA	NA	0	0	0	0	0
0426	Morgan Ranch	NA	NA	0	0	0	0	0
0427	North Spring Creek	NA	NA	0	0	0	0	0
0428	Cherokee Creek	NA	NA	0	0	0	0	0
0429	Rich	NA	NA	0	1	0	0	0
0430	Sage Creek	NA	NA	1	4	0	0	0
0431	Savery Creek	NA	NA	0	0	0	0	0
0432	Snow Creek	NA	NA	3	0	0	0	0
0433	Sulpher Springs	NA	NA	7	0	0	0	0
0434	Twingroves	NA	NA	1	0	0	0	0
0435	Wild Cow	NA	NA	3	0	0	0	0
0436	Windmill	NA	NA	1	1	0	0	0
0437	Hill Isolated Tract	NA	NA	0	0	0	0	0
0438	Spring Creek Isolated Tract	NA	NA	0	0	0	0	0
0440	Bartlett Isolated Tract	NA	NA	0	0	0	0	0
0441	North Pasture	NA	NA	0	0	0	0	0

NUMBER OF EXISTING RANGE IMPROVEMENTS ON PUBLIC LAND BY ALLOTMENT--CONTINUED

Allotment Number	Allotment Name	Fences (miles)		Reservoirs/ Pits	Windmills/ Wells/Pumps	Springs	Pipelines	Troughs
		Interior	Exterior					
0442	Horse Pasture	NA	NA	0	0	0	0	0
0443	East Muddy	NA	NA	4	0	0	0	0
0444	Truck Drivers Creek	NA	NA	0	0	0	0	0
0445	H.R. Holding Pasture	0	4	1	0	0	0	0
0446	Antelope Isolated Tract	NA	NA	0	0	0	0	0
0447	Mountain Pasture	NA	NA	2	0	0	0	0
0448	J.O. Pasture	NA	NA	0	0	0	0	0
0449	Sierra Madre Ranch	NA	NA	0	0	0	0	0
0450	Standard	NA	NA	5	0	0	0	0
0451	Jim Berger	NA	NA	0	0	0	0	0
0453	Thomas and Irma Ryan	NA	NA	0	0	0	0	0
0455	Sage Creek Ranch	NA	NA	0	0	0	0	0
0456	Deep Creek Pasture	NA	NA	3	0	0	0	0
0457	West Wild Cow	NA	NA	1	0	0	0	0
0501	Adam's Ranch	NA	NA	0	0	0	0	0
0502	Adobe Town	NA	NA	6	1	0	0	0
0503	Big Robber	NA	NA	13	2	0	0	0
0505	Cherokee Trail	NA	NA	14	5	0	1	0
0506	Continental	NA	NA	36	2	0	0	0
0507	Corson Spring	NA	NA	0	1	2	0	0
0508	Cottonwood Hill	NA	NA	10	0	0	0	0
0509	Cow Creek	NA	NA	31	1	0	0	0
0510	Crooked Wash	NA	NA	NA	NA	NA	NA	NA
0511	Espitaler	NA	NA	10	0	0	0	0
0512	Grindstone Springs	NA	NA	1	0	1	0	0
0513	Little Powder Mountain	NA	NA	8	1	0	0	0
0514	Little Robber	NA	NA	2	1	0	0	0

NUMBER OF EXISTING RANGE IMPROVEMENTS ON PUBLIC LAND BY ALLOTMENT--CONTINUED

Allotment Number	Allotment Name	Fences (miles)		Reservoirs/ Pits	Windmills/ Wells/Pumps	Springs	Pipelines	Troughs
		Interior	Exterior					
0515	Mexican Flats	NA	NA	6	0	0	0	0
0516	Mexican Graves	NA	NA	8	2	0	0	0
0517	Oppenheimer	NA	NA	9	5	0	1	0
0518	Poison Buttes	NA	NA	7	2	0	1	0
0519	Powder Mountain	NA	NA	6	1	0	1	0
0520	Powder Rim	NA	NA	20	9	5	0	0
0521	Red Creek	NA	NA	44	2	5	1	0
0522	River Bottom	NA	NA	0	0	0	0	0
0523	Rotten Springs	NA	NA	5	0	2	0	0
0524	Sand Creek	NA	NA	8	0	1	0	0
0525	South Barrel	NA	NA	8	2	0	0	0
0527	V Spreaders	NA	NA	1	1	0	0	0
0528	Willow Creek	NA	NA	19	2	0	0	0
0529	Headquarters Ranch	NA	NA	0	0	0	0	0
0530	South Muddy	NA	NA	1	0	0	0	0
0531	George Dew	NA	NA	0	0	0	0	0
0601	Badwater	NA	NA	14	0	0	0	0
0602	Bull Canyon	NA	NA	0	0	0	0	0
0603	Bolten Ranch	NA	NA	NA	NA	NA	NA	NA
0604	Coal Bank Wash	NA	NA	2	0	0	0	0
0605	Daley Ranch	NA	NA	7	4	0	0	0
0606	Doolittle	NA	NA	0	0	0	0	0
0607	Echo Springs	NA	NA	14	0	0	0	0
0608	Emigrant	NA	NA	1	1	0	0	0
0609	Fillmore	NA	NA	11	0	0	0	0
0610	LaClede	NA	NA	13	8	0	0	0
0611	North Barrel	NA	NA	9	0	0	0	0

NUMBER OF EXISTING RANGE IMPROVEMENTS ON PUBLIC LAND BY ALLOTMENT--CONTINUED

Allotment Number	Allotment Name	Fences (miles)		Reservoirs/ Pits	Windmills/ Wells/Pumps	Springs	Pipelines	Troughs
		Interior	Exterior					
0612	North Pine Butte	NA	NA	2	0	0	0	0
0613	Platte River	NA	NA	5	1	0	0	0
0614	Olsen Ranch Pasture	NA	NA	0	0	0	0	0
0615	Riner	NA	NA	7	2	0	0	0
0616	Sixteen Mile	NA	NA	24	3	0	0	0
0619	South Red Desert	NA	NA	8	0	0	0	0
0620	South Wamsutter	NA	NA	5	0	0	0	0
0621	Tipton	NA	NA	9	1	0	0	0
0623	Pine Grove	NA	NA	13	0	0	0	0
0624	Daley Ranch Pasture	NA	NA	0	0	0	0	0
0625	South Pine Butte	NA	NA	0	0	0	0	0
0626	44 Ranch	NA	NA	0	1	0	0	0
0701	Bell Springs	14	25	10	0	3	0	0
0702	Bell Springs Ranch Pasture	1	3	1	0	0	0	0
0703	East City Limits	10	3	1	0	0	0	0
0704	East Sinclair	4	8	0	0	1	0	0
0706	G.L.	4	24	6	0	0	0	0
0707	Haystack	10	41	5	0	0	0	0
0708	Haystack River Pasture	10	12	0	0	0	0	0
0709	Jawbone	4	40	6	3	0	0	0
0710	Monument Draw	3	20	4	1	0	1	12
0711	Monument Lake	69	65	22	5	0	0	0
0713	North Creston West	5	24	6	1	0	0	0
0714	Latham	3	48	2	1	0	0	0
0715	North Tipton	0	48	2	1	0	0	0
0716	North Wamsutter	25	51	4	7	0	0	0
0717	Ruby Knolls	0	30	0	2	0	0	0

NUMBER OF EXISTING RANGE IMPROVEMENTS ON PUBLIC LAND BY ALLOTMENT--CONTINUED

Allotment Number	Allotment Name	Fences (miles)		Reservoirs/ Pits	Windmills/ Wells/Pumps	Springs	Pipelines	Troughs
		Interior	Exterior					
0718	Sandstone	34	46	14	6	2	0	0
0719	Separation Flats	20	54	15	3	3	0	0
0720	Shamrock Hills	7	40	20	1	0	0	0
0721	D.O.	8	10	4	0	0	0	0
0722	Chain Lakes	0	28	2	4	0	0	0
0723	Shamrock Pasture	4	9	0	0	0	0	0
1012	Silver Spur North	NA	NA	0	0	0	0	0
1028	Plattoga Ranch	NA	NA	0	1	0	0	0
1030	V.T. Swanson	NA	NA	0	0	0	0	0
1037	Lazy River Ranch	NA	NA	0	0	0	0	0
1101	Airheart Pasture	NA	NA	2	0	0	0	0
1102	Big Gulch	NA	NA	0	0	0	0	0
1103	West Brown's Hill	NA	NA	0	0	0	0	0
1104	Cedar Ridge	NA	NA	0	1	0	0	0
1106	Cushing	NA	NA	0	0	0	0	0
1107	Dolan	NA	NA	NA	NA	NA	NA	NA
1108	Etherington	NA	NA	NA	NA	NA	NA	NA
1109	Fly Creek	NA	NA	0	0	0	0	0
1110	Hell Canyon	NA	NA	NA	NA	NA	NA	NA
1111	Hill Pasture	NA	NA	NA	NA	NA	NA	NA
1112	Little Horse Pasture	NA	NA	2	0	0	0	0
1113	Little Sandstone	NA	NA	NA	NA	NA	NA	NA
1114	McCarger Draw	NA	NA	0	0	0	0	0
1115	McCary	NA	NA	0	0	0	0	0
1116	McIntosh Horse Mountain	NA	NA	2	0	0	0	0
1117	Mexican Meadows	NA	NA	0	0	0	0	0
1118	Morgan Boyer Subunit	NA	NA	NA	NA	NA	NA	NA

NUMBER OF EXISTING RANGE IMPROVEMENTS ON PUBLIC LAND BY ALLOTMENT--CONTINUED

Allotment Number	Allotment Name	Fences (miles)		Reservoirs/ Pits	Windmills/ Wells/Pumps	Springs	Pipelines	Troughs
		Interior	Exterior					
1120	North Rye Grass	NA	NA	NA	NA	NA	NA	NA
1121	Pioneer Draw	NA	NA	0	0	0	0	0
1122	Poling Isolated Tract	NA	NA	NA	NA	NA	NA	NA
1123	Rasmussen Subunit	NA	NA	0	0	0	0	0
1124	Reader	NA	NA	NA	NA	NA	NA	NA
1125	Reader Basin Pasture	NA	NA	NA	NA	NA	NA	NA
1126	Road Gulch	NA	NA	1	0	0	0	0
1127	Sheep Mountain	NA	NA	NA	NA	NA	NA	NA
1128	Short	NA	NA	2	0	0	0	0
1129	South Baggs	NA	NA	NA	NA	NA	NA	NA
1130	South Pasture	NA	NA	0	0	0	0	0
1131	South Rye Grass	NA	NA	0	0	0	0	0
1132	Spring Gulch	NA	NA	1	0	0	0	0
1133	Standard	NA	NA	0	0	0	0	0
1134	State Line 40	NA	NA	0	0	0	0	0
1135	Willow Creek	NA	NA	0	0	0	0	0
1136	Battle Mountain Isolated Tract	NA	NA	NA	NA	NA	NA	NA
1137	C.A. McKee Isolated Tract	NA	NA	NA	NA	NA	NA	NA
1138	M.J. Anderson Isolated Tract #1	NA	NA	NA	NA	NA	NA	NA
1139	Cobb Cattle Company Isolated Tract	NA	NA	NA	NA	NA	NA	NA
1140	Grieve Reservoir Pasture	NA	NA	0	0	0	0	0
1141	M.J. Anderson Isolated Tract #2	NA	NA	NA	NA	NA	NA	NA
1142	East Brown's Hill	NA	NA	0	0	0	0	0
1143	L.U. Grieve Pasture	NA	NA	0	0	0	0	0
1144	Coal Bank Draw	NA	NA	NA	NA	NA	NA	NA

1/Miles of fencing depicts that area south of Wyoming 220.

Note: NA = Information not available.

POTENTIAL RANGE MANAGEMENT ACTIONS FOR CATEGORY I ALLOTMENTS UNDER THE PROPOSED ACTION

Allotment Number	Allotment Name	Change in Forage Use by Livestock	Change in Season of Use	Change in Forage Use by Wild Horses	Water Development	Fencing	Change in Forage Use by Wildlife	Monitoring	Grazing Treatments	Vegetation Manipulation
0203	Cherry Creek				X			X	X	
0209	Junk Creek				X			X	X	
0212	Long Creek				X			X	X	
0215	Pole Canyon	X			X			X	X	
0216	Sand Creek				X			X	X	
0219	Station 8	X			X	X		X	X	
0222	Wood Creek							X	X	X
0401	Airport	X			X			X	X	
0402	Antelope	X				X		X	X	
0403	Baggs Subunit				X	X	X	X	X	
0407	Centennial Creek				X	X		X	X	
0408	Cherokee			X			X	X	X	
0411	Cushing	X			X	X		X	X	X
0414	Dish				X			X	X	
0415	Doty Mountain				X	X	X	X	X	
0417	Grizzly							X	X	X
0418	Hartt Creek							X	X	X
0421	McCarty Canyon					X		X	X	X
0422	Methodist	X						X	X	

POTENTIAL RANGE MANAGEMENT ACTIONS FOR CATEGORY I ALLOTMENTS UNDER THE PROPOSED ACTION--CONTINUED

Allotment Number	Allotment Name	Change in Forage Use by Livestock	Change in Season of Use	Change in Forage Use by Wild Horses	Water Development	Fencing	Change in Forage Use by Wildlife	Monitoring	Grazing Treatments	Vegetation Manipulation
0426	Morgan Ranch						X	X	X	
0429	Rich	X					X	X	X	
0430	Sage Creek	X			X	X		X	X	X
0435	Wild Cow				X	X		X	X	
0440	Bartlett Isolated Tract	X				X		X	X	
0443	East Muddy						X	X	X	
0447	Mountain Pasture		X		X	X		X	X	
0450	Standard		X					X	X	
0451	Jim Berger							X	X	X
0453	Thomas and Irma Ryan				X			X	X	
0457	West Wild Cow				X	X		X	X	
0502	Adobe Town	X		X	X	X		X	X	
0505	Cherokee Trail				X	X		X	X	
0506	Continental	X		X	X			X	X	X
0507	Corson Springs			X		X		X	X	
0509	Cow Creek			X		X		X	X	
0510	Crook Wash			X		X		X	X	
0511	Espitalier			X		X		X	X	
0512	Grindstone Springs			X				X	X	

POTENTIAL RANGE MANAGEMENT ACTIONS FOR CATEGORY I ALLOTMENTS UNDER THE PROPOSED ACTION--CONTINUED

Allotment Number	Allotment Name	Change in Forage Use by Livestock	Change in Season of Use	Change in Forage Use by Wild Horses	Water Development	Fencing	Change in Forage Use by Wildlife	Monitoring	Grazing Treatments	Vegetation Manipulation
0513	Little Powder Mountain			X	X	X		X	X	
0517	Oppenheimer				X			X	X	
0518	Poison Buttes				X			X	X	
0519	Powder Mountain			X	X	X		X	X	
0520	Powder Rim				X	X		X	X	
0523	Rotten Springs			X	X	X		X	X	
0524	Sand Creek			X				X	X	
0527	V Spreaders	X			X		X	X	X	
0528	Willow Creek			X				X	X	
0530	South Muddy	X	X		X		X	X	X	
0604	Coal Bank Wash				X			X	X	
0605	Daley Ranch				X	X	X	X	X	X
0611	North Barrel			X		X		X	X	
0616	Sixteen Mile					X		X	X	
0626	44 Ranch				X		X	X	X	
0701	Bell Springs	X	X		X			X	X	X
0703	East City Limits				X	X		X	X	
0709	Jawbone				X	X		X	X	
0710	Monument Draw				X	X		X	X	

POTENTIAL RANGE MANAGEMENT ACTIONS FOR CATEGORY I ALLOTMENTS UNDER THE PROPOSED ACTION--CONTINUED

Allotment Number	Allotment Name	Change in Forage Use by Livestock	Change in Season of Use	Change in Forage Use by Wild Horses	Water Development	Fencing	Change in Forage Use by Wildlife	Monitoring	Grazing Treatments	Vegetation Manipulation
0715	North Tipton				X	X		X	X	
0719	Separation Flats				X			X	X	
0720	Shamrock Hills	X	X		X	X		X	X	
1028	Plattoga Ranch	X			X			X	X	
1030	V.T. Swanson					X		X	X	
1106	Cushing					X		X	X	X
1109	Fly Creek	X	X					X	X	
1113	Little Sandstone							X	X	
1114	McCarger Draw	X			X	X		X	X	X
1116	McIntosh Horse Mountain	X			X	X		X	X	X
1118	Morgan-Boyer Subunit				X	X		X	X	X
1120	North Rye Grass	X			X	X		X	X	X
1123	Rasmussen Subunit							X	X	X
1124	Reader	X	X					X	X	
1126	Road Gulch							X	X	X
1128	Short				X	X		X	X	X
1129	South Baggs							X	X	X
1131	South Rye Grass	X			X	X		X	X	X
1132	Spring Gulch	X	X					X	X	

POTENTIAL RANGE MANAGEMENT ACTIONS FOR CATEGORY I ALLOTMENTS UNDER THE ENHANCED LIVESTOCK GRAZING ALTERNATIVE

Allotment Number	Allotment Name	Change in Season of Use	Grazing Treatments	Change in Forage Use by Wild Horses	Water Development	Fencing	Change in Forage Use by Wildlife	Vegetation Manipulation
0203	Cherry Creek		X		X			
0209	Junk Creek		X		X			
0212	Long Creek		X		X			
0215	Pole Canyon	X	X		X	X		
0216	Sand Creek		X		X			
0219	Station 8	X	X		X	X		
0222	Wood Creek		X		X			X
0401	Airport		X		X			
0402	Antelope		X		X	X		
0403	Baggs Subunit	X	X		X	X	X	X
0407	Centennial Creek		X			X		X
0408	Cherokee		X	X		X	X	X
0411	Cushing		X		X	X		X
0414	Dish		X		X	X		X
0415	Doty Mountain	X	X	X	X	X	X	X
0417	Grizzly		X		X			X
0418	Hartt Creek		X		X			X
0421	McCarty Canyon		X			X		X
0422	Methodist		X		X		X	X
0426	Morgan Ranch		X			X	X	X
0429	Rich		X		X	X		X

POTENTIAL RANGE MANAGEMENT ACTIONS FOR CATEGORY I ALLOTMENTS UNDER THE ENHANCED LIVESTOCK GRAZING ALTERNATIVE--CONTINUED

Allotment Number	Allotment Name	Change in Season of Use	Grazing Treatments	Change in Forage Use by Wild Horses	Water Development	Fencing	Change in Forage Use by Wildlife	Vegetation Manipulation
0430	Sage Creek	X	X		X	X		X
0435	Wild Cow		X		X	X		X
0440	Bartlett Isolated Tract					X		
0443	East Muddy		X				X	
0447	Mountain Pasture		X		X	X		X
0450	Standard	X	X					X
0451	Jim Berger		X					X
0453	Thomas and Irma Ryan		X		X			X
0457	West Wild Cow		X		X	X		X
0502	Adobe Town		X	X	X	X		
0505	Cherokee Trail		X		X	X		
0506	Continental	X	X	X	X			X
0507	Corson Springs		X	X	X	X		
0509	Cow Creek		X	X		X		
0510	Crook Wash		X	X	X	X		
0511	Espitalier		X	X		X		
0512	Grindstone Springs		X	X				
0513	Little Powder Mountain		X	X	X	X		
0517	Oppenheimer		X		X			
0518	Poison Buttes		X		X			
0519	Powder Mountain		X	X	X	X		

POTENTIAL RANGE MANAGEMENT ACTIONS FOR CATEGORY I ALLOTMENTS UNDER THE ENHANCED LIVESTOCK GRAZING ALTERNATIVE--CONTINUED

Allotment Number	Allotment Name	Change in Season of Use	Grazing Treatments	Change in Forage Use by Wild Horses	Water Development	Fencing	Change in Forage Use by Wildlife	Vegetation Manipulation
0520	Powder Rim		X		X	X		X
0523	Rotten Springs		X	X	X	X		
0524	Sand Creek		X	X				
0527	V Spreaders	X	X					
0528	Willow Creek		X	X				
0530	South Muddy	X	X		X	X	X	
0604	Coal Bank Wash		X		X			X
0605	Daley Ranch		X		X	X	X	X
0611	North Barrel		X	X		X		
0616	Sixteen Mile		X		X	X	X	X
0626	44 Ranch		X		X			X
0701	Bell Springs	X	X		X			
0703	East City Limits		X		X	X		
0709	Jawbone		X		X	X		
0710	Monument Draw		X		X	X		
0715	North Tipton		X		X	X		
0719	Separation Flats		X		X	X		
0720	Shamrock Hills	X	X		X	X		
1028	Plattoga Ranch		X		X			X
1030	V.T. Swanson		X			X		X
1106	Cushing		X			X		X

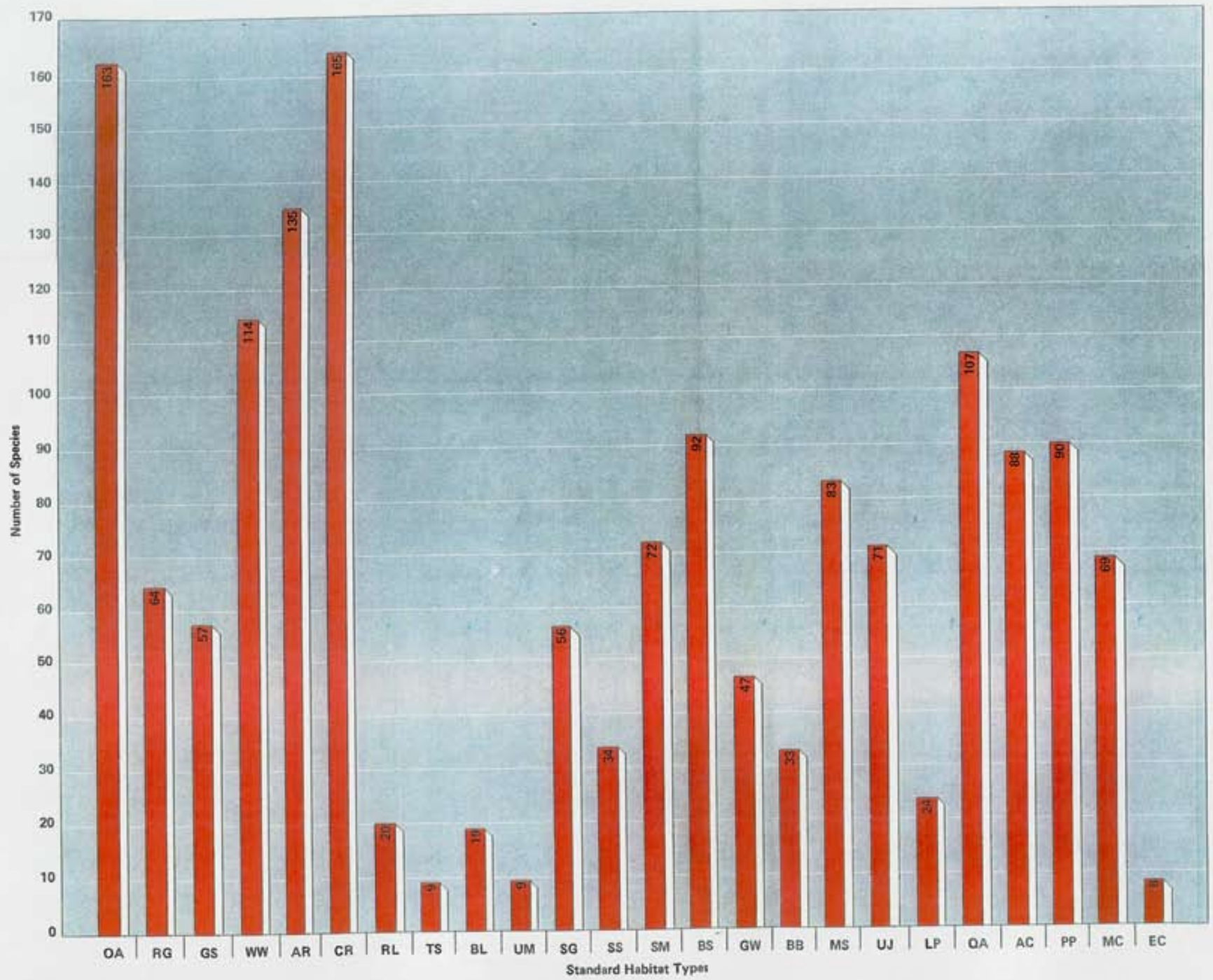
POTENTIAL RANGE MANAGEMENT ACTIONS FOR CATEGORY I ALLOTMENTS UNDER THE ENHANCED LIVESTOCK GRAZING ALTERNATIVE--CONTINUED

Allotment Number	Allotment Name	Change in Season of Use	Grazing Treatments	Change in Forage Use by Wild Horses	Water Development	Fencing	Change in Forage Use by Wildlife	Vegetation Manipulation
1109	Fly Creek	X	X					X
1113	Little Sandstone		X					X
1114	McCarger Draw		X		X	X		X
1116	McIntosh Horse Mountain		X		X	X		X
1118	Morgan-Boyer Subunit		X		X	X		X
1120	North Rye Grass		X		X	X		X
1123	Rasmussen Subunit		X					X
1124	Reader	X	X					
1126	Road Gulch		X					X
1128	Short		X		X	X		X
1129	South Baggs		X					X
1131	South Rye Grass		X		X	X		X
1132	Spring Gulch	X	X					X

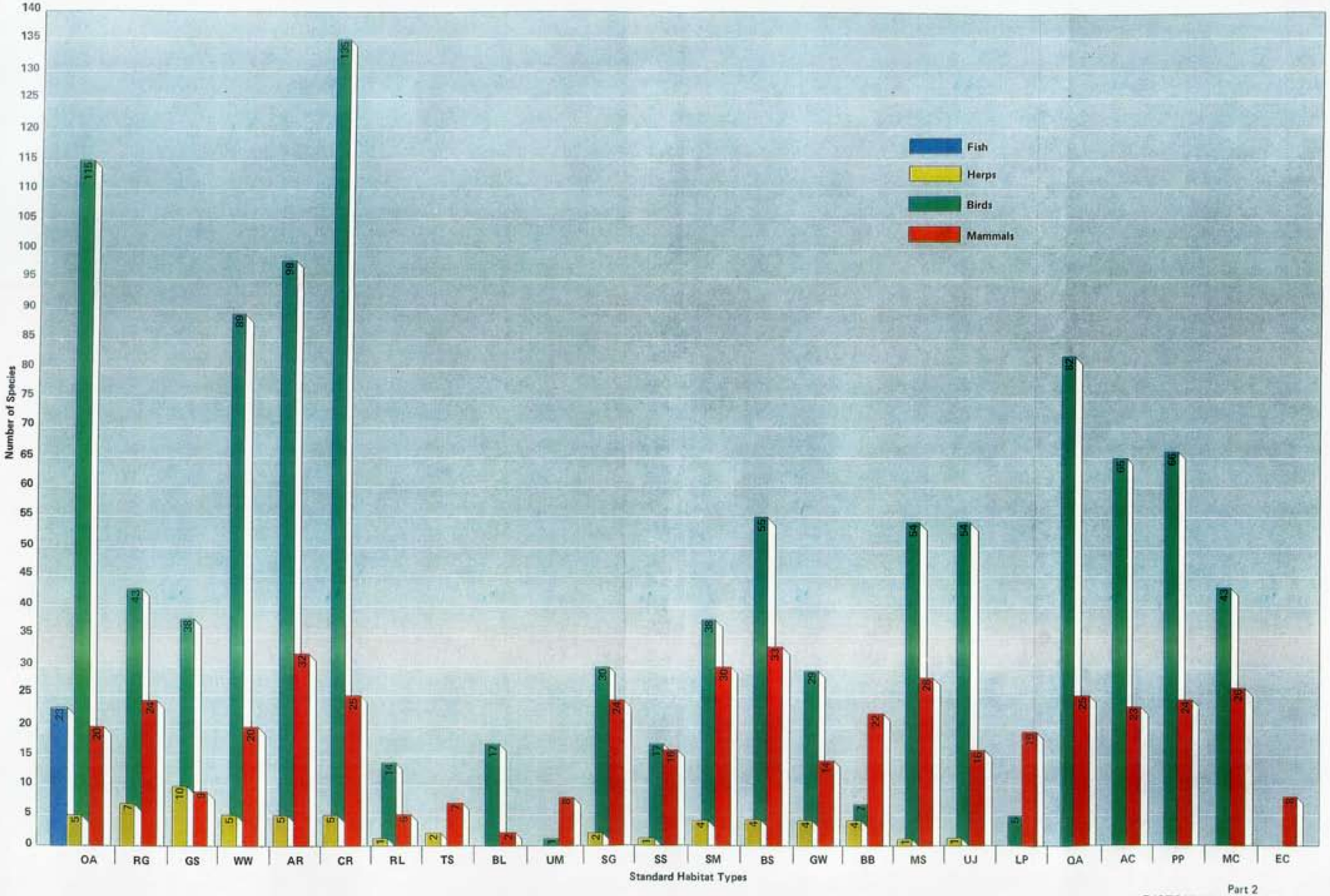
APPENDIX 5

GUIDE TO THE STANDARD HABITAT TYPES

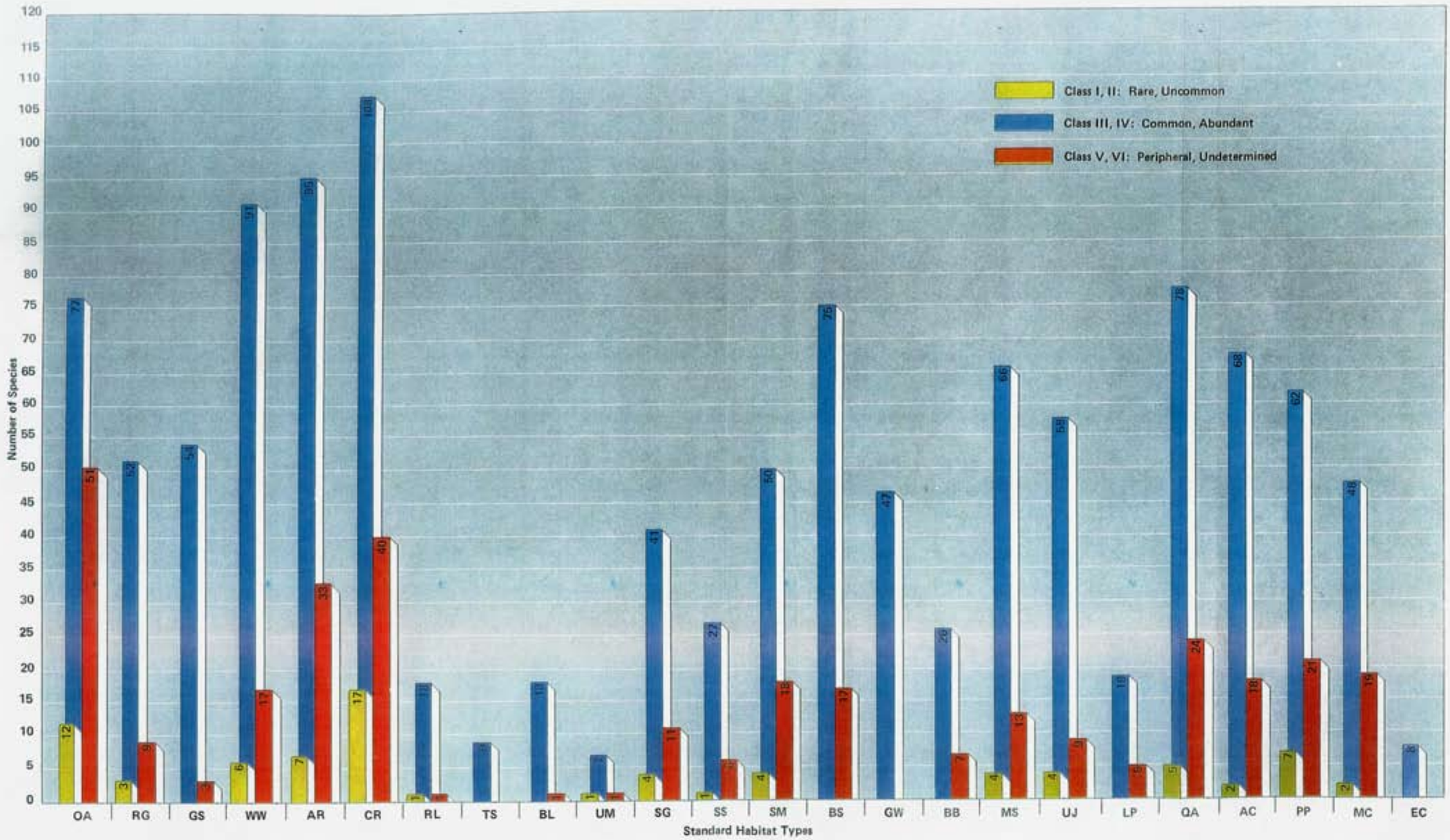
1. Open Aquatic - OA
2. Riparian Grassland - RG
3. Greasewood/Sagebrush Riparian Shrubland - GS
4. Willow/Waterbirch Riparian Shrubland - WW
5. Aspen Riparian Woodland - AR
6. Cottonwood Riparian Woodland - CR
7. Rockland - RL
8. True Sand Dune - TS
9. Badland - BL
10. Upland Meadow - UM
11. Short Grassland - SG
12. Saltbush Steppe - SS
13. Sagebrush/Mixed Grass Steppe - SM
14. Big Sagebrush/Rabbitbrush Steppe - BS
15. Greasewood Steppe - GW
16. Bitterbrush/Sagebrush Steppe - BB
17. Mountain Shrubland - MS
18. Utah Juniper Woodland - UJ
19. Limber Pine Woodland - LP
20. Quaking Aspen Woodland - QA
21. Aspen/Conifer Woodland - AC
22. Ponderosa Pine/Douglas Fir Forest - PP
23. Mixed Conifer Forest - MC
24. Early Successional Conifer Forest - EC



Part 1
NUMBER OF VERTEBRATE SPECIES
BY STANDARD HABITAT TYPE



Part 2
DISTRIBUTION OF SPECIES BY TAXONOMIC CLASS



Part 3
DISTRIBUTION OF SPECIES BY ABUNDANCE CLASS

APPENDIX 6

METHODOLOGY USED IN DETERMINING DIRECT ECONOMIC IMPACTS

A linear programing model was developed for each typical ranch based on budgets. In simplified terms, the linear programming process follows an iterative procedure of adding successive animal units until the marginal cost of one additional animal unit equals the marginal returns from that unit, or until a forage constraint is reached that will not allow the herd size to be increased further. When multiple forage sources are available during one grazing season, the model will select the lowest cost forage first, and the optimum solution will reflect the forage combination and herd size that maximizes return above cash costs for the enterprise.

This technique allows the researcher to vary amounts of available forage based on different scenarios and to analyze the impacts under those scenarios.

BACKGROUND DOCUMENTS

The following documents, referred to in this EIS, are available for review at the BLM Rawlins District Office, 1300 North Third Street, Rawlins, Wyoming.

Big Game Completion Reports (Wyoming Game and Fish Department, 1981)

BLM beaver pond inventories

BLM Manual

BLM reservoir maintenance inventories

BLM resource area maps

BLM site files

BLM stream inventories

BLM stream survey files, 1975-1977

Classification and Multiple-Use Act of 1964

Clean Air Act of 1977

Code of Federal Regulations (CFR) 40

Divide Basin URA-3

Divide MFP

Endangered Species Act of 1973

Executive Order 12088

Federal Land Policy and Management Act of 1976

Federal Water Pollution Control Act Amendment of 1972

Final Grazing Management Policy (BLM Instruction Memorandum No. 82-292)

Interim Management Policy and Guidelines for Lands under Wilderness Review

National Environmental Policy Act of 1969

National Register of Historic Places

Natural Resources Defense Council et al. versus Morton et al. (1974 federal court action)

Overland URA-3

Plant phenology study (1979)

Precipitation and production data collected by the University of Wyoming (1965 to 1979)

Programmatic Memorandum of Agreement between the Department of the Interior, Bureau of Land Management, the Advisory Council on Historic Preservation, and the National Conference of State Historic Preservation Officers regarding the Livestock Grazing and Range Improvement Program

Public Rangelands Improvement Act of 1978

Rangeland Programmatic Memorandum of Agreement with the Advisory Council on Historic Places (BLM Instruction Memorandum No. 80-369)

SCS Range Site Descriptions

Sediment Yield Rating System

Seven Lakes Grazing Environmental Statement

Sikes Act of 1974

Soil survey reports

Soils maps

Standard Habitat Site Classification: Overland EIS Area, September 1981

Taylor Grazing Act of 1934

Wild Free-Roaming Horse and Burro Act of 1971

Wyoming Game and Fish Department classification of streams (1977)

LIST OF PREPARERS

Team Leader

Bob Tigner

Qualifications: Natural Resource Specialist, Bureau of Land Management, 2 years; Wildlife Biologist (Research), U.S. Fish and Wildlife Service, 21 years; ranching, 15 years; Ph.D., Biology, University of Colorado; M.S., B.S., Wildlife Management, Colorado State University

Responsibility: Overall Direction and Management

Archeologist

Michael T. Bies

Qualifications: Archeologist, Bureau of Land Management, 1 year; Archeologist, U.S.D.A. Forest Service, 1½ years; Archeologist, Historic Archeologists Historian, Contract Cultural Resource Management, 3 years; stock farm, 3 years (cattle, sheep, and hogs); M.A. in progress, Anthropology, University of Idaho, Moscow; B.S., History and Sociology/Anthropolgy, University of South Dakota, Vermillion

Responsibility: Cultural Resources

Economist

Tom Crawford

Qualifications: Economist, Bureau of Land Management, 2 years; Research Specialist, New Mexico State University, 6 months; M.S., B.S., Agricultural Economics, New Mexico State University

Responsibility: Socioeconomics and Livestock Grazing

Editorial Assistant

Tina Warren

Qualifications: Editorial Assistant and AMtext 425 Operator, 4 years, Clerk/Typist (Mag Card and System 6 operator), 2½ years, Bureau of Land Management

Responsibility: Word Processing

Fisheries Biologist

Fred Stabler

Qualifications: Fisheries Biologist, Bureau of Land Management, 4 years; Fisheries Biologist, U.S. Fish and Wildlife Service, 1 year; M.S., Fishery Resources, University of Idaho; B.S., Wildlife Biology, Washington State University

Responsibility: Fisheries and Hydrology

Outdoor Recreation Planner

Gary Long

Qualifications: Outdoor Recreation Planner and Wilderness Coordinator, 4½ years, Land Use Planner (Economist), 4 years, Bureau of Land Management; Research Assistant, University of Wyoming, 1 year; B.A., Geography, University of Wyoming

Responsibility: Recreation and Visual Resources

Range Conservationist

Chuck Ashton

Qualifications: Range Conservationist, Bureau of Land Management, 3½ years; B.S. Range Management and Biology, Utah State University

Responsibility: Wild Horses, Socioeconomics, and Livestock Grazing

Range Conservationist

Michael R. Holbert

Qualifications: Range Conservationist, Bureau of Land Management, 5½ years; B.S., Range and Forest Management, Colorado State University

Responsibility: Vegetation

Soil Scientist

Steve Howell

LIST OF PREPARERS

Qualifications: Soil Scientist, Bureau of Land Management, 2 years; Soil Scientist, Soil Conservation Service, 3 years; B.S., Soil Science, University of Maine

Responsibility: Soils

Soil Scientist

Steve Strenger

Qualifications: Soil Scientist, Bureau of Land Management, 5 years; Soil Scientist, Indiana Department of Natural Resources, Soil and Water Conservation Committee, 3½ years; B.S., Natural Resources/Soil Science, University of Wisconsin, Madison

Responsibility: Soils

Technical Advisor

Bud Holbrook

Qualifications: Area Manager, Range Conservationist, Bureau of Land Management, 14 years; Part Owner/Manager of Holbrook Ranches, Inc., 7 years; Range Management Consultant, 5 years; B.S., Agronomy, Utah State University; Postgraduate Study, Range Management, Utah State University

Responsibility: EIS Review

Technical Coordinator

Kirby Boldan

Qualifications: Environmental Specialist, 3 years, Realty Specialist, 4 years, Bureau of Land Management; B.S., Economics, Boise State University

Responsibility: Team Coordination

Wildlife Biologist

Chris Yde

Qualifications: Wildlife Biologist, Bureau of Land Management, 4 years; Wildlife Biological Technician, Bureau of Land Management, ½ year; Biological Technician, U.S. Fish and Wildlife Service, ½ year; M.S., B.S., Fish and Wildlife Management, Montana State University

Responsibility: Wildlife

Wildlife Biologist

Larry Saslaw

Qualifications: Wildlife Biologist, Bureau of Land Management, 5 years; Range Conservationist, Bureau of Land Management, 1 year; B.S., Wildlife Management, Humboldt State University.

Responsiblity: Wildlife

CONSULTATION AND COORDINATION

COORDINATION WITH OTHER AGENCIES

The following agencies were consulted or expressed interest in the Divide MFP or EIS.

Federal

U.S. Department of Agriculture

- Forest Service
- Soil Conservation Service

Environmental Protection Agency

U.S. Department of Interior

- Fish and Wildlife Service
- National Park Service
- Geological Survey

State

New Mexico State University, Department of Agricultural Economics and Agricultural Business

Wyoming Board of Land Commissioners

Wyoming Game and Fish Department

University of Wyoming, Division of Agricultural Economics

Local

Carbon County Planning and Zoning Board

Sweetwater County Planning and Zoning Board

City of Rawlins

Town of Dixon

Town of Baggs

PUBLIC PARTICIPATION

The following organizations, companies, permittee/lessees, and individuals were consulted or expressed interest in the Divide MFP or EIS. They will be sent a copy of this EIS for review.

Organizations

American Society for the Preservation of Mustangs and Burros

Carbon County Stock Growers Association

Continenttal Divide Trail Society

Defenders of Wildlife

Divide EIS Monitoring Committee, an affiliate of the Carbon County Stockgrowers Association

International Society for the Protection of Mustangs and Burros

League of Women Voters of Wyoming

Natural Resources Defense Council, Inc.

Nature Conservancy

Wild Horse Organized Assistance

Wyoming State Grazing Board

Companies

Amoco Production Company

Atlantic Richfield Company

Chevron USA, Inc.

Cities Service Gas Company

Colorado Interstate Gas

CONSULTATION AND COORDINATION

First Wyoming Bank of Rawlins, N.A.

Lonesome Fox Corporation

Marathon Oil Company

Petroleum Association of Wyoming

Rawlins National Bank

Rocky Mountain Energy

Rocky Mountain Oil and Gas Association, Inc.

Rocky Mountain Scout

The Kemmerer Coal Company

Tri-State Generation and Transmission Association, Inc.

Western Nuclear, Inc.

Upland Industries Corporation

Permittees/Lessees

Steve Adams (Eliza Solace)

Steve Adams (Adams and Adams)

Margaret Anderson

Pauline Annis (Oscar T. Annis)

Ken Assay (Wyoming Game and Fish Department)

Garland Bartlett

Jim Berger

Jim Berger (Colonial Coins, Inc.)

Mrs. Jack Boyer (Jack Boyer)

Rick Boyer (Richard and Rick Boyer)

L.A. Brazell (L.A. Brazell and Margaret Semon)

L.A. Brazell

Kenneth E. Carrico

John T. Cobb

Tom Cobb (Cobb Cattle Company)

Jim Collins

Dennis Compton (Centennial Valley Ranch Company)

Ray J. Corbett (Louis Larsen Sheep Company)

Donald Corson

Mills Craig

Harry Duncan (Duncan Ranch)

Roy Echeverria (Echo Springs Livestock Company)

Sophie Echeverria

Bob Elliott (M. Taylor Laurence, Jr.)

F.B. Espy (Blake Sheep Company and F.B. Espy)

Phillip Espy (Espy Livestock Company)

L.V. Eversole

Ernest Forsberg

Pete Georgiou (Pete and Hazel Georgiou)

Robert Grieve (Battle Mountain Company)

Tom Grieve (LaClede Land and Livestock)

Reino Hakala (Olson Sisters Corporation)

Niels Hansen (P.H. Livestock Company)

Leonard Hay

Frank Hill (Hill Land and Livestock Company)

Dick Hiser

Dick Hiser (Plattoga Ranch)

CONSULTATION AND COORDINATION

Stan Jolley

William Jolley

Lee Jons

Roy Jons

Carl Kerbs (Kerbs Four Bars Herefords)

Peter Larsen (Martha Larsen)

George Lowham (Sierra Madre Ranch)

John Lufkin (Energy Development Company)

John Lufkin (N.R. Petry and 4900, Inc.)

John Lunt

John MacPherson (Riner Ranches)

Andrew Maneotis (Maneotis Sheep Company)

Earl Martin (ZIZ Ranch)

Wayne L. Martin

C.W. McIlvaine (Tullis Land Company)

Bill R. McKee

C.A. McKee, Jr.

Frank Miller (Miller Estate Company)

Tye Moore (Tye Moore, et al.)

Sam D. Morgan

Sam D. Morgan (Sam D. Morgan and Thomas Grieve)

John Niland (Niland, McDonough, Niland)

Ken Olson (Olson Ranch, Inc.)

Walter Olson

Robert G. Orchard

Steve Page (Elmer Short)

Francis Pearson (Rife Ranch)

Andy Peroulis

John Peroulis (Winslett Ranch, Inc.)

John Peroulis (John and Catherine Peroulis)

Elmer Peterson

Roger Pilgram (Roger and Margaret Pilgram)

Dean Plaster (Estate of Mary Blair)

Stuart Quealy (Quealy Livestock Company)

Robert Rasmussen

Roy Raymond (Ferris Mountain Ranch)

Jeff Reid (Boyer Ranch)

Ed Richner

Curtis Rochelle

Harry Russell (Umbrella Ranch, Inc.)

George Salisbury (Salisbury Livestock Company)

George R. Salisbury, Jr.

Kelly Sewell (Lazy C 2 Bar Ranch)

Kelly Sewell (International WYCO Cattle Company)

George O. Sheehan

Mike Sheehan

Patrick Sheehan

John Smith (Showalter and Smith Land and Livestock)

John Smith (Smith Rancho, Inc.)

Mrs. Raymond E. Smith (Raymond E. Smith)

James Stevenson

Theo and Katherine Stoddart

CONSULTATION AND COORDINATION

Donald Stratton (Sandstone Sheep Company)

Robert Stratton (Stratton Sheep Company)

Bernard Sun (Sun Land and Cattle Company)

Charles Swanson (Swanson Ranch and Implement Company)

Vernon T. Swanson

Bruce Thayer (Edith Thayer)

J. Burton Tuttle

Vern Vivion (Rocky Mountain Sheep Company)

Eugene and Marilyn Walck

Frank Waliser (Waliser Ranches, Inc.)

Jack Weber

Ray and Sid Weber (Weber Ranch, Inc.)

Phil Weber

Nelson E. Wren, Jr.

Jim York (Silver Spur North Ranch)

William Edward Young

Individuals

Lee Airheart

Frank Alguire

J.C. Arnold

Bev Behrends

Joseph R. Bohne

Ed Brehar

Gary D. Brown

Winston Bryon

L. Cabrera, Sr.

J.R. Chidley

Richard E. Cooper

Larry DiBrito

Elmer Erickson

Sherrod France

Darrell E. Gothard

Wilford N. Hemmert

Greg Hiatt

Paul J. Hickey

Lois Higley

John Johnson

Randy H. Johnson

Mrs. Roy Jons

Ty Kaisler

John Litzenberger

Dick Loper

LaVerda Mann

Casey McKee

Mrs. Frank Miller

Leona Miller

Mark Miller

Rod S. Miller

Margaret Mitchell

Randy Montgomery

Kathleen and Tom Moore

CONSULTATION AND COORDINATION

Warren Murphy

Donald Nelson

Carl K. Olson

Martha Page

Gerald Palm

Norman Palm

Bob Pappenheim

Jeff Powell

Wight M. Raffin

Daryl Remeyn

Phil Riddle

Linda Sanchez

Joyce B. Saeh

Chuck Sanger

Donna M. Smith

Kathleen Sun

Steve Sun

Harry B. Tipton

Tom Trowbridge

W.M. Trover

Carol J. Uhl

Clint Withrow

James R. Wolf

Lawrence W. Young II

GLOSSARY

ALLOTMENT. An area designated for the use of a prescribed number and kind of livestock under one plan of management.

ALLOTMENT MANAGEMENT PLAN. A documented program, which applies to livestock operations on public land, that is prepared in consultation, cooperation, and coordination with permittee(s), lessee(s) or other involved affected interests.

ANIMAL UNIT (AU). One mature (1,000 lb.) cow or the equivalent based on average daily forage consumption of 26 pounds of air dry forage per day.

ANIMAL UNIT MONTH (AUM). (1) The amount of forage required by an animal unit for 1 month. (2) Tenure of one animal unit for a period of 1 month.

AQUIFER. A subsurface zone of rock that yields economically important amounts of water to wells.

ARCHEOLOGICAL RESOURCES. All prehistoric and historic physical evidence of past human activity, other than historical documents, which can be used to reconstruct lifeways and cultural history of past peoples. These include sites, artifacts, environmental data, and all other relevant information and the contexts in which they occur.

BENEFIT/COST RATIO. A benefit/cost analysis is based on a ratio that is used to determine whether certain economic objectives will be met by a proposed program. A ratio of benefits to costs of less than 1:1 indicates that the benefits are less than the costs and that the proposed investment would lose money. On the other hand, a ratio in excess of 1:1 indicates the reverse—that beneftis are greater than costs or that the proposed investment will return a "profit" (and contribute to increasing the well-being of the nation).

BIOMASS. The dry weight of living matter in a population within a given area of or volume of habitat.

BIOME. A complex biotic community covering a large area and characterized by distinctive life forms of important climax species.

BROWSE. (1) The tender shoots, twigs, and leaves of trees and shrubs often used as food by domestic and wild ungulates. (2) To feed or eat on browse.

BULK DENSITY. The mass of dry soil per unit bulk volume, including the air space.

CALF CROP. The number of calves weaned from a given number of cows bred, normally expressed in percent.

CANOPY. The uppermost layer of vegetation.

CARBOHYDRATE STORAGE PERIOD. The period of time carbohydrates (food reserves) are stored in various areas of a plant. This period of time normally occurs when the food manufactured by the leaves exceeds the needs of the plant for metabolism and growth.

CARBON-14 DATING. The determination of the age of objects of plant or animal origin by measurement of the radioactivity of their carbon content. Used in archeology to date bone, wood, charcoal, and other plant and animal remains associated with human activity.

CARRYING CAPACITY. The maximum stocking rate possible without inducing damage to vegeation or related resources.

CHAINING. Mechanically controlling undesirable vegetation (even aged, mature, nonsprouting, single stemmed species such as junipers, pinyon, etc.) by dragging heavy anchor chain behind two crawler tractors traveling in a parallel direction.

CHECKERBOARD LAND PATTERN. A pattern of land ownership where sections alternative ownership between the federal government and the private sector, creating a pattern that resembles a checkerboard.

GLOSSARY

CLASS I CULTURAL RESOURCE INVENTORY. An existing data inventory—a review and compilation of known cultural resource data. When there have been no actual field investigations accomplished, the Class I inventory must determine whether any known cultural resources are present and evaluate the possibility of locating cultural resources should a Class III inventory be conducted. To accomplish this objective, the Class I inventory requires a search of all BLM cultural resource files, contact with the State Historic Preservation Officer, and a review of published manuscripts.

CLASS II CULTURAL RESOURCE INVENTORY. A sample-oriented field inventory. The Class II inventory provides the data base for making an objective estimate of the nature and distribution of sites within the study area, based on an on-the-ground sample of the area.

CLASS III CULTURAL RESOURCE INVENTORY. A complete on-the-ground inventory of a specific area. Upon completion of a Class III inventory in a specified area, no further cultural resource inventory work would usually be needed.

CLIMAX VEGETATION. The highest ecological development of a plant community that is capable of being perpetuated under the prevailing climatic and soil conditions.

COLLECTION BASINS. Any bowl-shaped depression in the surface of the land in which water collects after thunderstorms.

COMPETITION. Use of a resource by one species that reduces the availability of that resource to other species.

CONTOUR FURROW. A plowed or listered strip on a contour line for the purpose of water retention.

COVER. A major component of wildlife habitat. Cover consists of vegetation or terrain used by wildlife for protection from predators and adverse weather conditions.

CRITICAL HABITAT. Legally designated habitat that is essential to the survival of populations of an endangered or threatened species of wildlife.

CRUCIAL HABITAT. The portion of the living area used by a wildlife species that is essential to the survival and perpetuation of individuals or populations of that species.

CRUCIAL RANGE. An area of crucial importance to the survival of a local wildlife population during the periodic occurrence of drought or severe winter conditions.

CULTURE AREAS. Geographical regions where a similarity of cultural forms of the occupants of a region are found through ethnographic and archeological studies.

CULTURAL MODIFICATION. Any human activity which has altered the basic elements (form, line, color, or texture) of the land.

CULTURAL RESOURCES. Those fragile and nonrenewable remains of human activity, occupation, or endeavor, reflected in districts, sites, structures, buildings, objects, artifacts, ruins, works of art, architecture, and natural features that were of importance in human events. These resources consist of: (1) physical remains, (2) areas where significant human events occurred, even though evidence of the event no longer remains, and (3) the environment immediately surrounding the actual resource. Cultural resources, including both prehistoric and historical remains, represent a part of the continuum of events from the earliest evidences of man to the present day.

DEFERMENT. Delaying or discontinuing livestock grazing on an area for the period of time needed for plant reproduction, new plant establishment, or vigor restoration of existing plants.

DEFERRED GRAZING. The use of deferment in grazing management of a specific management unit, but not in a systematic rotation that would include other units.

GLOSSARY

DEFOLIATION. The removal of portions of a plant (such as leaves) by grazing animals and/or adverse weather conditions (wind, rain, hail, etc.).

DETAILED RECONNAISANCE (3RD ORDER) SOIL SURVEYS. Soil surveys conducted where data on soil resources are required for management of one to several medium-sized operating units (e.g., individual farms, ranches, wildlife refuges, watersheds). These surveys are commonly made during planning for extensive uses of land, such as rangeland, watershed, woodland, or cropland management.

ECOLOGICAL RANGE CONDITION. See range condition.

ECOSYSTEM. An ecological community, together with its physical environment, forming an interacting system inhabiting an identifiable space.

EPHEMERAL STREAM. A stream flowing only during and immediately after rain storms.

EROSIVE DRAINAGES. Drainages naturally more susceptible to wind and water erosion.

ESCAPE TERRAIN. Steep, rocky outcrops and cliffs used by bighorn sheep as a refuge from predators.

EVAPOTRANSPIRATION. Water transfer from soil to atmosphere from both evaporation and transpiration by plants.

FECAL COLIFORM. A group of bacteria that inhabit the intestinal tracts of human and other animals. Most pathogenic bacteria found in water are indigenous to the intestinal tract; therefore, fecal coliform can be used as a direct indication of the safety of water for drinking purposes.

FECAL MATTER. Human or animal waste.

FIELD CAPACITY. The percentage of water remaining in a soil two or three days after saturation and after free drainage has practically ceased.

FINE-TEXTURED SOIL. Sandy clay, slity clay, or clay.

FORAGE. All browse and herbaceous food that are available to grazing animals.

FORAGE PRODUCTION. The weight of forage that is produced within a designated period of time on a given area.

FORB. An herb other than grass.

FREE ROAMING. The ability to travel to different areas without movements being restricted by manmade structures such as fences.

GENETIC DRIFT. Changes of gene frequency in small populations due to chance preservation or extinction of particular genes.

GRAZING CAPACITY. See carrying capacity.

GRAZING DECISION. Decisions reached as a result of planning and consultation. They may include adjustments in livestock grazing, development of management plans, and implementation of rangeland improvements as needed to meet multiple-use management objectives.

GROWING SEASON. That portion of the year when temperature and moisture are usually most favorable for plant growth.

HABITAT. The place where an animal normally lives. Components of habitat generally include food, water, cover, and living space.

HABITAT CONDITION. The present state of a habitat in relation to its suitability or value as habitat for a particular wildlife species or group of species.

HABITAT MANAGEMENT PLAN (HMP). BLM's plan for habitat maintenance and improvement. The primary vehicle used in BLM to fund habitat projects.

HEAD CUTTING. Erosion that occurs in the upstream end of the valley which causes the gully to lengthen its course in the upstream direction.

GLOSSARY

HEADING OUT. When the majority of individuals of a plant species in an area has begun producing flower heads.

HERBACEOUS VEGETATION. Plants without a persistent woody stem above ground.

HERBIVORE. A plant-eating animal, especially an ungulate.

HERD MANAGEMENT AREA PLAN. A program of action designed to protect, manage, and control wild horses on a specific area of land.

HUNTER DAY. One person participating in any hunting activity for 12 hours.

INDUCED EMPLOYMENT. Employment level changes in agricultural service businesses and other associated industries brought about by changes in production levels in the livestock sector.

INFILTRATION. Downward entry of water into soil.

INPUT/OUTPUT (I/O) MODEL. A mathmatical model that measures the degree of interdependence between industries in a region. The model is used to measure changes in regional income and employment levels brought about by changes in the demand for a commodity produced by an economic sector.

INTERDISCIPLINARY TEAM. A number of persons from two or more disciplines or fields of study that are associated together in work or activity.

INTERMITTENT STREAM. A stream that is dry part of the year, but which receives some groundwater inflow when water tables are high enough.

INTRASPECIFIC COMPETITION. Competition for food, cover, water, and/or space among animals within the same species.

JUVENILE. An animal that is less than one year of age.

JUXTAPOSITION. The spacial relationship or ideal interspersion of habitat types.

KEY SPECIES. (1) Forage species whose use serves as an indicator to the degree of use of associated species. (2) Those species which must, because of their importance, be considered in the management program.

LAND-USE CONFLICTS. Actions occurring on-the-ground that result in problems or conflicts with other land uses or users.

LITHIC. Pertaining to stone, usually referred to in archeology as stone that has been flaked, chipped, or broken by human activity (sometimes includes ground stone artifacts).

LITTER. Dead plant debris on soil surface.

LITTER ACCUMULATION. The deposition of plant residues on the soil surface.

LITTORAL. The shore zone between high and low water marks.

LOAFING HABITAT. Areas where animals tend to gather to rest.

MANAGEMENT ACTION. An activity that, once implemented, would correct a management problem.

MANAGEMENT FRAMEWORK PLAN (MFP). A planning decision document that establishes, for a given area of land, the land-use allocations, coordination guidelines for multiple use, and objectives to be achieved for each class of land use or protection.

MEDIUM-TEXTURED SOIL. Very fine sandy loam, loam, silty loam, or silt.

MICROHABITATS. A small, specialized and effectively isolated location that is selected by an animal for a particular use.

MULTIPLIER. A coefficient derived from the input-ouput model, which is an indicator of the interdependency of sectors in a regional economy.

GLOSSARY

NET REVENUE. Total revenue minus total cost.

PARTURITION AREA. A historical area where animals usually go to give birth.

PERENNIAL STREAM. A stream that flows year-round.

PHENOLOGY. The study of periodic biological phenomenon such as flowering, seeding, etc., especially as related to climate.

PLANT POPULATION. The total of individual plants occupying an area.

PLAYA LAKE. The flat-floored bottom of an undrained basin that, at times, becomes a lake.

PPM. Parts per million. Equivalent to milligrams per liter.

PRESCIPTION GRAZING. The use of a particular season of use or kind of livestock in order to create a desired response in the vegetation community.

PROPER UTILIZATION. A degree or time of use of current year's growth that, if continued, will either maintain or improve the range condition consistent with conservation of other natural resources.

PUBLIC. Of or relating to persons interested in or affected by the contents of this EIS.

RANGE CONDITION. The present state of vegetation of a range site in relation to the climax (natural potential) plant community for that site. It is an expression of the relative degree to which the kinds, proportions, and amounts of plants in a plant community resemble that of the climax plant community for the site.

RANGE CONDITION RATING. An indicator of how close the plant community resembles the climax plant community for the range site. Four classes are used to express the degree to which the composition of the present plant community reflects that of the climax. They are:

Range condition class	Percentage of present plant composition that is climax for the range site
Excellent	76-100
Good	51-75
Fair	26-50
Poor	0-25

RANGE IMPROVEMENT PROJECTS. Projects such as fences and watering structures which cause better distribution of herbivores and therefore more even use of the range.

RANGE READINESS. The defined stage of plant growth at which grazing could begin under a specific management plan without causing permanent damage to vegetation or soil. This term is usually applied to seasonal ranges.

RANGE SITE. A distinctive kind of rangeland, which in the absence of abnormal disturbance and physical site deterioration, has the potential to support a native plant community typified by an association of species different from that of other sites. This differentiation is based upon significant differences in kind and proportion of species, or total productivity.

RANGE SUITABILITY. The adaptability of a range to grazing by livestock and/or game.

RANGE TREND. An interpretation of the direction of change in range condition resulting from various factors, primarily climate and grazing.

RHIZOME. A horizontal underground stem, usually sending out roots and aboveground shoots from the nodes.

RIFFLE. The shallower, more turbulent, fast moving sections of a stream.

RIPARIAN. Situated on or pertaining to the bank of a river, stream, or other body of water.

GLOSSARY

RIPARIAN VEGETATION. Plants of all types that grow rooted in the water table contiguous to wetlands.

RIPPLE EFFECTS. The effects on the regional economy due to production changes in the livestock sector.

RUNOFF. Streamflow resulting from precipitation.

SACRIFICE AREA. A portion of the range, irrespective of site, that is intentially overgrazed to obtain efficient overall use of the management area.

SALINE SOIL. Soil containing sufficient soluble salts to impair its productivity.

SALMONIDS. Fish that are in the family Salmonidae (salmons, trouts, white fishes, and graylings).

SCOPING. Process, involving the public, used to identify significant issues to be considered in an environmental impact statement. A public scoping meeting is held as one of the initial steps in the document preparation process.

SECTOR. An aggregate of similar industries (e.g., livestock sector, government sector, etc.).

SEEDING. The preparation of a seedbed followed by drilling or broadcasting harvested seed into the gorund. Artifical seeding may be used to: (1) introduce desirable vegetation, (2) improve conservation of soil and water, and/or (3) increase grazing capacities.

SENSITIVE. Plants and animals whose ranges are restricted to a few localities within a given state. Any reduction in numbers or degradation of habitat condition or availability could lead to extirpation or extinction of the species.

SHEET EROSION. The removal of a fairly uniform layer of soil material from the land surface through the action of rainfall and runoff water.

SIGNIFICANT. Having or likely to have influence or effect. In this EIS, significant may indicate the degree of public interest or it may be used in a judgmental manner. It is generally not a quantifiable term.

SILTATION. The degree to which silt settles out of water and blankets the bottom of a stream, lake, or reservoir.

SINUOSITY. A measure of the amount of stream meander.

SOIL BOUNDARY. The separating line which graphically describes the limit or extent of two distinct soil types or two distinct groups of soil types.

SOIL COMPACTION. Mechanical elimination of soil pores through downward pressure.

SOIL DISPERSION PROPERTIES. Those soil properties which contribute to the destruction of soil structure (breaking up the granules) so that each individual soil particle behaves as a unit.

SOIL INFILTRATION. The rate at which water enters the surface layer of soil.

SOIL POROSITY. The volume percentage of the total soil bulk not occupied by solid particles.

SOIL STRUCTURE. The combination or arrangement of primary soil particles into secondary particles or units.

SOIL TEXTURE. The relative proportions of sand, silt, and clay-sized particles soil.

SPIT CUTOFFS. Islands which are formed by mechanically removing portions of peninsulas or spits.

SPLASH EROSION. The detachment and airborne movement of small soil particles caused by the impact of raindrops on soils.

STOCKING RATE. The area of land that hs been allotted to each animal unit for the entire grazable period of the year.

GLOSSARY

STRUCTURAL DIVERSITY. The diversity of different vertical layers of vegetation within a plant community.

STRUCTURAL RANGE IMPROVEMENT. An improvement requiring placement or construction in order to faciliate management or control distribution and movement of grazing animals.

SUBLIMATION. Passage of water directly from the solid to gaseous state.

SURFACE REHABILITATION. Restoration of disturbed lands to original contour and vegetative state.

SUSPENDED SEDIMENT. Materials light enough to be carried in the zone of water flow and not settle out of this zone.

TAPROOT. A primary root that grows vertically downward and gives off small lateral roots.

TURBIDITY. The degree to which light can penetrate water; a measure of water clarity which varies with the types and amounts of suspended matter present in the water.

TURNOUT DATE. The day in which livestock are placed on the range at the beginning of the grazing season.

UNGULATES. Hoofed mammals (in this EIS, livestock and big game animals).

UPLAND POSITION. Ground elevated above the lands along rivers or between hills.

UTILIZATION. The proportion of the current year's forage production that is consumed or destroyed by grazing animals, usually measured in terms of use of key species.

VARIABLE COSTS. Costs that vary with the size of the operation (e.g., labor, protein supplement, etc.).

VASCULAR PLANT. Plants having specialized conducting systems, including xylem (which conducts water) and phloem (which conducts food).

VEGETATIVE COMPOSITION. The proportions of various plant species in relation to the total on a given area. It may be expressed in terms of cover, density, weight, etc.

VEGETATION CONVERSIONS. Alteration of present vegetation by using fire, plowing, spraying, or other means to manipulate natural successional trends.

VEGETATION TYPE. An area having similar plant species, percent composition of those species, and uniform production.

VEGETATIVE MANIPULATION. Mechanically or chemically changing the vegetation composition to obtain a desirable end result.

VEGETATIVE PARAMETER. A vegetation charcteristic used to describe the vegetation community.

VISITOR DAY. One person participating in a recreational activity for 12 hours.

VISUAL RESOURCE MANAGEMENT (VRM). The planning, design, and implementation of management objectives to provide acceptable levels of visual impacts for all BLM resource management activities.

VISUAL RESOURCE MANAGEMENT (VRM) CLASS. The degree of visual change that is acceptable within the characteristic landscape. The class is based on the physical and sociological characteristics of any given homogeneous area and serves as a management objective.

VISUAL RESOURCE MANAGEMENT (VRM) CONTRAST RATING. A method of determining the extent of visual impact for an existing or proposed activity that will modify any landscape feature (land and water form, vegetation, structures, etc.).

WATER DEFICIT LANDS. Lands for which annual precipitation is less than potential losses through transpiration and evaporation.

GLOSSARY

WETLAND. Land where water is the dominant factor determining the nature of soil development and the types of plant and animal communities existing in the soil and on its surface. Riparian areas are classified as wetlands.

WILD. Living and reproducing without the care or aid of man. A wild population need not be indigenous (e.g., wild horses).

WILTING POINT. The level of moisture content in soil at which plants wilt and fail to recover their turgidity when placed in a dark, humid atmosphere.

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