

COMMODITY PRODUCTION ALTERNATIVE

MINERALS

Oil and Gas

BLM Impacts

Total annual production and associated disturbance would remain the same as discussed for the Current Management Alternative. The conflicts between the other surface resources (reflected by the category designations) and the potential oil and gas areas are summarized in Table 4-7.

As discussed in the Resource Protection Alternative, the potential exists for oil and gas developments being inadvertently damaged or destroyed by oil shale construction activities.

Oil Shale

BLM Impacts

Approximately 130,000 to 180,000 bpd could be produced on four future oil shale tracts located within the priority management area (Figure 2-16). Approximately 1,700 to 2,200 acres would be disturbed during the production phase. An additional 20,000 bpd could be produced on an in situ oil shale tract. Approximately 1,250 acres would be disturbed during production, due to mining and related construction activities.

Tar Sand

BLM Impacts

Approximately 25,000 to 60,000 bpd could be produced on future hydrocarbon leases (Table 4-4). Approximately 13,400 to 22,700 acres would be disturbed due to mining and related construction activities (Table 4-5).

All public land within the STSAs would be available for tar sand development (Table 4-11). Tar sand within the Naval Oil Shale Reserve is withdrawn and reserved for the U.S. Navy (Figure 1-4). Special mitigating measures (category system) could have an effect on tar sand development similar to those discussed for oil and gas development which are summarized in Table 4-11.

Tar sand deposits and shallow oil shale deposits occur in the same geographical areas. Development of one of the resources would significantly delay the development of the other resource.

Gilsonite

BLM Impacts

Anticipated impacts would be similar to those discussed in the Resource Protection Alternative.

Sand and Gravel

BLM Impacts

Several additional areas could be made available for sand and gravel disposal. Approximately 50 to 110 acres could be disturbed annually. Sufficient sand and gravel would be made available to meet the projected demand over the next several years.

Building Stone

BLM Impacts

One new area would be available for building stone collection which would cover an additional 24,500 acres. *The number of acres which would actually be disturbed is unknown.* Approximately 1,000 acres of building stone could be damaged or destroyed by development of in situ oil shale.

RIGHT-OF-WAY CORRIDORS

BLM Impacts

Under this alternative, approximately 174,000 acres would be affected in the designated corridors (Figure 2-19). Major resource conflicts would include wildlife habitat, camp sites, productive woodlands, habitat for threatened and sensitive plant species, areas in critical and severe erosion condition, scenic overlooks, river corridors, visual resources, and floodplains (Appendix 9, Utility Corridors and Segments by Alternative). Site specific environmental documentation would be prepared for construction within the 330 miles of proposed corridors when specific right-of-way applications are received.

FORAGE

BLM Impacts

Blue Mountain Locality:

Authorization of 6,425 AUMs for livestock and 934 AUMs for wildlife would result in an improvement in ecological condition in four allotments: Blue Mountain AMP, Doc's Valley, Point of Pines, and Stuntz Valley. Two allotments would remain static (Cub Creek and

CHAP. 4 — COMMODITY PROTECTION ALTERNATIVE

Green River); no allotments would decline in overall ecological condition. Approximately 29,000 acres (76 percent) would improve in condition and 9,000 acres would remain in static condition. The net improvement to ecological condition class would be a change of about 5 percent, from fair to good and from good to excellent (Appendix 16, Anticipated Change in Ecological Condition Class).

An upward trend in ecological condition would result from land treatments, water development, and the development and revision of grazing systems. Approximately 11,625 acres would be burned or chemically treated. Doc's Valley and Blue Mountain AMP allotments would gain 582 AUMs beyond their original allocation levels; the other four allotments would have their carrying capacity returned to what it was at the time of adjudication. The total amount of forage produced in this locality would be 7,369 AUMs. Development of a total of three reservoirs, one spring, and one mile of pipeline in the Blue Mountain AMP, Green River, and Point of Pines allotments would result in better grazing distribution and improve overall plant vigor within the allotments. Grazing systems would be developed for Point of Pines, Doc's Valley, and Stuntz Valley; and the Blue Mountain AMP would be revised. Implementation of the grazing systems would defer spring grazing, resulting in an improvement in ecological condition as described in the general impact discussion of forage.

Wildlife forage would be reduced 834 AUMs (47 percent) below current use. When compared to allocated use, the reduction would be 66 AUMs or seven percent. The 66 AUMs would be available to support the increased livestock use.

Minerals developments would destroy an estimated 10 AUMs, bringing the total available forage to 7,359 AUMs.

Bonanza-Rainbow Locality:

Authorization of 62,026 AUMs for livestock, 377 AUMs for antelope, no AUMs for wild horses, and an unknown portion of 12,784 AUMs for deer would improve ecologic condition on 14 allotments, and 15 allotments would remain static; no allotments would decline in ecologic condition (Appendix 14, Anticipated Trend in Ecological Condition). Approximately 252,400 acres (40 percent) would improve and 380,800 acres would remain in stable ecologic condition. No declines in overall range condition would occur in this locality. The net improvement to ecological condition class would be a change of about 1 percent, from fair to good (Appendix 16, Anticipated Change in Ecological Condition Class).

Improvements in ecological condition would result from several actions. A total of 15 grazing systems would be prepared or revised to defer spring grazing. A total of 48 water developments would improve livestock and wildlife distribution and forage utilization on 12

allotments. Approximately 1,000 acres of sagebrush would be burned or chemically treated in the Raven Ridge allotment to improve forage quality and quantity (68 AUMs).

Total livestock use would increase by 703 AUMs (one percent) above active preference. These increases would occur in Asphalt Draw, Brewer, Olsen AMP, Raven Ridge, Sand Wash, Sunday School Canyon AMP, and Watson allotments. The increases would result from the land treatments or the transfer of wildlife AUMs to livestock.

Wild horses would be relocated outside of this locality under this alternative. The 480 AUMs of forage would be available for livestock use.

Antelope would be authorized 377 AUMs. This is 385 AUMs (51 percent) below the current level of use. However, it is 65 AUMs above the number of AUMs allocated to antelope at the time of forage adjudication. The additional 65 AUMs would be deducted from the forage allocated for deer.

The 2,959 AUMs allocated for deer in this locality would be reduced by 1,564 AUMs (53 percent). Mineral developments would eliminate approximately 859 AUMs (Appendix 15). Antelope would be given 65 AUMs from deer and livestock would be given 640 AUMs.

Authorized deer use in herd unit 28A which encompasses the Bonanza-Rainbow, Book Cliffs, and Hill Creek localities would be 12,784 AUMs. No attempt is made to break down this amount of forage by individual locality. It represents the amount of forage required to support current deer use, and no change to the deer population is expected.

Book Cliffs Locality:

Authorization of 28,385 AUMs for livestock, 0 AUMs for wild horses, an unknown portion of 12,784 AUMs for deer, and an unknown portion of 3,192 AUMs for elk would result in the improvement of plant vigor and ecologic condition on four allotments and static condition on three allotments (McClelland, Book Cliffs Pasture, and West Water Point). Approximately 260,100 acres (86 percent) would improve and 44,000 acres would remain in static ecologic condition. No declines would occur in overall ecological condition in this locality. The net improvement in ecological condition class would be a change of less than 5 percent, from fair to good (Appendix 16, Anticipated Change in Ecological Condition Class).

Improvements would result from several actions (Appendix 5, Forage Actions by Alternative). Four allotments (Atchee Ridge AMP, Winter Ridge AMP, Horse Point AMP, and Sweetwater AMP) would operate under revised grazing systems that would rotate grazing use to avoid the impacts of spring grazing upon plant vigor. Approximately 14,500 acres would be improved through

CHAP. 4 — COMMODITY PROTECTION ALTERNATIVE

land treatments resulting in an additional 1,800 AUMs of forage.

Total livestock use would increase to 28,385 AUMs, a 24 percent increase above active preference. All seven livestock allotments would operate at full preference. Approximately 5,014 AUMs of wildlife forage would be given to livestock to attain full preference. The Winter Ridge wild horse herd would be relocated outside this locality under this alternative. The 108 AUMs of forage would be available for livestock use.

Authorized deer use would not change from current use as previously discussed in the Bonanza-Rainbow locality.

Authorized elk use in herd unit 21 which encompasses the Book Cliffs and Hill Creek localities would be 3,192 AUMs. No attempt is made to break down this amount of forage by individual locality. It represents the amount of forage required to support current elk use, and no change to the elk population is expected.

Mineral development would result in a loss of 2,949 AUMs (Appendix 15, Forage Impacts).

Hill Creek Locality:

Authorization of 12,649 AUMs for livestock, 710 AUMs for wild horses, an unknown portion of 12,784 AUMs for deer, and an unknown portion of 3,192 AUMs for elk would result in improvement in ecological condition in eight allotments and static condition in four allotments (Green River AMP, Bartholomew, Santio Sibello, and Thorne-Ute-Broome) (Appendix 14, Anticipated Trend in Ecological Condition). Approximately 100,900 acres would improve, 39,100 acres would remain static, but no acres would decrease in overall ecological condition. The net improvement in ecological condition class would be a change of less than 5 percent, from fair to good (Appendix 16, Anticipated Change in Ecological Condition Class).

Improvement in plant vigor and ecological trend would result from deferment of spring livestock use in three allotments, development of 12 water projects and treatment of 3,800 acres. One grazing system would be continued for the Green River AMP, a grazing system would be prepared for Birchell, and a grazing system would be revised for West Tabyago AMP. Water developments in Oil Shale, Pack Mountain, and Tabyago allotments would improve livestock distribution and forage utilization. Land treatments would improve range conditions in Birchell, Tabyago, Upper Showalter, Ute, and West Tabyago allotments adding 3,160 AUMs of forage.

Livestock would increase to 12,649 AUMs, 18 AUMs above active preference. This increase would occur in the Ute and Birchell allotments, resulting from land treatments.

Wild horses would be allocated 710 AUMs under this alternative. Approximately 316 AUMs would result from land treatments and 223 AUMs would be taken from wildlife. Approximately 171 AUMs would be taken from the Horse Point allotment (within the Book Cliffs locality). The wild horse numbers would be in balance with the carrying capacity of the range.

Authorized deer use would not change from current use as previously discussed in the Bonanza-Rainbow locality.

Authorized elk use would not change from current use as previously discussed in the Book Cliffs locality.

Approximately 38 AUMs would be lost to mineral developments.

WILDLIFE/WILD HORSES

BLM Impacts

The utilization of 17,287 AUMs of existing forage from BLM lands by big game species, an additional 1,325 AUMs from Dinosaur National Monument, and 710 AUMs by wild horses would be sufficient to support near current big game and substantially decreased wild horse numbers. This level of forage utilization would be 69 percent (39,315 AUMs) short of meeting the requirements of the UDWR prior-stable wildlife objectives. The Blue Mountain mule deer herd (26) would be reduced by 427 head (27 percent) as a result of livestock increases. This alternative would also result in a decrease of 76 percent (2,220 AUMs) of the forage required to meet the Vernal District wild horse objective population levels.

The distribution of the various species would be as follows: 302 antelope (166 at Bonanza-herd unit 7, and 136 at East Bench); 7,300 mule deer (1,100 at Blue Mountain-herd unit 26, and 6,200 at Book Cliffs-herd unit 28A); 500 elk (all located at Book Cliffs-herd unit 21); 60 wild horses (all located at Hill Creek). The Bonanza antelope herd would decrease by 309 animals (from current numbers) as a result of AUM reductions to wildlife and greatly increased livestock numbers. The Bonanza and Winter Ridge wild horse herds would be eliminated; populations would be managed at the Hill Creek herd location.

Projected oil and gas development would have the same effect as previously described under the Current Management Alternative (Appendix 15-C, Forage Impacts).

Projected underground oil shale development could significantly affect crucial antelope habitat. Potential in situ oil shale development would significantly affect crucial winter mule deer and elk habitat. In addition, proposed tar sand development would significantly affect

CHAP. 4 — COMMODITY PROTECTION ALTERNATIVE

additional crucial mule deer, elk, and wild horse habitat. These wildlife species would be displaced to adjoining habitat and be subject to crowding, stress, and competition for available food, water, and cover (Hamilton 1984) (Appendix 15-C, Forage Impacts). ***Impacts to upland game birds and waterfowl would be the same as are discussed under the Current Management Alternative.***

An unquantifiable amount of habitat adjoining oil and gas, tar sand, and oil shale developments would be abandoned by most wildlife species as a result of disturbance (harassment), noise, and poaching. Indirect wildlife losses could increase significantly because of poaching and harassment from increased human populations. Gilsonite and sand and gravel development would not significantly affect any crucial wildlife habitat (Appendix 15-C, Forage Impacts).

Increased livestock production under this alternative would significantly affect certain wildlife populations. Deer and elk would be crowded into small areas of suitable habitat and be exposed to stress, inadequate amounts of forage and water, and increased poaching.

Annual depletion of 56,000 acre-feet of water from the White River could jeopardize the continued existence of two endangered fish species, the Colorado squawfish and humpback chub, and another species that is a candidate for listing, the razorback sucker. No impacts to the species would occur if the water is purchased from the White River Dam Project (WRDP) because of agreed upon conservation measures in the biological opinion for that project (FWS 1982). However, the White River Dam Project could not supply water for all projects proposed in the UBS Development EIS and this additional oil shale development. If the water is not purchased from WRDP, the degree of impact would be determined in the Fish and Wildlife Service's Biological Opinion.

WOODLANDS

BLM Impacts

By 1995, demand resulting from BLM projects would be approximately 1,900 cords per year.

Restrictions imposed upon woodland management by other resources would limit the allowable cut to 3,730 cords annually produced from 31,100 acres of woodland. Twenty acres would be eliminated from the woodland management to protect recreation sites, 680 acres would be lost to rights-of-way placed in utility corridors, 18,100 acres would be eliminated by tar sand development and 1,500 acres would be used for oil shale development. One hundred acres would be lost to wildfires over a ten-year period. In total, 20,400 acres capable of contributing 1,740 cords of firewood to the

annual allowable cut, would not be available for harvest and use by wood cutters.

Livestock grazing in cottonwood stands could prevent the establishment of seedlings. Cottonwood stands would grow old, and when removed by harvest or natural processes, would not be replaced by natural regeneration.

RECREATION

BLM Impacts

As a result of BLM projects, big game hunting opportunities would increase by 1,560 visitor days. The demand for all other recreation activities except big game hunting would increase by 5,900. However, 200 visitor days would be foregone as a result of ORV restrictions. ***An ORV designation of open for public lands adjacent to the Uintah and Ouray Indian Reservation Hill Creek Extension would be inconsistent with the existing Tribal plan. ORV users could unintentionally or intentionally cross from open public lands to closed Tribal lands and despoil the primitive or wilderness character that the Tribe desires to maintain.*** The White River canyon would be opened to ORV use, which could lead to a loss of primitive recreational values. There would be a loss of recreation values by not protecting scenic travel corridors, Musket Shot Spring, or Grand Valley overlooks.

The protective status prohibiting development in White River Canyon would be dropped. The placement of structures, such as pipelines, along and across the river would adversely affect the semi-primitive setting.

Increased water demands from tar sand and oil shale development would deplete flows on the White River to the minimum level on average water years. Minimum flows would result in marginal canoeing.

Utility and transportation corridors would cross 6,700 acres or 13 percent of the visual resource management Class II, and 6,700 acres or 9 percent of Class III. Certain types of rights-of-way placed in the corridors would not comply with the visual standards of these classes. Impacts would, however, be minimized by consolidating land-disturbing activities to designated corridors. This would prevent the proliferation of construction scars and man-made intrusions due to random crisscrossing of the landscape.

Nine percent of the proposed area for oil shale leasing and two percent of the area proposed for tar sand leasing contains Class II visual management standards and development would conflict with the visual standards. Development would create an unacceptable contrast with the natural environment.

CHAP. 4 — COMMODITY PROTECTION ALTERNATIVE

Potential deposits of sand and gravel along the Green River from Ouray to Sand Wash, if developed, could contrast with the existing landscape. Development of 420 acres of potential sand and gravel deposits along the Green River from Dinosaur National Monument to Jensen and 1,800 acres along the White River would not conform with VRM Class II and would contrast with the existing landscape.

As a result of dropping the designation for the Book Cliffs Mountain Browse Natural Area, approximately 30 AUMs would become available for grazing and 400 acres would become available for mineral leasing.

FIRE MANAGEMENT

BLM Impacts

Full suppression of wildfire would protect approximately 84,500 acres throughout the BCRA, safeguard private property, and prevent the spread of wildfire to non-Federal lands.

Approximately 13,000 to 28,500 acres would be prescribed burned over the next 10 years, providing additional forage for livestock (under this alternative, prescribed burns would not be initiated to enhance wildlife habitat or forage). The net effect of prescribed burns would be a significant increase in forage available for livestock and a potential reduction in wildlife habitat. These projects could occur in any vegetation-type or locality.

WATERSHED

Water Use

BLM Impacts

Development of four additional oil shale tracts would require approximately 56,000 acre-feet of water per year for underground mining (Table 4-12). That amount is 12 percent of the average annual flow of the White River. Less water would be required if modified in situ techniques are employed.

If the water could not be purchased from other water users with valid rights, development could be delayed or prevented, since the White River is essentially closed to further appropriation.

Water Quality

BLM Impacts

Less restrictive mineral leasing and ORV travel restrictions on public water reserves and floodplains would lead to a slight, unquantifiable deterioration of water quality.

The Detailed Development Plan for the White River Shale Project assumes no wastewater discharge from tracts U-a and U-b (Bechtel Petroleum, Inc. 1981). Using the same assumption for any additional oil shale leases leads to the conclusion of no impact to water quality. However, the wastewater would contain high concentrations of ammonia, sulfide, phenols, oil and dissolved solids, and has the potential to pollute both groundwater and surface water if any seepage or accidental discharge occurs. Based on depletion information in the UBS Development EIS (BLM 1982b), diverting 56,000 acre-feet per year from the White River would increase total dissolved solids concentrations at the mouth of the White River by 5.2 mg/l and by 2 mg/l at Imperial Dam. This increase would be less than 1 percent.

Soils

BLM Impacts

Surface disturbance of 13,400 to 22,700 acres for tar sand recovery, 1,200 to 1,600 acres for oil shale mining, 1,200 to 3,800 acres for oil and gas production, would increase soil erosion in the BCRA. Reclamation would reduce the average annual disturbance to about 5 to 10 percent of the total. Sediment yields from reclaimed surface mines were 300 to 600 percent higher than for undisturbed sites (Lusby and Toy 1976). In the Piceance Basin of Colorado, increases in sediment yield of 5.8 to 11.6 tons per acre per year during initial construction of oil shale mining sites and 2.9 tons per acre per year after construction were reported (Frickel et al. 1975). Assuming a tripling of soil loss from disturbed sites in the BCRA, an additional 45,800 to 81,500 tons of soil would be lost in the next 10 years. Although this additional soil loss is less than one percent of the current soil loss from the entire BCRA, localized impacts could be severe with gully formation in areas with reduced vegetation cover.

Less restrictive mineral leasing and ORV categories in critical and severe erosion condition areas would result in unquantifiable increases in soil erosion.

Confining major rights-of-way to 62.3 miles of corridors totalling 23,000 acres in severe and critical erosion condition would result in disturbance of fewer acres and thus, decreased soil erosion.

Constructing up to 320 detention-retention dams on 6,400 acres in severe and critical erosion condition areas, would reduce soil loss by 41,000 tons over the next 10 years. The short-term increase in wind and water erosion resulting from construction would be insignificant.

CHAP. 4 — COMMODITY PROTECTION ALTERNATIVE

Floodplains

BLM Impacts

Floodplain condition would not be significantly affected by implementation of any BLM actions considered for this alternative.

Boulevard Ridge Study Area

BLM Impacts

Discontinuing protection for the watershed study area would result in an unquantifiable amount of surface disturbance from livestock grazing, mineral development and other resource uses.

LAND TENURE ADJUSTMENT

BLM Impacts

Land ownership could change on up to 16,000 acres available for exchange. Up to 10,000 acres could be acquired by BLM, if they become available (Figure 2-7). No applications or specific proposals have been received for lands identified for disposal, so an impact analysis is not possible at this time. The lands identified for acquisition have high mineral values and would improve administration of proposed development areas under this alternative. Site specific environmental analyses would be done prior to disposal or acquisition of these lands.

AIR QUALITY

BLM Impacts

The impacts described here are based primarily on previous analysis (Aerocomp 1984, Dietrich et al. 1983). Aerocomp determined expected impacts for 25,000 bpd and 100,000 bpd of tar sand development in the PR Spring area. The impacts from the 60,000 bpd tar sand production considered here are expected to be intermediate between the impacts assessed by Aerocomp. Direct impacts from new oil shale leasing at up to 180,000 bpd, would double the impacts assessed by Dietrich et al. for an 80,000 bpd scenario.

The National Ambient Air Quality Standards (NAAQS) and Class II increments for TSP would be exceeded, mainly from surface mining activities and travel on unpaved roads. SO₂ impacts would be close to the Class II 24-hour increment. Nitrogen dioxide concentrations would be well within the NAAQS.

Highly visible atmospheric discoloration would occur at the Uintah and Ouray Indian Reservation and near the synfuel facilities. Less visible perceptible discolora-

tion may occur at Dinosaur and at Colorado National Monuments.

SOCIOECONOMICS

Methodologies and computations that were used to estimate economic impacts are discussed in Appendix 12 (Methodology for the Economic and Social Analysis).

Economic Conditions

BLM Impacts

Oil and gas production and subsequent employment and personal income opportunities would not significantly differ from that analyzed in the Current Management Alternative.

In areas where mineral resources overlap (e.g. oil shale, gilsonite, tar sand, oil and gas), only one resource could be developed at a time. In certain cases, the remaining mineral resources could not be developed at all. As a result, unquantified employment and personal income opportunities associated with development of these other resources would be delayed or not realized. These losses would be insignificant.

Gilsonite, sand and gravel, and miscellaneous mineral activities would continue essentially unchanged from that level discussed under the Current Management Alternative.

Production from BLM oil shale and tar sand leases, and therefore, local employment, population growth infrastructure needs, and fiscal problems would be greatest under this alternative. The resulting population increases are shown in Table 4-20.

Implementation of this alternative could increase the region's population by 40,448 by 1995. Including baseline population projections, Uintah County and the communities and surrounding areas of Roosevelt and Vernal would, at some time, need to accommodate a greater than 10 percent annual growth rate. The communities of Dinosaur and Rangely would, at some time, need to accommodate a greater than 5 percent annual growth rate.

The increased relative importance of the high-paying mining and construction sectors, and the increased demand for workers in other sectors would increase the region's per capita income by an unknown amount.

Population growth would require infrastructural improvements similar to those discussed under the Resource Protection Alternative but to a greater degree. The additional regional infrastructural needs are presented in Table 4-21. These needs can be estimated for each community by comparing the projected population increases of that community (Table 4-20) with the

Table 4-20

Population Projections
for
Commodity Production Alternative

	1982		1985		1990			1995			2000		
	Area	Base	Base	BLM	Other	Base	BLM	Other	Base	BLM	Other	Base	BLM
Duchesne	15,273	17,778	0	4,965	18,632	2,575	10,226	18,684	4,135	13,082	18,929	4,135	15,723
Roosevelt CCD	11,827	13,695	0	348	15,057	2,549	3,019	15,005	4,093	3,122	14,636	4,094	3,799
Roosevelt	4,678	5,416	0	244	5,955	1,759	2,057	5,934	2,824	2,106	5,789	2,825	2,599
Myton	609	705	0	12	775	53	103	773	85	105	754	85	130
Other	6,540	7,514	0	92	8,327	737	859	8,298	1,184	911	8,093	84	1,070
Other	3,446	10,204	0	4,617	3,575	26	7,207	3,679	42	9,960	4,293	40	11,924
Uintah	24,170	25,730	0	18,940	29,326	17,520	35,679	29,863	28,127	45,196	28,985	28,127	53,500
196 Uintah-Ouray	4,737	5,061	0	40	5,699	526	726	5,730	562	698	5,565	562	757
Ballard	678	775	0	20	966	175	315	976	281	297	926	281	619
Other	4,059	4,286	0	20	4,733	351	411	4,754	281	401	4,639	281	138
Vernal	19,417	20,653	0	1,413	23,611	12,614	10,242	24,117	27,002	12,154	23,404	27,283	14,755
Vernal	8,549	9,291	0	565	11,065	5,606	4,148	11,369	12,095	4,912	10,941	12,376	5,972
Other	10,868	11,362	0	848	12,546	7,008	6,094	11,389	14,907	7,242	12,463	14,907	8,783
Bonanza	16	16	0	178	16	4,380	1,575	16	563	0	16	281	0
Moffat-Rio Blanco	23,934	24,355	0	146	28,345	613	1,738	27,646	984	2,016	28,144	984	2,403
Dinosaur	451	501	0	64	405	343	810	425	551	943	437	551	1,124
Rangely	3,235	3,193	0	82	3,993	270	928	3,805	433	1,073	3,962	433	1,279
Grand	8,100	9,850	45	691	10,570	830	834	10,324	6,215	915	9,676	2,372	919
Thompson		380	45	691	366	830	834	366	6,215	915	365	2,372	919
Westwater		38	45	691		830	834		6,215	915		2,372	919
Mesa			17			307			2,295			877	

CCD: Census County Division

Table 4-21

Commodity Production Alternative
 Summary of Regional Socioeconomic Impacts
 Resulting from BLM Actions

Socioeconomic Development Category	Change From Projected Baseline			
	1985	1990	1995	2000
Population Growth				
Total	-	21,962	40,448	36,605
School Age	-	4,562	10,324	10,593
Employment Growth	-	11,231	19,368	15,068
Household Growth	-	7,688	13,433	10,145
Infrastructure Requirement				
Housing				
Single family	-	4,622	8,035	6,092
Multi-family	-	1,166	2,017	1,534
Mobile homes	-	1,933	3,356	2,544
Education				
Students	-	4,562	10,324	10,597
Classrooms	-	194	423	432
Teacher	-	194	423	432
Health Care				
Hospital beds				
General care	-	57	96	80
Long-term care	-	27	46	55
Medical personnel				
Doctors	-	27	40	33
Dentists	-	27	34	30
Nurses	-	48	82	70
Public health nurses	-	21	25	20
Medical health care				
Clinical psychologists	-	21	22	18
Methal health workers	-	21	22	18
Public Safety				
Law Enforcement				
Police officers	-	27	46	80
Patrol cars	-	27	46	80
Jail space (sq. ft.)	-	10,931	20,833	18,254
Juvenile holding cells	-	21	22	20
Fire Protection				
Fire flow (gpm)/ duration (hr.) ^a				
Emergency Medical Services				
Ambulances	-	9	25	20
Emergency medical technicians	-	147	173	141

Table 4-21 (Continued)

Commodity Production Alternative
 Summary of Regional Socioeconomic Impacts
 Resulting from BLM Actions

Socioeconomic Development Category	Change From Projected Baseline			
	1985	1990	1995	2000
Utility Service Demands				
Water System				
Connections	-	5,554	10,293	9,041
Supply (10 ⁶ gal./yr.)	-	3,244	6,010	5,280
Storage (10 ⁶ gal./yr.)	-	1,621	3,006	2,640
Treatment (10 ⁶ gal./yr.)	-	3,244	6,010	5,280
Sewage System (10 ⁶ gal./yr.)	-	625	1,163	1,022
Solid Waste Acres/Yr.		4.6	8.6	7.8

Source: BLM 1983h.

^aFire protection measured in fire flow (gpm)/duration (hr.) cannot be aggregated across the affected counties.

CHAP. 4 — COMMODITY PROTECTION ALTERNATIVE

projected population increases of the region (Table 4-21) and applying the resulting proportion to the projected infrastructure needs of the region (Table 4-21).

The fiscal problem and issues related to rapid population growth would be similar to those discussed under the Resource Protection Alternative except that these problems would be more widespread.

The management actions would affect the amount of public rangeland forage that would be available to livestock operators. This could monetarily affect ranchers' incomes, and abilities to obtain loans, with some secondary income and employment effects through the local economy.

Compared to their existing use, 16 of the cattle operators would, on the average, have eight percent more useable forage. If the added forage were grazed, cattle operators would realize an added \$8,224 in returns above cash cost, a one percent increase over what these operators now earn.

Compared to their existing use, 5 of the sheep operators would, on the average, have five percent more useable forage. If the added forage were grazed, sheep operators would realize an added \$6,978 in returns above cash cost, a less than one percent increase over what these operators now earn.

Compared to existing use, none of the livestock operators would have less available forage. If mineral developments were concentrated in several allotments rather than spread among all allotments with mineral development potential, as was assumed in the analysis, 15 livestock operators would have two percent less forage, resulting in less than a one percent decrease in their returns above cash cost.

The number of livestock operators affected to varying degrees, and the total rancher income are shown on Tables 4-22 and 4-23, respectively.

Any increase from active preference could affect operator wealth. Under this alternative, total long-term grazing privileges would be 6,934 AUMs above active preference. At a market value of \$60 per AUM for BLM grazing permits, total operator wealth could increase by as much as \$416,040, a two percent increase in base property value Appendix 12 (Methodology for the Economic and Social Analysis).

BLM wildlife management actions would keep the big game populations near stable; however, human population increases could increase hunting by 1,560 hunter days by 1995, and increase revenues to the local economy by \$70,200. The increase would be 23 percent higher than present levels.

Human populations are projected to be the largest under this alternative. These people would cause significant long-term increases to the recreation sector. Rec-

reation use could increase by 5,900 recreation days by 1995 and increase revenues to the local economy by \$265,500. This increase would be 82 percent higher than present levels.

Social Conditions

The social effects resulting from the projected population increases would be similar to those that would occur under the Resource Protection Alternative. However, the effects of implementing this alternative would be more intense and widespread. The difference would be in degree, not in the nature of the impact.

TRANSPORTATION

BLM Impacts

By 1995, BLM actions could increase traffic volumes on the four major highways in the areas by 16 percent (refer to Table 4-18). Highway levels of service could be reduced, but by an unknown amount. Traffic accidents and road deterioration would increase by an unquantifiable amount. Operating speeds would drop and an increased number of stoppages would occur.

UNAVOIDABLE ADVERSE IMPACTS

Development of mineral resources such as oil and gas, tar sand, and oil shale would cause surface disturbance and a modification of topography. Such disturbances could adversely affect other surface uses and resources. Approximately five percent (1,507 acres) of the area disturbed by minerals would be used for plant sites and facilities. These areas would be lost for forage production.

Implementation of this alternative would have the greatest potential to adversely affect wildlife and wild horse populations. The emphasis on minerals development would preclude wildlife habitat improvement projects and an unquantifiable, yet significant portion of wildlife and wild horse habitat would be lost. Wild horses would be managed at much lower levels and at only one location. In most cases, increased livestock forage utilization levels would allow sufficient forage for current wildlife population levels.

Because critical and severe erosion areas would not be protected from woodland harvest, clear cuts could change the timing of runoff and possibly increase erosion.

Obtrusive developments, such as overhead power and communication lines, within the designated utility and transportation corridors would not comply with visual resource management Class II and Class III areas.

Due to proposed tar sand and oil shale development,

TABLE 4-22

Number of Operators Affected Under the Commodity
Production Alternative and Degree of Impact

	Percent Increase From Existing Use and Revenues			Not Affected	Percent Decrease From Existing Use and Revenues		
	50-100	11-50	1-10		1-10	11-50	51-100
Public Rangeland Forage		7	13	19			
Operator Returns Above Cash Cost		3	17	19			

Note: Changes are based on average use over the past 3 years.

TABLE 4-23

Summary of Short-Term and Long-Term Economic Impacts
to Livestock Operators in Dollars

	Current Situation	Commodity Production
<u>Cattle Operators</u>		
Gross Revenue	\$2,415,282	\$2,420,168
Total Cash Cost	1,441,458	1,438,120
Returns Above Cash Cost	973,824	982,048
Returns to Labor and Investment	526,204	535,760
<u>Sheep Operators</u>		
Gross Revenue	\$3,585,258	\$3,594,551
Total Cash Cost	1,509,804	1,512,119
Returns Above Cash Cost	2,075,454	2,082,432
Returns to Labor and Investment	1,719,522	1,726,305

CHAP. 4 — COMMODITY PROTECTION ALTERNATIVE

insufficient water flows could preclude floatboating during midsummer to the late fall on the White River.

Salinity would increase at the mouth of the White River by 5.2 mg/l and at Imperial Dam by 2 mg/l.

An additional 45,800 to 81,500 tons of soil would be lost to erosion as a result of mineral development.

Even with mitigating measures, TSP standards could be exceeded at many areas, including Dinosaur National Monument; the Uintah and Ouray Indian Reservation; Vernal, Utah; and Rangely, Colorado. Atmospheric discoloration would be visible near synthetic fuel facilities and power plants, the Uintah and Ouray Indian Reservation, and possibly at Dinosaur and Colorado National Monuments.

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

Based on present technology, minerals mined and subsequently consumed, or left underground as unrecoverable, would be irretrievably lost. Tar sand strip mining could permanently alter the site potential on approximately 1,250 acres. In situ oil shale development could permanently alter the site potential on approximately 2,500 acres. The changes would be irreversible.

Soils lost due to surface disturbing activities would be irretrievably lost.

Allowing development in the Boulevard Ridge control study area would negate the possibility of obtaining future scientific data from that site.

Some degradation of air quality would be irreversible due to established urbanization in the area after closure of the oil shale and tar sand facilities.

A decision to select this alternative would call for the conversion of additional non-Federal agricultural lands to support urban development. It would lock people into an expanding social system that in many ways would be irreversible and, in turn, would probably solidify a new lifestyle for area residents.

SHORT-TERM USE VERSUS LONG-TERM PRODUCTIVITY

Because of the number and amount of minerals considered unrecoverable with present mining technology and practices, loss of mineral production could occur in the long term to achieve short-term minerals production.

A total of 21,000 acres would be treated, resulting in an additional 2,700 annual AUMs of forage. Although a short-term loss of forage and habitat would occur as a result of forage and habitat improvement projects, a long-term forage and habitat benefit would occur.

Mineral development could cause long-term elimination of forage and habitat. The duration of the impacts would depend on the amount of annual precipitation and the degree of the reclamation success. Reclamation could take up to 30 years in areas which receive less than 10 inches of precipitation annually.

Harvest of firewood would increase long-term forage production.

Over the long term, 1,000 acres of productive woodlands could be lost to oil shale development and 18,100 acres to tar sand development.

Wildfires occurring in pinyon/juniper stands would halt regeneration by destroying the seed source. Reestablishment of stands would be delayed 40 to 80 years. Depending on the size of the burn, the allowable cut would be reduced. Less pinyon and juniper firewood would be available for firewood cutters.

In the short term, areas developed for tar sand and oil shale would be adversely affected by a loss of visual quality to the natural landscape. It would be expected that the majority of the disturbance would be unnoticeable following a period of successful reclamation.

The 56,000 acre-feet of water used to develop four additional oil shale tracts would not be available for other uses until the projects would be terminated. Water quality would be restored when the depletion is no longer needed.

An unquantifiable amount of soil would be lost during construction of detention-retention dams; however, their construction would reduce soil loss by 41,000 tons over the next 10 years.

The PSD air quality increments would be available for other projects after completion of the oil shale and tar sand developments.

CUMULATIVE SUMMARY

Direct cumulative impacts on minerals would generally be the same as were discussed under the BLM Impacts for this alternative. Air quality permits and water supplies would be available for additional oil shale and tar sand projects if considered separately from interrelated projects. When considered cumulatively, air quality permits and sufficient water supplies may not be available, delaying development of Federal oil shale and tar sand resources.

Livestock use would be increased 6,570 AUMs above active preference. This would be approximately six percent over active preference and a 63 percent increase from average use (present operating levels). BLM actions would result in improvement in ecological condition in 30 allotments and a static condition in 24 allotments. No allotments would decline in ecological condition. Approximately 642,300 acres would improve, and 472,900 acres would remain in static condition. The net improvement in fair to good ecological condition would be a change of approximately 1 percent from fair to good ecological condition.

CHAP. 4 — COMMODITY PROTECTION ALTERNATIVE

An estimated 3,856 AUMs would be lost due to mineral development activities; however, land treatments would add an estimated 2,700 AUMs of forage.

Cumulative impacts of interrelated projects (-910 AUMs) and BLM actions (6,570 AUMs) would result in an increase of 41,595 AUMs from average livestock use. This increase would be 5,660 AUMs above active preference.

Wildlife use would decrease by 1,219 AUMs (seven percent) below current use. This represents a 60 percent decrease from the allocated level of 43,638 AUMs.

Wild horses would be allocated 710 AUMs, an increase from no allocation, but a 71 percent decrease from average use. Wild horses would be removed from the Bonanza-Rainbow and Book Cliffs localities.

By 1995, the cumulative demand for firewood could reach 8,400 cords per year. Firewood demand would exceed the allowable cut by 4,670 cords annually. The BLM would not be able to supply fuelwood for over half of the people seeking it.

Visitor days for big game hunting resulting from BLM and interrelated projects would expand from the 1982 level of 6,770 to 11,745, for an increase of 4,975 visitor days by 1995.

Increased energy development, coupled with increased population would decrease the quality of the areas available for dispersed recreation. Increased vandalism would also occur.

Big game numbers are not expected to increase over current levels. The number of hunter visitor days would almost double and as a result, hunting quality would be expected to decrease.

Demand for all other forms of recreation except big game hunting would expand from the current level of 7,200 to 24,900 visitor days or an increase of 17,700. This increase would expand demand for floating and fishing on the Green River, ORV travel and sightseeing.

Cumulative depletions would increase to 223,000 acre-feet per year or 48 percent of the average annual flow of the White River, exceeding by 114,000 acre-feet the capacity of the White River reservoir.

The cumulative increase in total dissolved solids concentration at Imperial Dam resulting from other projects and BLM actions would be 7 mg/l. This represents less than a one percent increase.

Cumulative impacts on soils would be the same as discussed in BLM impacts.

Impacts to floodplains are the same as in the Current Management Alternative.

Class II TSP standards would be exceeded at Dinosaur National Monument; the Uintah and Ouray Indian Reservation; Vernal, Utah; and Rangely, Colorado. Class II standards for SO₂ could possibly be exceeded in the BCRA. Yellow-brown atmospheric discoloration, resulting from emissions of nitrogen oxides from synthetic fuel facilities and power plants, would be visible from the Uintah and Ouray Indian Reservation and Dinosaur National Monument.

Cumulative impacts on infrastructure needs for the Commodity Production Alternative are summarized in Table 4-24. Population projections for Uintah and Duchesne Counties, and the communities of Roosevelt, Myton, Ballard, Vernal, Dinosaur, and Rangely, show a need to accommodate a greater than 10 percent annual growth rate. Northern Grand County would need to accommodate a greater than 5 percent annual growth rate.

Cumulative transportation impacts are displayed on Table 4-19. All highways except County Road 262 would provide an unsatisfactory level of service.

Table 4-24

Commodity Production Alternative
Cumulative Infrastructure Needs
BLM and Interrelated Projects

Socioeconomic Development Category	1985	1990	1995	2000
Population Growth				
Total	27,282	71,230	103,438	111,582
School Age	4,619	13,834	26,369	41,204
Employment Growth	15,817	36,822	47,571	47,121
Household Growth	8,264	22,870	31,803	31,306
Infrastructure Requirement				
Housing				
Single family	4,958	13,730	19,057	18,789
Multi-family	1,239	3,443	4,773	4,709
Mobile homes	2,066	5,730	7,949	7,835
Education				
Students	4,619	13,834	26,369	33,762
Classrooms	185	564	1,064	1,359
Teacher	185	564	1,064	1,359
Health Care				
Hospital beds				
General care	59	154	221	230
Long-term care	12	57	96	112
Medical personnel				
Doctors	16	57	77	78
Dentists	14	51	65	68
Nurses	46	132	188	196
Public health nurses	6	31	39	36
Medical health care				
Clinical psychologists	3	25	26	23
Methal health workers	4	27	28	27
Public Safety				
Law Enforcement				
Police officers	54	125	171	230
Patrol cars	54	125	171	230
Jail space (sq. ft.)	13,592	35,607	52,110	55,609
Juvenile holding cells	5	28	31	30
Fire Protection				
Fire flow (gpm)/ duration (hr.) ^a				
Emergency Medical Services				
Ambulances	6	19	39	35
Emergency medical technicians	38	215	268	251

Table 4-24 (Continued)

Commodity Production Alternative
 Cumulative Infrastructure Needs
 BLM and Interrelated Projects

Socioeconomic Development Category	1985	1990	1995	2000
Utility Service Demands				
Water System				
Connections	8,769	21,399	30,441	33,143
Supply (10 ⁶ gal./yr.)	5,121	12,498	17,777	19,355
Storage (10 ⁶ gal./yr.)	2,561	6,248	8,890	9,677
Treatment (10 ⁶ gal./yr.)	5,121	12,498	17,777	19,355
Sewage System (10 ⁶ gal./yr.)	992	2,417	3,443	3,749
Solid Waste Acres/Yr.	5.9	15.1	21.8	23.5

Source: BLM 1983h.

^aFire protection measured in fire flow (gpm)/duration (hr.) cannot be aggregated across the affected counties.