

Table 3-6. Management Activities on UCRB Forestlands

ACRES (thousands per decade)															
Forest Cluster	Harvest				Thin				Prescribed Burning				Water-shed Restr.	Roads* Decrs. (%)	
	dry	moist	cold	Total	dry	moist	cold	Total	dry	moist	cold	Total			
Acres (thousands per decade)															
ALTERNATIVE 1															
	<u>dry</u>	<u>moist</u>	<u>cold</u>	<u>Total</u>	<u>dry</u>	<u>moist</u>	<u>cold</u>	<u>Total</u>	<u>dry</u>	<u>moist</u>	<u>cold</u>	<u>Total</u>			
1	6-8	25-30	4-7	35-45	4-6	4-6	2-3	10-15	40-55	30-45	25-30	95-130	60-80	0-25	
2	50-40	200-275	30-35	280-380	45-60	40-55	30-45	115-155	65-85	55-70	40-55	160-210	90-120	0-25	
3	35-45	135-185	20-27	190-260	50-65	45-60	35-45	130-170	30-40	25-30	15-25	70-95	35-45	0-25	
4	90-115	365-505	47-70	505-690	120-165	110-150	90-120	320-435	60-85	50-70	40-55	150-210	100-135	0-25	
5	5-8	25-30	5-7	35-45	8-10	7-9	5-6	20-25	4-6	3-5	3-4	10-15	5-10	0-25	
6	15-20	55-70	10-15	80-105	20-25	15-20	10-15	45-60	15-20	15-20	10-15	40-55	30-45	0-25	
Total	205-275	810-1095	110-115	1125-1525	245-330	220-300	175-230	640-860	210-290	180-240	135-185	525-715	320-435		
ALTERNATIVE 2															
1	6-8	34-50	5-4	45-65	6-9	10-14	4-4	20-30	40-55	30-45	25-30	95-130	175-230	0-25	
2	15-20	80-105	10-15	105-140	25-35	40-50	15-25	80-110	65-85	55-70	40-55	160-210	285-380	0-25	
3	15-20	90-120	15-20	120-160	20-30	35-45	15-20	70-95	30-40	25-30	15-25	70-95	120-160	0-25	
4	20-27	120-165	20-23	160-215	90-115	135-190	75-95	300-400	60-85	50-70	40-55	150-210	100-140	0-25	
5	1-2	8-11	1-2	10-15	5-6	7-10	3-4	15-20	4-6	3-5	3-4	10-15	5-10	25-50	
6	4-5	23-30	3-5	30-40	8-10	10-15	7-10	25-35	15-20	15-20	10-15	40-55	30-45	0-25	
Total	60-80	360-485	50-70	470-635	155-205	235-320	120-165	510-690	210-290	180-240	135-185	525-715	715-965		
ALTERNATIVE 3															
1	7-8	14-17	4-5	25-30	10-14	10-14	5-7	25-35	90-120	90-120	40-55	220-295	175-230	0-25	
2	40-60	90-125	25-30	155-215	60-80	60-80	35-45	155-205	145-195	150-200	60-85	355-480	285-380	25-50	
3	40-60	90-125	25-30	155-215	50-70	50-70	30-35	130-175	60-80	60-80	25-35	145-195	120-160	25-50	
4	105-140	220-295	55-75	380-510	170-230	170-230	80-115	420-575	80-110	80-110	40-50	200-270	100-140	25-50	
5	7-8	14-17	4-5	25-30	14-1/8	14-18	7-9	35-45	8-12	8-12	4-6	20-30	5-10	50+	
6	10-18	25-35	10-12	45-65	35-45	35-45	15-25	85-115	40-55	40-55	20-30	100-140	30-45	0-25	
Total	215-290	450-615	120-160	785-1065	340-460	340-460	170-230	850-1150	425-575	430-580	185-255	1040-1410	715-965		
ALTERNATIVE 4															
1	10-14	15-20	5-6	30-40	15-20	11-15	9-10	35-45	135-185	105-140	75-100	315-425	175-230	0-25	
2	65-85	95-125	20-35	180-245	120-150	85-115	60-85	260-350	215-290	165-225	125-165	505-680	445-605	25-50	
3	50-65	75-95	15-25	140-185	175-105	60-80	40-50	175-235	75-105	60-80	40-50	175-235	120-160	25-50	
4	100-145	160-220	45-50	305-410	200-280	155-205	115-160	470-645	185-250	140-190	100-135	425-575	290-390	25-50	
5	7-10	10-15	3-5	20-30	15-20	11-15	9-10	35-45	15-20	10-15	5-10	30-45	15-25	50+	
6	20-23	25-35	5-7	50-65	45-60	35-50	30-35	110-145	55-75	40-55	30-40	125-170	30-45	25-50	
Total	250-340	380-510	95-125	725-975	470-635	355-480	260-350	1085-1465	680-925	520-700	375-505	1575-2130	1075-1455		

Table 3-6. Management Activities on UCRB Forestlands (continued).

ACRES (thousands per decade)															
Forest Cluster	Harvest			Total	Thin			Total	Prescribed Burning			Total	Water-shed Restr.	Roads* Decrs. (%)	
	dry	moist	cold		dry	moist	cold		dry	moist	cold				
Acres (thousands per decade)															
ALTERNATIVE 5															
1	5-7	25-32	0	30-40	10-15	20-25	5-10	35-50	40-55	60-80	20-25	120-160	175-235	0-25	
2	25-35	115-155	0	140-190	45-60	65-90	20-25	130-175	130-165	165-225	50-65	340-455	285-380	0-25	
3	25-35	115-155	0	140-190	62-81	85-110	25-35	170-225	50-70	75-100	20-30	145-200	120-160	25-50	
4	105-135	405-545	5-15	515-695	165-225	235-320	75-95	25-35	65-90	95-130	30-40	190-260	100-135	0-25	
5	4-5	16-20	0	20-25	10-13	12-17	3-5	475-640	7-9	10-12	3-4	20-25	15-25	25-50	
6	17-20	70-100	0	90-125	31-40	40-55	9-15	80-110	35-45	50-70	15-20	100-135	30-45	0-25	
Total	180-240	750-1010	5-15	935-1265	325-435	455-615	135-185	915-1235	325-435	455-615	135-185	915-1235	725-980		
ALTERNATIVE 6															
1	5-6	7-10	3-4	15-20	20-25	15-20	10-20	45-65	100-135	80-105	55-75	235-315	175-230	0-25	
2	35-55	55-65	10-15	100-135	95-130	75-100	55-75	225-305	160-220	125-170	85-120	375-510	280-380	25-50	
3	25-30	30-45	10-15	65-90	55-75	45-60	30-40	130-175	65-90	50-70	40-50	155-210	120-160	50+	
4	80-110	110-155	30-40	220-305	195-260	150-200	105-145	450-605	180-240	125-180	95-130	400-545	290-390	25-50	
5	5-6	7-10	3-4	15-20	13-17	10-13	7-10	30-40	10-15	10-12	5-8	25-35	15-25	25-50	
6	10-12	15-17	5-6	30-35	25-30	20-25	10-20	55-75	45-60	35-40	35-40	105-140	30-45	0-25	
Total	160-220	225-305	60-80	445-605	405-545	310-420	220-300	935-1265	560-760	425-575	310-420	1295-1755	910-1230		
ALTERNATIVE 7															
1	2-3	5-6	1-2	8-11	6-9	2-3	2-3	10-15	30-40	10-15	10-15	50-70	60-80	0-25	
2	20-25	35-50	5-8	60-85	30-35	10-15	10-15	50-65	100-135	35-45	40-55	175-235	90-120	25-50	
3	30-40	55-75	5-8	90-125	35-45	10-15	15-20	60-80	115-155	40-55	50-6+5	205-275	35-45	50+	
4	65-87	130-180	15-17	210-280	95-135	35-45	40-50	170-230	250-340	90-120	100-135	440-595	100-135	25-50	
5	3-4	6-9	1-2	10-15	9-15	3-5	3-5	15-20	30-40	10-15	10-150	50-70	5-10	50+	
6	10-14	20-25	5-6	35-45	15-20	5-7	5-8	25-35	60-80	20-30	25-30	105-140	30-45	0-25	
Total	130-180	255-345	30-40	415-565	190-260	65-90	75-100	330-450	585-790	205-275	235-320	1025-1385	320-435		

* includes primarily native surface roads.

Table 3-7. Management Activities on UCRB Rangelands.

Range Cluster	Livestock Management				Improve Rangelands				Prescribed Burning				Roads* Riparian Decrs. Restr. (%)	
	dry grass	dry shrub	cool shrub	Total	dry grass	dry shrub	cool shrub	Total	dry grass	dry shrub	cool shrub	Total		
Acres (thousands per decade)														
ALTERNATIVE 1														
1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2	0	5-15	0	5-15	0	0	0	0	0	0	0	0	0	0-25
3	0	5-10	0	5-10	0	0	0	0	0	0	0	0	0	0-25
4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
5	55-65	155-210	55-75	265-350	35-45	100-135	35-45	170-225	90-120	0	40-50	130-170	20-25	0-25
6	30-50	90-110	30-40	150-200	20-30	60-85	20-30	100-145	50-70	0	25-35	75-105	15-20	0-25
Total	85-115	255-345	85-115	425-575	55-75	160-220	55-75	270-370	140-190	0	65-85	205-275	35-45	
ALTERNATIVE 2														
1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2	0	5-10	0	5-10	0	0	0	0	0	0	0	0	0	0-25
3	0	5-10	0	5-10	0	0	0	0	0	0	0	0	0	0-25
4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
5	125-160	505-690	160-210	79-1060	25-35	110-150	35-50	170-235	85-105	0-5	45-65	130-175	20-25	0-25
6	65-95	295-385	90-130	450-610	15-20	65-90	20-25	100-135	45-60	0-5	30-35	75-100	15-20	0-25
Total	190-255	810-1095	250-340	1250-1690	40-55	175-240	55-75	270-370	130-165	0-10	75-100	205-275	35-45	
ALTERNATIVE 3														
1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2	0	5-10	0	5-10	0	0	0	0	0	0	0-5	0-5	0	0-25
3	0	5-10	0	5-10	0	0	0	0	0	0	0-5	0-5	0	0-25
4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
5	120-160	550-750	120-160	790-1070	75-105	365-490	75-105	515-700	100-135	0	290-385	390-520	60-90	0-25
6	65-90	320-420	65-90	450-600	45-60	210-285	45-60	300-405	20-25	0	55-70	75-95	40-50	0-25
Total	185-250	880-1190	185-250	1250-1690	120-165	575-775	120-165	815-1105	120-160	0	345-465	465-625	100-140	
ALTERNATIVE 4														
1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2	0	5-10	0	5-10	0	0	0	0	0	0	0-5	0-5	0	0-25
3	0	5-10	0	5-10	0	0-5	0	0-5	0	0	0-5	0-5	0	25-50
4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
5	210-285	1055-1435	140-195	1405-1915	80-105	390-520	50-70	520-695	65-85	25-35	300-385	390-505	70-100	0-25
6	120-160	595-790	80-105	795-1055	70-95	350-485	50-60	470-640	10-20	5-10	60-80	75-110	30-40	25-50
Total	330-445	1660-2245	220-300	2210-2990	150-200	740-1010	100-130	990-1340	75-105	30-45	360-475	465-625	100-140	

Table 3-7. Management Activities on UCRB Rangelands (continued).

Range Cluster	Livestock Management				Improve Rangelands				Prescribed Burning				Roads* Riparian Decrs. Restr. (%)	
	dry grass	dry shrub	cool shrub	Total	dry grass	dry shrub	cool shrub	Total	dry grass	dry shrub	cool shrub	Total		
Acres (thousands per decade)														
ALTERNATIVE 5														
1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2	0	5-10	0	5-10	0	0	0	0	0-5	0	0	0-5	0	0-25
3	0	5-10	0	5-10	0	0-5	0	0-5	0-5	0	0	0-5	0	0-25
4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
5	35-55	635-845	120-165	790-1065	10-15	135-175	25-35	170-225	85-105	10-15	40-50	135-170	60-90	0-25
6	25-30	360-485	65-90	450-605	15-20	245-330	45-65	305-415	55-65	0-5	20-30	75-100	40-50	0-25
Total	60-85	1005-1350	185-255	1250-1690	25-35	380-510	70-100	475-645	140-180	10-20	60-80	210-280	100-140	
ALTERNATIVE 6														
1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2	0	5-10	0	5-10	0	0-5	0	0-5	0	0	0-5	0-5	0	0-25
3	0	5-10	0	5-10	0-5	0	0	0-5	0	0	0-5	0-5	0	0-25
4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
5	210-285	1055-1425	140-195	1405-1905	25-35	130-170	15-25	170-230	70-85	25-30	295-395	390-510	60-90	0-25
6	120-160	595-800	80-105	795-1065	50-60	225-305	30-40	305-405	10-20	10-15	55-70	75-105	40-50	25-50
Total	330-445	1660-2245	220-300	2210-2990	75-100	355-480	45-65	475-645	80-105	35-45	350-475	465-625	100-140	
ALTERNATIVE 7														
1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0-25
3	0	0-5	0	0-5	0	0	0	0	0	0	0	0	0	25-50
4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
5	95-135	200-265	100-135	395-535	40-60	85-120	45-55	170-235	50-70	40-50	295-390	385-510	20-30	0-25
6	80-105	155-210	80-105	315-420	25-30	50-70	25-35	100-135	10-15	5-10	60-85	75-110	40-50	25-50
Total	175-240	355-480	180-240	710-960	65-90	135-190	70-90	270-370	60-85	45-60	355-475	460-620	60-80	

*Includes primarily native surface roads.

Comparison of Alternatives

This section compares the seven alternatives in three ways. First, the theme of each alternative is briefly stated in Table 3-8. Second, a comparison is made between the “No Action” alternatives (Alternatives 1 and 2) and the

“Action” alternatives (Alternatives 3 through 7). Third, a relative comparison of the effects of the alternatives is made, summarizing the estimation of effects described in detail in Chapter 4.

Table 3-8. Comparison of Alternatives by Theme

Alternative 1. No Action

Continues management specified under existing Forest Service or BLM land-use plans. Includes direction from current plans for 17 National Forests and 20 BLM Resource Areas.

Alternative 2

Applies recent interim direction (PACFISH and INFISH) as the long-term strategy for lands administered by Forest Service or BLM. All other direction from existing plans would continue. Direction in Alternative 1 would apply to areas not covered by interim direction.

Alternative 3

Updates existing Forest Service or BLM plans in response to changing conditions. Minimizes changes to local plans, addressing only priority conditions that most hinder effectiveness or legal conditions. Provides a broader dimension and more integrated management regarding priority large-scale issues than Alternatives 1 or 2.

Alternative 4

Aggressively restores ecosystem health through active management using an integrated ecosystem management approach. Priority is placed on forest, rangeland, and watershed health. Actions are designed to produce economic benefits whenever practical.

Alternative 5

Emphasizes production of goods and services consistent with ecosystem management principles. Areas are targeted for specific uses based on biological capability and economic efficiency; other uses may occur but conflicts would be resolved in favor of the priority use.

Alternative 6

Emphasizes an adaptive management approach to restore and maintain ecosystems while providing for social and economic needs. Takes a slower, more cautious approach than other alternatives and implies the use of experimental processes, local research, and extensive monitoring.

Alternative 7

Emphasizes reducing risks to ecological integrity and species viability by establishing a system of reserves lands administered by the Forest Service or BLM. Reserves are selected for representation of vegetation and rare animal species. Management activities are limited within reserves and are similar to Alternative 3 outside reserves.

Differences Between the Alternatives

In general, there are several differences between the “no action” alternatives, which reflect current BLM and National Forest land and resource management plans, and the “action” alternatives. There are 75 BLM and National Forest management plans within the project area. Many aspects of these existing plans are still accurate and appropriate, as are many approaches to dealing with local issues. Certain broader scale issues, however, have been more challenging to resolve on a unit by unit basis. These plans were approved over a 15- to 20-year time period, and they do not reflect consistent approaches to broad-ranging issues, such as declines in cold water fish and riparian habitat, concerns about mature or old forests, and the expansion of exotic weed species. The “action” alternatives attempt to portray consistent interagency approaches to these broad-ranging

issues, as well as applications of evolving ecosystem management principles. Alternatives 1 and 2 represent existing Forest Service and BLM land-use plans and current direction. The management of Forest Service- or BLM-administered lands would shift in varying degrees towards an ecosystem-based landscape approach under Alternatives 3 through 7. This means that these lands would be managed as a whole within watersheds and as connected lands between watersheds. Where forestland and rangeland are intermingled within watersheds, or between watersheds, they would be managed for connected flows of resources and habitats. Hydrologic and riparian systems within watersheds would be managed as integral networks of forest and rangelands. Through time, the implementation of activities to restore landscapes and produce commodities would be prioritized to achieve integrated landscape, aquatic, and terrestrial integrity and social and economic resilience, and would be concentrated in time and space to better reflect the biophysical template.

Some of the more substantial differences between the “no action” and “action” alternatives are as follows:

“No Action” Alternatives (Alternatives 1 and 2)

Many current plans describe desired future conditions but have emphasis on commodity production with mitigation for other resource values. In forested ecosystems, these plans typically reflect more traditional approaches, emphasizing even-aged management with small patch sizes scattered across the landscape. On land suitable and available for timber production, timber yields were optimized within the constraints of standards and guidelines, often relying on improved genetic stocks and in some cases, fertilization. Timber volume generally is produced from all size classes, including large diameter trees. On rangelands, among other things, strategies often equate stocking levels of domestic livestock with the capacity of the land. There is less emphasis on managing the landscape in ways similar to how native species evolved.

“Action” Alternatives (Alternatives 3 through 7)

Focus is on developing old trees and late seral structure where it has declined throughout the basin, to reflect conditions expected under more natural disturbance regimes. Most volume comes from smaller size and age classes from thinnings or removal of smaller trees to enhance development of residual overstory trees. On both forest and rangelands, more reliance on the use of prescribed fire to restore patterns and structure more consistent with those in which these systems evolved.

Continued on the next page

There is no overall cold water aquatic and riparian management strategy. Parts of the planning area are covered under PACFISH or INFISH. Some of the rangelands are not covered by any of these and rely on what is in the respective plans.

More common consistent approach to managing aquatic and riparian resources, with primary management goals and objectives to maintain or improve aquatic/riparian functions and processes. Strategies in these alternatives address the linkages between riparian areas and uplands, relating this to overall watershed function.

Although current plans generally include prescribed fire, thinning, and other vegetative management activities, there is little emphasis on working with natural disturbance patterns and processes across the landscape.

More emphasis on effectively working with natural disturbance patterns and processes across landscapes.

Generally, current plans were the best attempt at the time to provide sustainable goods and services for people.

Emphasis on appropriate ecosystem analysis to determine desirable patterns, structure and composition of vegetation that more closely considers natural disturbance events and regimes. Emphasis is on what patterns, structure, and composition are desirable to carry into the future. Resource outputs exceeding those needs available for social and economic benefits to society.

Same as above.

Activity locations and expected management treatments would be more closely focused on restoring ecosystem function, process, and structure.

Public participation in natural resource decision making is generally driven by NEPA, and the emphasis varies by administrative unit.

Stronger emphasis on how decisions are made on public lands. Recognize the need for meaningful participation at all levels, and recognize unique needs and contributions of tribes and local governments.

Most land-use plans were developed prior to the Forest Service and BLM adopting policies of ecosystem-based approaches to management activities. Existing plans often recognized that current conditions may differ from desired conditions. Now there is better understanding of how the ecosystems function and are influenced by Forest Service and BLM management activities and natural events and processes.

Recognize that some systems have elements that reflect shifts from healthy functioning conditions, which have occurred for several reasons over a long period of time. Effects of past management from timber harvest, livestock grazing, road construction, and fire exclusion have altered systems. Some of this is desired by society, while some creates long-term challenges. Other events, such as climate cycles, exotic weed expansion, and management of non-Federal lands influence how these Federal lands are managed, and vice versa. These interactions are more fully considered than under existing plans.

Comparison of the Effects of the Alternatives

Chapter 4 describes the environmental consequences of the alternatives in detail. This section provides a summary of those effects, using a relative comparison among alternatives for the ten evaluation criteria (see sidebar below).

The EIS Team developed the evaluation criteria to reflect the *Purpose and Need* statement and *issues* in Chapter 1 and *goals* for the alternatives in Chapter 3. The action alternatives (Alternatives 3 through 7) were developed to respond to the evaluation criteria. With the diversity of species, physical environments, landscape conditions, trends, communities, and cultures in the planning area, it would not be possible for any alternative to fully meet all the evaluation criteria. In some cases, fully meeting one criterion could lead to risks and trade-offs in other criteria.

Each evaluation criterion is made up of one or more subparts, called *indicator variables*. These variables (both individually and in combination) give a relative indication, based on findings of the Science Team, of how well

the alternatives respond to the evaluation criteria. The alternatives were graphed for each indicator variable using a relative ranking system with a scale of 0 to 10. The alternative that rated the highest was assigned a rating of 10 and the other alternatives were rated relative to that alternative.

Indicator variables are made up of one or more *causal variables*. In most cases, the graphs of indicator variables, with reference to their respective causal variables, were adequate to illustrate the relative ranking of alternatives. In a few cases, causal variable graphs were included.

Following the graphs are a few paragraphs for each evaluation criterion summarizing the relative effects among alternatives. The evaluation criteria process provided valuable information in the selection of a Preferred Alternative. For more detailed information on the effects, see Chapter 4 of this Draft EIS, (Environmental Consequences), or the *Evaluation of EIS Alternatives by the Science Integration Team* (Quigley, Lee, and Arbelbide 1997).

The following evaluation criterion summaries are based on indicator variable rankings among alternatives in combination with information from Chapter 4.

Evaluation Criteria ~ Ten questions reflecting the Purpose and Need, issues, and goals used to rank the effects of the alternatives relative to each other.

Indicator Variables ~ The components of evaluation criteria, which are themselves made up of causal variables.

Ranking ~ For each indicator variable, the alternative that rated the highest was assigned a rating of 10. The other alternatives were rated relative to that alternative. The ranking of indicator variables is for both short-term (10 years) and long-term (50 to 100 years) effects unless otherwise noted.

Evaluation Criteria / Indicator Variables

1. To what extent does each alternative affect forest health and natural disturbance processes?

- IV#1 Stand Structure and Composition
- IV#2 Ecosystem Process and Function
- IV#3 Resilience to Stresses

2. To what extent does each alternative affect rangeland health and natural disturbance processes?

- IV#1 Noxious Weeds
- IV#2 Woody Species
- IV#3 Restoration
- IV#4 Grazing Pressure
- IV#5 Ecosystem Analysis at the Watershed Scale

3. To what extent does each alternative affect aquatic and riparian health?

- IV#1 Watershed, Aquatic, and Riparian Protection Standards
RCAs
- IV#2 Watershed, Aquatic, and Riparian Restoration
Road Decommissioning and Obliteration
Road Closure
Restoration Acres
- IV#3 Short-term Risk and Uncertainty
Ecosystem Analysis at the Watershed Scale
Management Disturbance
- IV#4 Long-term Risk and Uncertainty
- IV#5 Habitat to Support Viable Fish Populations

4. To what extent does each alternative affect landscape health?

- IV#1 Landscape Health
Short-term
Long-term
- IV#2 Landscape Health Cost

5. How does each alternative contribute to long-term viable populations of terrestrial species?

- IV#1 All Species at-risk
- IV#2 Riparian Associated Species at-risk
- IV#3 Snag/downed Wood Dependent Species at-risk
- IV#4 Species at-risk Improved by Upland Restoration
- IV#5 Species at-risk Improved by Lower Road Density
- IV#6 Fewest Unfavorable Habitat Outcomes for Species at-risk

6. How does each alternative contribute to long-term recovery and delisting of threatened and endangered species?

- IV#1 Bald Eagle
- IV#2 Fish

7. To what extent does each alternative respond to Federal trust responsibilities and tribal rights and interests?

- IV#1 Effective Consultation
- IV#2 Tribal Rights and Interests
- IV#3 Access
- IV#4 Places: Specific Landscapes Based on Meanings and Images
- IV#5 Ethno-habitats Usability

8. What annual level of goods and services is provided by each alternative?

- IV#1 Livestock Production
- IV#2 Timber Volume
- IV#3 Recreation Value

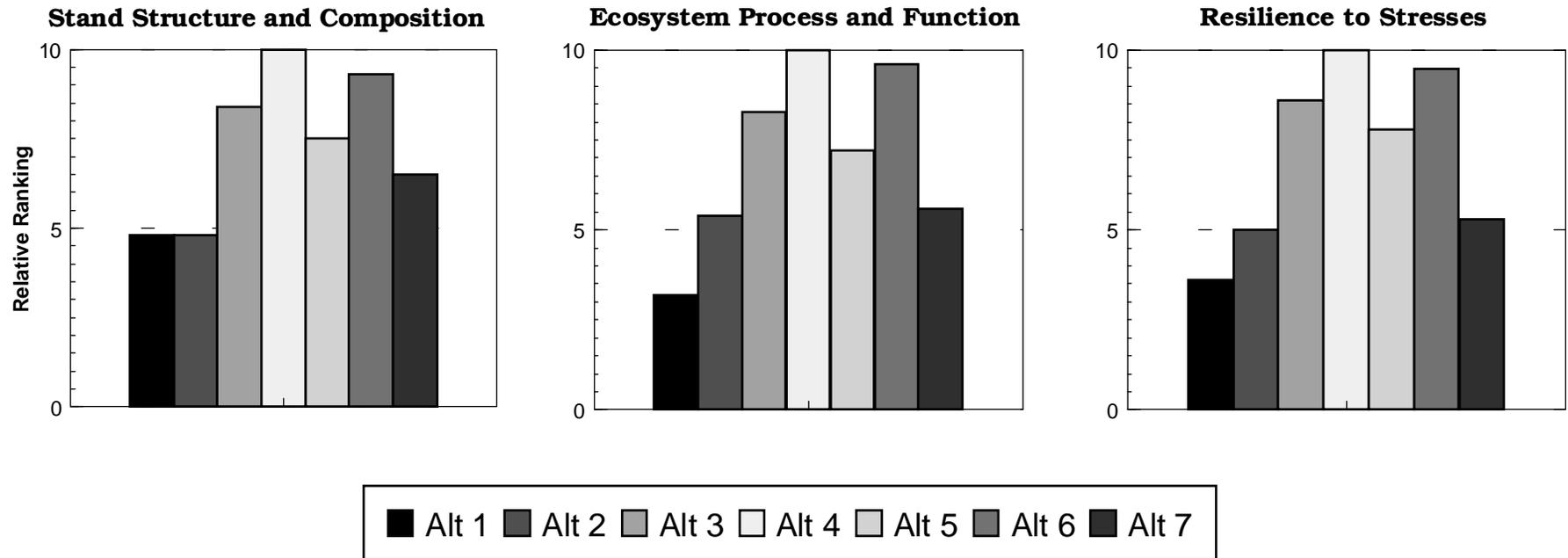
9. What are the effects of each alternative on community vitality and resiliency?

- IV#1 Timber Jobs
- IV#2 Ranching Jobs
- IV#3 Recreation Jobs
- IV#4 Restoration Jobs

10. What are the effects of each alternative on quality of life for project area residents?

- IV#1 Environmental Risk Reduction (short-term and long-term)
- IV#2 Economic Opportunity

EC 1: To what extent does each alternative affect forest health and natural disturbance processes?

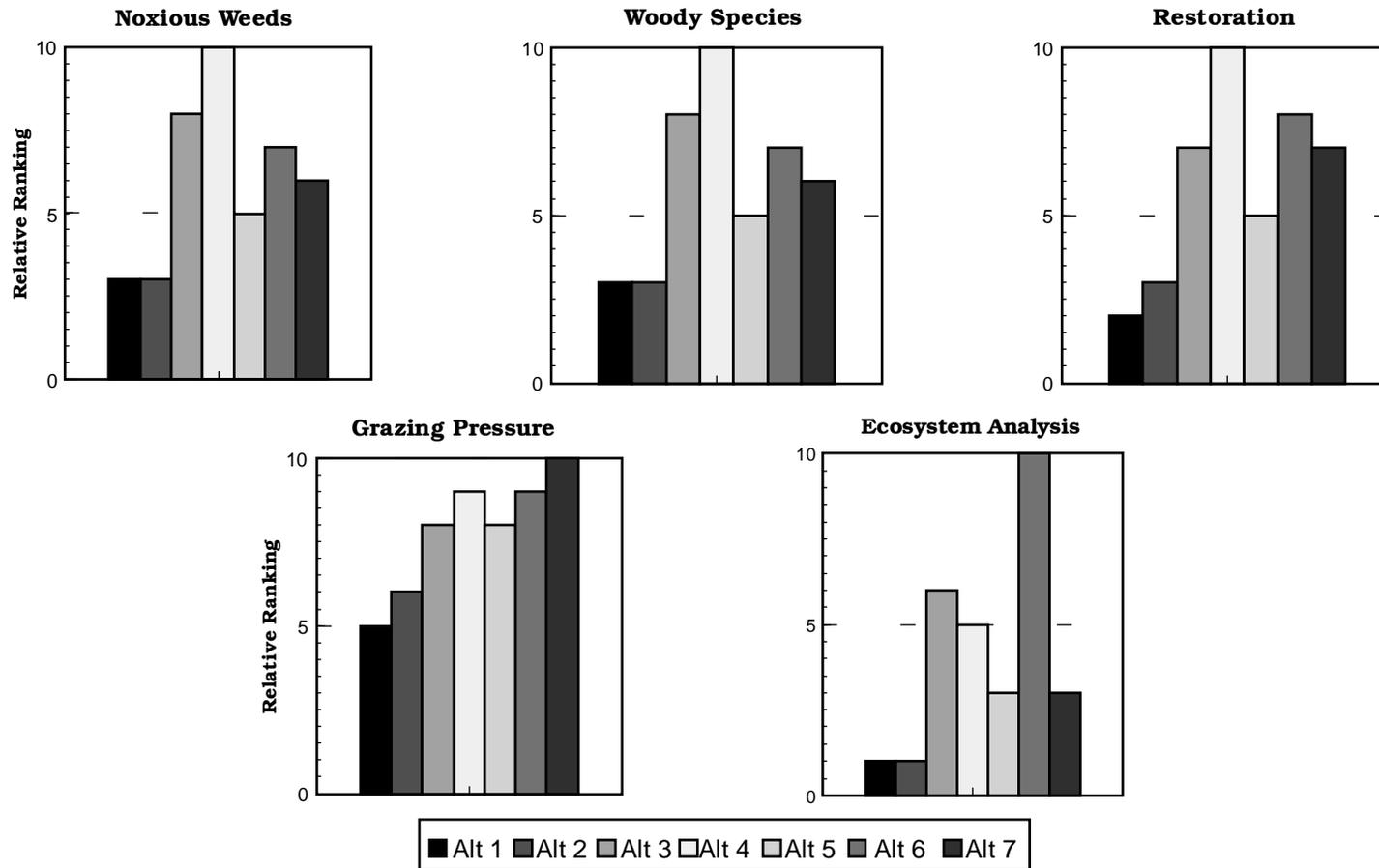


Stand Structure and Composition: Long-term relative ranking of alternatives based on projected similarity to Historical Range of Variability using the following stand characteristics: 1) structure of young, mature, and old forests; 2) large tree component; and 3) tree species composition; and 4) density.

Ecosystem Process and Function: Long-term relative ranking of alternatives based on projected 1) coarse woody debris levels; 2) soil disturbance; 3) nutrient cycling; 4) road restoration; 5) hydrologic function; and 6) carbon cycling.

Resilience to Stresses: Long-term relative ranking of alternatives based on the ecosystem's projected ability to withstand the following stresses: 1) wildfire; 2) insects and disease; 3) climatic; and 4) noxious weeds.

EC 2: To what extent does each alternative affect rangeland health and natural disturbance processes?



Noxious Weeds: Relative ranking of alternatives based on effectiveness in reducing the spread of weeds using IWM standards, road management standards, and management activity tables for range improvement.

Woody Species: Relative ranking of alternatives based on effectiveness in reducing the density of juniper, conifers and sagebrush using standards and management activity tables for range improvement and prescribed burning.

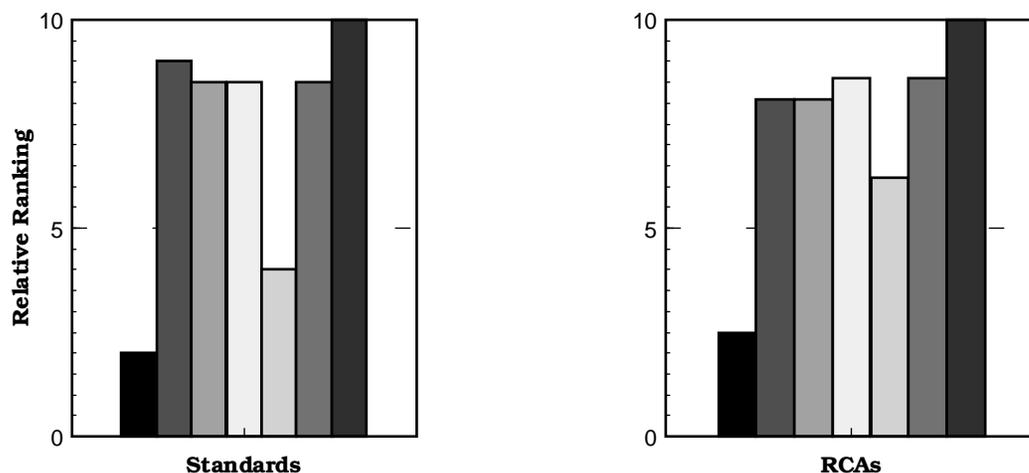
Restoration: Relative ranking of alternatives based on effectiveness in restoring rangelands using standards and management activity tables for livestock management and range improvement.

Grazing Pressure: Relative ranking of alternatives based on effectiveness in reducing grazing pressure on rangelands using the standards and management activity tables for livestock management.

Ecosystem Analysis: Short-term relative ranking of alternatives based on effectiveness in reducing risk of management actions using the amount of acreage requiring ecosystem analysis.

EC 3: To what extent does each alternative affect aquatic and riparian health?

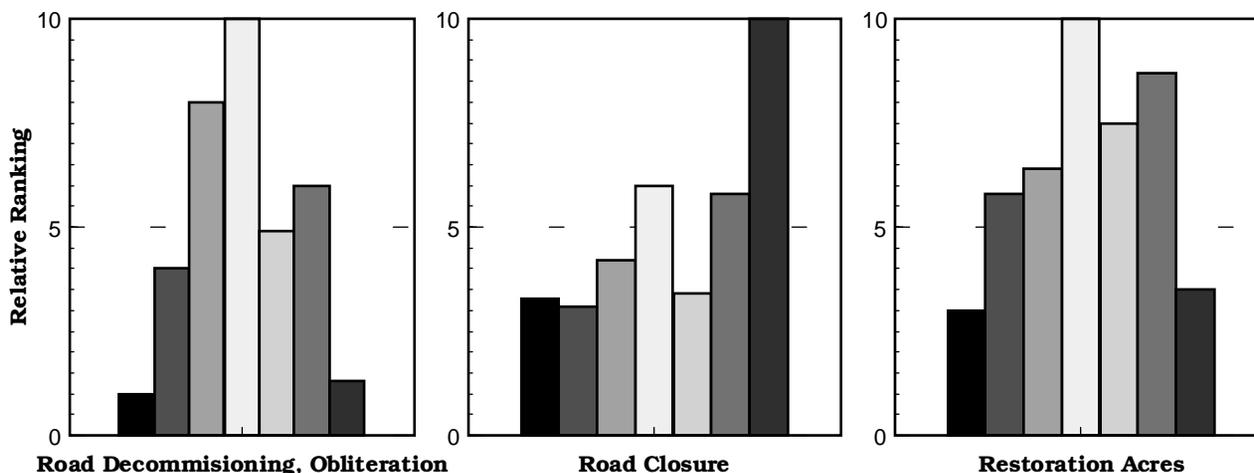
Watershed, Aquatic, and Riparian Protection



Standards: Short-term relative ranking of alternatives based on the protective or conservative nature of aquatic and riparian management standards. The highest bar reflects the most conservative management approach.

RCAs: Short-term relative ranking of alternatives based on the amount of land within Riparian Conservation Areas (RCAs), with the highest bar reflecting the greatest area. Alternatives 2 through 7 do not account for landslide prone areas. Also, the slope adjustment factor is not included in Alternatives 4, 5, and 6 which would increase RCA area.

Watershed, Aquatic, and Riparian Restoration



Road Decommissioning and Obliteration: Short-term relative ranking of alternatives based on road decommissioning and obliteration miles used in the cost analysis. The highest bar reflects the greatest amount of road decommissioning and obliteration.

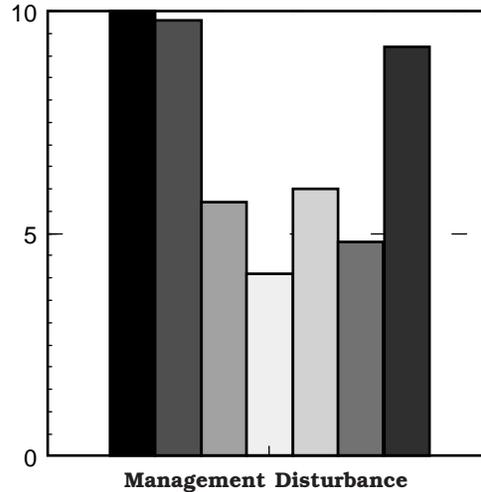
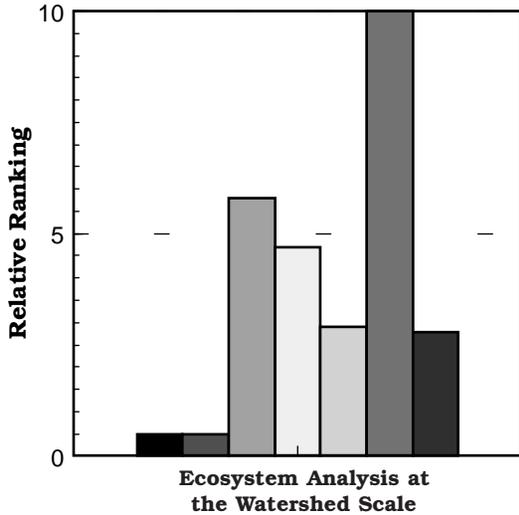
Road Closure: Short-term relative ranking of alternatives based on road closure miles used in the cost analysis. The highest bar reflects the greatest amount of road closure.

Restoration Acres: Short-term relative ranking of alternatives based on the amount of watershed and riparian restoration acres shown in the activity tables with the highest bar reflecting the greatest amount.



EC 3: To what extent does each alternative affect aquatic and riparian health? (continued)

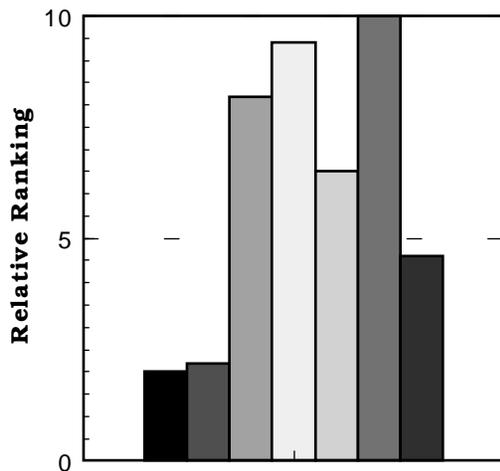
Short-term Risk and Uncertainty



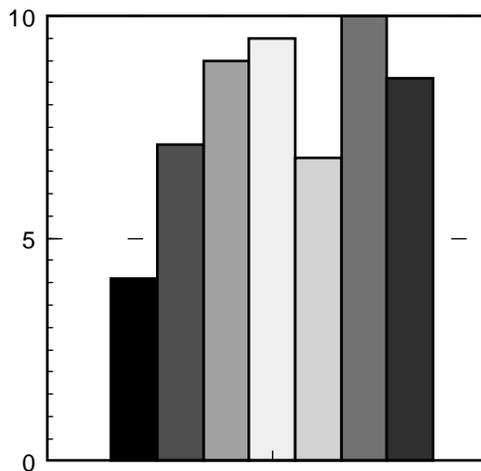
Ecosystem Analysis at the Watershed Scale: Short-term relative ranking of alternatives based on the potential amount of ecosystem analysis at the watershed scale. The assumption is that ecosystem analysis at the watershed scale reduces short term risk (<10 years) and uncertainty of outcomes to watershed, aquatic, and riparian resources. The highest bar reflects the alternative with the greatest potential amount of ecosystem analysis at the watershed scale.

Management Disturbance: Short-term relative ranking of alternatives based on the amount of management activities shown in the activity tables excluding road decommissioning, obliteration, and closure. The assumption is that the greater the rate of management activity, the higher likelihood of short term risk (<10 years) to watershed, aquatic, and riparian resources. The highest bar reflects the alternative with the lowest short term risk as measured by activity rate.

Long-term Risk and Uncertainty



Habitat to Support Viable Fish Populations



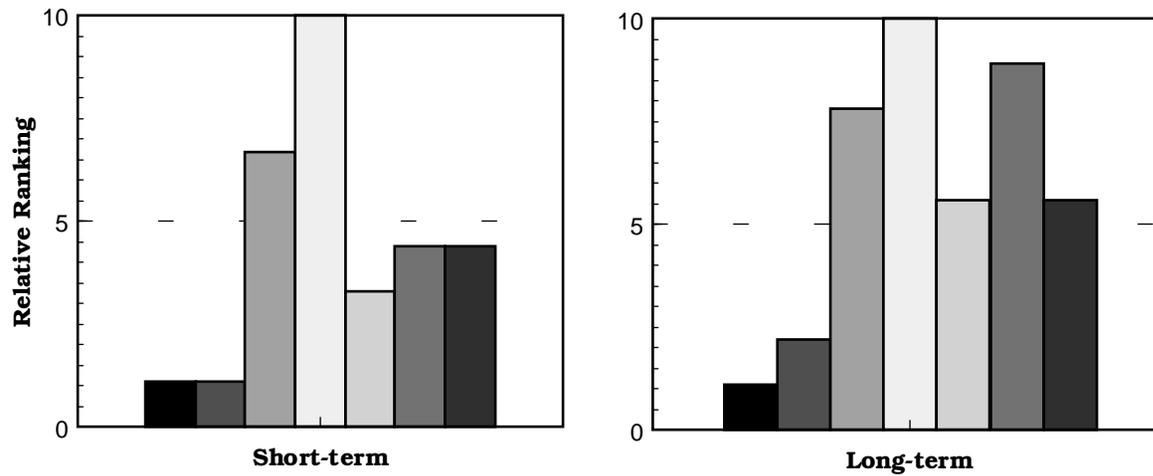
Long-Term Risk and Uncertainty: Long-term relative ranking of alternatives based on the similarity of landscape pattern, disturbance regime, and vegetation structure to historic. The assumption is that the greater the similarity to historic conditions, the lower the risk to watershed, aquatic, and riparian resources in the long term (50-100 years). The highest bar reflects the alternative with the greatest similarity to historic.

Habitat to Support Viable Fish Populations: Long-term relative ranking of alternatives based on the previous aquatic and riparian indicator variables. The highest bar reflects the alternative that best maintains viability requirements for fish species.

Alt 1
 Alt 2
 Alt 3
 Alt 4
 Alt 5
 Alt 6
 Alt 7

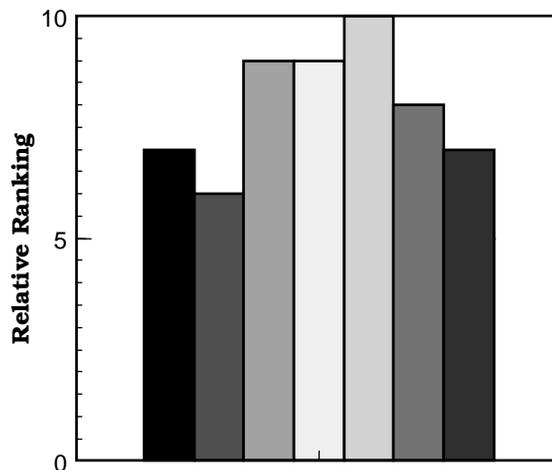
EC 4: To what extent does each alternative affect landscape health?

Landscape Health



Short-term and Long-term Landscape Health: Relative ranking of alternatives based on consistency of landscape patterns with their appropriate biophysical succession/disturbance regimes, associated reduction in soil disturbance, exotic species invasion, conservation of landscape scale terrestrial and aquatic species habitats, fire risk reduction in the urban-rural/wildland interface, and associated flow of commodities and amenities.

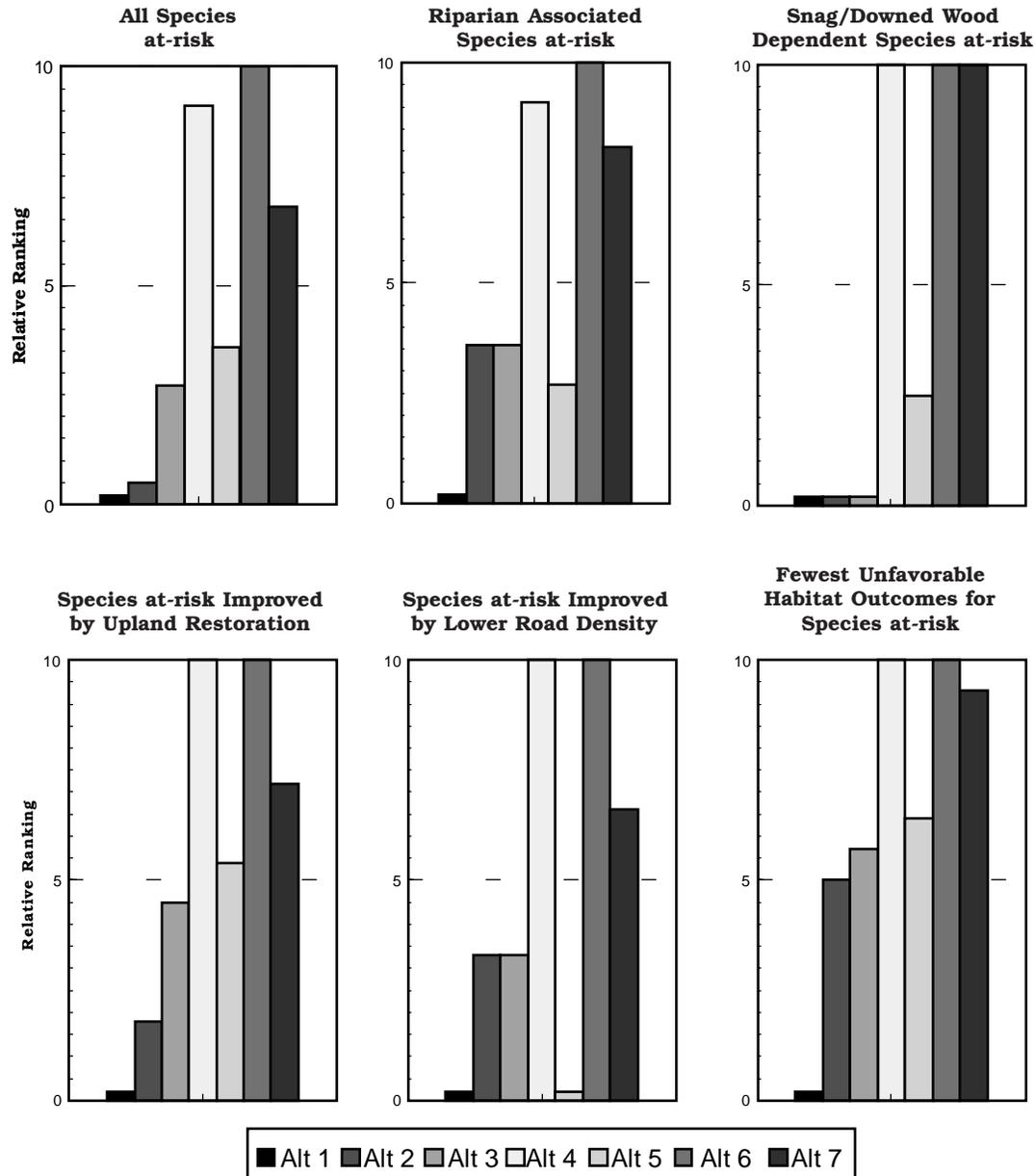
Landscape Health Cost



Landscape Health Cost: Relative ranking of alternatives based on costs of land management activity and wildfire suppression.



EC 5: How does each alternative contribute to long-term viable populations of terrestrial species?



All Species At-Risk: Long-term relative ranking of alternatives based on improved habitat outcomes of all species listed in Table 4-41.

Riparian Associated Species At-Risk: Long-term relative ranking of alternatives based on improved habitat outcomes for a selected group of species from Table 4-41 and riparian restoration/protection in standards and activity tables.

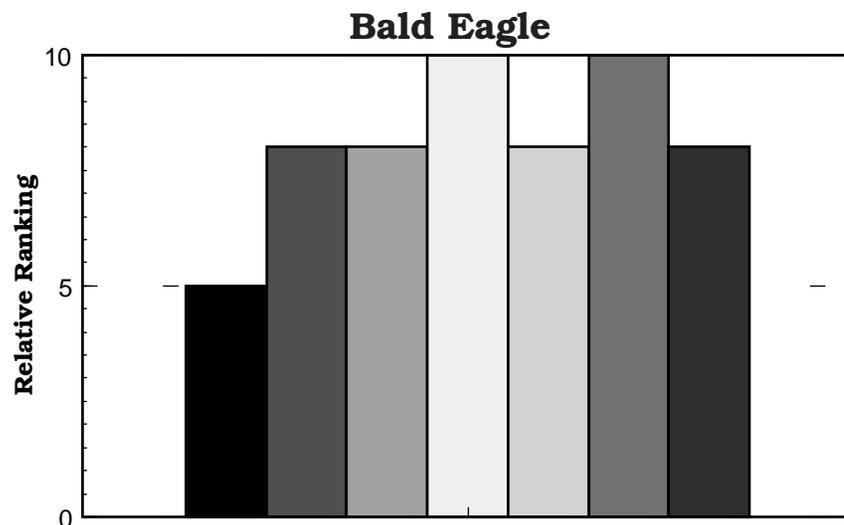
Snag/Downed Wood Dependent Species At-Risk: Long-term relative ranking of alternatives based on improved habitat outcomes for a selected group of species from Table 4-41 and snag and downed wood standards.

Species At-Risk Improved by Upland Restoration: Long-term relative ranking of alternatives based on improved habitat outcomes for a selected group of species from Table 4-41 and improvements in connectivity and reduction in fragmentation.

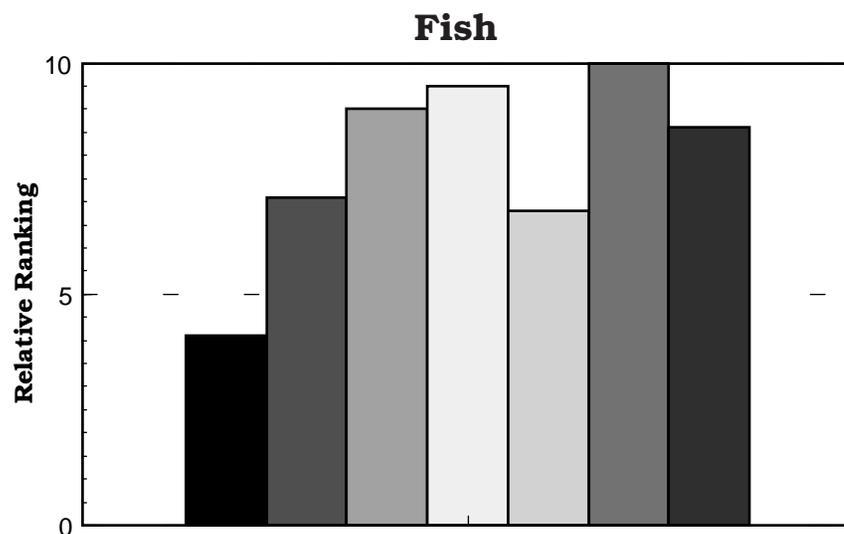
Species At-Risk Improved by Lower Road Density: Long-term relative ranking of alternatives based on improved habitat outcomes for a selected group of species from Table 4-41 activity tables, and road density standards.

Fewest Unfavorable Habitat Outcomes for Species At-Risk: Long-term relative ranking of alternatives based on the number of species with unfavorable outcomes from Table 4-41 excluding species at-risk historically.

EC 6: How does each alternative contribute to long-term recovery and delisting of threatened and endangered species?



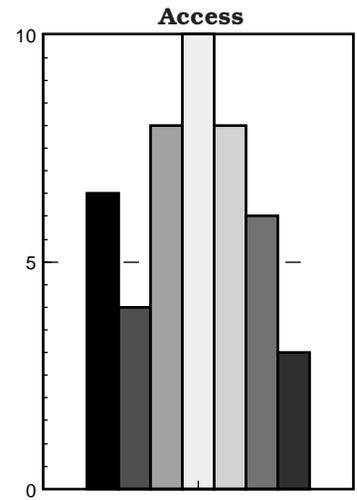
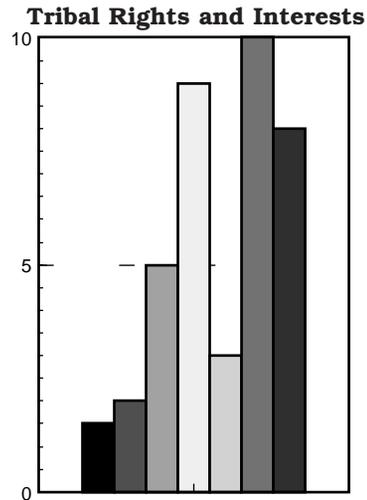
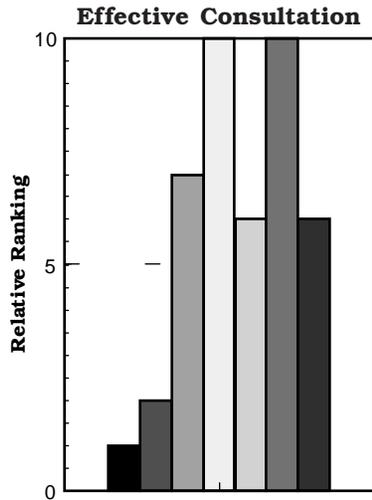
Bald Eagle: Likelihood of improvement of bald eagle habitat. (No other threatened or endangered terrestrial species exhibited a substantial difference between alternatives at this scale of analysis.) Long term relative ranking of alternatives based on habitat protection provided by the Endangered Species Act, riparian standards, and activity tables.



Fish: Long-term relative ranking of alternatives based on indicator variables from EC 3, and reflects improvement in habitat trends towards supporting viable populations of threatened and endangered fish species. Threatened Snake River ocean-type (fall) chinook are not included because the species is largely dependent on habitats outside of Forest Service- or BLM-administered lands.

Alt 1
 Alt 2
 Alt 3
 Alt 4
 Alt 5
 Alt 6
 Alt 7

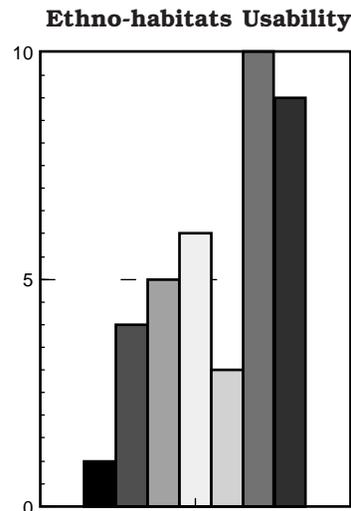
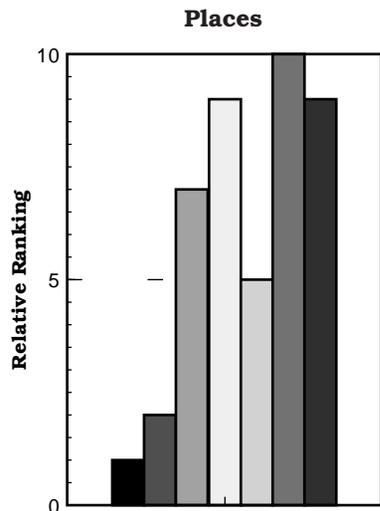
EC 7: To what extent does each alternative respond to federal trust responsibilities and tribal rights and interests?



Effective Consultation: Relative ranking of alternatives reflects interagency/tribal consultation and tribal involvement prior to decisions, the theme of the alternative, and objectives and standards.

Tribal Rights and Interests: Relative ranking of alternatives based on the theme of the alternative, objectives and standards, the effectiveness of consultation, and related elements in Table 4-12.

Access: Relative ranking of alternatives based on the theme of the alternative, road management objectives and standards, and opportunity for tribes to take part in road management decisions.

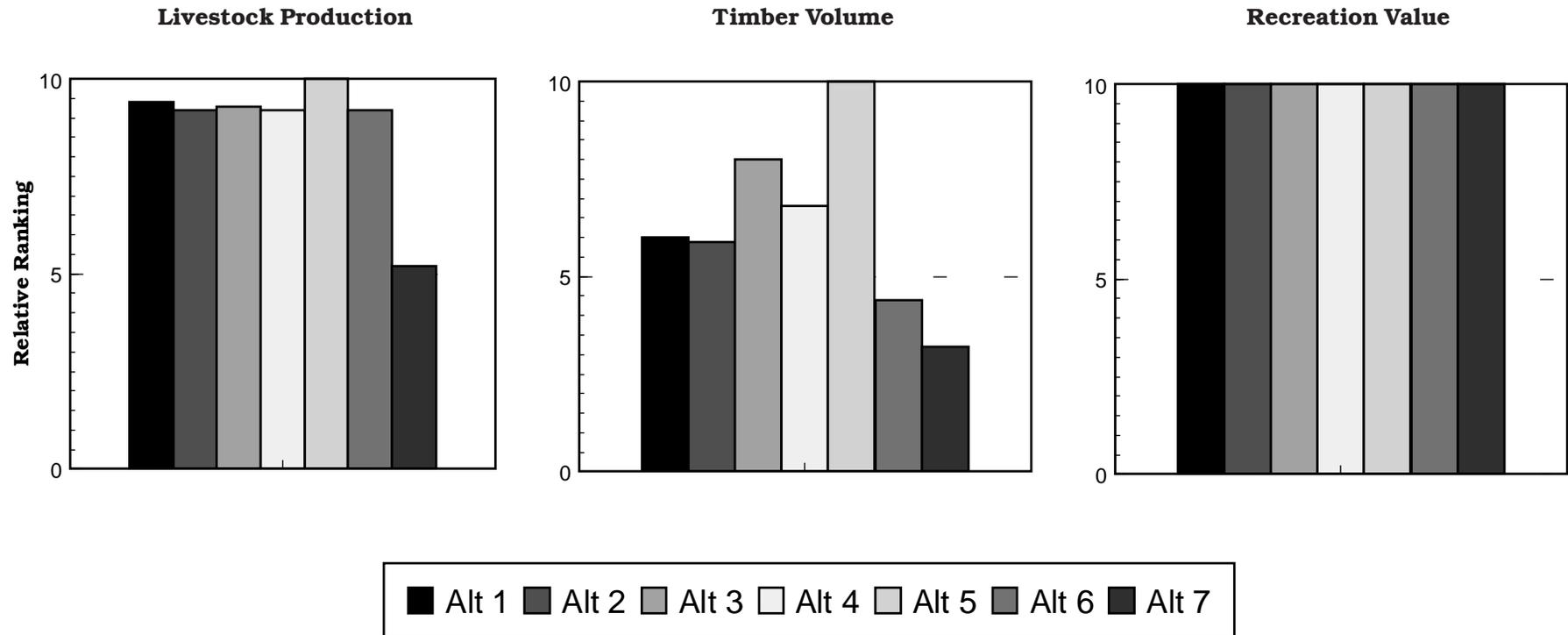


Places: Relative ranking of alternatives reflects tribal significant places and their access/use based on the previous three indicator variables and Table 4-53.

Ethno-habitats Usability: Relative ranking of alternatives based on biophysical trends, tribal-interest species habitat trends, and the previous four indicator variables.



EC 8: What annual level of goods and services is provided by each alternative?

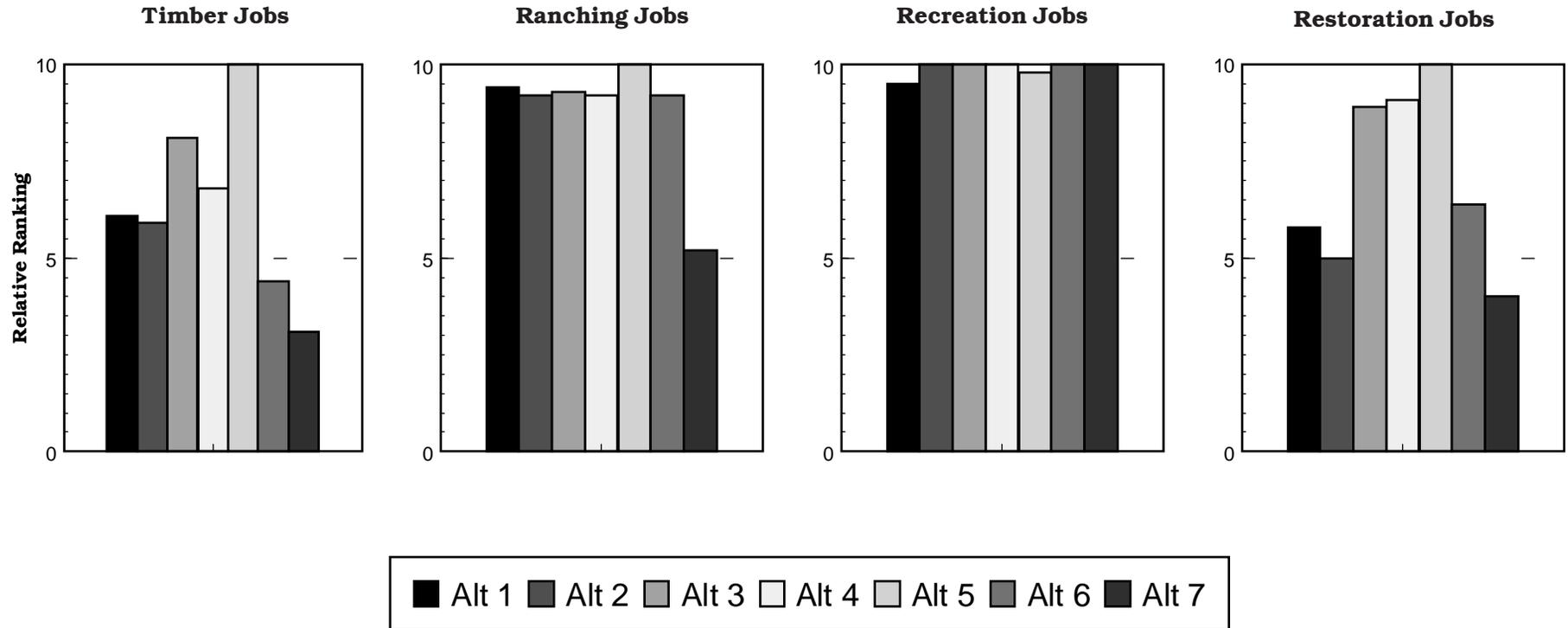


Livestock Production: Relative ranking of alternatives based on estimated percentage decrease from 1993 production level.

Timber Volume: Relative ranking of alternatives based on midpoint harvest acres from tables 3-6 and 3-7 multiplied times volume/acre values from simulations.

Recreation Value: Relative ranking of alternatives based on the Economics Chapter of the Scientific Assessment.

EC 9: What are the effects of each alternative on community vitality and resiliency?



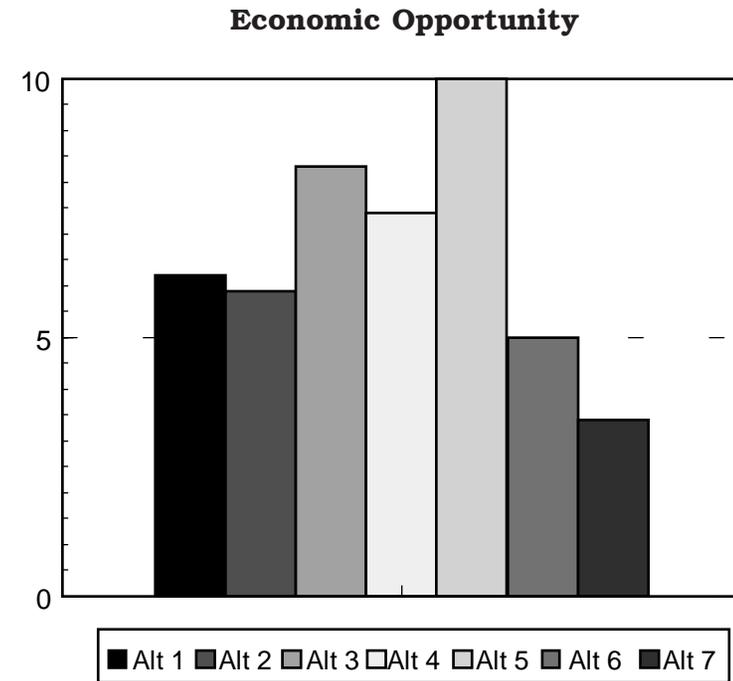
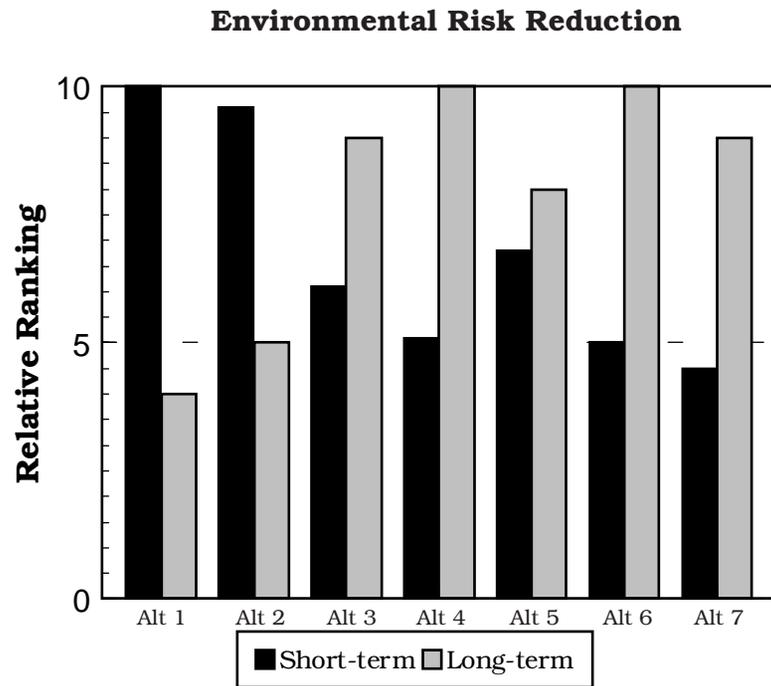
Timber Jobs: Relative ranking of alternatives derived from total volume harvested (mmbf) using a multiplier of jobs per mmbf.

Ranching Jobs: Relative ranking of alternatives derived from total AUMs produced using a multiplier of jobs per AUM.

Recreation Jobs: Relative ranking of alternatives derived through an analysis of how a number of job sectors serve recreation.

Restoration Jobs: Relative ranking of alternatives derived by using a multiplier of jobs per million dollars spent based on activities in tables 3-6 and 3-7.

EC 10: What are the effects of each alternative on quality of life for project area residents?



Environmental Risk Reduction: Relative ranking of alternatives based on ecosystem analysis, range restoration, road closure, prescribed fire, timber harvest, and natural processes.

Economic Opportunity: Short-term relative ranking of alternative based on timber, ranching, and restoration jobs.

Effects on Forest Health and Natural Disturbance Processes

Alternative 4 would be the most responsive overall in addressing forest health, followed closely by Alternative 6. Alternatives 3 and 5 would be more responsive than Alternative 7, followed by Alternatives 2 and 1.

Indicator variables that describe forest health are the following: (1) stand structure and composition, (2) ecosystem processes and function, and (3) resilience to stress. Over time, fire exclusion, harvest, livestock grazing, road building, invasion of exotic species, ownership patterns, and other management practices have altered the landscape. The reduction of large trees, increases in mid-seral and multi-story forests, and increases in shade-tolerant tree species are changes in stand structure that have made these forests more vulnerable to fire, insects, disease, and climatic stresses. Many forests are out of balance with ecosystem processes, physical environment, and their locations on the landscape.

Alternative 4 would show the most aggressive restoration of ecosystem structure, process, function, and patterns. Alternative 6 would be slightly less aggressive because it puts more emphasis on adaptive management; this alternative would therefore also result in fewer risks from management activities. Alternative 7's passive approaches would lead to natural disturbances with more unpredictable results. Alternative 3 would fix only the high priority problems in forest health. Under Alternative 5, levels of restoration would vary depending on the priority area and on whether the focus is on commodity or amenity production. Alternatives 1 and 2 would continue many of the current trends in forest management.

Alternatives 4 and 6 would lead to forest structures and compositions in the long term resembling more historical conditions with more large trees, more shade-tolerant trees (ponderosa pine and western larch), older stands, more single story structures, and lower tree densities. In Alternatives 1, 2, and 5 (in timber priority areas), young forests would tend to be relatively uniform in size and tree spacing with smaller patch sizes and fewer large trees compared to the other alternatives. Alternatives 1 and 2 would have more transitions from old to

mid-seral and from single story to multi-story forest. Alternatives 3 and 7 (outside reserves) would have a combination of uniform and more historic conditions. Alternative 7 (inside reserves) may produce large patch sizes in the short term due to wildfire.

In Alternatives 4 and 6, the ecosystem would move most rapidly toward conditions similar to those under which soils and vegetation evolved. These alternatives have the highest likelihood of restoring ecosystem processes and function. Overall soil disturbance would be lowest, coarse woody debris would be highest, and road restoration and rehabilitation would be most aggressive. Hydrologic, carbon, and nutrient cycling would benefit in the process. Alternatives 3 and 5 have a somewhat lower likelihood of sustaining soil productivity and restoring and maintaining ecosystem processes. Alternative 7 is not rated as high because of the effects of severe wildfire and lack of road restoration in reserve areas. Alternatives 1 and 2 rank lowest for this variable.

Alternatives 3 through 6 are all projected to have fewer acres burned by wildfire and fewer acres of crown fire than Alternatives 1, 2, and 7 because they emphasize restoring forest structure to a state less susceptible to high intensity wildfire in the moist and dry forest. In the cold forest, management activities would reduce the extent of high intensity wildfires by patterning the landscape with varied age classes and forest structures. Alternatives 4 and 6 would produce disturbance patterns most in sync with the ecosystem's biological and physical environment. These alternatives would be followed by Alternatives 3, 5, 7, and 2, and 1. Alternatives 1 and 2 would continue to maintain landscapes of stand structures susceptible to high intensity wildfire. Alternative 7 (in reserves) is predicted to have the highest amounts of wildfire due to lack of restoration or fire suppression efforts in reserves.

Alternative 4 is projected to produce forested conditions most resistant to insect and disease epidemics such as lower densities and more shade-intolerant tree species. Alternative 3 would rank next, followed by Alternatives 6, 5, 7, and 1 and 2.

Effects on Rangeland Health and Natural Disturbance Processes

Alternatives were rated based on their relative ability to improve rangeland health and resemble or restore natural disturbance processes as compared with the other alternatives. Alternative 4 would be more responsive in improving rangeland health and natural disturbances than Alternatives 6, 7, and 3; Alternative 5 would be less responsive. These would all be more responsive than Alternatives 1 and 2. This comparison of alternatives takes into consideration the overall ability of alternatives to reverse undesirable conditions and trends described in the beginning of Chapter 2 called "Summary of Conditions and Trends." The ranking of alternatives may change as individual rangeland conditions and outcomes are examined. For example, Alternatives 3 and 4 would be most responsive in preventing the spread of noxious weeds, whereas Alternative 7 would have the highest ability to prevent negative affects to rangeland health caused by improper grazing of the plant resources. Natural disturbance processes or the resemblance thereof are predicted to improve overall under Alternatives 3 through 7 as ranked above.

Alternatives 4, 6, and 7 would have the highest likelihood of restoring, conserving, and maintaining soil productivity and function, sustainable through time. This is because overall soil disturbance would be lowest, and vegetation would aggressively move towards conditions most similar to those under which soils evolved while also providing the most reduction in spread of exotics. Alternative 7 may not be as effective in meeting goals for sustainable soil productivity and function as Alternative 4 and 6 because road restoration may not be directed at restoring soil and hydrologic function, and reducing the spread of exotics would have a less active approach. Alternatives 3 and 5 are somewhat less likely to meet the goals of sustainable soil productivity, but have a higher likelihood than alternatives 1 and 2.

Natural fire regimes, or the resemblance of these regimes in the dry grass and dry shrub potential vegetation groups, might not be desired in some areas in some alternatives because of the presence or conversion of native vegetation

communities to altered sagebrush steppe. Fire in these communities can promote altered sagebrush steppe if exotic annual grasses like cheatgrass and medusahead are already present in the community or are in the vicinity. Fire, in this instance, would be of limited use in meeting the desired range of future conditions, described earlier in this chapter.

All alternatives are predicted to have less total wildfire acres burned than the historical levels, since no fire suppression existed in the historical period. Alternatives 1, 2, and 7 are predicted to have the highest amounts of wildfire. In Alternatives 1 and 2, this would appear to be a result of lower priorities for restoration of altered sagebrush steppe in the dry shrub PVG (the predicted levels of wildfire exceed the historical levels in this PVG). In Alternative 7, fire suppression actions within the large reserves would be limited to fires that threaten the reserve boundaries. But the amount of wildfire acres predicted is less than Alternative 1 and 2 for total rangeland PVG's as a result of suppression and restoration actions outside reserve boundaries. The dry shrub PVG in Alternative 7 would be predicted to be similar to historical levels, likely as result of no grazing or management action to reduce exotic annual grasses within reserves.

Alternatives 3 through 6 all are predicted to have fewer acres burned by wildfire than alternatives 1, 2, and 7. One primary reason for this difference is Alternatives 3 through 6 emphasize activities that would reduce the extent and break up the continuity of altered sage brush steppe. The result would be an enhanced ability to suppress wildfire in dry shrub areas. Alternatives 1 through 5 would not provide enough total fire (wildfire and prescribed fire) in cool shrub areas to reach historical levels of wildfire. These levels of disturbance would not likely achieve the levels of herbaceous-dominated stages which were historically in cool shrub. The levels of total fire in Alternative 6 would be similar to historical levels of wildfire, while total fire in Alternative 7 exceeds historical levels of wildfire.

All alternatives would show less wildfire in the dry grass area than historically, likely as a result of aggressive suppression in these areas. Even Alternative 7, the alternative with the

highest amount of wildfire, is predicted to have about one-half of the amount of wildfire as historically. This would likely be the result of effective suppression outside of reserve boundaries.

Effects on Aquatic and Riparian Health

Aquatic Health

The current composition, distribution, and status of most fish species within the planning area would improve under Alternatives 3, 4, 6, and 7, with the greatest potential for improvement occurring with Alternatives 4, 6, and 7. Alternative 4 may pose a higher risk in the short term than Alternatives 6 and 7 due to increased activities, but in the long term, Alternatives 4 and 6 have equally high potential for improvement, while that for Alternative 7 declines. All four provide better outcomes than Alternative 2. Most native fishes' distribution and status would continue to decline under Alternative 1 and Alternative 5 (outside aquatic, wildlife, and recreation priority areas).

Alternatives 6 and 7 would result in the greatest improved distribution and status of resident key salmonids in the short term (bull trout, westslope and Yellowstone cutthroat, and redband trout), while Alternatives 4 and 6 are equally high in the long term, while improvement declines with Alternative 7. Successful ecological outcomes of Alternatives 4 and 6 depend upon prioritization of restoration and other management actions and maximizing adaptive management to minimize risk.

Alternatives 3, 4, 6, and 7 would conserve most core population areas for steelhead and stream-type chinook salmon. Improvements in steelhead and stream-type chinook stocks under Alternative 4 are less certain in the short term due to the higher rate of restoration and other management, but the requirements of ecosystem analysis and setting of restoration priorities should reduce some of this uncertainty. However, none of the alternatives address the need for a comprehensive approach to restore habitat and alleviate mortality for steelhead and stream-type chinook stocks outside BLM- and Forest Service-administered lands. Alternatives 1, 2, and 5 would result in the continued decline in the overall status and distribution of steelhead and stream-type chinook salmon stocks.

None of the alternatives would be expected to

provide for the full habitat needs of ocean-type chinook salmon, since none of the alternatives address the need for a comprehensive approach to restore habitat and alleviate mortality outside BLM- and Forest Service-administered lands. Alternatives 6 and 7 would provide the most conservative short-term approaches and might result in some benefits to ocean-type chinook salmon if management actions improve water quality and quantity. In the long term, Alternatives 4 and 6 would offer the greatest protection, because long-term risks of large-scale disturbances would increase for Alternative 7.

Implications. In Chapter 2, a sidebar discusses the effects of hydropower, hatcheries, harvest, and habitat on interior Columbia River Basin anadromous fishes.

- ◆ Downstream stresses associated with the hydropower system are dominant causes of declining anadromous fish runs in the Snake River, notwithstanding land use activities in the watersheds. Mid-Columbia anadromous stocks (e.g. John Day and Deschutes Rivers) are influenced less by hydropower due to a lower number of dams below spawning and rearing areas. Habitat degradation is another important factor in the decline of salmon and steelhead.
- ◆ Maintenance of high-quality habitats is vital to the persistence of populations but the magnitude of effects varies from sub-basin to sub-basin. High quality habitat alone is no guarantee of increased persistence without a comprehensive approach that addresses all mortality factors acting upon individual populations. Additional high quality habitat alone could increase abundance of individual fish but it would not likely reverse current negative population trends in the short-term. Assuming mainstem conditions are resolved in the longer term, and if the objective is to support the full expression of life histories ad species, then it will be necessary to conserve and restore broader habitat networks than currently exist.
- ◆ Salmon population numbers in much of the interior Columbia River Basin are far below what current habitat conditions could likely support under a scenario of increased downriver survival. Some areas (e.g. central Idaho and northern Cascades) potentially could support hundred-fold increase or better in adult numbers. However, this is not the case everywhere.

Existing habitat conditions in some areas, such as the John Day, Deschutes and Grande Ronde Rivers and Panther Creek, would likely not be sufficient to support increases in returning adults resulting from the improvement in downstream survival. In such places, there is a need to increase egg-to-smolt survival where it is currently depressed by habitat degradation.

Riparian Health

On a relative scale, Alternatives 6 and 7 are expected to provide the highest short-term benefits to riparian and aquatic environments because of riparian area protection requirements and reduced rates of management activities that could negatively affect these resources; however, over the long term Alternatives 4 and 6 offer equally high benefits. The lack of active watershed, rangeland, and forest restoration in Alternative 7 may pose risks to riparian and aquatic environments in the long term. Alternative 4 would have similar benefits to Alternatives 6 and 7, but it has a greater uncertainty of ecological outcomes in the short term due to higher amounts and rates of activities. Ecosystem analysis and prioritization of restoration required in Alternative 4 reduces some uncertainty associated with this alternative. Alternative 2 and 3 would benefit riparian and aquatic environments due to riparian area protection requirements but to lesser degrees than Alternatives 4, 6, and 7. Alternative 3 would provide slightly greater benefits than Alternative 2 due to an ecosystem management and watershed restoration emphasis. Alternatives 1 and 5 provide the least overall protection to riparian and aquatic environments. Alternative 1 is not expected to lead to recovery of aquatic and riparian environments because of a lack of a comprehensive riparian protection and recovery strategy. Although aquatic, wildlife, and recreation priority areas in Alternative 5 have the same level of protection as Alternatives 4 and 6, the lack of riparian protection outside these priority areas is expected to result in broad scale fragmentation of aquatic and riparian environments.

Effects on Landscape Health

The alternatives were rated based on “best fit” considerations: consistency of landscape patterns with their appropriate biophysical succession/disturbance regimes, associated reduction in soil disturbance and noxious weed

invasion, conservation of landscape-scale terrestrial and riparian habitats, fire risk reduction in the urban-rural/wildland interface, and an associated flow of human commodities and amenities. When compared to the other alternatives, Alternative 4 would provide a much higher transition to healthy landscapes in the first decade. Alternative 3 would have a higher transition rate than Alternatives 5, 6, or 7, which would have higher rates than Alternatives 1 and 2. In the long term (50 to 100 years), Alternative 6 would have almost as high a transition rate as Alternative 4; Alternative 3 would have a somewhat more rapid transition than Alternatives 5 and 7, followed by Alternatives 2 and 1 in that order. Under projected cumulative effects, transition to landscape health would be somewhat diluted, but Alternatives 3 through 7 would promote landscape health across the interior Columbia River Basin. Alternatives 4 and 6 would rank highest, with Alternatives 3, 5, and 7 at a secondary level, and Alternatives 2 and 1 at respectively lower levels.

When considering the comparative costs of management, restoration, and wildfire suppression, Alternatives 4 and 3 would provide the highest return to landscape health for the cost within the first decade, followed by Alternatives 7, 6, and 5. Alternatives 1 and 2 would have the lowest first-decade return in improvement of landscape health for the cost. In the long term, Alternatives 4, 6, and 3 would be most efficient, while Alternatives 5 and 7 respectively would have lower return in improvement of landscape health for the cost. However, Alternatives 5 and 7 would transition only about half the landscapes toward a healthy condition, while Alternative 3 would transition almost two thirds, and Alternatives 4 and 6 would transition most landscapes toward a healthy condition. Alternatives 1 and 2 would have the poorest return for the cost and would transition very low amounts toward a healthy condition in the long term, but Alternative 2 would be somewhat higher than Alternative 1. In projected cumulative effects, Alternatives 4 and 6 would have the highest return in improved Basin-wide landscape health per unit of cost; Alternatives 3 and 7 would have somewhat lower returns; Alternatives 5 and 2 follow respectively; and Alternative 1 would have the poorest return per unit of cost.

Effects on Long-Term Viable Populations of Terrestrial Species

Historically, 18 plant and animal (vertebrate) species were judged to have viability outcomes of 4 or 5 (see Terrestrial Species Viability in Chapter 4 for explanation of outcomes). Currently, 51 species also have viability outcomes of 4 or 5. There would be little change in overall habitat outcomes for the vast majority of species analyzed for all alternatives. Implementation of Alternatives 4, 6, and 7 would result in 32, 32, and 33 species respectively; Alternatives 5, 3, 2, and 1 would result in 37, 38, 39, and 46 species with unfavorable habitat outcomes.

Alternative 1 would result in the highest number of species with some risk of extirpation, on average, than the other alternatives. Alternatives 1, 2, and 5 would result in more species with increased risk of extirpation/viability loss than with improved likelihood of persistence and viability; however, Alternative 2 also has the greatest number of species showing no change in habitat outcomes. Alternatives 3 and 7 would result in an equal number of species with increased risks of extirpation and species with improved likelihood of persistence. Alternatives 4 and 6 would result in more species with improved likelihood of persistence than species with increased risk of extirpation. None of the alternatives approach historical conditions for habitats or viable populations for the 118 vertebrate and 14 plant species analyzed. Many species, including listed species, are influenced by factors beyond the ability of BLM or Forest Service managers to control, such as species migration and off-site habitat conversion.

Effects on Long-term Recovery and Delisting of Threatened and Endangered Species

There are 28 federally listed threatened or endangered, or candidate species in the project area, including plants, vertebrates, and invertebrates. The Science Team considered 7 of these 28 to warrant further broad-scale analysis; others had limited ranges and are more appropriately addressed locally through forest or resource area plans or project plans. Historically, 4 of these species ~ woodland caribou, *Howellia aquatilis*, MacFarlane's four-o'clock, and Malheur wire-lettuce ~ were

disjunct and isolated. This suggests that these species' habitats are of concern within the project area.

The other three threatened or endangered species that were evaluated have varying outcomes. Bald eagle habitat would improve in all alternatives, with greatest improvement seen in Alternatives 4 and 6. Gray wolves will have a high likelihood of viability on BLM- and Forest Service-administered lands, with the best outcome in Alternative 7. Grizzly bear habitat is greatly reduced from historical levels, and habitat outcomes are poor in all alternatives with Alternative 7 showing a slight improvement, because of large reserves. Both wolves and grizzly bears have a high likelihood of extirpation when cumulative effects are considered.

Threatened and endangered species were evaluated for how the species would be affected by the alternatives, but were not evaluated regarding delisting and recovery. See the outcomes discussed in the Effects on Long-term Terrestrial Species Viability section below, which also apply to threatened and endangered species viability.

The largest improvement in condition for narrow endemic threatened and endangered fishes is associated with Alternative 6. Alternative 4 is similar to Alternative 6, but it carries a slightly higher risk in the short term. Alternative 7 would conserve core populations, but depressed populations in currently degraded habitats outside of reserves may continue to decline over the long term. Similarly, Alternative 3 would conserve most core populations, but may not prevent declines in areas in need of aggressive restoration in the long term. Listed anadromous fish species, except Snake River ocean-type chinook, show the same results, but persistence of these species is dependent upon a comprehensive approach to address and alleviate sources of mortality occurring outside of Forest Service- or BLM- administered lands. None of the alternatives are expected to provide for the habitat needs of listed Snake River ocean-type chinook salmon because they inhabit lower elevation, non-federally administered mainstem river habitats and are less affected by BLM or Forest Service management. Alternatives 6 and 7 have the most conservative approach and might result in some benefit to Snake River ocean-type chinook salmon if management actions improve water

quality and quantity. None of the alternatives address the need for a comprehensive approach to restore habitat and alleviate mortality outside BLM- or Forest Service-administered lands to ensure persistence of ocean-type chinook salmon stocks, because it is beyond the scope of this EIS.

Effects on Federal Trust Responsibilities and Tribal Rights and Interests

Every alternative has some amount of activity on agency lands, which are potentially disturbing to ecosystems, habitats (including ethno-habitats), resources, places, and heritage resources where American Indians/tribes have interests and/or reserved rights. In the long term, Alternatives 1, 2, and 5 would have a low ability and Alternatives 3 and 7 a moderate ability to achieve healthy landscape systems through management activities. Alternatives 4 and 6 would have a high rate of transition toward healthy landscapes in resembling natural disturbance patterns. Given tribes' interest in management actions that can stop and reverse trends that are moving away from the historical range of conditions and facilitate moving toward the desired range of future conditions, Alternatives 4 and 6 would be favorable to their interests.

The alternatives have varying effects on different tribes and Indian communities. Generally, Alternatives 1 and 2 were the least responsive in providing for meaningful consultation/access to decision making, moving towards the desired range of future conditions, protection of culturally significant fish and wildlife species and their habitats with viability concerns, recognition or management of places, providing for access rights, and addressing interests or rights to healthy, sustainable or useable ethno-habitats. Alternative 5 also provides a relatively moderate response, but allows for more meaningful consultation and is slightly more responsive to Indian interests/rights than Alternatives 1 and 2. Relative to Alternatives 1, 2 and 5, Alternatives 3 and 7 responded better, especially with regards to access to decision-making, aquatic protection and restoration, and providing more favorable trends in habitat and landscape dynamics. Overall, Alternatives 4 and 6 are expected to be most responsive to Federal trust responsibility and tribal rights and interests. Although they do not provide all of the most protective measures, they tend to exhibit the most positive trends toward ecosystem functions and processes,

habitat, watershed restoration, and access to effective consultation.

No alternative is fully responsive to all interests of tribes in the project area. All alternatives reflect a recognition for baseline Federal legal responsibilities. Several alternatives support enhancement of habitats for species with treaty significance or of interest to tribes.

Effects on the Level of Annual Goods and Services

While 'goods and services' includes a large array of benefits provided from Forest Service- and BLM-administered lands, both priced and unpriced, the effects on three major outputs are evaluated for the alternatives. These include: livestock animal unit months (AUMs), representing the number of domestic livestock fed on Forest Service- and BLM-administered rangelands; the supply of recreation provided by each of three recreation opportunity spectrum (ROS) classes; and wood volume produced from timber harvest and vegetation management actions, measured in billion board feet (bbf). Alternative 5 produces the most AUMs, but only slightly more than Alternatives 1, 2, 3, 4 and 6. Alternative 7 produces about half the AUMs of the other alternatives. All the alternatives supply about the same amount of recreation value. There are some changes in the types of recreation opportunities provided. Alternative 7 would cause a shift from developed and road-based recreation to semi-primitive recreation in the reserves. Alternative 3 through 7 potentially provide less water-based and dispersed roaded recreation than Alternatives 1 and 2. Alternatives 1 and 5 harvest the most wood volume. Compared to Alternatives 1 and 5, Alternatives 2, 3, 4, 6 and 7 harvest about 40, 20, 30, 55 and 70 percent less wood respectively.

The alternatives produce many other goods and services for people that cannot be reliably measured, specifically those benefits produced through maintaining or restoring ecosystem conditions, processes, and disturbance regimes. The management strategies for Alternatives 3, 4 and 6 emphasize restoration with an intent to supply ecosystem benefits. Alternative 4 does the most restoration. Alternatives 3 and 6 do about 20 percent less than Alternative 4. Alternative 5, which emphasizes a mix of production and restoration, does about 40

percent less restoration than Alternative 4. Alternatives 1, 2 and 7 do about 50 to 60 percent less restoration than Alternative 4, though each emphasizes different types. Alternative 7 includes a substantial amount of passive restoration (through the reserves), an emphasis not shared by the other alternatives. Benefits expected from restoration activities include improved environmental goods and services and reduced environmental risk. Both kinds of benefits are important quality-of-life attributes for people residing inside and outside the project area.

Effects on Community Vitality and Resiliency

Community vitality and resiliency are influenced by many factors outside the scope of Forest Service and BLM land use decisions. The factor most directly influenced by the agencies is the number, type and location of jobs generated. Job effects are most influenced by the amount and type of management activity done, outputs produced, and services provided from Forest Service and BLM-administered lands. Most important are jobs generated from grazing livestock, supplying recreation, harvesting and processing timber, and jobs related to conducting restoration activities. Alternative 5 generates the most ranching jobs, though ranching jobs under Alternatives 1, 2, 3, 4, and 6 drop by less than 10 percent compared to Alternative 5. Ranching jobs under Alternative 7 drop by about 50 percent compared to Alternative 5. All seven alternatives provide about the same number of recreation jobs. Alternative 5 generates the most jobs from harvesting and processing timber. Compared to Alternative 5, Alternatives 1, 2, 3, 4, 6 and 7 generate about 40, 40, 20, 30, 55 and 70 percent fewer timber jobs, respectively. Alternative 5 generates the most jobs through management activities. Compared to Alternative 5, Alternatives 1, 2, 3, 4, 6 and 7 generate about 40, 50, 10, 10, 35 and 60 percent fewer restoration jobs, respectively.

The locations where jobs will be generated cannot be reliably estimated. Alternatives 3 through 7 share an objective to support the economic needs of areas determined to be economically and socially vulnerable to changing Forest Service and BLM management. Concentrating jobs from restoration activities and resource production in these areas could

accomplish this objective, though other strategies for economic assistance may also be employed. Alternatives 3, 4, and 6 share an emphasis to reduce the risk of fire at the wildland-urban interface, presumably concentrating a larger proportion of restoration jobs in these areas. Alternative 5 specifies that timber, livestock grazing, and recreation will be emphasized in certain areas. Presumably, jobs would follow these prioritized uses. How management priorities distribute activities, outputs, and services from Forest Service and BLM-administered lands to different areas can be important to the quality-of-life of people in those areas because of the economic opportunities they provide.

Effects on Quality of Life for Project Area Residents

Like economic vitality and resiliency, the quality of life for project area residents is influenced by many factors outside the scope of Forest Service and BLM land use decisions. Furthermore, individuals will prioritize the factors that define their quality of life quite differently. For some, their economic well-being may be paramount. In some areas, that economic well-being may be closely associated with jobs generated from the use of Forest Service and BLM-administered lands. Quality-of-life may also depend on the ability of county governments to provide needed social and economic services. Some counties depend on revenues from agency lands to finance these services. This situation is often found in geographically isolated and sparsely populated parts of the project area. For others, whose economic well-being is not directly tied to agency lands, lifestyle considerations and environmental concerns may be paramount in appraising their quality of life. For these people, the ecological benefits and environmental risks associated with Forest Service and BLM-administered lands are most important. This situation is often found in more densely populated and economically diverse areas, and rural communities experiencing rapid population growth. Translating these two situations into 'economic opportunity' and 'environmental risk' factors provides a means to evaluate the effects of the Draft EIS alternatives on the quality of life of project area residents.

Alternative 5 provides the most jobs and presumably the most economic opportunity.

Compared to Alternative 5, Alternatives 1, 2, 3, 4, 6 and 7 provide about 40, 40, 25, 25, 50 and 65 percent fewer jobs, respectively. The proportion of these jobs that will benefit the isolated and sparsely populated rural areas, where they are most needed, is unknown. It may be that the restoration themes of Alternatives 3, 4, 6 and 7 result in a moderately smaller proportion of jobs going to rural areas (due to more emphasis on fire risk reduction at the more populated wildland-urban interface areas) and that timber priority areas in Alternative 5 might favor rural areas.

A composite measure for environmental risk that accounts for the benefits and risks associated with ecosystem analysis, restoration activities, timber harvest, and natural processes is used to evaluate this aspect of quality of life for the seven alternatives; for both the long and short term. In the short term, Alternatives 4, 6 and 7 appear to involve the most environmental risk, though Alternatives 3 and 5 involve almost as much. The difference in short-term risk among Alternatives 3, 4, 5, 6 and 7 is probably not significant for this composite measure. Short-term risk for Alternatives 1 and 2 is about 35 percent less than for Alternatives 4, 6 and 7. In the long term, Alternative 1 appears to involve the greatest environmental risk, followed closely by Alternative 2. Alternatives 3 through 7 involve about 40 to 60 percent less long-term risk than Alternative 1. This composite measure of environmental risk leads to the conclusion that: short-term environmental risk is relatively high (and similar) for Alternatives 3 through 7; long-term risk is considerably lower than the short-term risk for Alternatives 3 through 7; and long-term risk is considerably higher than short term risk for Alternatives 1 and 2.

A User's Guide to the "Action" Alternatives

As noted above under Development of Alternatives, each "action" alternative (that is, Alternatives 3–7) was formulated through a multi-step process. Generally, this process was designed so that each alternative could be formulated in enough detail to provide for meaningful comprehension, comparison, and analysis of the alternatives. This user's guide includes questions and answers commonly raised about the alternatives.

Rangelands

✓ I graze livestock on Federal land south of Murphy, Idaho. How can I interpret Alternative 4 for this area?

To interpret Alternative 4 for Federal land south of Murphy, use the steps described and illustrated below:

1. Murphy is located in southwest Idaho. Refer to Map 2-34, Range Clusters, to determine what range cluster encompasses Federal land south of Murphy. (*Federal land south of Murphy lies mostly within range cluster 5.*)
2. Turn to the Description of Alternatives section in this chapter to determine the overall focus of Alternative 4. (*Alternative 4 is designed to aggressively restore ecosystem health through active management, the results of which resemble endemic disturbance processes including insects, disease, and fire. The alternative focuses on short-term vegetation management to improve the likelihood of moving towards or maintaining ecosystem processes that function properly in the long-term.*)
3. Turn to table 3-10, Comparison of Alternatives by Management Emphases, to determine the management emphasis assigned to range cluster 5 under Alternative 4. (**Please turn to the first page of the Objectives and Standards section of this Chapter for the definitions of the management emphasis terms Produce, Restore, and Conserve.**)

As shown below in the range cluster portion of table 3-10, the **Restore** management emphasis is assigned to range cluster 5 under Alternative 4:

Range Clusters	Alternatives						
	1	2	3	4	5	6	7
1	P	PC	RP	R	RP	R	CR
2	C	C	C	CR	C	CR	C
3	PC	C	CR	R	CR	CR	C
4	P	PC	RP	R	PC	R	CR
5	P	PC	R	R	PC	CR	C
6	P	PC	RP	R	RP	R	CR

- Turn to Appendix L to determine the rule for assigning levels of management activities to a Restore management emphasis for range clusters.

As shown below in the rangeland portion of Appendix L, a Restore management emphasis for range clusters means moderate or high levels of livestock management, with three or more restoration activities at moderate or higher levels:

Management Emphasis	Rule Set	
	Livestock Management	Restoration Activities
C	High	1 or less restoration activity > or = Mod
C-R	High	2 restoration activities > or = Mod
R	Mod or High	3 or more restoration activities > or = Mod
R-P	Low or Mod	2 restoration activities > or = Mod
P	Low	1 or less restoration activity > or = Mod
P-C	Mod	1 or less restoration activity > or = Mod

- Refer to table 3-11, Comparison of Alternatives by Management Activity and Cluster, to determine how the rules described in Appendix L were applied to range cluster 5 under Alternative 4.

As shown in this excerpt from table 3-11, a Restore management emphasis for range cluster 5 under Alternative 4 calls for high levels of livestock management with moderate levels of range improvement, a low decrease in road density, moderate levels of riparian restoration, and prescribed burning. (Prescribed fire planning is not regarded as a restoration activity.)

Management Activity	Alternatives						
	1	2	3	4	5	6	7
Range Cluster 5							
Livestock Management	L	M	M	H	M	H	H
Improve Rangeland	L	L	M	M	L	L	L
Decrease Road Density	L	L	L	L	L	L	L
Riparian Restoration	L	L	M	M	M	M	L
Prescribed Burning	L	L	M	M	L	M	M
Prescribed Fire Plan	L	L	L	M	L	M	H

- Turn to table 3-12, Cluster Activity Level Assumptions for All Action Alternatives, to interpret what the high, moderate, and low activity levels mean.

This excerpt from table 3-12 shows the activity levels assumed to be applied within the first decade in range cluster 5 under Alternative 4:

Rangelands	Low	Moderate	High
Livestock Management (Percent of all rangeland with improved management)	0-6	6-12	12-20
Improve Rangelands (Percent of all rangeland treated/decade)	0-4	4-8	8-11
Decrease Road Density (Percent of native surface road miles reduced/decade)	0-25	25-50	50+
Riparian Restoration (Percent of all riparian areas treated/decade)	0-25	25-50	50-75
Prescribed Burning (Percent of all rangeland treated/decade)	0-3	3-6	6-9
Prescribed Fire Plans (Percent of all rangeland with implemented plans/decade)	0-20	20-40	40+

Livestock Management. A summation of livestock management variables that affect rangeland health, including: grazing systems, changing riparian grazing management, season of use (length and timing), number of head, change of class, distribution, grazing deferment, and herding.

Improve Rangelands. Capital Investments: fencing, stock water improvements, seedings, control of invasion or spread of exotics, and non-fire shrub and juniper control.

Decrease Road Density. Permanent closure of native surface roads.

Riparian Restoration. Includes improving road condition (drainage and/or surface), riparian plantings, in-channel restoration, and riparian exclosures.

Prescribed Burning. Management ignited fire.

Prescribed Fire Plan. Allows natural ignition fires to burn when in prescription and/or identifies areas that require prescribed burning.

What this means for the first decade on BLM-administered land in Range Cluster 5:

- ◆ 12 to 20 percent of rangeland would have improved management [high level of livestock management].
- ◆ 4 to 8 percent of rangeland would be treated [moderate level of rangeland improvement],
- ◆ 0 to 25 percent of net total native surface road miles would be permanently closed [low decrease in road density].
- ◆ 25 to 50 percent of riparian areas would be treated [moderate level of riparian restoration].
- ◆ 3 to 6 percent of rangeland would be prescribed burned through management ignition [moderate level of prescribed burning].
- ◆ On 20 to 40 percent of rangeland, naturally-ignited fires would be allowed to burn when in prescription, and/or areas that need prescribed fire would be identified [moderate level of prescribed fire plan].

7. Refer to table 3-13, Summary of Activity Levels Matched with Relevant Objectives, Alternative 4, to determine the objectives that are relevant to the various activity groups.

As shown in this excerpt from table 3-13, several objectives are relevant to the activities undertaken on Federal lands in range cluster 5 under Alternative 4, including Objective TS-O15. Table 3-13 in its entirety follows this User's Guide.

		Range Clusters					
		1	2	3	4	5	6
		R	CR	R	R	R	R
Livestock Management	EM-O1,2,3,4; PE-O1,2,3,4; TS-O1,3,4,12,13,14,15; AQ-O1,2,3,4,5,6,7,9,10,11,12,13,14; HA-O2,3,4,5,6,7; HU-O1,3,4,5,6,7; RM-O2; AM-O1,2	M	H	H	M	H	H
Improve rangeland	EM-O1,2,3,4; PE-O1,2,3,4; TS-O1,2,3,4,5,12,13,14,15; AQ-O1,2,3,4,5,6,7,9,10,11,12,13,14; HA-O1,2,3,4,5,6; HU-O3,4,7,14; RM-O2; AM-O1,2	M	L	M	M	M	H
Decrease road density	EM-O1,2,3; PE-O1,2,3,4; TS-O1,4,12,15; AQ-O1,2,3,4,5,6,7,9,10,12,13,14; HA-O2,3,4,5,6; HU-O2,3,4,13,14; RM-O2,3; AM-O1,2	H	L	M	M	L	M
Riparian restoration	EM-O1,2,3; PE-O1,2,3,4; TS-O1,3,4,5,12,14,15; AQ-O1,2,3,4,5,6,7,9,10,11,12,13,14; HA-O1,2,3,4,5,6; HU-O3,4,7; RM-O1,2,3,4; AM-O1,2	M	M	M	M	M	M
Prescribed burning	EM-O1,2,3,4; PE-O1,2,3,4,5; TS-O1,2,3,4,12,15; AQ-O1,2,3,4,5,6,7,9,10,12,13; HA-O1,2,5,6; HU-O3,4,9; RM-O2; AM-O1,2	H	H	H	M	M	L
Prescribed fire plans	EM-O1,2,3,4; PE-O1,2,3,4,5; TS-O1,2,12,15; AQ-O1,2,3,4,5,6,7,9,10,12,13,14; HA-O2,3,4,5,6; HU-O3,4,9; RM-O2; AM-O1,2	H	H	H	M	M	L
Recreation activities	EM-O1,2,3,4; PE-O1,2,3,4; TS-O1,4,12; AQ-O1,2,3,4,7,9,12,13; HA-O4,5,6; HU-O1,3,4,7,8,10,11,12; RM-O1,2,3,4; AM-O1,2	—	—	—	—	—	—

- Turn to table 3-5, Objectives and Standards, to find the objectives and standards, including Objective Ts-O15. This excerpt from the table includes the following description of Objective Ts-O15, under Alternative 4.

Table 3-5 Objectives and Standards	
TS-O15.	Objective: Restore dry grasslands, dry shrublands, and cool shrublands in Range Clusters 1, 5, and 6.

- Turn to table 3-7, Management Activities on UCRB Rangeland, to find the level of activity for the first decade in Alternative 4 range cluster 5. *(We see that improved livestock management would be developed for 1,405,000–1,915,000 acres; range improvement techniques would be applied to 520,000–695,000 acres; prescribed burning would be applied to 390,000–505,000 acres; and riparian restoration actions would be taken on 70,000–100,000 acres of Federal rangeland. There would be 0 to 25 percent decrease in native surface road.)*

ACRES (thousands per decade)														
Range	Livestock Management				Improve Rangelands				Prescribed Burning				Riparian	Roads
Cluster	dry			Total	dry			Total	dry			Total	Restr.	Decrs.(%)
	grass	shrub	shrub		grass	shrub	shrub		grass	shrub	shrub			
1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2	0	5-10	0	5-10	0	0	0	0	0	0	0-5	0-5	0	0-25
3	0	5-10	0	5-10	0	0-5	0	0-5	0	0	0-5	0-5	0	25-50
4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
5	210-285	1055-1435	140-195	1405-1915	80-105	390-520	50-70	520-695	65-85	25-35	300-385	390-505	70-100	0-25
6	120-160	595-790	80-105	795-1055	70-95	350-485	50-60	470-640	10-20	5-10	60-80	75-110	30-40	25-50
Total	330-445	1660-2245	220-300	2210-2990	150-200	740-1010	100-130	990-1340	75-105	30-45	360-475	465-625	100-140	

In summary, under Alternative 4, Federal land south of Murphy, Idaho, would generally be managed with a Restore emphasis, with high levels of improved livestock management, moderate levels of rangeland improvement activities, riparian restoration activities, and prescribed burning, and a low level of decreasing road density.

Forestlands

✓ **My family backpacks near Libby, Montana. How can I interpret Alternative 4 for this area?**

To interpret Alternative 4 for Federal land near Libby, use the steps described and illustrated below:

1. Libby is located in northwest Montana. Refer to Figure 2-33, Forest Clusters, to determine what forest cluster encompasses Federal land near Libby. (*Federal land near Libby lies within forest cluster 4.*)
2. Turn to the Description of Alternatives section in this chapter to determine the overall focus of Alternative 4. (*Alternative 4 is designed to aggressively restore ecosystem health through active management, the results of which resemble endemic disturbance processes including insects, disease, and fire. The alternative focuses on short-term vegetation management to improve the likelihood of moving towards or maintaining ecosystem processes that function properly in the long term.*)
3. Turn to table 3-10, Comparison of Alternatives by Management Emphases, to determine the management emphasis assigned to forest cluster 4 under Alternative 4.

As shown below in the forest cluster portion of table 3-10, the **Restore** management emphasis is assigned to forest cluster 4 under Alternative 4:

Forest Clusters	Alternatives						
	1	2	3	4	5	6	7
1	C	C	CR	CR	C	CR	C
2	PC	C	R	R	CR	R	C
3	P	PC	R	R	R	R	CR
4	P	PC	RP	R	P	R	CR
5	P	CR	R	R	R	R	CR
6	PC	C	CR	R	RP	CR	C

- Turn to Appendix L to determine the rule for assigning levels of management activities to a Restore management emphasis for forest clusters.

As shown below in this excerpt from Appendix L, a Restore management emphasis for forest clusters means low or moderate levels of timber harvest, with three or more restoration activities at moderate or greater levels.

Management Emphasis	Rule Set	
	Harvest	Restoration Activities
C	Low	1 or less restoration activity > or = Mod
C-R	Low	2 restoration activities > or = Mod
R	Low or Mod	3 or more restoration activities > or = Mod
R-P	Mod or High	2 restoration activities > or = Mod
P	High	1 or less restoration activity > or = Mod
P-C	Mod	1 or less restoration activity > or = Mod

- Refer to table 3-11, Comparison of Alternatives by Management Activity and Cluster, to determine how the rules described in Appendix L were applied to forest cluster 4 under Alternative 4.

As shown in the forest cluster portion of table 3-11, a Restore management emphasis for forest cluster 4 under Alternative 4 calls for a moderate level of timber harvest, high level of thinning, moderate levels of decreased road density, watershed restoration, and prescribed burning. (Prescribed fire planning is not regarded as a restoration activity.)

Management Activity	Alternatives						
	1	2	3	4	5	6	7
Forest Cluster 4							
Harvest	H	M	M	M	H	M	L
Thin	M	M	H	H	H	H	L
Decrease Road Density	L	L	M	M	L	M	M
Watershed Restoration	L	L	L	M	L	M	L
Prescribed Burning	L	L	L	M	L	M	M
Prescribed Fire Plan	L	L	L	M	L	M	M

- Turn to table 3-12, Cluster Activity Level Assumptions for All Action Alternatives, to interpret what the high and moderate activity levels mean.

This excerpt from table 3-12 shows the activity levels assumed to occur within the first decade in forest cluster 4 under Alternative 4:

Forest		Low	Moderate	High
Harvest (commercial) (Percent of all forested area treated/decade)	Alts. 1, 2, 7 >	0-4	4-8	8-10
	Alts. 3 to 6 >	0-5	5-9	9-11
Thin (pre-commercial) (Percent of all forested area treated/decade)		0-3	3-6	6-8
Decrease Road Density (Percent of native surface road miles reduced/decade)		0-25	25-50	50+
Watershed Restoration (Percent of all forested area treated/decade)		0-3	3-6	6-8
Prescribed Burning (Percent of all forested area treated/decade)		0-5	5-9	9-11
Prescribed Fire Plans (Percent of all forestland with implemented plans/decade)		0-20	20-40	40+

Harvest. All commercial harvest methods (for example single tree selection, group selection, shelterwood, seed tree, overstory removal, clearcut, and commercial thinning from above or below)

Thin. All pre-commercial thinnings used to alter forest structure, species composition, density, rate of growth, fuel ladders, fire behavior, etc.

Watershed Restoration. Includes increased road maintenance, improved road condition (surface and/or drainage), reduced road related erosion, road obliteration, road decommissioning, increased large woody material, riparian plantings, in-channel restoration, etc.

Decrease Road Density. Permanent closure of native surface roads.

Riparian Restoration. Includes improving road condition (drainage and/or surface), riparian plantings, in-channel restoration, and riparian exclosures.

Prescribed Burning. Management ignited fire.

Prescribed Fire Plan. Allows natural ignition fires to burn when in prescription and/or identifies areas that require prescribed burning.

What this means for the first decade, under Alternative 4, in Forest Cluster 4 on Forest Service-administered lands:

- ◆ 5 to 9 percent of forestlands within the cluster would be treated through timber harvest [moderate level of timber harvest].
- ◆ 6 to 8 percent of forested area would be pre-commercially thinned [high level of thinning].
- ◆ There would be a 25 to 50 percent net reduction in native surface road miles on Federal lands [moderate decrease in road density].
- ◆ 3 to 6 percent of forested area would be treated through watershed restoration projects, such as increased road maintenance or riparian plantings [moderate level of prescribed burning].
- ◆ 5 to 9 percent of forested area would be prescribed burned through management ignition [moderate level of prescribed burning].
- ◆ On 20 to 40 percent of forested land, naturally-ignited fires would be allowed to burn when in prescription, and/or areas that needed prescribed fire would be identified [moderate level of prescribed fire plan].

7. Refer to table 3-13, Summary of Activity Levels Matched with Relevant Objectives, Alternative 4, to determine the objectives that are relevant to the various activity groups.

As shown in this excerpt from table 3-13, there are several objectives that are relevant to activities undertaken on Federal lands in forest cluster 4 under Alternative 4, including Objective TS-O6:

Management Activities	Objectives	Forest Clusters					
		1 CR	2 R	3 R	4 R	5 R	6 R
Harvest	EM-O1,2,3,4; PE-O1,2,3,4; TS-O1,4,6,7,8,9,10,11; AQ-O1,2,3,4,5,6,7,9,10,12,13; HA-O2,3,5,6; HU-O1,3,4,5,6,7,9,13,14; RM-O1,2,4; AM-O1,2;	L	L	M	M	M	L
Thin	EM-O1,2,3,4; PE-O1,2,3,4; TS-O1,4,6,8,10; AQ-O1,2,3,4,5,6,7,9,10,12,13 HU-O3,4,7,9,13,14; HA-O1,2,3,5, 6; RM-O1,2,4; AM-O1,2	L	M	H	H	H	H
Decrease road density	EM-O1,2,3; PE-O1,2,3,4; TS-O1,4; AQ-O1,2,3,4,5,6,7,9,10,12,13,14; HA-O2,3,5,6; HU-O2,3,4,13,14; RM-O2,3; AM-O1,2	L	M	M	M	H	M
Watershed restoration	EM-O1,2,3; PE-O1,2,3,4; TS-O1,3,4,6,8,10; AQ-O1,2,3,4,5,6,7,9,10,13,14; HA-O1,2,3,5,6; HU-O3,4,7; RM-O1, 2,3,4; AM-O1,2	M	H	M	M	M	L
Prescribed burning	EM-O1,2,3,4; PE-O1,2,3,4,5; TS-O1,2,3,4,6,8,10; AQ-O1,2,3,4,5,6,7,9,10,12,13; HA-O1,2,3,5,6; HU-O3,4,9,13,14; RM-O2; AM-O1,2	H	H	M	M	H	M
Prescribed fire plans	EM-O1,2,3,4; PE-O1,2,3,4,5; TS-O1,2,6,8,10; AQ-O1,2,3,4,5,6,7,9,10,12,13,14; HA-O1,2,3,5,6; HU-O3,4,9, 17; RM-O2; AM-O1,2	H	H	M	M	H	M

8. Turn to table 3-5, Description of Objectives and Standards, to find the objectives and standards, including Objective TS-O6.

This excerpt from the table includes the following description of Objective TS-O6, under Alternative 4.

Table 3-5 Description of Objectives and Standards	
Objective TS-O6:	Restore ecosystem processes by managing vegetation structure, stand density, species composition, patch size, pattern, and fuel loading and distribution so ecosystems are resilient to endemic levels of fire, insects, and disease. Restoration is the emphasis and priority for the mid- and late-seral, dense multi-layer communities in currently roaded portions of Forest Clusters 2, 3, 5, and 6. Timber production is a byproduct of resoration activities.

9. Turn to table 3-6, Management Activities on UCRB Forestlands, to find the level of activity for the first decade in Alternative 4, forest cluster 4. (We see that a total of 305,000 to 410,000 acres would be subject to various harvest techniques including commercial thinning; 470,000 to 645,000 acres would be treated with pre-commercial thinning; and 425,000 to 575,000 acres would be treated with prescribed fire. From 290,000 to 390,000 acres would be treated with watershed restoration techniques, and there would be a net reduction in native surface roads of 25 to 50 percent on Federal lands.)

ACRES (thousands per decade)														
Forest Cluster	Harvest				Thin				Prescribed Burning				Riparian Restr.	Roads Decrs.(%)
	dry	moist	cold	Total	dry	moist	cold	Total	dry	moist	cold	Total		
1	10-14	15-20	5-6	30-40	15-20	11-15	9-10	35-45	135-185	105-140	75-100	315-425	175-230	0-25
2	65-85	95-125	20-35	180-245	120-150	85-115	60-85	260-350	215-290	165-225	125-165	505-680	445-605	25-50
3	50-65	75-95	15-25	140-185	75-105	60-80	40-50	175-235	75-105	60-80	40-50	175-235	120-160	25-50
4	100-145	160-220	45-50	305-410	200-280	155-205	115-160	470-645	185-250	140-190	100-135	425-575	290-390	25-50
5	7-10	10-15	3-5	20-30	15-20	11-15	9-10	35-45	15-20	10-15	5-10	30-45	15-25	50 +
6	20-23	25-35	5-7	50-65	45-60	35-50	30-35	110-145	55-75	40-55	30-40	125-170	30-45	25-50
Total	250-340	380-510	95-125	725-975	470-635	355-480	260-350	1085-1465	680-925	520-700	375-505	1575-2130	1075-1455	

In summary, under Alternative 4, Federal land near Libby, Montana, would generally be managed with a Restore emphasis, with a moderate level of timber harvest, high level of thinning, and moderate levels of decreased road density, watershed restoration, and prescribed burning.

✓ **Where do I find information common to all of the action alternatives?**

The section entitled Features Common to Alternatives 3 through 7 discusses the conditions and aspects shared by all of the “action” alternatives. This section includes:

- ◆ Five goals, derived from the purpose and need, and issues for the project. (Example: “Sustain and where necessary restore the health of forest, rangeland, aquatic, and riparian ecosystems.”)
- ◆ Some aspects of a “desired range of future conditions,”—a vision of the long-term condition of the land. (Example: “There is no downward trend in quality and quantity of riparian areas, wetlands, and lakes. Some are showing an upward trend.”)

✓ **What is each alternative trying to achieve?**

The Desired Range of Future Conditions (DRFC) describes what we desire or expect each alternative to achieve. The DRFC is a portrayal of the land, resource, and social and economic conditions that are expected to result in 50 to 100 years if the alternative is carried out. The DRFC for each alternative is found in two places: the parts of the DRFC common to Alternatives 3 through 7 are in the section of this chapter called Features Common to Alternatives 3 through 7; and the parts of the DRFC unique to an individual alternative are included as part of the description of each alternative.

✓ **Where can I find general information about each alternative?**

General information is included in the narrative description of each alternative. This description includes:

- ◆ A theme (brief description of the alternative’s focus or emphasis);
- ◆ The DRFC expected to be achieved if the alternative were implemented.

General features of each alternative are also illustrated on the maps accompanying each alternative.

✓ What are the “pieces” of each alternative?

Each alternative consists of several pieces that must be linked to fully understand the alternative's intent and application. These pieces and their linkages are described below. (Please refer to the first two questions in this User's Guide for a step-by-step example of how these pieces fit together.)

As described in the answer to the previous question, some of the alternative pieces provide general information. Other pieces provide more detailed information:

- ◆ Table 3-10, Comparison of Alternatives by Management Emphases, shows the management emphasis assigned to each forest and range cluster under each alternative. Management emphases, which reflect an overall approach to management, includes Conserve (C), Restore (R), Produce (P), Conserve-Restore (C-R), Restore-Produce (R-P), and Produce-Conserve (P-C). (*Example: The management emphasis of forest cluster 4 under Alternative 4 is Restore.*) (Please turn to the first page of the Objectives and Standards section of this chapter for definitions of the management emphasis terms *Produce*, *Restore*, and *Conserve*.)
- ◆ Appendix L includes the rules for assigning the management emphases shown in table 3-10 into levels of management activities. (*Example: The Restore management emphasis for forest clusters translates into a low or moderate harvest level, with three or more restoration activities planned at moderate or higher levels.*)
- ◆ Table 3-11, Comparison of Alternatives by Management Activity and Cluster, applies the rules described in Appendix L to forest and range clusters under each specific alternative. (*Example: In forest cluster 4 under Alternative 4, a moderate harvest level is assigned, with moderate to high levels of restoration activities such as thinning, decreasing road density, watershed restoration, and prescribed burning. (Prescribed fire planning was not considered a restoration activity.)*)
- ◆ Table 3-12, Cluster Activity Level Assumptions for All Action Alternatives, (for both forest and range) interprets the low, medium, and high activity levels. (*Example: A moderate level of harvest means that 5 to 9 percent of all Federal forested land within the forest cluster would be treated within a decade.*)
- ◆ Table 3-13, Summary of Activity Levels Matched with Relevant Objectives, summarizes for each alternative the management emphasis and levels of management activities assigned to each cluster. These tables also indicate the objectives that are relevant to the use of the various groups of management activities. Identified groups of activities are applied in order to reach the objective, and, also, as constrained by the objectives. (*Example: Timber harvest in forest cluster 4 under Alternative 4 should be applied as prescribed by several objectives, including AQ-O1.*)
- ◆ Table 3-5, Description of Objectives and Standards, describes the objectives and standards for each alternative. Objectives are measurable and time-specific indicators against which progress can be gauged. (Unless stated otherwise, the objectives in table 3-5 are assumed to be implemented within 10 years. The quantification of the objective is found in the management activity, tables 3-6 and 3-7.) (*Example: Objective AQ-O1 states, “Restore watershed, soil productivity, stream channel, riparian, and soil integrity where functions are at levels that do not allow ecosystem sustainability and resilience. Implement watershed restoration activities at the levels described in tables 3-6 and 3-7.*) The objectives describe what is to be accomplished by management activities. Standards are mandatory actions or prohibitions needed to achieve the objectives. (*Example: Standard AQ-S2 says, “Monitoring plans shall be integrated with grazing management strategies for riparian areas within 10 years.” This standard states a mandatory action that is to be completed in order to accomplish Objective AQ-O1.*)

✓ **How can I quickly compare the “action” alternatives?**

To quickly compare the overall approach of the action alternatives, see table 3-8, Comparison of Alternatives by Theme.

See table 3-11, Comparison of Alternatives by Management Activity and Cluster, to compare the levels of management activities assigned to each forest or range cluster.

To compare the amounts and types of activities expected under each alternative, use tables 3-6 and 3-7, Management Activities on UCRB Forestlands, and Management Activities on UCRB Rangelands. These tables show the types of management activity groups and amount of activity, expressed as a range, in thousands of acres per decade, planned under the alternative. **(While the range of management activity groups in these tables is part of the decision that could be made through this planning process, we have not assumed nor determined what portion of the activity group would be applied in a particular Forest Service- or BLM-administrative unit. Those assignments would be worked out among the land management agencies at a later time.)**

Table 3-10. Comparison of Alternatives by Management Emphases

	Alternatives						
	1	2	3	4	5	6	7
Forest Clusters							
1	C	C	CR	CR	C	CR	C
2	PC	C	R	R	CR	R	C
3	P	PC	R	R	R	R	CR
4	P	PC	RP	R	P	R	CR
5	P	CR	R	R	R	R	CR
6	PC	C	CR	R	RP	CR	C
Range Clusters							
1	P	PC	RP	R	RP	R	CR
2	C	C	C	CR	C	CR	C
3	PC	C	CR	R	CR	CR	C
4	P	PC	RP	R	PC	R	CR
5	P	PC	R	R	PC	CR	C
6	P	PC	RP	R	RP	R	CR

Table 3-11. Comparison of Alternatives by Management Activity and Cluster

Management Activity	Alternatives						
	1	2	3	4	5	6	7
Forest Cluster 1							
Harvest	L	L	L	L	L	L	L
Thin	L	L	L	L	L	L	L
Decrease Road Density	L	L	L	L	L	L	L
Watershed Restoration	L	M	M	M	M	M	L
Prescribed Burning	L	L	M	H	L	M	L
Prescribed Fire Plan	H	H	H	H	H	H	H
Forest Cluster 2							
Harvest	M	L	L	L	L	L	L
Thin	L	L	L	M	L	M	L
Decrease Road Density	L	L	M	M	L	M	M
Watershed Restoration	L	M	M	H	M	M	L
Prescribed Burning	L	L	M	H	M	M	L
Prescribed Fire Plan	H	H	H	H	H	H	H
Forest Cluster 3							
Harvest	H	M	M	M	M	L	L
Thin	M	L	M	H	H	M	L
Decrease Road Density	L	L	M	M	M	H	H
Watershed Restoration	L	M	M	M	M	M	L
Prescribed Burning	L	L	M	M	M	M	M
Prescribed Fire Plan	L	L	L	M	M	M	H
Forest Cluster 4							
Harvest	H	M	M	M	H	M	L
Thin	M	M	H	H	H	H	L
Decrease Road Density	L	L	M	M	L	M	M
Watershed Restoration	L	L	L	M	L	M	L
Prescribed Burning	L	L	L	M	L	M	M
Prescribed Fire Plan	L	L	L	M	L	M	M
Forest Cluster 5							
Harvest	H	L	M	M	M	L	L
Thin	M	M	H	H	H	H	M
Decrease Road Density	L	M	H	H	M	M	H
Watershed Restoration	L	L	L	M	M	M	L
Prescribed Burning	L	L	M	H	M	H	L
Prescribed Fire Plan	L	L	M	H	H	H	M
Forest Cluster 6							
Harvest	M	L	L	L	M	L	L
Thin	L	L	H	H	M	H	L
Decrease Road Density	L	L	L	M	L	L	L
Watershed Restoration	L	L	L	L	L	L	L
Prescribed Burning	L	L	M	M	M	M	M
Prescribed Fire Plan	L	L	M	M	L	M	M

Table 3-11. Comparison of Alternatives by Management Activity and Cluster (continued).

Management Activity	Alternatives						
	1	2	3	4	5	6	7
Range Cluster 1							
Livestock Management	L	M	M	M	L	M	H
Improve Rangeland	L	L	M	M	L	M	L
Decrease Road Density	L	L	L	H	M	M	M
Riparian Restoration	L	L	L	M	L	M	L
Prescribed Burning	L	L	M	H	M	H	M
Prescribed Fire Plan	L	L	M	H	H	H	H
Range Cluster 2							
Livestock Management	H	H	H	H	H	H	H
Improve Rangeland	L	L	L	L	L	L	L
Decrease Road Density	L	L	L	L	L	L	L
Riparian Restoration	L	L	L	M	L	M	L
Prescribed Burning	L	L	M	H	M	M	L
Prescribed Fire Plan	H	H	H	H	H	H	H
Range Cluster 3							
Livestock Management	M	H	H	H	H	H	H
Improve Rangeland	L	L	L	M	M	M	L
Decrease Road Density	L	L	L	M	L	L	M
Riparian Restoration	L	M	M	M	L	L	L
Prescribed Burning	L	L	M	H	M	M	L
Prescribed Fire Plan	L	L	M	H	M	H	H
Range Cluster 4							
Livestock Management	L	M	M	M	M	M	H
Improve Rangeland	L	L	L	M	L	M	L
Decrease Road Density	L	L	M	M	L	M	M
Riparian Restoration	L	L	L	M	M	M	M
Prescribed Burning	L	L	M	M	L	L	L
Prescribed Fire Plan	L	L	L	M	L	M	M
Range Cluster 5							
Livestock Management	L	M	M	H	M	H	H
Improve Rangeland	L	L	M	M	L	L	L
Decrease Road Density	L	L	L	L	L	L	L
Riparian Restoration	L	L	M	M	M	M	L
Prescribed Burning	L	L	M	M	L	M	M
Prescribed Fire Plan	L	L	L	M	L	M	H
Range Cluster 6							
Livestock Management	L	M	M	H	M	H	H
Improve Rangeland	L	L	M	H	M	M	L
Decrease Road Density	L	L	L	M	L	M	M
Riparian Restoration	L	L	M	M	M	M	M
Prescribed Burning	L	L	L	L	L	L	L
Prescribed Fire Plan	L	L	L	L	L	L	M

Table 3-12. Cluster Activity Level Assumptions for All Action Alternatives

	Low	Moderate	High
Forest			
Harvest (commercial) (Percent of all forested area treated/decade)	Alts. 1,2,7 > 0-4 Alts. 3-6 > 0-5	4-8 5-9	8-10 9-11
Thin (pre-commercial) (Percent of all forested area treated/decade)	0-3	3-6	6-8
Decrease Road Density (Percent of total road miles reduced/decade)	0-25	25-50	50+ Chg. RDC ¹
Watershed Restoration (Percent of all forested area treated/decade)			
	0-3	3-6	6-8
Prescribed Burning (Percent of all forested area treated/decade)			
	0-5	5-9	9-11
Prescribed Fire Plans (Percent of all forestland with implemented plans/decade)			
	0-20	20-40	40+
Range			
Livestock Management (Percent of all rangeland with improved management)			
	0-6	6-12	12-20
Improve Rangelands (Percent of all rangeland treated/decade)			
	0-4	4-8	8-11
Decrease Road Density (Percent of total road miles reduced/decade)			
	0-25	25-50	50+ Chg. RDC ¹
Riparian Restoration (Percent of all riparian areas treated/decade)			
	0-25	25-50	50-75
Prescribed Burning (Percent of all rangeland treated/decade)			
	0-3	3-6	6-9
Prescribed Fire Plans (Percent of all rangeland with implemented plans/decade)			
	0-20	20-40	40+

Harvest. All commercial harvest methods (for example single tree selection, group selection, shelterwood, seed tree, overstory removal, clearcut, and commercial thinning from above or below)

Thin. All pre-commercial thinnings used to alter forest structure, species composition, density, rate of growth, fuel ladders, fire behavior, etc.

Watershed Restoration. Includes increased road maintenance, improved road condition (surface and/or drainage), reduced road related erosion, road obliteration, increased large woody material, riparian plantings, in-channel restoration, etc.

Livestock Management. A summation of livestock management variables that affect rangeland health, including: grazing systems, changing riparian grazing management., season of use (length and timing), number of head, change of class, distribution, grazing deferment, and herding.

Improve Rangelands. Capital Investments: fencing, stock water improvements, seedings, control of invasion or spread of exotics, and non-fire shrub and juniper control.

Decrease Road Density. Permanent closure of unsurfaced roads.

Riparian Restoration. Includes improving road condition (drainage and/or surface), riparian plantings, in-channel restoration, and riparian exclosures.

Prescribed Burning. Management ignited fire.

Prescribed Fire Plan. Allows natural ignition fires to burn when in prescription and/or identifies areas that require prescribed burning.

¹ Chg. RDC = Change in road density class (see table with RDC definition).

Alternative 2

Management Activities	Objectives¹	Forest Clusters					
		1 C	2 C	3 PC	4 PC	5 CR	6 C
Harvest	A2/AQ-O1,2,3,4; HA-O6; AM-O1,2	L	L	M	M	L	L
Thin	A2/AQ-O1,2,3,4	L	L	L	M	M	L
Decrease road density	A2/AQ-O1,2,3,4	L	L	L	L	M	L
Watershed restoration	A2/AQ-O1,2,3,4	M	M	M	L	L	L
Prescribed burning	A2/AQ-O1,2,3,4	L	L	L	L	L	L
Prescribed fire plans	A2/AQ-O1,2,3,4	H	H	L	L	L	L

		Range Clusters					
		1 PC	2 C	3 C	4 PC	5 PC	6 PC
Livestock Management	A2/AQ-O1,2,3,4	M	H	H	M	M	M
Improve rangeland	A2/AQ-O1,2,3,4	L	L	L	L	L	L
Decrease road density	A2/AQ-O1,2,3,4	L	L	L	L	L	L
Riparian restoration	A2/AQ-O1,2,3,4	L	L	M	L	L	L
Prescribed burning	A2/AQ-O1,2,3,4	L	L	L	L	L	L
Prescribed fire plans	A2/AQ-O1,2,3,4	L	H	L	L	L	L
Recreation activities	A2/AQ-O2,3; HU-O10,11	—	—	—	—	—	—

¹ Objectives for Alternatives 1 and 2 vary according to the current plans for individual National Forests and BLM Resource Areas and may not correspond directly to the specific objectives prepared for Alternatives 3 to 7.

Alternative 6

Management Activities	Objectives	Forest Clusters					
		1 CR	2 R	3 R	4 R	5 R	6 CR
Harvest	EM-O1,2,3,4; PE-O1,2,3,4; TS-O1,4,6,7,8,9,10,11; AQ-O1,2,3,4,5,6,7,9,10,12,13; HA-O2,3,5,6; HU-O1,3,4,5,6,7,9,13,14; RM-O1,2,4; AM-O1,2	L	L	L	M	L	L
Thin	EM-O1,2,3,4; PE-O1,2,3,4; TS-O1,3,4,6,8,10; AQ-O1,2,3,4,5,6,7,9,10,12,13; HU-O3,4,7,9,13,14; HA-O1,2, 3,5,6; RM-O1,2,4; AM-O1,2	L	M	M	H	H	H
Decrease road density	EM-O1,2,3; PE-O1,2,3,4; TS-O1,4; AQ-O1,2,3,4,5,6,7,9,10,12,13,14; HA-O2,3,5,6; HU-O2,3,4,13,14; RM-O2,3; AM-O1,2	L	M	H	M	M	L
Watershed restoration	EM-O1,2,3; PE-O1,2,3,4; TS-O1,3,4,6,8,10; AQ-O1,2,3,4,5,6,7,9,10,13,14; HA-O1,2,3,5,6; HU-O3,4,7; RM-O1, 2,3,4; AM-O1,2	M	M	M	M	M	L
Prescribed burning	EM-O1,2,3,4; PE-O1,2,3,4,5; TS-O1,2,3,4,6,8,10; AQ-O1,2,3,4,5,6,7,9,10,12,13; HA-O1,2,5,6; HU-O3,4,9,13,14; RM-O2; AM-O1,2	M	M	M	M	H	M
Prescribed fire plans	EM-O1,2,3,4; PE-O1,2,3,4,5; TS-O1,2,6,8,10; AQ-O1,2,3,4,5,6,7,9,10,12,13,14; HA-O1,2,5,6; HU-O3,4,9, 17; RM-O2; AM-O1,2	H	H	M	M	H	M
		Range Clusters					
		1 R	2 CR	3 CR	4 R	5 CR	6 R
Livestock Management	EM-O1,2,3,4; PE-O1,2,3,4; TS-O1,3,4,12,13,14,15; AQ-O1,2,3,4,5,6,7,9,10,11,12,13,14; HA-O2,3,4,5,6,7; HU-O1,3,4,5,6,7; RM-O2; AM-O1,2	M	H	H	M	H	H
Improve rangeland	EM-O1,2,3,4; PE-O1,2,3,4; TS-O1,2,3,4,5,12,13,14,15; AQ-O1,2,3,4,5,6,7,9,10,11,12,13,14; HA-O1,2,3,4,5,6; HU-O3,4,7,14; RM-O2; AM-O1,2	M	L	M	M	L	M
Decrease road density	EM-O1,2,3; PE-O1,2,3,4; TS-O1,4,12,15; AQ-O1,2,3,4,5,6,7,9,10,12,13,14; HA-O2,3,4,5,6; HU-O2,3,4,13,14; RM-O2,3; AM-O1,2	M	L	L	M	L	M
Riparian restoration	EM-O1,2,3; PE-O1,2,3,4; TS-O1,3,4,5,12,14,15; AQ-O1, 2,3,4,5,6,7,9,10,11,12,13,14; HA-O1,2,3,4,5,6; HU-O3,4,7; RM-O1,2,3,4; AM-O1,2	M	M	L	M	M	M
Prescribed burning	EM-O1,2,3,4; PE-O1,2,3,4,5; TS-O1,2,3,4,12,15; AQ-O1,2,3,4,5,6,7,9,10,12,13; HA-O1,2,5,6; HU-O3,4,9; RM-O2; AM-O1,2	H	M	M	L	M	L
Prescribed fire plans	EM-O1,2,3,4; PE-O1,2,3,4,5; TS-O1,2,12,15; AQ-O1,2,3,4,5,6,7,9,10,12,13,14; HA-O2,3,4,5,6; HU-O3, 4,9; RM-O2; AM-O1,2	H	H	H	M	M	L
Recreation activities	EM-O1,2,3,4; PE-O1,2,3,4; TS-O1,4,12; AQ-O1,2,3,4,7,9,12,14; HA-O4,5,6; HU-O1,3,4,7,8,10,11,12; RM-O1,2,3,4; AM-O1,2	—	—	—	—	—	—

