Rim Fire Recovery (43033)

Rangeland Specialist Report

Stanislaus National Forest
Groveland and Mi-Wok Ranger Districts
Mariposa and Tuolumne Counties, California

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3.07 RANGE

Analysis Framework: Statute, Regulation, Forest Plan and Other Direction

Current management direction for the Stanislaus National Forest range program comes from several sources, which include the 1991 Forest Land and Resource Management Plan (LRMP) and the 2001 and 2004 Sierra Nevada Forest Plan Amendments. This direction is reflected in the terms and conditions of each Forest-issued term grazing permit. Secretary of Agriculture Regulations related to grazing and livestock on the National Forest System are in 36 CFR 222. Legislative authorities for administration of the National Forest System range program are shown in Forest Service Manual (FSM) 2201. Objectives, policies, and responsibilities for the range management program are in the FSM 2202 through 2204 and FSM 2230 through FSM 2238. Direction that is most applicable to this project is listed below.

Forest Plan

- Forest Plan Direction (USDA 2010) presents the current management direction, based on the original LRMP (USDA 1991) as amended:

FOREST GOAL FOR RANGE:

Manage livestock to utilize available forage while avoiding adverse impacts on soil, vegetation, water quality, wildlife, fisheries and riparian zones.

FORESTWIDE STANDARDS AND GUIDELINES FOR RANGE

Allotment Management

Livestock grazing and all other uses are based on soil and vegetative resources. Maintaining these resources in satisfactory condition is the first priority of range management on this Forest. Any management practice that maintains or causes unsatisfactory soil or vegetative conditions in an area must be modified or if necessary, eliminated from that area. (36 CFR 219.20(b)) AUM increases are possible in allotments with satisfactory resource conditions. In many cases, improving resource conditions leads to increased forage production.

Improve ecological condition of rangelands, where currently unsatisfactory, through improved management, and structural and non-structural improvements.

On any allotment or unit of allotment, grazing management will be based on the vegetative type or soil type contained which is most susceptible to damage through improper grazing management. Examples: a riparian drainage through annual grassland; meadows within transitory range. Allowable use standards will be established in the allotment management plans and annual operating plans for each unit of each allotment. The standards will be based on Regional standards in R5 FSH2209.21. Priority will be given to range improvement on allotments with a high percentage of primary rangeland in unsatisfactory condition, or high conflicts between livestock grazing and other resources and uses.

Transportation systems in established range allotments will include fences and cattle guards where new roads open up natural livestock barriers.

Annual Range

Includes any segment of the California annual grassland either in large pure types or small types interspersed with shrubs and hardwoods. When management is based on this type the following apply:

Determine livestock on-dates based on soil moisture conditions and expected readiness date on associated perennial range to which the livestock are moved.

Perennial Range

Includes meadows, perennial grassland, sagebrush, broadleaf and riparian vegetation types. When grazing management is based on perennial range the following apply:

On allotments or pastures under intensive management provide rest or deferment during the growing season at least every third year.

On allotments under intensive management, as part of an approved discontinuous grazing system, allow grazing use to exceed normal use (as defined in R5 FSH 2209.21) up to one year out of two.

Under extensive or maintenance management where continuous season-long grazing is allowed, remove livestock when grazing reaches the allowable use level specified for the designated key areas.

Under all management strategies base on-dates for livestock on the phenological development of key forage or indicator species. Refer to R5 FSH 2209.21 for range readiness standards or use comparable criteria for species not listed. One exception is where an intensive management system limits early grazing to that which the range can withstand.

When primary range occurs within riparian areas: Allowable herbaceous forage utilization levels will be set according to Regional methods at standards that will contribute to the achievement of good to excellent vegetative and soil conditions (FSH 2209.21, Range Analysis Handbook).

Transitory Range

Includes all forage available following logging or fire, whether natural or seeded where there is no intention of permanently managing the type for forage production because tree or shrub canopies will grow to severely limit forage production. When management is based on transitory range the following apply:

Maximize forage utilization consistent with other resource values. Utilization may exceed normal range allowable use standards, but soils, watershed, riparian, wildlife or recreation considerations may modify use.

Initiate grazing use to complement silvicultural needs. Heavy grazing can help control grass and shrubs and prevent them from dominating the site.

Code of Federal Regulations

36 CFR 222.2 (c) Management of the range environment.

Forage producing National Forest System lands will be managed for livestock grazing and the allotment management plans will be prepared consistent with land management plans.

36 CFR 222.9 (a) Range improvements.

The Chief, Forest Service, is authorized to install and maintain structural and nonstructural range improvements needed to manage the range resource on National Forest System lands and other lands controlled by the Forest Service.

Forest Service Manuals and Handbooks

FSH 2209.13, Section17.2 - Non-use for Resource Protection or Development

Nonuse may be implemented by the authorized officer if necessary to facilitate the protection or development of National Forest System lands and resources. Nonuse may be on an allotment, watershed, or landscape scale depending on the scale of the rangeland resource needing protection or development.

Effects Analysis Methodology

Assumptions Specific to Range

1. Forest Plan Direction authorizes grazing on allotments in the project area and guides grazing management on those allotments. The authorization for livestock grazing and the administration of allotments will not change with any of the proposed alternatives.
2. Salvage of dead timber can have a beneficial effect on grazing resources by improving the Forest's ability to administer grazing allotments and increasing forage availability and livestock distribution.
3. The area proposed for activities and the amount of rangeland infrastructure in treatment areas reflects the relative degree of impact each alternative would have on permitted grazing in the project area.
4. Spatial data has limitations, but can provide information useful for interpreting conditions and anticipated effects. Interpretations about spatial data are only as good as the spatial data analyzed. Field visits are important to verify conditions on the ground, but complete survey is impractical due to the scale of the project area.
5. Monitoring will occur during implementation of the project to inform livestock management about the effects of project implementation on grazing use and rangeland resource conditions.

Data Sources

In describing the rangeland resources in the project area and analyzing alternatives, the following information was used:

- Post-fire field visits
- Local professional knowledge
- Spatial data files:
    - Project Treatment Information
    - Vegetation and Soil Burn Severity, Soil Erosion Hazard Rating
    - California Wildlife Habitat Relationships
    - Allotment and unit/pasture boundaries
    - Land ownership
    - Capable Rangeland
    - Range infrastructure
    - Transportation

Range Indicators

In order to describe range existing condition the following indicators and categories were used:

- Field Visits and Monitoring Data
- Vegetation Burn Severity and Vegetation Type
- Soil Burn Severity and Erosion Hazard Rating
- Range infrastructure location and condition

In order to assess the potential effects of each alternative on rangeland resources, the following indicators were used:

- Proposed treatment area in each allotment (percent of allotment proposed for treatments)

- Proposed treatment area in capable rangelands within each allotment
- Road treatments (hazard tree removal and reconstruction/maintenance)
- Amount of range infrastructure encompassed by proposed treatments

Range Methodology by Action

The method used to determine the effects on rangeland resources was quantitative and qualitative comparison of each alternative's anticipated impacts on rangeland resources and expected potential for moving existing conditions towards desired conditions identified in Forest Plan Direction.

Affected Environment

Existing Conditions

GRAZING ALLOTMENTS AFFECTED BY RIM FIRE

There are fourteen active grazing allotments either wholly or partially within the Rim Fire (Appendix A). Table 3.07-1 displays administrative variables for each of the allotments burned in the Rim fire.

Table 3.07-1 Allotment Administrative variables

Allotment	Area (acres)	Ranger District	Livestock Number*	Season of Use	Animal Use Months (AUMs)	Elevation Range (feet)	
						Low	High
Bonds	6403	Groveland	60	5/25 - 9/30	240	2400	3900
Bower Cave	12113	Groveland	40	5/25 - 9/30	160	2300	6000
Bull Creek	34415	Groveland	150	5/1 - 9/30	700	1300	6000
Curtin	14113	Groveland	100	6/16 - 9/30	350	3000	6000
Duckwall	17625	Mi-Wok	142	5/15 - 8/31	497	2200	5800
Gravel Range	378	Mi-Wok	100	5/15 - 6/15	100	2700	3400
Hunter Creek	30136	Mi-Wok	150	5/15 - 9/30	675	1000	5800
Jawbone	31170	Groveland	168	5/15 - 9/30	756	2200	6400
Lower Hull	8804	Mi-Wok	75	6/1 - 9/15	263	3800	6000
Meyer-Ferretti	5810	Groveland	368	5/15 - 6/15	284	1200	3500
Middle Fork	31739	Groveland	200	6/16 - 9/30	700	1500	5600
Rosasco	19969	Groveland	96	6/1 - 9/30	384	2900	6900
Upper Hull	39608	Mi-Wok	150	6/15 - 9/15	450	4200	7900
Westside	11122	Mi-Wok	75	6/1 - 9/15	263	3000	5700

* listed livestock number indicates the maximum number of cow/calf pairs currently permitted to graze on NFS lands. Number shown does not include animals authorized to graze on private lands in the project area.

Some of the allotments are administered in conjunction with adjacent allotments: the Jawbone and Rosasco allotments; the Meyer-Ferretti, Middle Fork, Curtin and Gravel Range allotments; the Lower Hull, Upper Hull, and Westside allotments; and the Bonds, Bower Cave, Bull Creek, and Little Crane (not affected by Rim fire) allotments. Because these allotments are managed by the same grazing permit holder (permittee) and often with the same herds of livestock, they will here forth be discussed cohesively.

Fire Extent and Burn Severity of Grazing Allotments

Of the 14 allotments affected by the Rim Fire, some were relatively less impacted due either to the proportion of the allotment burned and/or fire severity in the burned areas. Capable rangeland describes areas of land that can sustain domestic grazing and generally includes areas with less than 30% slope, lacking physical barriers, within one mile of perennial water, and with the potential to produce an average of 200 lbs. of forage per acre per year (USDA 2004). Capable rangeland was used to compare the relative effects of the fire on the allotments, because these areas represent the portions of the landscape assumed to be most commonly used by cattle. Table 3.07-2 displays data summarizing the areas burned at moderate and high vegetation burn severity high soil burn severity, and high erosion hazard rating.

Table 3.07-2 Allotment burn severity and erosion hazard data

Allotment(s)	Allotment vegetation burned at moderate or high severity (%)	Capable range vegetation burned at moderate or high severity (%)	Capable range soil burned at high severity (%)	Allotment soil erosion hazard rating high (%)
Jawbone-Rosasco	64	72	61	15.1
Hunter Creek	54	52	49	3.5
Duckwall	14	6	8	2.2
Middle Fork, Meyer-Ferretti, Gravel Range, Curtin	65	68	56	18.1
Bonds, Bower Cave, Bull Creek, Little Crane	20	2	2	1.4
Westside, Lower Hull, Upper Hull	17	5	3	1.5

Grazing Management

Allotment Administration

Grazing on an allotment is authorized by issuance of a term grazing permit. The management of each allotment is guided by an Allotment Management Plan (AMP), which prescribes site-specific livestock management strategies. Annual Operating Instructions (AOI) provide annual information used to carry out strategies detailed in the AMPs. Forest Plan Direction provides standards and guidelines that are designed to provide for resource conservation and sustainable use of rangelands. Range monitoring is conducted as needed to ensure that the grazing management strategies meet objectives for desired conditions. Administration of grazing allotments involves travel on roads by Forest Service staff and permittees. Post-fire administration of grazing allotments will require more frequent travel to and from key areas and range infrastructure. Dead trees pose a threat to human safety and make access more difficult for grazing permittees and Forest staff.

Rangeland Infrastructure

Rangeland infrastructure includes fences, water developments (troughs), cattleguards, gates, and corrals. Because this infrastructure is designed to control livestock movements (timing, duration, and insensity of grazing) and is often required by the AMP, allotments are not viable if critical infrastructure is not functioning. Rangeland infrastructure was damaged by the fire and fire suppression activities. Over time, standing dead and unhealthy trees will fall on range fences in the project area, as noted following the Ackerson Fire. Because this infrastructure is designed to control livestock movements (timing, duration, and intensity of grazing) and often required by the allotment management plan(s), allotment management is much more difficult if critical range infrastructure is not functioning. Some improvements, particularly fences, are in need of repairs. Dead trees adjacent to fences and troughs pose a safety risk for Forest staff and permittees responsible for repairing and maintaining improvements and over time are likely to fall on and damage or destroy range infrastructure after it is repaired. Several cattleguards in the project area are not functioning because they were either damaged during the fire or have filled in with sediment and debris.

Livestock Movements

Livestock move through the allotments throughout the grazing season to find available forage and water. Dead or dying trees may reduce forage production to some extent due to shading and space availability. In many burned areas dead standing trees are abundant, and many dead trees have begun

to fall. Fallen dead trees have the potential to "jackstraw", which can inhibit livestock movements and reduce forage availability. Defective trees may also pose some risk to livestock, as cattle may be injured or killed by falling trees or by an excess of unburned fuel and debris. The presence of an abundance of dead timber also impedes the ability of permittees to herd livestock and achieve proper distribution.

The allotments in the project area are open range allotments. Livestock frequently travel across and along roads. When vehicles approach, the cattle will generally move off of roads and out of the way of the oncoming vehicle. Fire killed trees along roadsides are expected to fall and the resulting down logs may hamper the ability of livestock to move off of roads when vehicles approach. To some extent, fallen dead trees along roadsides have the potential to cause an increase in vehicle-cattle interactions and/or collisions.

Rangeland Vegetation

Vegetation Types

The project area contains a mosaic of vegetation types distributed and controlled primarily by climate and soils. Ecosystems in the middle elevation range are a mosaic of mixed conifer forests, ponderosa pine plantations, hardwood forests, and chaparral dissected by riparian corridors, with intermittent meadows and forest openings. At the lower elevations are a limited amount of oak woodlands and annual grasslands, and at the higher elevations are Jeffrey pine, red fir, lodgepole pine, and white fir.

The allotments in the project area are mainly transitory range allotments. Transitory range describes vegetation types that are created and maintained by stand replacing fires or timber harvests. Chaparral is a plant community dominated by woody, drought-hardy shrubs, and driven by a Mediterranean climate. Chaparral contains a variety of shrub species, including species of Ceanothus (*Ceanothus spp.*), Manzanita (*Arctostphylos spp.*), and Scrub Oak (*Quercus spp.*). Deerbrush (C*eanothus integerrimus*) is the predominant forage species used by livestock in the mid-elevation range (between approximately 3,500 and 6,000 feet) of the Stanislaus National Forest. Riparian areas and meadows, which occur as patches within the forest mosaic, are also preferred by livestock due to the availability of water, shade and high quality forage. Livestock also feed in open forested areas with a sufficient understory component and forest openings where shrubs and grasses are common. Livestock also may graze incidentally in any area of an allotment while moving between primary grazing areas.

California Wildlife Habitat Relationships (CWHR) vegetation types (Mayer and Laudenslayer 1988) and fire severity (Miller and Thode 2007) are used to describe the existing potential for landscape diversity. Pre-fire vegetation was examined using the CWHR vegetation types. Vegetation types were grouped into one of five broad categories of rangeland ecosystems. Pre-fire composition of rangeland vegetation types in the project area, derived from CWHR System data, are summarized Table 3.07-3.

Table 3.07-3 General rangeland vegetation types affected by the Rim fire.

Vegetation Type	Area (Acres)	Composition (% of fire area)
Annual Grasslands	7928	5.2
Hardwood Forests	18737	12.3
Chaparral	22465	14.8
Conifer Forests	101073	66.4
Riparian	2004	1.3

Vegetation Condition

Current vegetation conditions are the combined result of pre-fire conditions and fire effects on the landscape. High levels of mortality exist within areas that burned under moderate (areas with greater than 50 percent basal area mortality) and high (areas with greater than 75 percent basal area mortality) vegetation burn severity. Table 3.07-4 shows vegetation burn severity for five broad rangeland vegetation types. Some vegetation types inherently burn more severely (chaparral), but species that dominate these plant communities are well adapted to recover from fire. Unburned areas and areas that burned at low severity are in a condition similar to that prior to the fire. Areas that burned at high severity are most likely to be in poor condition, with significantly reduced plant vigor and ground cover immediately following the fire. Because burned areas will naturally recover following fire, vegetation condition will improve over time, even in severely burned areas.

Table 3.07-4 Burn severity of vegetation types in the project area.

Ecosystem	Moderate vegetation burn severity (%)	High vegetation burn severity (%)	Moderate and high vegetation burn severity (%)
Annual Grasslands	22.4	48.3	70.7
Hardwood Forests	17.0	51.3	68.3
Chaparral	15.1	65.1	80.2
Conifer Forests	13.8	37.0	50.8
Riparian	16.7	49.2	65.9

Forest and rangeland ecosystems recover naturally following fire, but different vegetation types respond differently to fire. Recovery sequence and timing varies based and environmental factors such as climate, soils and land management activities. Recognizing differences in vegetation types, identifying the stages of recovery and being responsive with changes in management are crucial to facilitating recovery of the burned landscape. Fire can cause a large scale vegetation type conversion to predominantly non-forest vegetation types, with many areas often dominated by brush within a few years following fire. The increase in transitory range helps to reduce overall utilization, due to the post-fire flush of palatable and nutritious forage.

Environmental Consequences

Direct effects are effects on rangeland resources that are directly caused by project implementation or, as with Alternative 2 (No Action), a lack of treatment. Indirect effects are effects on rangeland resources that are in response to the direct effects of treatment implementation. Project management requirements are designed to mitigate the direct and indirect effects of the project on rangeland resources. The following management requirements apply to Alternatives 1, 3, and 4:

Project-Specific Rangeland Management Requirements

a. Avoid damage to rangeland infrastructure (fences, water developments, cattleguards) during project implementation.

b. Any serviceable/intact infrastructure that is damaged during implementation must be repaired to Forest Service standards.

c. Avoid snag retention adjacent to critical range infrastructure.

d. Consider seeding to provide for site stabilization in areas adjacent to meadows where salvage occurs. Use only native, sterile or non-persistent weed-free seed.

Alternative 1 (Proposed Action)

DIRECT AND INDIRECT EFFECTS

Alternative 1 proposes salvage logging, fuels treatments, and road improvements in grazing allotments. The area of treatments proposed in each allotment was used to compare the relative effects of the fire on grazing allotments. Table 3.07-5 displays data summarizing the treatment area within allotments, the capable rangeland area proposed for activities, road miles treated for roadside hazard trees, and percentage of range allotment infrastructure encompassed by project treatment units.

Table 3.07-5 Alternative 1 treatments in affected grazing allotments.

Allotment	Treatment area in allotment (Acres)	Allotment area proposed for treatment (%)	Capable area proposed for treatment (%)	Roadside hazard trees (miles)	Fences in treatment area (% of fences)
Jawbone-Rosasco	14189	28	33	71.3	25
Hunter Creek	3482	12	28	67.1	16
Duckwall	941	5	9	15.0	41
Middle Fork, Meyer-Ferretti, Gravel Range, Curtin	17260	33	20	121.7	22
Bonds, Bower Cave, Bull Creek, Little Crane	1487	3	2	24.5	50
Westside, Lower Hull, Upper Hull	5087	9	5	56.4	90

Grazing Management

Allotment Administration

Implementation of Alternative 1 would improve conditions for allotment administration and grazing management. The amount of roads treated for hazard trees affects the safety of grazing managers and affects accessibility for administration. Alternative 1 would remove hazard trees along a total of 356 miles of roads and improve (reconstruction and maintenance) 508 miles of roads inside allotment boundaries. Alternative 1 would also remove hazards away from roadsides in salvage units, which would improve safety conditions for grazing permittees and forest staff when working away from roads. Access within the allotments would be improved from existing conditions, facilitating allotment administration activities such as herding and monitoring. Project activities involving roads could affect livestock operations if temporary road closures are needed, although alternative access may be available for permittees. Non-use as a result of project activities is not expected to be necessary; however, if non-use is necessary, this change would result in inconvenience or economic loss to the permit holders.

Rangeland Infrastructure

This alternative poses some risk that harvest activities will cause damage to range infrastructure. The potential for damage to range improvements during project implementation is mitigated by project management requirements and timber sale administration. Timber sale contracts will require project activities to avoid damaging functioning range fences and to repair damage to fences that occur during project implementation. Long term maintenance needs would decrease to some extent, and the functioning condition of range infrastructure would increase under Alternative 1 because dead trees would be removed along approximately 13.8 fence miles within grazing allotments. Dead trees pose a safety risk for forest staff and permittees responsible for repairing and maintaining infrastructure. Removing snags adjacent to range infrastructure would improve conditions for persons responsible for infrastructure maintenance have a positive effect on grazing management. Several cattleguards occur within the project area on roads proposed for reconstruction and maintenance. These

cattleguards would be maintained during project implementation, which would also improve grazing management on affected allotments.

Livestock Movements

Alternative 1 would treat 4193 acres in capable rangelands. Long-term availability of forage may be increased by salvage logging since removing dead or dying trees can increase sunlight as a result of treatments. Livestock distribution could potentially change or expand if treatments reduce dead and downed woody material and if transitory range is created around these areas. An increase in transitory range could improve livestock distribution and use patterns. The proposed action reduces the short and long term potential for fallen dead trees, minimizing "jackstraw", which will increase livestock movement and forage availability. Removal of roadside hazard trees would reduce the potential for vehicle-cattle interactions and livestock injury or death. This alternative would facilitate herding and increase livestock movements and distribution.

Rangeland Vegetation

Vegetation Types

Vegetation types are driven primarily by climate and soils. Different vegetation types respond differently to fire and other disturbance. The type of vegetation that grows back after a disturbance event often depends on what was there before. Through natural recovery ecosystems will tend to revert back to plant communities similar to what was seen with the pre-fire state, though there may be shifts in the proportions of vegetation types, floristic composition, and elevation range. The proposed activities may result in short term changes in species composition but is not likely to result in long term measurable changes to the proportions and distribution vegetation types on a landscape scale.

Vegetation Condition

The proposed action would have a beneficial effect on vegetation condition as it relates to grazing. Proposed activities would directly increase short-term forage availability, which would result in a reduction of overall forage utilization. The proposed action would indirectly improve long term vegetation condition because fuel treatments would reduce the potential for future catastrophic fires. Project activities may increase the likelihood of weed invasion and spread, a serious threat to rangelands. However, proposed mitigations would minimize the potential for weed invasion in the project area. Monitoring of grazing standards and guidelines would be continued as described in the permit, Allotment Management Plan (AMP), and Annual Operating Instructions (AOI). Monitoring and adaptive management would be used to ensure that vegetation condition meets standards and guidelines outlined in management direction.

CUMULATIVE EFFECTS

The cumulative effects of Alternative 1 would generally be positive for grazing allotment administration, range infrastructure, livestock distribution, and rangeland vegetation. Forest Plan Direction provides standards and guidelines that are designed to provide for resource conservation and sustainable use of rangelands. Cumulative effects on rangelands (soil compaction, ecological disturbance, weed invasions) through project activities and grazing are expected to be minimal since management requirements and Forest Plan standards and guidelines for grazing would mitigate potential effects to acceptable levels. Monitoring would occur as needed to ensure that the combined effects of proposed projects and ongoing activities, such as grazing, meet Forest objectives for desired conditions.

Alternative 2 (No Action)

DIRECT AND INDIRECT EFFECTS

No project activities would take place under the no action alternative. No dead timber would be salvage logged, hazard trees would be left standing along roadsides, fuels would not be treated and the road system would not be improved.

Grazing Management

Allotment Administration

Alternative 2 would not improve conditions for allotment administration and grazing management. The presence of hazard trees poses risks to the safety of rangeland managers and negatively affects accessibility for allotment administration. Access within the allotments would not be improved from existing conditions. Maintenance (clearing of fallen trees) of travel routes may become cumbersome in areas where roadside hazard trees are prevalent. Allotment administration activities such as herding and monitoring would be more challenging and time consuming, but would still occur.

Rangeland Infrastructure

Because there are no harvest activities, there is no risk of damage to range infrastructure by timber salvage operations. However, dead and unhealthy trees would not be removed and will fall on range fences in the project area over time, as noted following the Ackerson Fire. Allotment management would become much more difficult if critical range infrastructure is not functioning. Maintenance needs would be more significant under this alternative than for action alternatives. Dead trees pose a safety risk for forest staff and permittees responsible for repairing and maintaining infrastructure. The long term functioning condition of range infrastructure would be degraded as a result of this alternative.

Livestock Movements

The no action alternative will not reduce the potential for “jackstraw”, which can inhibit livestock movements and reduce forage availability. Livestock distribution and movements would not be improved by Alternative 2. This alternative does not reduce the risk of livestock death or injury by falling trees or by an excess of unburned fuel and debris. Permittee ability to herd and distribute livestock throughout key areas and capable range would not be improved under this alternative, which may increase the potential for localized overgrazing. The no action alternative may also increase the potential for vehicle-cattle interactions.

Rangeland Vegetation

Vegetation Types

This alternative would have no effects on rangeland vegetation types because no project activities would occur. The lack of project activities would is not likely to have measurable effects on post-fire recovery and vegetation dynamics. The landscape will recover naturally as early stages of forest succession take place immediately following the fire, favoring rapid revegetation of grasses, forbs, and sprouting woody plants. The expected result would be the continuation over time of forest succession in the burned area.

Vegetation Condition

The no action alternative may indirectly negatively affect vegetation condition as it relates to grazing. Because this alternative may increase the potential for localized overgrazing, it may also cause negative impacts on vegetation condition in some areas. Additionally, a lack of fuel treatments increases the potential for future catastrophic fire. Monitoring and adaptive management would be used to ensure that vegetation condition meets standards and guidelines outlined in management direction.

CUMULATIVE EFFECTS

The no action alternative may have negative cumulative effects to rangeland resources. Failure to treat fuels would have a cumulative effect on rangelands should future wildfires occur in the project area. Fuel loadings would be higher and the chances for a larger, hotter, and more resource damaging fire would increase. Combined with the increased potential for localized overgrazing, lack of road treatments, wildlife and watershed treatments, the cumulative effects of Alternative 2 are not likely to contribute to desired conditions for rangeland resources in the project area.

Alternative 3

DIRECT AND INDIRECT EFFECTS

Alternative 3 proposes salvage logging, fuels treatments, road improvements, and watershed treatments in grazing allotments. The area of treatments proposed in each allotment was used to compare the relative effects of the fire on grazing allotments. Table 3.07-7 displays data summarizing Alternative 3 treatment areas within each allotment, the capable rangeland area proposed for harvest, road miles treated for roadside hazard trees, and percentage of range allotment infrastructure encompassed in project treatment units.

Table 3.07-7 Alternative 3 treatments in affected grazing allotments.

Allotment	Treatment Area in Allotment (Acres)	Allotment area proposed for treatment (%)	Capable area proposed for treatment (%)	Roadside hazard trees (miles)	Fences in treatment area (% of fences)
Jawbone-Rosasco	16569	32	46	62.3	37
Hunter Creek	3439	11	28	66.8	16
Duckwall	940	5	9	13.8	41
Middle Fork, Meyer-Ferretti, Gravel Range, Curtin	16813	32	21	122.4	18
Bonds, Bower Cave, Bull Creek, Little Crane	1488	3	2	24.9	50
Westside, Lower Hull, Upper Hull	4471	8	5	54.3	9

Grazing Management

Allotment Administration

Implementation of Alternative 3 would improve conditions for allotment administration and grazing management. The amount of roads treated for hazard trees affects the safety of grazing managers and affects accessibility for administration. Alternative 3 would remove hazard trees along a total of about 345 miles of roads and improve (reconstruction and maintenance) 503 miles of roads inside allotment boundaries. Alternative 3 would also remove hazards away from roadsides in salvage units, which would improve safety conditions for grazing permittees and forest staff when working away from roadsides. Access within the allotments would be improved from existing conditions, facilitating allotment administration activities such as herding and monitoring. Project activities involving roads could affect livestock operations if temporary road closures are needed, although alternative access may be available for permittees.

Rangeland Infrastructure

Alternative 3 poses some risk that harvest activities will cause damage to range infrastructure. The potential for damage to range improvements during projects is mitigated by project management requirements and timber sale administration. Timber sale contracts will require project activities to avoid damaging functioning range fences and to repair damage to fences that occur during project

implementation. Maintenance needs would decrease to some extent, and the functioning condition of range infrastructure would increase under Alternative 3 because dead trees would be removed along approximately 12.9 miles of fence lines within grazing allotments. Removal of snags adjacent to range infrastructure would improve conditions for persons responsible for infrastructure maintenance have a positive effect on grazing management. Several cattleguards occur within the project area on roads proposed for reconstruction and maintenance. These cattleguards would be maintained during project implementation, which would also improve grazing management on affected allotments.

Livestock Movements

Alternative 3 proposes treatments in 4887 acres of capable rangelands, approximately 700 more acres than proposed for Alternative 1. The effects of this alternative are similar as described for the proposed action. Long-term availability of forage may be increased by salvage logging since removing dead or dying trees can increase sunlight as a result of treatments. Livestock distribution could potentially change or expand if treatments reduce dead and downed woody material and if transitory range is created around these areas. An increase in transitory range could improve livestock distribution and use patterns. The proposed action reduces the short and long term potential for fallen dead trees, minimizing “jackstraw”, which will increase livestock movement and forage availability. Removal of roadside hazard trees would reduce the potential for vehicle-cattle interactions and livestock injury or death. This alternative would facilitate herding and increase livestock movements and distribution.

Rangeland Vegetation

Vegetation Types

The effects of Alternative 3 on rangeland vegetation condition would be similar to those described for Alternative 1. Proposed activities may result in short term changes in species composition, the long term effects of the proposed action on vegetation types will not change the proportions and distribution vegetation types on a landscape scale.

Vegetation Condition

Alternative 3 would have a beneficial effect on vegetation condition as it relates to grazing. Proposed activities would directly increase short-term forage availability, which would result in a reduction of overall forage utilization. This alternative would indirectly improve long term vegetation condition because fuel treatments would reduce the potential for future catastrophic fires. Watershed treatments proposed under this alternative may facilitate recovery of sensitive areas by increasing soil cover and organic matter, and reducing erosion. The activities may increase the likelihood of weed invasion and spread, a serious threat to rangelands. However, proposed mitigations would minimize the potential for weed invasion in the project area. Monitoring of grazing standards and guidelines would be continued as described in the permit, AMP, and AOI. Monitoring and adaptive management would be used to ensure that vegetation condition meets standards and guidelines outlined in management direction.

CUMULATIVE EFFECTS

The cumulative effects of Alternative 3 would generally be positive for range resources including allotment administration, range infrastructure, livestock distribution, and rangeland vegetation. Forest Plan Direction provides standards and guidelines that are designed to provide for resource conservation and sustainable use of rangelands. Cumulative effects of foreseeable future actions and ongoing activities on rangelands (soil compaction, ecological disturbance, weed invasions) through project activities and grazing are expected to be beneficial or neutral since management requirements and Forest Plan standards and guidelines for grazing would mitigate potential effects to acceptable levels. Monitoring would occur as needed to ensure that the combined effects of future projects and ongoing activities, such as grazing, meet Forest objectives for desired conditions.

Alternative 4

DIRECT AND INDIRECT EFFECTS

Alternative 4 is similar to Alternative 3 (proposes salvage logging, fuels treatments, road improvements, and watershed treatments in grazing allotments) while providing for additional habitat for Black-Backed Woodpeckers and removing the need for new road construction. The area of treatments proposed in each allotment was used to compare the relative effects of the fire on grazing allotments. Table 3.07-8 displays data summarizing Alternative 4 treatment areas within each allotment, the capable rangeland area proposed for harvest, road miles treated for roadside hazard trees, and range allotment infrastructure encompassed in project treatment units.

Table 3.07-8 Alternative 4 treatments in affected grazing allotments.

Allotment	Treatment Area in Allotment (Acres)	Allotment area proposed for treatment (%)	Capable area proposed for treatment (%)	Roadside hazard trees (miles)	Fences in treatment area (% of fences)
Jawbone-Rosasco	15487	30	46	65.2	37
Hunter Creek	3439	11	28	66.8	16
Duckwall	941	5	9	13.8	17
Middle Fork, Meyer-Ferretti, Gravel Range, Curtin	8240	16	21	123.3	4
Bonds, Bower Cave, Bull Creek, Little Crane	1184	2	2	24.9	50
Westside, Lower Hull, Upper Hull	3946	7	5	55.3	9

Grazing Management

Allotment Administration

Implementation of Alternative 4 would improve conditions for allotment administration and grazing management. The amount of roads treated for hazard trees affects the safety of grazing managers and affects accessibility for administration. Alternative 4 would remove hazard trees along a total of about 349 miles of roads and improve (reconstruction and maintenance) 503 miles of roads inside allotment boundaries. Alternative 4 would also remove hazards away from roadsides in salvage units, which would improve safety conditions for grazing permittees and forest staff when working away from roadsides. Access within the allotments would be improved from existing conditions, facilitating allotment administration activities such as herding and monitoring. Project activities involving roads could affect livestock operations if temporary road closures are needed, although alternative access may be available for permittees.

Rangeland Infrastructure

Alternative 4 poses some risk that harvest activities will cause damage to range infrastructure. The potential for damage to range improvements during projects is mitigated by project management requirements and timber sale administration. Timber sale contracts will require project activities to avoid damaging functioning range fences and to repair damage to fences that occur during project implementation. Maintenance needs would decrease to some extent, and the functioning condition of range infrastructure would increase under Alternative 4 because dead trees would be removed along approximately 8 fence miles within grazing allotments. Dead trees pose a safety risk for forest staff and permittees responsible for repairing and maintaining infrastructure. Removing snags adjacent to range infrastructure would improve conditions for persons responsible for infrastructure maintenance have a positive effect on grazing management. Several cattleguards occur within the project area on

roads proposed for reconstruction and maintenance. These cattleguards would be maintained during project implementation, which would also improve grazing management on affected allotments.

Livestock Movements

Alternative 4 would treat 4850 acres in capable rangelands, approximately 700 more acres than proposed for Alternative 1 and only slightly less area than proposed for Alternative 3. The effects of this alternative are similar as described for the proposed action. Long-term availability of forage may be increased by salvage logging since removing dead or dying trees can increase sunlight as a result of treatments. Livestock distribution could potentially change or expand if treatments reduce dead and downed woody material and if transitory range is created around these areas. An increase in transitory range could improve livestock distribution and use patterns. This alternative would decrease "jackstraw" of fallen dead timber and reduce the potential for vehicle-cattle interactions. Alternative 4 would increase livestock movements and distribution.

Rangeland Vegetation

Vegetation Types

The effects of Alternative 4 on rangeland vegetation types would be similar to those described for Alternatives 1 and 3. Proposed activities may result in short term changes in species composition, the long term effects of the proposed action on vegetation types will not change the proportions and distribution vegetation types on a landscape scale.

Vegetation Condition

The effects of Alternative 4 on rangeland vegetation condition would be similar to those described for Alternatives 1 and 3, except that less of the project area would be treated. Alternative 4 would have a beneficial effect on vegetation condition as it relates to grazing. Monitoring and adaptive management would be used to ensure that vegetation condition meets standards and guidelines outlined in management direction.

CUMULATIVE EFFECTS

The cumulative effects of Alternative 4 would generally be positive for range resources including allotment administration, range infrastructure, livestock distribution, and rangeland vegetation. Forest Plan Direction provides standards and guidelines that are designed to provide for resource conservation and sustainable use of rangelands. Cumulative effects on rangelands are expected to be minimal since management requirements and Forest Plan standards would mitigate potential effects to acceptable levels. Monitoring would occur as needed to ensure that the combined effects of proposed projects and ongoing activities, such as grazing, meet Forest objectives for desired conditions.

Summary of Effects Analysis across All Alternatives

The effects of each alternative are compared against the relative area proposed for treatment within grazing allotments, the amount of capable range in treatment areas, length of fence segments encompassed by treatments, and travel routes treated for hazard tree removal and road improvements. Table 3.07-9 displays data summarizing this information for all action alternatives.

Table 3.07-9 Allotment area and length of fences treated by each alternative.

Treatment Variable	Alternative 1	Alternative 3	Alternative 4
Grazing Allotment Area Proposed for Treatment	42445	43720	41718
Capable Range Area Proposed for Treatment	4193	4887	4850
Fence Miles Proposed For Treatment	13.8	12.9	7.8
Road Miles Proposed for Hazard Tree Removal	356	345	350
Road Miles Proposed for Improvement	508	503	503

Alternative 3 proposes treatments to the most area within allotments, and so would provide the most benefits in terms of allotment administration (safety and travel). Alternative 4 would improve conditions for allotment administration, but to a lesser extent than Alternatives 1 and 3. Alternative 3 also proposes treatments to the largest amount of capable rangeland, and so has the potential to create the most improvements in forage availability and livestock distribution. Treatments proposed for Alternative 3 would also provide the most benefits to rangeland vegetation. The treatments proposed under Alternative 1 encompass the most fence segments, and so is the most desirable alternative from a strictly range infrastructure standpoint. All action alternatives propose a similar amount of roadside hazard tree removal and road improvement activities, and so would provide similar positive effects to allotment administration and livestock movements. Alternative 2 would not provide any improvements to allotment administration, range improvements, livestock movements, or rangeland vegetation.

Compliance with the Forest Plan and Other Direction

Alternatives 1, 2, 3 and 4 comply with Forest Plan Direction (USDA 2010).

References

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