United States Department of Agriculture
Forest Service

Slack Weiss Analysis Project

Environmental Assessment/

Finding of No Significant Impact

Parks Ranger District, Medicine Bow-Routt National Forests & Thunder Basin National Grassland
Jackson and Grand Counties, Colorado
Townships 4-5 North, Ranges 79-81 West, 6th PM

November 2015

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Cover Photo: Slack Weiss Project Area (Simeon Caskey).

Chapter 1 – Need for the Proposal

Background

This environmental assessment (EA) describes the Slack Weiss Analysis Area Project and presents an analysis of effects related to the project. The EA provides sufficient site-specific information to demonstrate consideration of environmental consequences of the proposed action and alternatives, with a focus on issues identified during scoping. Additional documentation is located in the project file at the Parks Ranger District and is available upon request. This EA and the Notice of Proposed Action and other project information are also available on the Forest website at: http://www.fs.fed.us/nepa/nepa_project_exp.php?project=41482.

The lodgepole pine cover-type in Jackson County has experienced high levels of mortality resulting from a mountain pine beetle (*Dendroctonus ponderosae*) outbreak. This outbreak was declared an epidemic on June 25, 2007 by the Deputy Regional Forester. Large portions of the Routt National Forest and project area have been affected, resulting in reduced regeneration, diversity, and resiliency of forest cover types; and high hazard fuel conditions due to tree mortality. Forest districts are identifying opportunities for vegetation management in high priority areas to address changing fuel conditions and potential fire hazards, salvage merchantable timber and regenerate forests, and remove dead and dying trees that are posing a public safety hazard. Vegetation treatments would reduce fuel accumulations and fuel continuity and create conditions more conducive to aspen and lodgepole pine regeneration.

Based on information in this EA and the project file, the Responsible Official may decide to take no action, defer activities, or implement all or part of the proposed action. The Forest Service has prepared this EA in compliance with the National Environmental Policy Act (NEPA), the National Forest Management Act, and the 1997 Revised Routt National Forest Land and Resource Management Plan (Forest Plan)[1]. The project proposal is consistent with Wetlands and Floodplains Executive Orders, the Clean Water Act, and other relevant Federal and State laws and regulations.

Purpose and Need

Consistent with Forest Plan direction, the primary purpose of this project is to improve forest health, reduce threats to public safety by addressing high levels of tree mortality associated with the mountain pine beetle epidemic, reduce fuels and related threats to public safety, and provide commercial forest products while minimizing environmental effects in the project area. A secondary purpose of the project is to address other resource conflicts and needs identified in the project area, as described below.

The project would advance Forest Service goals, objectives, and desired conditions of the Forest Plan including managing for ecosystem function and providing for multiple-uses and sustainability of National Forests in an environmentally acceptable manner (Forest Plan, pp. 1-1 to 1-3).

[1] USDA Forest Service. 1997. Routt National Forest Revised Land and Resource Management Plan and Final Environmental Impact Statement. USDA Forest Service, Rocky Mountain Region, Lakewood, CO.

The mountain pine beetle epidemic has affected large portions of the Slack Weiss project area, resulting in reduced regeneration, diversity, and resiliency of forest cover types; and high hazard fuel conditions due to tree mortality. The project would implement a variety of silvicultural treatments and fuels treatments to:

- Encourage establishment and better growing conditions for aspen and lodgepole pine regeneration, through natural regeneration and/or artificial reforestation;
- Manage timber stands to create optimum conditions for forest resiliency, growth, and regeneration;
- Reduce the development of large, continuous hazardous fuels and associated threats to public safety by removing dead, dying, and susceptible trees;
- Enhance wildlife habitat; and
- Provide commercial forest products and/or biomass to industry.

In addition, other resource conflicts and needs have been identified in the project area including fence damage and risk of damage associated with dead and dying trees; and travel-related impacts on recreation, watershed, heritage, and other values. Implementing actions to address these issues would benefit range, hydrology, recreation, heritage, and wildlife resources while minimizing environmental effects in the project area.

Project Area and Existing Condition

The Slack Weiss Project area is located on the Parks Ranger District of the Medicine Bow-Routt National Forests and Thunder Basin National Grassland in Jackson and Grand Counties, approximately 25 miles south of Walden, Colorado, in Townships 4 & 5 North, Ranges 79, 80, & 81 West, 6th PM (Figure 1). Based on watershed boundaries, the Analysis Area encompasses approximately 139,748 acres (ac), including 58,804 ac (38.5%) of private land, 46,922 ac (33.6%) of National Forest, 24,015 ac (17.2%) of State land, 14,926 ac (10.7%) of Bureau of Land Management (BLM), and 80 ac (0.1%) owned by the Colorado River Water Conservancy District (Figure 1).

The project area occurs primarily in the Arapahoe Creek (27,264 ac) and Chimney Rock (15,612 ac) Geographic Areas (GA). Both GAs support motorized and non-motorized recreation, and portions of the Continental Divide National Scenic Trail (CDNST) occur in the northern extent of the Chimney Rock GA. Small portions of the project area occur in the Willow Creek (49 ac) and Troublesome (27 ac) GAs (Figure 1).

According to the Forest Plan, the 27,310-acre Arapahoe Creek GA is dominated by lodgepole pine (43%), spruce-fir (26%), and aspen (17%). The northeast corner of the GA provides deer and elk winter range. Desired conditions for this area include continued dominance by these land cover types; a variety of tree sizes and seral stages under Management Area prescriptions 5.11 and 5.13; and vegetation diversity for a full spectrum of wildlife (Forest Plan, p. 3-7). In Management Area 5.13, late successional habitats should be provided and well distributed so that individuals requiring those habitats can interact with others (Forest Plan, p. 3-8).

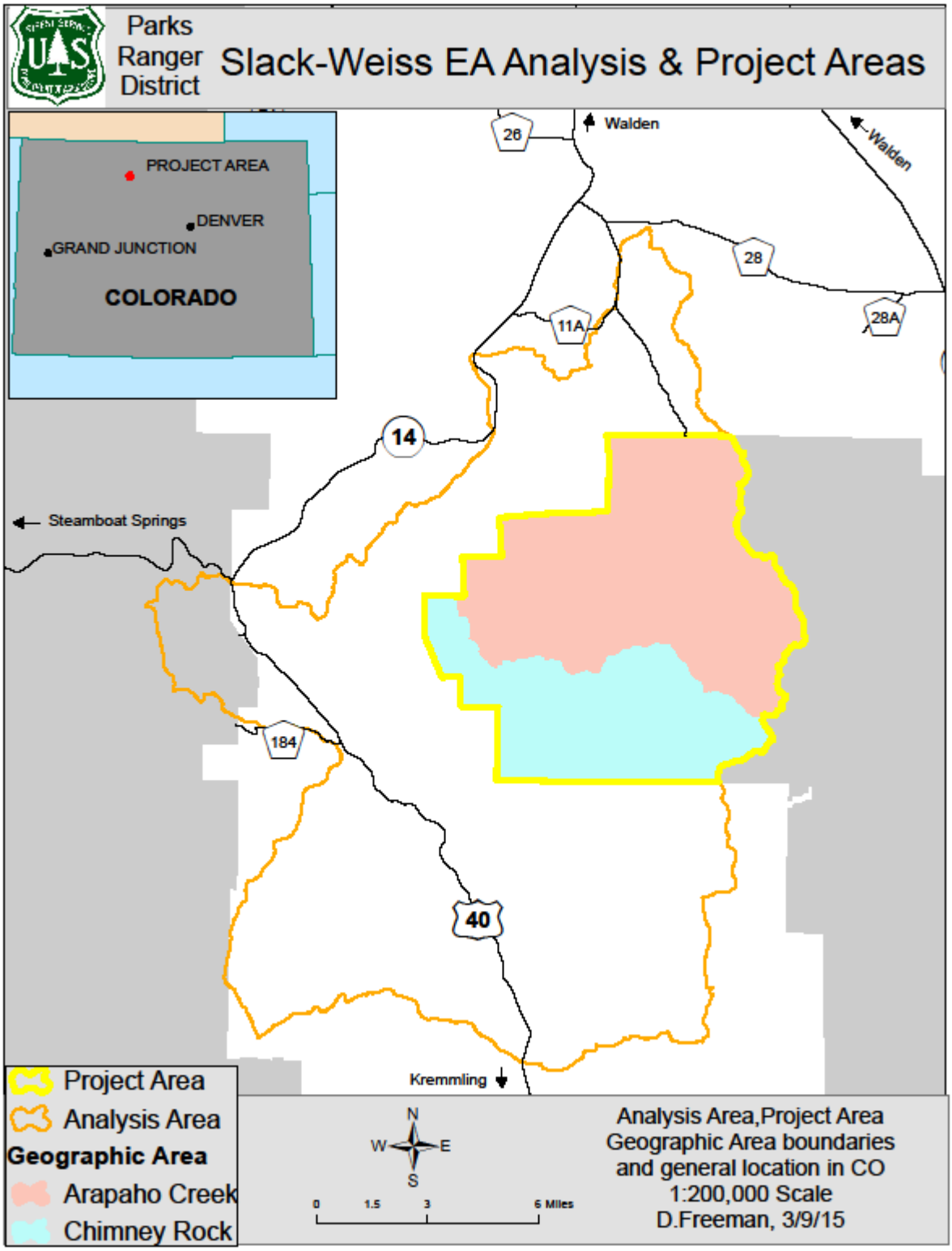

Figure 1. Slack Weiss Project location and analysis units.

According to the Forest Plan, the 15,622-acre Chimney Rock GA is dominated by lodgepole pine (26%), spruce/ fir (35%), aspen (22%), and shrubs (6%). Desired conditions for this area include continued dominance by these land cover types; a variety of tree sizes and seral stages, including late successional; continued shade of kettle lakes to provide amphibian habitat; riparian health that meets forest plan objectives in Indian Creek and other watersheds; and vegetation diversity for a full spectrum of wildlife (Forest Plan, p. 3-12).

The project is consistent with Forest Plan direction for the above Geographic Areas and Management Areas 1.32 (Backcountry Recreation Non-motorized with Winter Limited Motorized), 5.11 (General Forest and Rangelands – Forest Vegetation Emphasis), 5.12 (General Forest and Rangelands—Range Vegetation Emphasis), 5.13 (Forest Products), and 5.41 (Deer and Elk Winter Range). As described below in Chapter 2, under the proposed action, timber harvest and treatments would occur in Management Areas 5.11, 5.12, and 5.13. Direction for these management areas emphasizes vegetation composition and structure to meet the needs of wildlife, range, and timber/forest products. Detailed descriptions and a map of Management Areas on the Routt National Forest can be found in the Forest Plan (pp. 2-1 to 2-56; Alternative C map).

Proposal Development/Public Involvement

The Slack Weiss Analysis Project was initiated and listed on the Forest Service Schedule of Proposed Actions (http://www.fs.fed.us/sopa) on April 1, 2013, and updates have been provided quarterly. A Legal Notice was published in *The Jackson County Star*, the newspaper of record, on March 26, 2015, initiating the 30-day comment period and publication of the Notice of Proposed Action (NOPA) for the project. Also at that time, letters were mailed to 52 interested or affected individuals or organizations notifying them of the 30-day comment period and issuance of the NOPA. The NOPA and supporting documentation for the proposal were made available for public viewing on the Forest Service planning website. We also contacted and/or consulted with Federal, Tribal, State, and local agencies regarding the proposal (Chapter 4).

The Forest Service received a total of nine public comment letters, of which three were in opposition and six were in favor of, or neutral toward, the proposal. The Forest Service interdisciplinary team (IDT) and District Ranger considered all public comments received. Comments and responses to comments are incorporated in the project record. Public comments did not identify any significant issues or result in substantive changes to the proposed action or analyses. Based on both our review of public comments and internal scoping of issues, no unresolved conflicts related to the proposed action were identified. Therefore, a new alternative was not developed or analyzed, consistent with 40 CFR 1501.2(c). Further, as described in the following paragraph, incremental changes to the proposed action may be considered as alternatives considered under NEPA.

Based on internal scoping and field surveys, the Forest Service refined the initial proposal to address potential resource issues. Environmental constraints including steep and rocky slopes, roadless areas, wetlands, streams and riparian areas, access and road engineering issues, and wildlife concerns were considered, and timber treatment units (prescription type, size, and configuration/location) were modified to avoid or minimize potential impacts. We consider these incremental changes to the proposed action as alternatives considered under NEPA; however, a new alternative was not developed, consistent with 36 CFR 220.5(e).

In particular, silvicultural prescriptions were changed from predominantly *clearcut* to predominantly *salvage/sanitation* to retain aspen and spruce and fir components and protect natural regeneration and regrowth observed in many forested stands. Timber prescription unit #9 (71 ac of salvage/sanitation cutting) was dropped from the proposal due to inaccessibility of the unit and potential impacts to East Fork Arapaho Creek associated with new road construction and a required stream crossing. This modification addressed concerns related to aquatic/fisheries, hydrological, and other resources. Timber and fuel treatment units 38 and 40 (57 ac of commercial thinning) were also dropped from the proposal to minimize potential impacts to Canada lynx and its habitat.

Chapter 2 – Proposed Action and Other Alternatives

Two alternatives are evaluated in this EA, the No Action (Alternative 1) and Proposed Action (Alternative 2), as described below. Other alternatives recommended by commenters, including "using pheromones to address the pine beetle" and a "prescribed fire alternative", were considered but not analyzed in detail because the Forest Service determined that they would not meet the purpose and need for the project (see Purpose and Need).

No Action (Alternative 1)

Under the No Action alternative, current management would continue and vegetation management would not occur. No silvicultural treatments would occur to improve or restore forest health. Standing or down fuel loading would not be reduced. No additional fuel treatments would occur to create defensible space around roads, trails, fences, or near private lands. No treatments or actions would occur to improve watershed conditions or restore wetlands. Additional forest products would not be utilized. Roads would remain unchanged and their maintenance would continue as scheduled. Other identified resource conflicts and needs related to wildlife, fuels, range, recreation, and heritage would not be addressed. Under the No Action alternative, valid previously approved management actions would continue to be implemented in the project area, and new independent actions could be analyzed and/or implemented.

Proposed Action (Alternative 2)

Alternative 2 is the Proposed Action Alternative designed to specifically meet the purpose and need for this project. Under the proposed action, the Forest Service would manage areas affected by mountain pine beetle to improve and restore conditions for the future forest and to provide timber products. Standing or down fuel loading would be reduced. Fuels treatments would occur to create defensible space around roads, trails, fences or near private lands. Also under the proposed action, management actions would be implemented to address known conflicts and needs for other resources including range, hydrology, heritage, and recreation (Figures 2 and 3). Design criteria would be implemented to avoid or minimize impacts on resources. Specifically, under the proposed action the Forest Service would:

- Treat approximately 1,705 ac of forested stands through timber management, requiring construction of approximately 2.5 mi of new temporary road and 1.4 mi of new specified road;

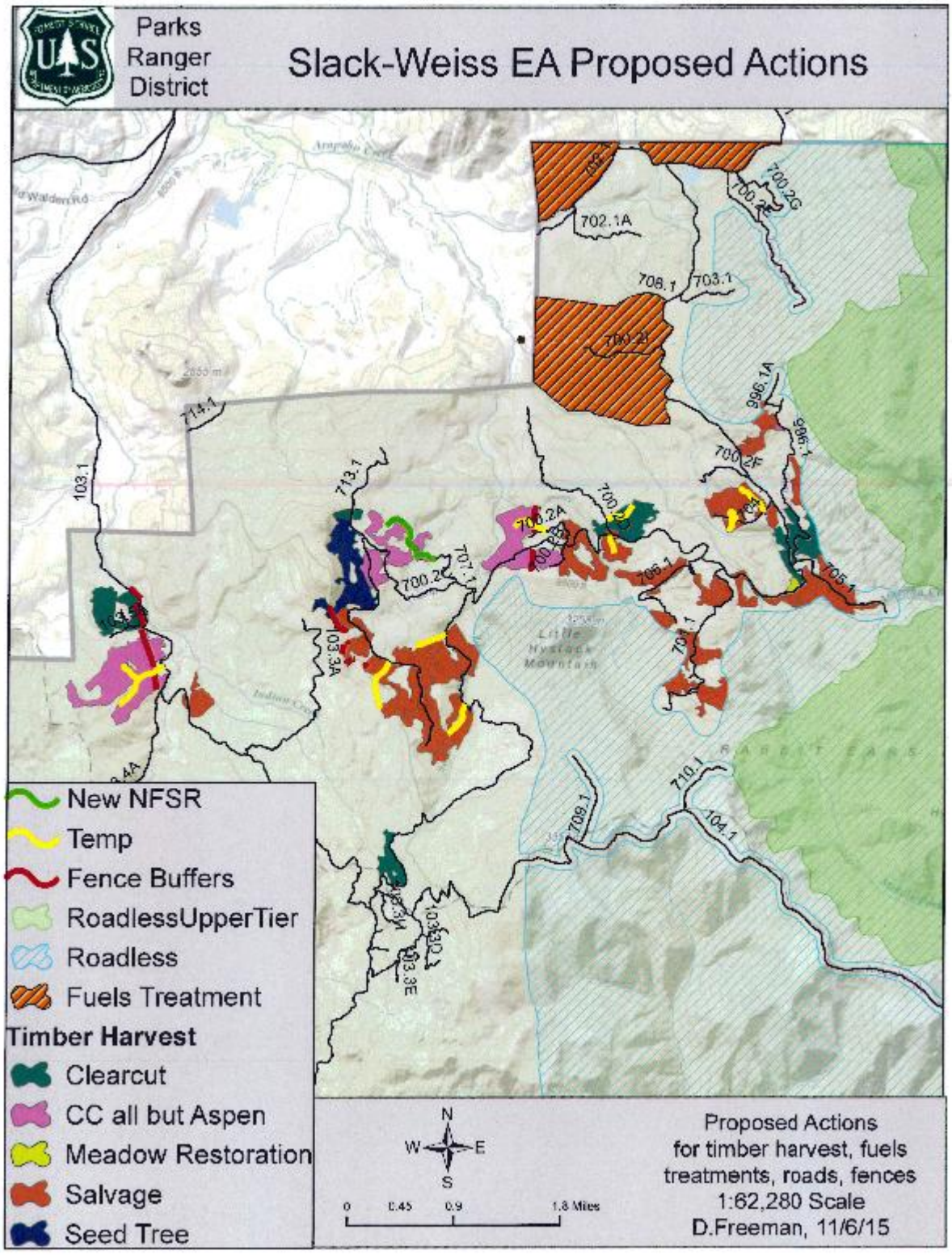

Figure 2. Proposed Action (Alternative 2)- timber, fire/fuels and range management. (Key: NFSR- National Forest System Road; Temp- temporary road; CC- clearcut)

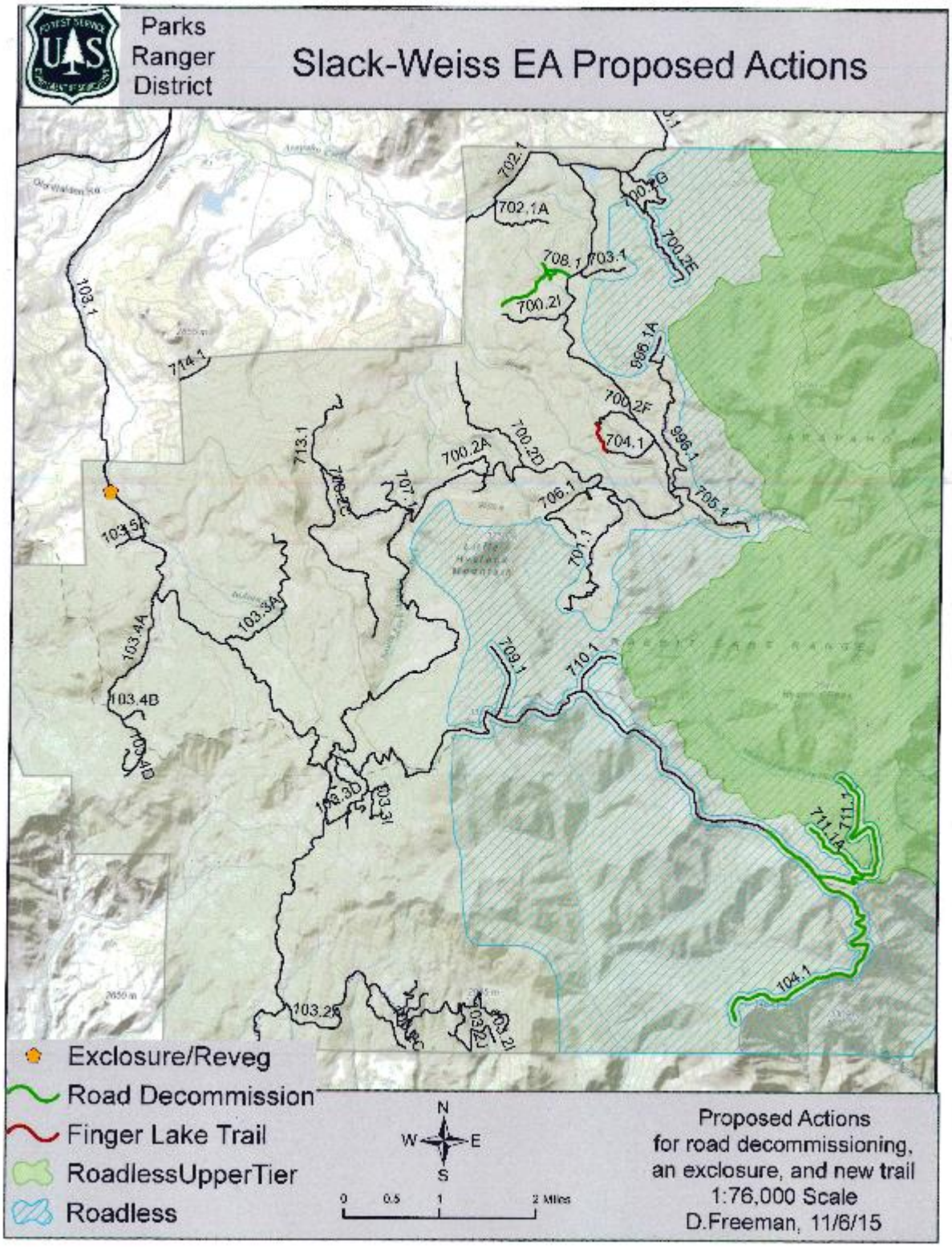

Figure 3. Proposed Action (Alt 2)- recreation, transportation and watershed management.

- Use prescribed fire and mechanical treatments to reduce hazardous fuels across approximately 1,025 ac;
- Focus timber and fuels treatments along fence lines where practical to remove hazardous trees;
- Designate approximately 0.37 mi of an existing, unauthorized trail to enhance motorized recreation opportunities in the Finger Lake area; and
- Decommission approximately 10.9 mi of non-system road to improve watershed conditions and other resources.

Project implementation would occur via timber sale contracts, stewardship contracting, service contracting authorities, or by Forest Service crews or partners. Implementation would begin as early as winter or spring of 2016 and may take several years to complete. Each of the above management actions is described in detail below.

Timber Management

Under the proposed action, a combination of silvicultural prescriptions would be implemented across approximately 1,705 ac of forest (Tables 1 and 2; Figure 2). The majority of treatment units would occur in MA 5.13 (Forest Products), with some units in 5.11 (General Forest/ Rangelands – Forest Vegetation Emphasis) and a few in 5.12 (General Forest/Rangelands – Range Vegetation Emphasis) (Table 2). Proposed treatments are consistent with GA and MA desired conditions as prescribed in the Forest Plan (see Project and Analysis Areas).

Table 1. Proposed Action (Alternative 2)- Timber prescriptions.

Timber Prescription	Estimated Acres [a, b]
Salvage/ Sanitation Cut	928.69
Commercial Harvest – Clearcut all but aspen	395.58
Commercial Harvest – Clearcut/ Overstory Removal	266.03
Seed Tree	107.69
Meadow Restoration	7.14
TOTAL	**1,705.14**

[a] Estimates are based on the best information currently available. Actual treated acres will likely be less due to topographic and other site constraints, and application of project design criteria.
[b] See Table 2 for more precise figures by timber unit.

Approximately 929 ac of forest would be treated by salvage and sanitation cutting. This treatment is designed to improve forest health as well as reduce the buildup of forest fuels. In stands of mixed conifer with a manageable fully stocked understory, most dead and dying lodgepole pine (including dwarf mistletoe infected pine) and spruce would be removed. All dead or dying trees would be salvaged and any remaining live lodgepole trees may be sanitized if risk of wind-throw is evident. Advanced regeneration would be protected, and live fir and spruce would be retained in support of Canada lynx habitat objectives. Slash would typically be lopped

Table 2. Timber units and associated Management Areas (MA).

Unit	Prescription	MA	Acres
1	Salvage/ Sanitation Cut	5.12	34.10
2	Clearcut all but Aspen	5.13	2.10
3	Salvage/ Sanitation Cut	5.13	18.76
4	Clearcut/ Overstory Removal	5.13	17.87
5	Clearcut/ Overstory Removal	5.13	58.67
6	Salvage/ Sanitation Cut	5.13	88.27
7	Meadow Restoration	5.13	7.14
8	Salvage/ Sanitation Cut	5.13	12.64
10	Salvage/ Sanitation Cut	5.13	20.49
11a	Salvage/ Sanitation Cut	5.13	20.68
11b	Salvage/ Sanitation Cut	5.13	14.52
12	Salvage/ Sanitation Cut	5.12	47.83
13	Clearcut/ Overstory Removal	5.13	64.88
15	Salvage/ Sanitation Cut	5.13	28.95
16	Salvage/ Sanitation Cut	5.13	35.56
17	Salvage/ Sanitation Cut	5.13	8.49
18	Salvage/ Sanitation Cut	5.13	35.62
19	Salvage/ Sanitation Cut	5.13	15.53
20	Salvage/ Sanitation Cut	5.13	52.34
22	Salvage/ Sanitation Cut	5.13	34.96
23	Salvage/ Sanitation Cut	5.13	70.70
24	Clearcut all but Aspen	5.13	118.17
28	Clearcut all but Aspen	5.13	63.99
29	Seed Tree	5.13, 5.11[a]	107.69
30	Clearcut all but Aspen	5.13	31.85
31	Clearcut/ Overstory Removal	5.13	11.47
32	Salvage/ Sanitation Cut	5.13	43.75
33	Salvage/ Sanitation Cut	5.13, 5.11[a]	118.25
34	Salvage/ Sanitation Cut	5.13	41.69
35	Salvage/ Sanitation Cut	5.13	42.51
36	Salvage/ Sanitation Cut	5.13	62.24
37	Salvage/ Sanitation Cut	5.13	51.29
39	Clearcut/ Overstory Removal	5.11	34.07
44	Salvage/ Sanitation Cut	5.11	29.51
45	Clearcut all but Aspen	5.11	179.48
48	Clearcut/ Overstory Removal	5.11	79.06
		TOTAL	**1,705.14**

[a] Over 90% of the unit occurs in Management Area 5.13 of the Forest Plan.

and scattered to 24 inches. Some site preparation by scarification, piling and burning or pile removal may occur. Some salvage/ sanitation units would require temporary road construction for access.

Approximately 396 ac would be treated using the clearcut all but aspen prescription. Treatment methods would be the same as those described below for Clearcut/ Overstory Removal but would retain aspen.

Approximately 266 ac of forest would be commercially harvested by clearcutting and overstory removal. This treatment is designed to reduce the buildup of forest fuels and regenerate pine and understory growth. In stands of primarily lodgepole pine without a manageable, fully stocked understory, most trees 5-inch dbh (diameter at breast height) and greater would be removed. Slash would typically be machine piled for future disposal (either burning or biomass removal). Whole tree skidding would be avoided. If a stand prescribed for clearcut is found to be regenerating at the time of layout, and has a manageable fully stocked understory, overstory removal would include most trees 7-inch dbh and greater. Advanced regeneration would be protected. Slash would typically be lopped and scattered to 24 inches. Piling and burning or pile removal may occur. Post-harvest site preparation by scarification and/or slash treatment may be required when regeneration is not present. Some clear cut units would require temporary road construction for access.

Approximately 108 ac (Unit 29) would be treated using seed tree treatment methods. In stands of mixed conifer without a manageable fully stocked understory, most dead and dying trees would be removed (60-80% of the merchantable trees). This treatment is designed to reduce the buildup of forest fuels and regenerate the stand. Scattered trees and small groups of healthy pine and spruce would be retained as a seed source for future development of the stand. Some site preparation may be required to create a suitable seedbed. Advanced regeneration would be protected. Slash would typically be lopped and scattered to 24 inches. In this unit, winter logging would be avoided. Some units would require temporary road construction for access.

Approximately 7 ac (Unit 7) would be treated using the meadow restoration prescription, removing all conifer trees from the unit to reduce conifer encroachment. Most trees in this unit are less than 7-inch dbh. Slash would typically be piled for future disposal, either by burning or biomass removal.

The condition of beetle killed trees continues changing forest stand structure over time. Thus, subject to project design criteria, slight variations of proposed timber prescriptions may be used to meet site-specific needs related to wildlife habitat, hydrologic concerns, silviculture, fuels or other resource objectives.

Activity fuels would be reduced by conducting follow-up treatments across the project area. Fuels treatments would be considered at the time of project implementation and would include one or more of the following: whole tree skidding, lop and scatter, broadcast burning, pile and burn, or removal as biomass material. Pile and burn areas would be subsequently evaluated for rehabilitation through scarifying or seeding. Following timber treatments, site monitoring would occur to determine if further work is needed to promote forest regeneration. If additional

treatments are needed, mechanical site preparation would occur to encourage establishment of seedlings. Also, active planting or seeding with local tree species may occur within the harvest units. Invasive plant species would be treated and monitored in disturbed areas.

The minimal road system needed was identified to meet Forest objectives and the purpose and need of this project. Existing transportation systems would be utilized to provide general access to the treatment units. Approximately 2.5 mi of new temporary roads and 1.4 mi of new specified, system roads would be needed to implement the silvicultural treatments (Figure 2). These roads would be used by harvesting and hauling equipment to remove forest products from the project area. Maintenance (20.3 mi) and reconstruction (17.5 mi) of existing Forest system roads may also occur to provide safe access to work sites. Locations and miles of road work needed are approximate; final locations of maintenance, reconstruction, and new construction would be determined upon implementation. If road conditions deteriorate before project implementation, due to storm events or other factors, additional road work may be necessary and may require further NEPA analysis.

Fire/Fuels Management

Under the proposed action, prescribed fire and mechanical treatments would be implemented to reduce hazardous fuels and promote fire resistant plant communities with the intent of reducing the wildland fire risk near the Wildland Urban Interface (WUI) and the National Forest boundary. Private lands near the forest boundary include ranch lands and primary and secondary residences. Treatments would occur entirely within MA 5.41 (Deer and Elk Winter Range), in the northwestern corner of the Slack-Weiss Analysis Area where it borders private land and BLM-administered land (Figure 2). Treatments would be designed to benefit wildlife values including deer and elk winter range, consistent with GA and MA desired conditions (see Project and Analysis Areas).

Prescribed fire would be used to treat approximately 1,025 ac to reduce the quantity and continuity of hazardous fuels with the intent of reducing the intensity of future wildland fire in the area, while benefiting wildlife. Treatment units in the project area consist of high elevation mountain shrub communities, mid to late seral aspen communities, grassy meadows, and mixed conifer stands with varying degrees of mortality due to disease and insects. Generally, a mosaic of burn patterns would be the desired result, affecting 40-75% of the areas dominated by mountain shrub or aspen. Prescribed burn units would be slightly larger than the extent of target vegetation to create a ‘maximum management area’ and allow for flexibility in implementing prescribed fire. Burning could occur during any season allowing for flexibility and wider prescribed burning windows. Existing roads, natural vegetation breaks, topographic breaks, black-lining, and constructed line (hand or heavy equipment) would be used for fire control. Snowline may also be utilized extensively during spring burning, which is the typical prescribed burn season. Constructed line would be rehabilitated once burning operations are complete.

Range Management

Under the proposed action, within proposed timber and fuels units, treatments would occur along fence lines where practical to remove dead or dying trees and reduce damage and risk of damage to fences. Approximately 1.6 mi of fence and 19.9 ac of forest would be treated for this purpose (Figure 2).

Recreation and Travel Management

Under the proposed action, multiple actions would occur to enhance recreation opportunities, the Forest Service travel system, and other resources. Approximately 0.37 mi of existing, unauthorized trail would be designated to connect National Forest System Roads (NFSR) 700.2F and 704.1 (Figure 3). The designation would authorize motorized trail use by off-highway vehicles (OHV) greater than 50" wide. The NFSR 700.2F and 704.1 would remain in the open road system as Maintenance Level 2 (high clearance vehicles) designated routes. These actions would enhance motorized recreation opportunities in the Finger Lake area.

Also under the proposed action, four routes, or portions thereof, would be decommissioned or closed (Figure 3). In total, 10.9 mi of road would be decommissioned, benefiting hydrology, riparian, heritage, recreation, and wildlife resources. Specific routes that would be decommissioned include:

- NFSR 104.1 and spur roads (10.1 mi total): A 7.1-mile segment of the 104.1 would be closed to motorized vehicles beginning at the Rabbit Ears Divide Telecommunications Site, and a non-motorized trail would be designated within the road footprint. Roads accessed by the 104.1 including the 711.1 (2.2 mi) and 711.1A (0.8 mi) would also be closed to motorized vehicles, and a non-motorized trail would be designated within the road footprint for access to the CDNST. These closures would benefit recreation, heritage, wildlife, and other resources.
- NFSR 708.1: Unauthorized routes (.8 mi total) beyond the system road would be closed and rehabilitated to reduce impacts on wetlands, streams, and riparian in the area. This closure would benefit watershed, wildlife, and other values.

Decommissioning of routes would require rehabilitation by either natural recovery of vegetation, if appropriate, or by using active techniques such as scarification, ripping, recontouring, waterbar installation, culvert removal, chipping and mulching, slash placement (see Appendix A).

Watershed Management

Under the proposed action, an exclosure would be installed and revegetation (reseeding, willow planting) would occur along an ephemeral drainage and floodplain above Indian Creek and near NFSR 103.1 (Figure 3), affecting approximately 5 ac. The objective is to restore hydrologic function and mitigate impacts associated with livestock grazing.

Design Criteria

The IDT identified design features that would be implemented as part of the proposed action to reduce or prevent undesirable effects resulting from management activities (Appendix A). Design criteria include Best Management Practices and watershed conservation practices that supplement Forest Plan standards and guidelines and other environmental protection required by laws and regulations.

Chapter 3 – Environmental Impacts of the Proposed Action and No Action Alternative

This chapter summarizes the potential impacts (negative and beneficial) of the proposed action and no action alternative based on identified issues. Consistent with 40 CFR 1500.4(c), only significant issues related to the project should be analyzed in detail under NEPA. In the context of NEPA, *issues* are cause-effect relationships that highlight effects or unintended consequences to the environment that may result from the proposed action. *Significant issues* are unresolved conflicts or effects that are:

- within the scope of the proposed action;
- supported by scientific or factual evidence;
- not already decided by law, regulation, Forest Plan, or other higher level decision; and
- relevant to the decision being made.

Based on scoping for this project, no significant issues were identified (see Chapter 1 – Proposal Development/ Public Involvement). However, non-significant issues and findings are described briefly below, pursuant to 40 CFR 1500.4(c). Non-significant issues may include impacts that are either beneficial or negligible based on analyses, and/or impacts addressed by project design criteria or through proposal development. Specialist reports and supporting information provide more detailed discussion of the affected environment; the direct, indirect, and cumulative effects of each alternative; and consistency with Forest Plan standards and guidelines. This information is considered in the decision and is incorporated in the project record which is available upon request from the Parks Ranger District office.

Aquatic, Amphibian, and Fisheries Resources

Under the No Action alternative, overall aquatic habitat conditions for aquatic habitat and species including Management Indicator Species and Region 2 Sensitive Species would likely remain stable or improve in the project area. Impacts to aquatic resources from the no action alternative include:

- Shifts in the dynamic equilibrium of stream channels and riparian vegetation due to continued effects of the mountain pine beetle epidemic
- Stable or improved riparian condition and riparian vegetation recruitment due to conifer tree loss
- Accumulation of large woody debris accumulation in riparian areas improving stream conditions
- Increased fuel loading in aquatic habitats and higher potential for fires which may have beneficial or negative effects depending on severity
- Reduced habitat conditions due to unauthorized roads and poorly designed culverts
- Degraded aquatic habitat and destabilization of streams over the short-term due to water yield increases from tree mortality
- Degraded stream health due to continued chronic sediment sources
- Potential degradation of aquatic habitats due to fuel loading and higher potential for fires

Under the Proposed Action, negative impacts to aquatic habitat and species in the project area including Management Indicator Species and Region 2 Sensitive Species would be minimal. Some beneficial effects would occur. Impacts would not result in a loss of viability nor cause a

trend toward Federal listing of sensitive species. No impacts to federally listed species would occur. Negative impacts would be reduced or avoided by implementation of Forest Plan Standards and Guidelines, watershed conservation practices, and project design criteria. Impacts to aquatic resources from the proposed action include:

- Increased sediment reaching stream channels, particularly at stream crossings, due to road construction
- Crushing of individual amphibians, particularly during migration periods
- Both negative and beneficial changes to amphibian habitat (vegetation communities)
- Altered riparian and stream habitat conditions
- Benefits to streams, riparian areas, wetlands, and aquatic species from road decommissioning (reduced sedimentation, improved watershed conditions, and improved aquatic habitat)
- Reduced potential for stand replacing fire
- Improved aquatic habitat due to reduction of chronic sediment sources
- Short-term, minimal impacts to individual boreal toad, northern leopard frog, wood frog, and brook trout

Botany

Under the No Action alternative, sensitive species and species of local concern would continue to experience current levels of disturbance associated with the mountain pine beetle epidemic in the project area. However, population viability for these species would not be affected under this alternative. Impacts to botany resources from the no action alternative include:

- Crushing or killing of individual plants due to fallen dead trees
- Increased plant populations over time due to tree mortality
- Increased fuel loads and potential for high intensity and high severity wildfire
- Increased water yield and potentially altered habitats due to tree mortality

Under the Proposed Action, negative impacts to sensitive plant species and plant species of local concern and their habitats would be minimal. Some beneficial effects would occur. No impacts to federally listed species would occur. Further, impacts would not result in a loss of viability or cause a trend toward Federal listing of any sensitive species. Negative impacts would be reduced or avoided by implementation of Forest Plan Standards and Guidelines, watershed conservation practices, and project design criteria. Impacts to botany resources from the proposed action include:

- Breaking, crushing, and/or uprooting of individual plants
- Covering or smothering by slash, chips, soil, or fallen trees
- Reduced growth, development, and/or seed set
- Degraded or altered habitats including shifts in vegetation structure and hydrologic, solar, and soil characteristics of rare plant habitats
- Negative impacts to pollinators and mycorrhizae associated with rare plants
- Loss or mortality of individuals, depending on the species, with potential impacts to population size and viability
- Introduction of invasive plant species and indirect impacts to rare plants and habitats
- Decreased native species richness
- Sedimentation and soil erosion impacts to wet or mesic habitats and microflora
- Increased soil compaction which would inhibit seedling emergence

- Loss of white-veined wintergreen
- Reduced fuel loads and risk of high severity fire at the landscape scale
- Possible increased risk of high severity fire in local areas with potential impacts to populations
- Altered livestock and wildlife foraging behavior with potential impacts to plants
- Increased potential habitat for moonwort (*Botrychium* species) due to vegetation management and road decommissioning

Fire and Fuels

Under the No Action alternative, fuels and resulting fire behavior potential would continue to be heavily influenced by large amounts of falling dead timber in the project area as well as regeneration of young trees. Fire and fuel-related impacts from the no action alternative include:

- Heavy loading of dead and down material which would increase fire risk
- Increased fire behavior potential due to reduction in sheltering from the canopy and associated increases in wind speed and temperatures at the ground level and reduced fuel moisture content
- Increased commitment of resources and risks to fire personnel
- Smoke production during a wildfire and associated impacts to visibility and human health
- Encroachment and replacement of aspen stands by conifers, sagebrush, or possibly other shrub communities due to lack of fire
- Fuels in mixed mountain shrub communities would continue to increase in height and total load which would increase risk of fire and impacts to nearby residences
- Reduced likelihood of mountain sagebrush regeneration following fire
- Increased fire risk during late summer and fall periods in antelope bitterbrush communities, reduced resprouting of bitterbrush and, indirectly, impacts to livestock and wildlife forage
- Reduced effectiveness of future prescribed burns in mountain shrub communities
- Encroachment of conifers and other trees in mountain meadows with increased wildfire risk and smoke-related impacts

Under the Proposed Action, fuels and resulting fire behavior potential would be substantially reduced in the project area due to vegetation management actions. Fire and fuel-related impacts from the proposed action include:

- Lower total heat output and fire severity during the flaming and smoldering stages of combustion, thereby reducing some negative effects on soils and vegetation
- Increased fire behavior potential due to reduction in sheltering from the canopy and associated increases in wind speed and temperatures at the ground level and reduced fuel moisture content
- Improved health of mountain meadows due to the removal of conifer and increases in sunlight penetration
- Improved natural fire breaks provided by healthy mountain meadows
- Reduced heavy fuels in mixed mountain shrub communities and reduced fire risk
- Improved conditions and safety for fire suppression and personnel
- Short-term smoke production and associated impacts to visibility and human health
- Increased access for fire personnel in the event of a future fire due to new roads
- Cumulatively, a decrease in hazardous fuels conditions in the project area

Forest Vegetation and Products

Under the No Action alternative, forest vegetation resources in the project area would continue to change due to tree mortality and forest succession. Impacts to forest vegetation and products from the no action alternative include:

- Reduced regeneration and production potential associated with the mountain pine beetle epidemic
- Continued changes to forest stand conditions including structure and composition
- Increased loss of seed sources and risk of future loss of trees due to fire in areas with heavy fuel loading
- Potential loss of spruce and domination by subalpine fir, a less desirable timber species
- Potential loss of lodgepole pine timber stock and domination by early succession conditions
- Slow recovery of forest products if stands were to burn

Under the Proposed Action, effects would generally be beneficial to forest product resources, and negative impacts would be minimal. Negative impacts to forest product resources would be reduced or avoided by implementation of Forest Plan Standards and Guidelines and project design criteria. Impacts to forest vegetation and products from the proposed action include:

- Accelerated forest regeneration in high pine mortality areas proposed for treatment
- Improved forest diversity and increased resilience to beetle infestations
- Maintenance of the Forest's allowable sale quantity for timber
- Stimulation of local and national timber markets by providing forest products to local timber markets
- Damage to advanced regeneration of trees and residual trees associated with harvesting equipment
- Reduced potential for fire to have detrimental impacts on forest regeneration and timber production
- Reduced or increased spread of dwarf mistletoe

Heritage Resources

Under the No Action alternative, heritage resources in the project area would generally remain in the same condition. Impacts to heritage resources from the no action alternative include:

- Destruction or alteration of heritage or archaeological resources due to falling trees or dislodged root systems

Under the Proposed Action, negative impacts to heritage resources in the project area would be minimal and would be reduced or avoided by implementation of Forest Plan Standards and Guidelines and project design criteria. Impacts to heritage resources from the proposed action include:

- Ground disturbance and alteration or destruction of artifacts or cultural features (surface and subsurface) and damage to site soil matrices and depositional strata associated with ground disturbance
- Destruction or loss of archaeological contexts due to ground disturbance and associated erosion, vegetation changes, and subsequent vandalism or collection of artifacts
- Cumulative loss of non-significant archaeological resources for future study

Hydrology

Under the No Action alternative, watershed resources in the project area would generally be minimal. Impacts to hydrology from the no action alternative include:

- Continued degradation of watershed health and water quality in areas in need of rehabilitation (road decommissioning)
- Limited impacts to water temperature due to tree mortality and loss
- Degraded water quality, increased sedimentation in water in stream network, and destabilization of streams if a future fire were to occur

Under the Proposed Action, negative impacts to hydrology resources would be minimal. Some beneficial effects would occur. Negative impacts would be reduced or avoided by implementation of Forest Plan Standards and Guidelines, watershed conservation practices, and project design criteria. Impacts to hydrology from the proposed action include:

- Impacts to wetlands and hydrologic connectivity due to proposed temporary roads
- Sediment loading in streams
- Improved infiltration, hillslope hydrology, stream health, and water quality due to project design criteria and road decommissioning
- Cumulative increases in water yield due to tree removal

Lands and Minerals

Under the No Action alternative, land and mineral resources in the project area would likely remain in the same condition and use. Impacts to lands and minerals resources from the no action alternative include:

- Potential blockage or damage to ditches due to accumulation of dead timber

Under the Proposed Action, negative impacts to lands and minerals resources would be minimal. Some beneficial effects would occur. Negative impacts would be reduced or avoided by implementation of Forest Plan Standards and Guidelines and project design criteria. Impacts to lands and mineral resources from the proposed action include:

- Reduced potential for blockage or damage to ditches associated with dead, live, and blow-down timber
- Potential breaching or failure of ditches due to construction of temporary roads
- Increased traffic on Highway 14 and Forest Service Roads in the project area

Rangeland Resources

Under the No Action alternative, impacts to rangeland resources in the project area would generally be minimal. Impacts to rangeland resources from the no action alternative include:

- Restricted livestock and wildlife access and use due to fallen trees
- Damage to fence lines and reduced control of livestock
- Increased burden and safety hazard to permittees to remove trees and repair fences
- Limited ability to construct new fence necessary for improved livestock management
- Increased risk of stand replacing wildfire with potentially negative short term effects and positive long term effects to rangeland resources

Under the Proposed Action, negative impacts to rangeland resources would be minimal. Some beneficial effects would occur. Negative impacts would be reduced or avoided by implementation of Forest Plan Standards and Guidelines and project design criteria. Impacts to rangeland resources from the proposed action include:

- Increased space and transitory range for livestock to travel and feed
- Reduced shrub cover, herbaceous understory, and grazing capacity in the short term
- Stimulation of dead and decadent vegetation, increased vigor of shrub and herbaceous plants, enhanced wildlife habitat and forage base for livestock in the long term
- Delayed recovery of native vegetation in the short-term due to burning of slash but increased herbaceous growth in the long-term
- Introduction/spread of noxious weeds due to slash burning, surface disturbance, and associated traffic
- Potential damage to fences from tree felling, although removal of hazard trees would be beneficial over the long term
- Facilitation of future fence construction to improve livestock management
- Potential alteration of natural/geographic pasture/allotment boundaries due to timber removal and subsequent issues with livestock use in areas not authorized for grazing
- Increased resilience of vegetation to wildfire through diversified habitat conditions

Recreation Resources

Under the No Action alternative, recreation resources in the project area would generally remain in the same condition and use. However, issues addressed under the proposed action would continue to occur.

Under the Proposed Action, impacts would be primarily beneficial. Negative impacts to recreation resources would be minimal and would be reduced or avoided by implementation of Forest Plan Standards and Guidelines and project design criteria. Impacts to recreation resources from the proposed action include:

- Limited public access to the project area during timber harvest activities due to closures for public safety
- Increased access for hunting, fishing, and wildlife viewing
- Increased motor vehicle use of temporary roads and disturbed areas following project implementation with potential impacts to nearby roadless areas
- Enhanced OHV recreation access and experience with the designation of 0.37 mi of trail near Finger Lake
- Reduced unauthorized motor vehicle activity and enhanced primitive recreation opportunities (hiking, hunting, fishing) due to road decommissioning, including conversion of a road-based segment (NFSR 104) of the Continental Divide National Scenic Trail to a hiking trail
- Reduced motor vehicle access and use due to road decommissioning

Soil Resources

Under the No Action alternative, soil resources in the project area would generally remain in the same condition. Impacts to soil resources under the no action alternative include:

- Increased risk of large-scale wildfire which could result in detrimental burning of soils, introduction of soil hydrophobicity, increased soil erosion rates and mass movement, and decreased soil productivity

Under the Proposed Action, negative impacts to soil resources would be minimal and would be reduced or avoided by implementation of Forest Plan Standards and Guidelines, best management practices, watershed conservation practices, and project design criteria. Impacts to soils from the proposed action include:

- Soil disturbance including erosion, compaction, displacement, puddling, rutting, burning
- Reduced vegetation interception and increased exposure of soil to erosive forces of rainfall
- Increased woody debris and soil organic material cover associated with lop and scatter of harvest-generated slash
- Reduced soil productivity in the short term due to road construction and decommissioning activities
- Reduced soil productivity associated with authorized and unauthorized motor vehicle activities
- Increased soil productivity in the long term due to road decommissioning and restriction of motorized travel

Transportation

Under the No Action alternative, the transportation system in the project area would remain the same. Impacts to soil resources under the no action alternative include:

- Limited public, administrative, and fire suppression access
- Continued impacts to hydrology, soils, and vegetation associated with poorly located, aligned, or designed roads and infrastructure (bridges and other crossings), or ineffective closures
- Increased maintenance costs due to poorly located or designed roads and infrastructure
- Negative impacts to motorized vehicle experiences
- Reduced transportation access due to tree mortality and periodic falling of trees

Under the Proposed Action, negative impacts to transportation would be minimal. Some beneficial effects would occur. Negative impacts would be reduced or avoided by implementation of Forest Plan Standards and Guidelines, best management practices, watershed conservation practices, and project design criteria. Impacts to transportation resources from the proposed action include:

- Improved vehicle access, driving experience, and safety due to road improvements and maintenance
- Reduced impacts to hydrology, soils, and vegetation with proper location, alignment, and design of roads
- Increased road density, traffic, and maintenance/management costs associated with new roads
- Erosion, noise, and dust from road work in the short-term
- Reduced recreational road and trail use in the short term

Visual Resources

Under the No Action alternative, visual resources in the project area would essentially remain the same. Impacts to visual resources from the no action alternative include:

- Standing beetle-killed trees become dominant in areas of foreground and middleground zones
- Transition to a landscape of jackstraw and downed lodgepole pine forest
- Lasting visible scars on the landscape until vegetation recovers if wildfire were to occur

Under the Proposed Action, negative impacts to visual resources would be minimal. Some beneficial effects would occur. Negative impacts to visual resources would be reduced or avoided by implementation of Forest Plan Standards and Guidelines and project design criteria. Impacts to visual resources from the proposed action include:

- Improved visual quality due to the establishment/regeneration of a healthy stand of aspen and lodgepole pine over the long-term
- Improved visual quality due to road decommissioning consistent with the desired landscape character for the project area
- Degraded visual quality due to disturbed ground and slash piles that contrast with surrounding natural appearing landscapes over the short-term
- Degraded visual quality associated with unauthorized off-highway vehicle use in disturbed areas

Wildlife

Under the No Action alternative, wildlife including sensitive species in the project area would continue to experience disturbance associated with the mountain pine beetle epidemic. Population viability for sensitive species would not be affected under this alternative. Impacts to wildlife from the no action alternative include:

- Change of forested stands and habitat conditions to early successional stages
- Loss of needle forage for important prey species (snowshoe hare and dusky grouse), foliage that supports insects for foliage gleaning birds, and tree canopy that supports nesting birds and provides protection from predators and weather
- Short-term loss of mature and older aged trees important to species such as the northern goshawk and American marten (sensitive species) and associated prey
- Increase in density of large snags and coarse woody debris in some areas that may support cavity-nesting birds and denning sites for small mammals and furbearers including American marten
- Short-term increase in understory production by grasses, forbs, and shrubs but limited changes in diversity
- Over the long-term (25 years), multi-story, multi-age forest with a vigorous understory that would provide excellent wildlife habitat
- Over the short-term, continued unsuitable rating as lynx habitat due to tree mortality; over the long-term, improved habitat conditions for lynx due to abundant coarse woody debris, a high density of young trees, and a high density of snowshoe hare
- Continued impacts to habitat conditions associated with unauthorized roads

Under the Proposed Action, negative impacts to wildlife including sensitive species and their habitat would be minimal. Some beneficial effects would occur. Impacts would not result in a loss of viability nor cause a trend toward Federal listing of any sensitive species. Negative impacts would be reduced or avoided by implementation of Forest Plan Standards and Guidelines and project design criteria. Impacts to wildlife from the proposed action include:

- Reduced habitat in harvested areas for most wildlife and associated prey that use mature conifer forest (e.g., American marten, red squirrel, Northern goshawk)
- Increased potential habitat for wildlife species that prefer forest openings and early successional vegetation (e.g., mountain bluebird, olive-sided flycatcher, junco)
- Noise and visual disturbance of wildlife due to vegetation management activities
- Displacement of most wildlife in harvest units until vegetation recovery is adequate to provide cover, food, and nesting/denning habitat
- Increased forest vegetation diversity in the long term
- Shorter regeneration time of forested stands potentially benefitting species that depend on mature forest (American marten, Northern goshawk)
- Improved habitat condition and connectivity due to road decommissioning
- Improved habitat and prey base over time for species that use mature conifer forest
- Short-term impacts to Canada lynx include noise disturbance to individuals if present; and reduced forest habitat and landscape connectivity. However, benefits to snowshoe hare and lynx habitat would occur over the long-term from the proposed action. Based on this and other information in the wildlife specialist report and Biological Assessment, the proposed action “may affect, but is not likely to adversely affect” the Canada lynx, a federally threatened species. Pursuant to section 7 of the Endangered Species Act, the Forest Service evaluated the proposed action and determination and found it to be consistent with the Programmatic Consultation Agreement for Canada lynx in the Southern Rockies and the Southern Rockies Lynx Project Screens.

Economics

Under the No Action alternative, economic conditions in the project area would essentially remain the same. Impacts to the economy from the no action alternative include:

- Economic hardship for adjacent home and land owners in the event of a severe wildfire
- Loss of opportunity to harvest forest products for the timber industry
- Continued degraded habitat conditions which may impact hunting success and other forms of wildlife-related recreation

Under the Proposed Action, negative impacts to the economy would be minimal. Some beneficial effects would occur. Impacts to the economy from the proposed action include:

- Economic benefits to the timber industry and contractors
- Reduced risk of severe wildfire and potential damage to property

Chapter 4 – Agencies and Persons Consulted

Public involvement, mailing, and comments are described in Chapter 1 of this EA. A detailed mailing list for this project is also available in the project record. Agencies consulted or contacted for the Slack Weiss Project proposed action include:

- Cheyenne and Arapaho Tribes
- Northern Arapaho Tribe
- Northern Cheyenne Tribe
- Northern Ute Tribe
- Southern Ute Tribe
- Ute Mountain Ute Tribe
- Ute Business Committee
- Bureau of Land Management
- Town of Walden
- City of Fort Collins
- Colorado State Forest Service
- Colorado Department of Highways
- Colorado Parks and Wildlife
- Colorado State Land Board
- Colorado River Water Conservation District
- North Park Conservation District
- Grand County
- Jackson County
- CO State Historic Preservation Office
- U.S. Fish and Wildlife Service
- North Park Conservation District
- Western Area Power Administration
- CO Department of Transportation

Finding of No Significant Impact

As the responsible official, I am responsible for evaluating the effects of the project relative to the definition of significance established by the CEQ Regulations (40 CFR 1508.13). I have reviewed and considered the EA and documentation included in the project record, and I have determined that the Slack Weiss Project Proposed Action will not have a significant effect on the quality of the human environment. As a result, no environmental impact statement will be prepared. My rationale for this finding is as follows, organized by subsection of the CEQ definition of significance cited above.

Context

Disclosure of direct, indirect, and cumulative effects in this EA and the project record demonstrate analysis of the proposed action primarily in the context of the analysis area (i.e., effects within the Slack Weiss Project area) and the locality (e.g., effects beyond the boundaries of the project area, including downstream and to adjacent lands). Effects to the geographic region (e.g., the Medicine Bow-Routt National Forest, animal and plant populations) were also considered. Short- and long-term effects of the proposed action were also considered.

Intensity

Intensity is a measure of the severity, extent, or quantity of effects, and is based on information from the effects analysis of this EA and the references in the project record. The effects of this project have been appropriately and thoroughly considered with an analysis that is responsive to concerns and issues raised during scoping. The agency has taken a hard look at the environmental effects using relevant scientific information and knowledge of site-specific conditions gained from field visits. My finding of no significant impact is based on the context of the project and intensity of effects using the ten factors identified in 40 CFR 1508.27(b).

1. *Impacts that may be both beneficial and adverse. A significant effect may exist even if the Federal agency believes that on balance the effect will be beneficial.*

The interdisciplinary team analyzed the direct, indirect, and cumulative effects of the proposed action on biological, physical, and cultural resources in and around the Slack Weiss Project area. The EA summarizes the negative and positive effects of the proposed action and alternatives over the short- and long-term. Beneficial effects to the quality of the human environment are expected over the long-term to the project and geographic areas and the Routt National Forest. Design criteria have been agreed upon by the interdisciplinary team to ensure that impacts will not be significant (EA, Appendix A). Although not described in detail in the EA, the project record includes detailed analyses of the effects of the alternatives to timber; range; soil; hydrology; threatened, endangered, sensitive, and candidate species; fisheries and aquatics; botanical resources; fire and fuels; and heritage resources. These analyses contribute to my understanding of the effects of the alternatives and confirm that there will be no significant impacts to those resources.

2. *The degree to which the proposed action affects public health or safety.*

The proposed action and alternatives are not expected to significantly affect public health or safety. Vegetation treatments would decrease fuels in the Slack Weiss Project area, thereby decreasing the risk of high-intensity wildfire on adjacent private and other lands (EA, p. 3).

Measures such as road closures would be put in place during harvest activities to protect public safety (EA, Appendix A). Limited smoke may occur for short periods during burning of slash piles but would meet Colorado air quality standards.

3. *Unique characteristics of the geographic area such as the proximity to historical or cultural resources, parklands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas.*

The analysis area does not include parklands, prime farmlands, wild and scenic rivers, or ecologically critical areas. A survey of cultural resources was completed in accordance with the programmatic agreement with the Colorado State Historic Preservation Office and Section 106 of the National Historic Preservation Act, and project design criteria will be implemented to ensure that any cultural resources found within proposed treatment areas are protected (EA, Appendix A). Wetlands, including streamside riparian areas, will be protected by project-specific design criteria (EA, Appendix A). Proposed treatments and roads would occur outside of roadless areas (EA, p. 6, and Figures 2 and 3). No other unique characteristics have been identified within the project area.

4. *The degree to which the effects on the quality of the human environment are likely to be highly controversial.*

The interdisciplinary team has reviewed public comments and conducted analyses and confirmed that there are no unresolved conflicts or significant controversy related to effects from the proposed action (EA, pp. 6, 15).

5. *The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks.*

The effects analyses of the EA (pp. 15-23), specialist reports, and other information in the project record incorporate accepted techniques and methods, the best available scientific literature, reliable data, field review, and the judgment of qualified professional resource specialists. Neither these analyses nor consideration of public comments identified highly uncertain effects or unique or unknown risks associated with the alternatives.

6. *The degree to which the action may establish precedent for future actions with significant effects or represents a decision in principle about a future consideration.*

The proposed action is similar to past projects and projects that will continue to be implemented by Forest Service line officers for range and habitat improvement, fuels reduction, and vegetation management on National Forest System lands. The proposed activities are within the scope of the Forest Plan (EA, pp. 3, 6) and are not expected to establish a precedent for future actions.

7. *Whether the action is related to other actions with individually insignificant but cumulatively significant impacts. Significance exists if it is reasonable to anticipate a cumulatively significant impact on the environment. Significance cannot be avoided by terming an action temporary or by breaking it down into small component parts.*

The EA analysis, specialist reports, and project record demonstrate that there are no significant cumulative effects on the environment, either when combined with the effects created by past and reasonably foreseeable future projects or the effects from natural changes taking place in the environment (EA, pp. 15-23).

8. *The degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources.*

A survey of cultural resources was completed in accordance with the programmatic agreement with the Colorado State Historic Preservation Office and Section 106 of the National Historic Preservation Act, and project design criteria will be implemented to ensure that any cultural resources found within proposed treatment areas are protected (EA, Appendix A). The effects analyses of the EA (pp. 15-23), specialist reports, and other information in the project record incorporate accepted techniques and methods, the best available scientific literature, reliable data, field review, and the judgment of qualified professional resource specialists. Neither these analyses nor public comments identified significant effects to the above resources.

9. *The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973.*

Pursuant to section 7 of the Endangered Species Act, the Forest Service initiated consultation with the U.S. Fish and Wildlife Service and evaluated the proposed action for consistency with programmatic consultation agreements and project screens. It was determined that, with implementation of design criteria, the proposed action "may affect, but is not likely to adversely affect" Canada lynx (EA, p. 23).

10. *Whether the action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment.*

The Slack Weiss Project proposed action complies with all Federal, State, and local laws and requirements imposed for the protection of the environment. These include the Clean Water Act, Wetlands and Floodplains Executive Orders (EA, p. 3), the Endangered Species Act (EA, p. 23), The National Historic Preservation Act (EA, p. 18 and Appendix A), the National Environmental Policy Act, and the National Forest Management Act (EA, p. 3). The proposed action complies with Forest Plan desired conditions, objectives, standards, and guidelines (EA, pp. 3-5, 7, 10).

Appendix A

Design Criteria, Mitigation Measures, and Monitoring Criteria for the Proposed Action

Resource	Design Criteria
Heritage	Significant cultural and/or paleontological resources in the project area should be avoided or the effects of project implementation otherwise mitigated based on decisions identified during analysis of the undertaking under the National Historic Preservation Act and other relevant cultural resource protection laws and regulations, and consideration of the undertaking's effects to historic properties.
Heritage	All roads planned for decommissioning that have not been adequately surveyed for cultural resources will be identified for the archaeologist to review, and subject to National Historic Preservation Act (NHPA) compliance prior to any implementing activities.
Heritage	With regard to the development of roads under this project, all proposed road corridors either outside units or within units that have not been adequately surveyed for cultural resources will be identified during sale preparation and approximate locations provided to the archaeologist for review, which will be completed prior to sale implementation. If necessary, additional survey will be conducted and supplemental consultation completed with the CO SHPO.
Heritage	If affected properties are discovered after project activities are completed, the District would document any damage and consult with SHPO and the Advisory Council for Historic Preservation pursuant to 800.13(b).
Wildlife	Protection of Stands with Advanced Regeneration- Applicable in mixed conifer stands: Avoid advanced regeneration with greater than 35% lateral cover that is available to snowshoe hares in winter (≥5 ft. in height) as described in the Southern Rockies Lynx Amendment.
Wildlife	Live 'Character' Tree Retention- Applicable to mixed conifer stands, since lodgepole pine have experienced high mortality. • Retain on average 2-4 live character trees (>10 DBH and 25 feet tall) per acre. Character trees are defined in the Routt National Forest LMP (1997 Revision) as live trees that are broken at the top, have mechanical damage or genetic defect. They serve as replacement snags. Live trees should be retained singly or in groups of up to 32 trees (equivalent to 4 live trees/acre x 8 acres). • Paint all live retention trees.
Wildlife	Protection of Known Goshawk Territories • Where treatment management actions are proposed within a 3/8-mile radius of a known goshawk nest site, a wildlife biologist will delineate three 30-acre nesting habitat protection areas.
Wildlife	Protection of Raptor Nesting Sites • Where treatment management actions are proposed within a known

	raptor nest site, a wildlife biologist will delineate one nesting habitat protection area that is up to 30 acres in size depending on biology of the species and territory size.
Wildlife	Goshawk and Raptor Nesting Period Seasonal Restriction • For Northern goshawk, prohibit all logging or activities, including log haul, within ¼-mile of an active goshawk nest between March 15 and September 15. • The seasonal restriction also applies to use of existing roads by Timber Sale contractors and Forest Service personnel. Within a ¼-mile of an active raptor nest, use of an existing road (that has been and is currently closed to public travel) will be limited until raptor nest has successfully fledged nestlings.
Wildlife	Protection of Newly Discovered Goshawk Nests or other TES Occurrences Identified Prior to or After Award of Timber Sale (TS) or Service Contract • Prior to TS or Service contract award, train timber sale layout, engineering and resource personnel to identify and report active goshawk nests (or goshawks defending a territory) found during routine fieldwork. • After TS or Service contract award, between May 1 and July 31st of each year, a wildlife biologist or trained crew will conduct goshawk inventory (detection) surveys in areas scheduled for treatment during the upcoming operating season if adequate surveys have not been completed to the degree to evaluate goshawk occupancy.
Wildlife	Conservation of Coarse Woody Debris (CWD) • To the extent practicable, and where available, retain in place within timber harvest units some existing deadfalls (whole trees) or logs (portions of tree boles) measuring ≥10 inches in diameter and that are ≥20 feet in length.
Recreation Transportation Hydrology Soils Heritage Wildlife	The following guidelines would apply to route decommissioning. • Scarification would occur to a minimum depth of 4 to 6 inches. The ripper teeth should be lifted every 150 feet on slopes less than 15 percent, every 100 feet on slopes 15 to 30 percent, and every 50 feet on slopes greater than 30 percent to prevent concentration of water and development of rills and gullies. • An approved seed mixture would be used for reseeding. • Water bars would be installed using an appropriate spacing for slope and soil type. • Slash would include both fine and coarse woody debris. • Chips and mulch would not exceed more than 3 inches in depth and would not cover more than 40 percent of the treatment area. When mastication or chipping is used distribution will be a discontinuous, patch mosaic and avoid contact with residual trees. If desired coverage or depth are exceeded, the site will be evaluated to determine if redistribution or disposal is required. • Ground cover would be 65 percent over the affected area. • Road obliteration would be rehabilitated by restoring and re-contouring

	to a hydrologically self-maintaining and natural state, any roads and skid trails with a 3-foot or greater cut slope, roads that cross slopes exceeding 25%, and other areas as determined necessary by Forest Service personnel. Where recontouring is not needed, outsloping of roads may occur to maintain the hillslope hydrology and prevent concentrated flows. Once re-contouring or outsloping is complete, work equipment would remain on the existing roadway or skid trail to minimize new disturbance. Scattering slash may also occur in re-contoured areas to prevent erosion, add organic material, and improve water retention. • Where re-contouring or outsloping is not necessary, such as on flat areas of ground, then obliteration may occur by installing water bars, scarification, scattering of slash, and seeding where necessary. • Culverts would be removed, and streambanks would be reshaped to reflect the original or natural hydrology of the stream. Stabilization of newly constructed streambanks using slash, logs, or rocks would occur as specified by Forest Service personnel.
Visuals	The shape and pattern of harvest units should be designed to complement and maintain the landscape character of the analysis area.
Visuals	Follow natural contour lines and avoid straight lines when laying out units. Avoid laying out units that run across contour lines of steep slopes.
Visuals	Size of harvest units should be variable to avoid duplicating shape and to maintain natural mosaic pattern.
Visuals	Edges of harvest units should be feathered or intermixed. Permit boundaries of harvest units to locate adjacent to edges of aspen stands to create natural appearing edges.
Visuals	Retain natural features such as rock outcrops, young healthy trees, understory trees of lodgepole pine, aspen and spruce/fir, sagebrush, juniper and other shrubs, forbs and grasses in the immediate foreground (approximately 25 to 100 feet from edges of road) of NFSRs 103.1, 104.1 and 700.1 and Continental Divide National Scenic Trail (CDNST). It is acceptable to have light logging residues to remain on the ground if it does not attract the attention of Forest visitors. Beyond the immediate foreground, lop and scatter slash evenly.
Visuals	Design decommissioned roads and trails to blend with the surrounding landscape. When using rocks as barriers, rocks should be buried as least 1/3 in the ground. Use different size and shape of rocks. Do not use tank trap for road or trail closure within the immediate foreground of State Highway 125, FDRs 106 and 715 and 721.
Range	A pre-haul inspection of cattleguards shall be done by Contract Administration in order to create a base line inventory of cattleguard condition.
Soils	Follow Forestry Best Management Practices to Protect Water Quality in Colorado 2010, Watershed Conservation Practices Handbook, and Soil Management Handbook, R2 Supplement
Soils	Skids trails shall be approximately 75’ apart
Soils	Skid trails shall be monitored to determine if rehabilitation shall occur. Rehabilitation may consist of any of the following; scarification, additional slash, seeding and water barring or other methods that reduce detrimental soil disturbance and control erosion.
Soils	No landings, or burn piles within WIZ (Water Influence Zone).

Soils	Over-Snow logging - These requirements are only for areas where the soil wetness or to minimize disturbance to wetlands, WIZs, etc. makes over-snow logging necessary to protect the soil from compaction, displacement or erosion. • Harvest when frozen soil is ≥4 inches deep OR snow is ≥12 inches deep OR a combination of compactable snow and frozen soil that is ≥12 inches in thickness. Snow quality should be such that it will compact and form a running surface for equipment by being moist and non-granular.
Soils	Units 2, 4, 6-14, 16, 18, 33-38 skidtrails' with ≥10% slope gradient shall have waterbars spaced at 45 to 60 ft and a light cover of slash to impede erosion, specifically, having waterbars on the closer end of the range near bottom of slopes.
Range Lands Hydrology Recreation	Designate areas listed below as protected improvements on the Analysis Area Map to prevent damage through proposed activities. Require avoidance and/or restoration to full function of these protected improvements: irrigation ditch right-of-ways; fences, motorized and non-motorized trails, high use dispersed campsites, power-line right-of-ways, cattle guards, water improvements and all associated structures, and road signs.
Lands Hydrology	Slash and other logging debris will be kept out of irrigation ditches. If slash or other material does get in the ditch, it shall be removed promptly to avoid impeding flow of water and damage to the ditch.
Lands Hydrology	All crossings of ditches will be temporary in nature and will not affect ditch function or stability. Upon completion of work all construction materials shall be removed and ditch restored to fully functional condition.
Hydrology	Incorporate design criteria from the Watershed Conservation Practices Handbook (FSH 2509.25) which are listed in the specialist report into all timber management activities. The WCP-Timber crosswalk spreadsheet identifies how these design criteria should be incorporated into timber sale NEPA, preparation, contract development, and post-harvest activities.
Hydrology Botany	All USGS blue-line streams, wetlands, riparian areas, and specific crenulations identified during project layout will be designated as protected stream courses and considered streamside management zones unless determined otherwise by a hydrologist or soil scientist. Heavy equipment will not be allowed to operate in protected stream courses or streamside management zones. Keep equipment 100' from developed spring sources. (Hydro)
Hydrology	A hydrologist will identify and flag streamside management zones during timber sale preparation to ensure adequate protection of wetlands, riparian areas, streams, and crenulations/ephemeral draws deeper than two feet.
Hydrology	Require specified road construction when crossing intermittent or perennial stream courses, or ditches. All specified road locations will be reviewed by a watershed specialist.
Hydrology	Do not allow ground disturbing activities other than specified road construction in any ephemeral draw that is deeper than two feet from the top of the bank to the bottom of the draw unless approved by the Forest Service. • Harvesting equipment is allowed to reach into the draws to remove material
Hydrology Botany	Do not accumulate slash in ephemeral stream courses.
Hydrology Botany	Hydro: Avoid soil disturbing actions during periods of heavy rain or wet soils. Do not operate equipment when conditions will result in rutting of soils. Winter

	operations can occur with a minimum of 1 foot of packed snow or 2 inches of frozen soil.
Hydrology	Avoid operating mechanical equipment on sustained slopes steeper than 35 percent.
Hydrology Botany	Landings should be located in upland areas, where practicable and outside of the water influence zone always, to minimize the potential for slash piles and burning of slash to affect protected stream courses.
Hydrology	Piling of slash is discouraged except in fuels reduction units. Burn Piles should not exceed 60 feet in diameter. Burn piles greater than 30 feet in diameter will be rehabilitated when economically feasible. Consider not burning piles that cannot be rehabilitated due to economics, access, or would serve as wildlife habitat. Smaller (less than 20 foot diameter) hand piles may be left unburned for habitat.
Hydrology	Clearly identify the need for mechanical site prep. If site prep is necessary, mechanical site prep passes should occur on the contour versus down the fall line on all slopes greater than 5 percent. Site prep by burning whenever possible, especially in units with steep slopes, and/or those adjacent to streams and wetlands where traditional site prep may increase surface erosion and stream sedimentation. Units with a stream in bottom of unit and trail above are good candidates as minimal control lines would be needed.
Hydrology Botany Wildlife Heritage	Areas outside of unit boundaries and road right of ways are excluded to protect riparian areas, wetlands, sensitive plants and animals, and heritage resources unless approved by the Forest Service.
Hydrology	Locate vehicle service and fuel areas, chemical storage and use areas, and waste dumps on gentle upland sites. Mix, load and clean on gentle upland sites. Dispose of chemicals and containers in State-certified disposal areas.
Hydrology	Where possible, use hardened fords rather than culverts for road-stream crossings, outslope roads with rolling dips and/or waterbars to maintain hillslope hydrology to the extent possible and ensure adequate road drainage for all conditions. Armor rolling dips as needed to prevent rutting damage. Space cross drains based on slope and soil type.
Hydrology	Temporary road construction will follow the following criteria. • Outslope roads with rolling dips and/or waterbars to maintain hillslope hydrology to the extent possible and ensure adequate road drainage for all conditions. • Road widths should not exceed 12 feet unless needed to meet curve radius or intersection needs. • Temporary roads should not exceed 8 percent. • Any cut/fill required for temporary road construction should not exceed 2 feet in height. • Temporary roads will not cross perennial or intermittent stream courses, wetlands, or riparian areas
Hydrology	Restore and re-contour all temporary roads to a hydrologically self-maintaining and natural state. Restore hydrology and landscape character of the area and re-contour temporary roads that cross slopes of 25 percent or more. Waterbarring and subsoiling may be required. Scarify and reseed old roadbed to reduce visual impact and to blend with the surrounding landscape, as necessary. Do not use berms/tank traps for road closure adjacent to high-use arterial and collector

	roads. Use different sizes of rocks and boulders buried at least 1/3 in ground for barrier instead of berm/tank trap in the immediate foreground of arterial and collector roads.
Hydrology	Skid trails and landings shall be ripped, seeded, and/or have slash scattered to prevent erosion and reduce compaction. Scattering of slash may be in lieu of constructing water bars. Scattering of slash shall cover approximately 30-50% of the skid trail or landing. Heavily used trails and landings indentified by the Forest Service will require ripping to reduce compaction instead of scattering slash. These trails will be ripped to a depth of 4-6 inches and seeded with an approved seed mix. When ripping skid trails, the ripper teeth shall be lifted every 150 feet on slopes less than 15%, every 100 feet on slopes 15-30%, and every 50 feet on slopes greater than 30% to prevent concentration of water and development of rills and gullies.
Hydrology Lands	Prior to implementation of proposed new National Forest System Road (NFSR) across East Fork Arapaho Creek, Cochrane Ditch, and associated wetlands, the hydrologist, fisheries biologist, and soil scientist need to review on the ground to determine consistency with the Forest Plan. If not found consistent with Forest Plan, Unit 9 and new road may need to be dropped. Coordination with permittee (ditch owner) and special use permit administrator are necessary prior to implementation.
Hydrology Lands	The alignment of the Finger Lake Motorized Trail and design of any crossings would need to be approved by a soil scientist and hydrologist before construction. Trail construction and alignment would need to involve coordination with the ditch owner and permit administrator prior to implementation.
Botany	Delineate a 100 ft. buffer around known occurrences of R2 sensitive and local concern plant species and flag for avoidance by heavy equipment. Limit heavy equipment and timber and fuels operations in buffered population areas to hand and/or non-ground disturbing mechanical equipment. Unless identified as a fuel hazard, trees felled in buffered areas would be left on site.
Botany	Fell trees away from identified buffered populations.
Botany	Do not place or burn slash piles or broadcast burn slash in buffered areas.
Botany	To the extent possible, any seed used in the project area will be tested for noxious and non-native seed according to the Guidelines for Revegetation for the Medicine Bow-Routt National Forests and Thunder Basin National Grasslands. If this is not possible, coordinate with the botanist to identify the best alternative.
Botany	Where revegetation is appropriate, work with the forest botanist to identify appropriate species for planting.
Botany	Time prescribed fire to reduce the spread of invasive (native and non-native) species.
Botany	Use transportation mats during transportation of equipment between road and excavation areas to avoid soil compaction.
Aquatics, Botany, Wildlife	If specific impacts from the alternatives to threatened, endangered, and Region 2 sensitive species (TES) and/or their habitats are identified, management may be adjusted as necessary to reduce those impacts through working with the biologists or botanists. Timing restrictions may also need to be applied. The TES

	species of interest include goshawks, raptors, pygmy shrews, amphibians, and rare plants.
Recreation	Designate as protected improvements motorized trail templates, trail markers and trail signs. Do not use designated trails as skid trails or landing locations. Remove slash from the trail template after harvest and/or fuels treatment. Do not conduct scarification or other site preparation methods on or within 30 feet of trail templates. Cross designated trails only at right angles and only when absolutely necessary. Coordinate with Trails Specialist during preparation of TS contract package minimize impacts to the motorized trail system.
Transportation	Road closure devices, including gates, barriers, slash or other devices needed to prohibit or eliminate use, would be located on the ground to provide the most effective means of accomplishing the desired travel management strategy.
Transportation	Physical closures, such as slash, stumps, rocks and revegetation are to be used to eliminate use. Earthen barriers may be used when there is not adequate material available for slash, stumps or rock closures. This may be done after activities, to allow use of a road by the purchaser, or as funds become available. Closure gates may be utilized where administrative access is needed.
Transportation	Whenever possible, roads shall be relocated or constructed out of draw bottoms to improve drainage and protect soil and water resources. Abandoned roadbeds shall be revegetated and returned to as natural a state as possible.
Transportation	Where sod has effectively stabilized existing roadbeds, efforts would be made to minimize disturbance to the sod layer during maintenance and reconstruction activities.
Transportation	Dust control, if necessary, may be done with water, magnesium chloride, calcium chloride, or equivalent.
Transportation	Route verification would be held prior to road contract preparation, to show Forest and District Specialists the location and design of planned relocation, realignment and new construction to ensure the road would not have additional adverse effects on resources.

Affected Resources	Mitigation Measures
Transportation	Maintenance on all roads used for timber harvest would be the responsibility of the Timber Purchaser for the life of the Timber Sale Contract. Maintenance includes cleaning out silt from sediment collecting ponds and depositing it in upland locations, keeping silt fence upright and functioning by cleaning out any sediment collected in front of the silt fence and depositing it in upland locations, keeping all drainage structures clear and functional, eliminating erosion of cut and fill slope and roadway soils, maintaining vegetative buffers, encouraging revegetation, and blading road surfaces. Post use maintenance is required by the Purchaser as part of the Timber Sale Contract.

Affected Resources	Monitoring Criteria

Range	After treatments have been completed, the area will need to be inventoried for new populations of noxious and invasive weeds, and treated appropriately.
Soils	Main skidtrails shall be evaluated for rehabilitation. Main skidtrails are those that have several skidtrails combining to make one skidtrail that can be heavily compacted.
Soils	Burned slash piles shall be monitored for vegetation recovery. If in two years vegetation is not sufficient to control erosion seed with appropriate seed mix and monitor for further rehabilitation.
Wildlife	After project implementation, ensure that the following snag retention standards are met: Hard and Soft Snag Retention- Applicable to all treatment units within the project area. It is recognized some stands may not have trees that are greater than 10" DBH, so this design criteria may not be feasible in every unit. • Retain on average of 4 existing 'hard' snags greater than 10" DBH (decay class 1 or 2) per acre within treatment units in Management Area (MA) 5.11 and a minimum of 2 per acre in MA 5.13. Groups of up to 32 trees or greater (equivalent to 4 snags/acre x 8 acres or 16 trees equivalent to 2 snags/acre x 8 acres) should be retained within the unit. Retain all 'soft' (*i.e.,* rotten, decay class 3 to 5) snags unless they are a safety hazard.
Transportation	Implementation monitoring of road maintenance, reconstruction and new construction activities would be accomplished through site inspections conducted by District personnel and certified Engineering personnel to ensure contract specifications and road designs are implemented as described in the road contract. Measured and visual monitoring would determine physical effects, success of natural and enhanced revegetation, and to ensure traffic safety and compliance with state and federal laws.