

Sample Forest Management Plan

Prepared by Woodland Restoration Inc.

Sample

Introduction

This plan applies to a 240-acre parcel of forest land on the John Doe Ranch. The plan outlines four treatments aimed at improving overall forest health, reducing lethal fire hazard and maintaining aesthetic values. Secondary objectives are to improve wildlife habitat and improve water quality in Woodland Creek.

This forest contains relatively healthy trees, but its sustainability is threatened by overstocking, growth stagnation, increased susceptibility to insect and disease epidemics, and increased hazard of severe wildfire. Bark beetles are killing both lodgepole and ponderosa pines. As these beetle kill patches get larger many large healthy ponderosa pines will be lost.

This treatment plan is designed to optimize the health and aesthetic value of the forest. This plan enhances the long term economic value of the forests on the ranch. In contrast, a plan to maximize current harvest income would remove the largest and most vigorous trees, diminishing the aesthetic qualities and timber values of the property.

Woodland Restoration Inc. will provide the consulting foresters and contractors for this project. Our employees and subcontractors are trained and experienced in the art and science of restoration forestry, and in the importance of aesthetic considerations as well.

Site Description

The Ranch has a very diverse forest. Stand structure and species composition vary with the changing aspects and topographic sites. The north aspects and riparian area along Woodland Creek support the moist habitats which contain western red cedar, grand fir, and white spruce.

Any treatment activities in the riparian area must protect this sensitive, valuable community and comply with Montana's Streamside Management Zone Law.

Douglas-fir, western larch, and lodgepole pine share dominance in the over story on the upland easterly aspects of the ranch. On the slopes facing more toward the south, ponderosa pine becomes increasingly common.

Stumps and growth rings of older trees indicate that the forest was logged around 1900. The oldest trees sampled were ponderosa pines approximately 175 years old, but most of the overstory trees are 90-100 years old. Where the forest canopy is more open dense clumps of younger grand fir and Douglas-fir occur.

The basal area for this forest currently ranges from 130 to 210 square feet per acre.

Sample

Silvicultural Design

The objectives of the proposed treatments are to promote forest health, reduce lethal fire hazard, and enhance aesthetic values.

To implement these objectives we propose a light thinning where all the largest, healthiest trees will be retained. The more fire-resistant species—ponderosa pine and western larch--will be preferred for leave trees. The majority of the trees that would be cut would be smaller Douglas-fir and bark-beetle susceptible lodgepole pine.

The following criteria will direct the treatment.

1. The largest most vigorous trees will be retained.
2. Most small trees in overstocked areas will be removed.
3. Most trees with poor vigor or damage from insect or disease attack will be removed.
4. Snags that do not present a safety hazard will be left standing for wildlife habitat.

Scattered groups of small trees that do not create dangerous fuel ladders will be retained to provide canopy level diversity and hiding cover for wildlife.

The more vigorous trees tend to grow in groups and therefore leave tree spacing will be irregular as a reflection of these natural conditions. This approach is in direct contrast with most forestry and logging where an unnatural, even tree spacing is desired.

Harvest Plan

The basal area of the stand after treatment will average 75-80 square feet per acre, but will range from 40 to 120 square feet in accordance with variations in site productivity. The harvest is estimated to remove about 160 mbf and this will leave approximately 250 mbf of the best timber standing after treatment.

Treatment will begin in the northeast corner of the property (Stand A--see map). In this area bark beetles have killed and continue to infest most of the lodgepole pine. Healthy white spruce, Douglas-fir and ponderosa pine are mixed throughout this site. Harvest here will remove all but the most vigorous, lodgepole pine while being careful to protect the remaining trees from damage. These operations will be performed while the ground is frozen. These operations should pay for themselves.

The adjacent area to the west (Stand B on map) will be treated next using the same harvest selection criteria as outlined above. The volume harvested from these stands is estimated to yield approximately \$15,000 above treatment costs.

Sample

In the remainder of the forest (approximately 90 acres), income from the volume harvested would not be sufficient to cover the treatment costs. We estimate the income from stands A and B would be adequate to allow treatment of approximately sixty additional acres. Treatment of the rest of the forest would require investing additional money to cover the difference between harvest income and costs.

Harvest Design

Thinning will be done primarily with cut-to-length technology. This system will use a rubber tired harvester-processor and a rubber tired log forwarder to minimize damage to the remaining stand and the soil. The harvester processes trees at the stump, so there is no need to drag whole trees out of the forest and slash is treated in the woods which benefits nutrient cycling. This system also greatly reduces the need to create large openings in the forest for log decks and slash piles (landings). Scarring of leave trees will be further minimized by careful operation. Soil disturbance is minimized because the forwarder carries logs instead of skidding them. Soil disturbance will be further minimized by operation on frozen or dry ground.

Some of the large dead lodgepole pine will be removed as long logs with a skidder in order to maximize their value as house logs. These dry, light-weight logs represent a small portion of the total volume and when skidded carefully there will be no significant impact.

For Stand C we will consider using a whole-tree harvest system because: there will be no need to cut a big landing in the forest since we can use the field; the trees and skid distances are short so damage to leave trees can be prevented; since trees are small and crowded a feller- buncher can be more efficient than a cut-to-length harvester; and the terrain in this stand is gentle, therefore damage to the soil will be minimal when the work is done on dry or frozen ground.

The steep slopes in Stand D will require using a special kind of cable yarder called an excaliner, or a helicopter. This will require extra effort in leave tree selection and implementation, but when implemented correctly both systems will produce a residual stand that is aesthetically pleasing. The system we choose will depend on economic considerations at the time of implementation.

Fuels treatment

Following the thinning, slash will be carefully piled with a rubber tired grapple machine. This method produces much less soil disturbance and visual impact than the common practice of pushing slash together with a bulldozer or dragging whole trees to large landings. In woods grapple piling reduces fire hazard while helping to keep nutrients in the forest. The small piles will be burned during suitable weather conditions to exceed the State of Montana slash disposal requirements.

Sample

Sample

Wildlife

The ranch provides habitat for deer, elk, black bear, mountain lion, wolves, and a variety of smaller mammals. This habitat will be enhanced by opening the tree canopy in places. This will promote the growth of grasses including rough fescue, Idaho fescue and bluebunch wheatgrass. Opening the canopy will also stimulate the growth of shrubs including chokecherry, serviceberry, Scouler's willow and snowberry. All of these plants provide important food sources for wildlife, but they are all in decline due to shading from the dense tree canopy.

The tree thinning will be done in a conservative fashion, so wildlife cover should not be adversely affected. To maintain more structural diversity and provide more hiding cover, several areas of 5 to 15 acres will be left untreated.

The landowner will continue monitoring for weeds to be sure opening the tree canopy does not reveal any new infestations.

Roads

This project will not require any new roads. The current road drainage will be reconfigured in the area near Woodland Creek to reduce the amount of sediment the road currently adds to the creek. This will improve water quality in Woodland Creek significantly during runoff.

Adaptive Management

As treatments are being implemented, adaptive management techniques will be utilized to ensure that the key objectives are being met. If a goal is not being met, or a problem with a treatment arises, the treatment will be adapted to correct the problem and meet the desired goal.

Sample