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# Mill Creek Dry Forest Restoration Project

United States Forest Service  
Ochoco National Forest  
Lookout Mountain Ranger District  
Crook County, Oregon

## Introduction

The Ochoco National Forest is proposing dry forest restoration on approximately 23,015 acres in the Mill Creek Dry Forest Restoration Project (Mill Creek) area by actively managing stands to restore historic stand composition, structure, and density; reducing activity generated and naturally occurring fuels; and restoring streams, floodplains, and Riparian Habitat Conservation Areas (RHCAs). The project area is located on the Lookout Mountain Ranger District approximately 23 miles east of Prineville, Oregon, adjacent to the Mill Creek Wilderness (Map 1). The project area is approximately 36,485 acres in size.

## Purpose and Need

The purpose and need for the Mill Creek project was derived from comparing the existing conditions in the project area to:

- Goals, objectives and desired conditions identified in the Forest Plan, as amended;
- Historic conditions in dry forests in the project area (historic range of variability);
- Best available science regarding dry forest restoration; and
- Goals and objectives identified in the National Cohesive Wildland Fire Management Strategy developed by the U.S. Department of the Interior and the U.S. Department of Agriculture.

### *Historic Conditions in Dry Forests*

Dry ponderosa pine and mixed conifer forests (dry forests) in the Mill Creek project area no longer appear or function as they once did. Prior to the settlement of the area in the 1800's, dry forests generally had an open forest structure with a mosaic pattern of clumps or patches of trees dominated by large diameter, old ponderosa pines, scattered individual trees, and openings that contained an abundance of native grasses and shrubs. Dry forests had relatively low tree densities, simple canopy layering, and an open "park-like" nature.

Though ponderosa pine tended to dominate dry forests, stands of mixed species, such as western larch, grand fir, and Douglas-fir existed on the landscape. Stands of aspen were abundant and interspersed throughout grassy meadows or found near streams, springs, and rock outcrops. Disturbances, such as fire, insects, and disease, were a natural and common occurrence in dry forests. Frequent low severity fires not only shaped the composition and structure of dry forests and functioned as the feedback mechanism that maintained ecosystem resilience, which is a forest's capacity to recover from disturbance and return to pre-disturbance structure and function after being impacted or modified by disturbances.

### *Current Conditions in Dry Forests*

Composition, structure, and density of dry forests in the Mill Creek project area have been altered by past grazing practices, past timber harvest, and decades of fire suppression. Past grazing practices greatly reduced the grasses, shrubs, herbs, and other small plants that grew in abundance and allowed the spread of low-intensity surface fires across the forest every few years. Past timber harvest practices selectively removed large fire tolerant trees (e.g. ponderosa pine, western larch, large Douglas-fir) and fire intolerant trees (e.g. western juniper, small Douglas-fir, and grand fir) quickly filled in the landscape. Historically, frequent low severity fires would have moved through the dry forests and killed small trees and fire intolerant trees,

resulting in lower density forests. Instead, decades of fire suppression allowed many fire intolerant and small trees to thrive and develop into dense, multi-story stands.

In many stands today there is relatively more western juniper, Douglas-fir, and grand fir and less ponderosa pine and western larch than what occurred historically. Multi-story dense stands with large trees that were scarce historically are now over abundant. Increased density and altered species composition have also impacted riparian communities. Hardwood communities (e.g. aspen, black cottonwood, alder, willow) have declined as they become shaded out (they thrive in full sunlight) and weakened from competing conifers for nutrients and water. Single-story stands of large ponderosa pine with an open “park-like” nature that were abundant historically are now scarce. The historic mosaic pattern of patches of trees, individual trees, and openings has been replaced with dense, continuous stands of trees.

Several Riparian Habitat Conservation Areas (RHCA) in the Mill Creek project area are experiencing channel incision or floodplain connectivity issues, shortages of large woody debris, and lack of riparian/hardwood vegetation that is affecting pool frequency, water temperature, and width/depth ratios. Additionally, RHCAs in the project area currently lack natural vegetative complexity and species composition where natural disturbance processes have been interrupted.

### ***Why Consider Taking Action?***

Historically, dry forests persisted through centuries of natural disturbances such as fire, insects, disease, drought, and climate fluctuation. Forests are naturally resilient - meaning they have the capacity to recover from disturbance and return to pre-disturbance structure and function after being impacted or modified by disturbances they evolved with. However, a forest’s resilience to disturbance can be diminished if forest vegetative conditions are severely altered or degraded or the natural disturbance processes a forest evolved with change.

As previously described, the vegetative conditions (composition, structure, and density) of dry forests in the project area have been altered by past grazing practices, past harvest practices, and fire suppression. These changes are of sufficient magnitude that dry forests in the project area are not only more susceptible to disturbances, but less resilient when disturbances do occur. These changes in the vegetative conditions have also changed how natural disturbance processes function in dry forests.

The proposed project is needed to restore characteristic (i.e. historic) dry forest vegetative conditions in the Mill Creek project area, thereby increasing resilience to insects, disease, fire, and drought; reducing the risk of uncharacteristic high severity fires; and enhancing and restoring RHCAs.

### **Insects and Disease**

Active management of dry forests in the project area with commercial thinning, noncommercial thinning, and prescribed burning would reduce stand densities and create more open park-like conditions and simple canopy layering, thereby reducing the acreage of stands rated as “high risk” for insects and disease and reducing the likelihood of insects and disease spreading over large areas. Reducing stand densities would increase health and vigor of the remaining trees (less competition for resources) making them less susceptible to the effects of insects, disease, and drought, and more resilient when effects do occur.

### **Fire**

Active management of dry forests in the project area with commercial thinning and noncommercial thinning would preferentially remove grand fir and Douglas-fir (fire-intolerant species) and retain ponderosa pine and western larch (fire tolerant species), thereby restoring a more historic species composition that would support low and mixed severity fires rather than high severity fires. Commercial thinning and noncommercial thinning would reduce stand densities and create more of the open park-like conditions and simple canopy layering that also support low severity and mixed severity fires and reduce the risk of high severity fires spreading from crown-to-crown and over large areas when they do occur.

Treatment of activity generated and naturally occurring fuels (prescribed burning) would reduce surface fuel loading; reduce ladder fuels and maintain open stands by removing seedlings, saplings, and the lowest branches of the canopy; and reduce the amount of fire intolerant species, resulting in conditions that support low severity and mixed severity fires and reduce the risk of uncharacteristic high severity fire and/or stand replacing fires.

### **Riparian Habitat Conservation Area Restoration**

Riparian Habitat Conservation Areas (RHCAs) were established with the adoption of the Inland Native Fish Strategy (INFISH) in 1995. RHCAs are portions of watersheds where riparian-dependent resources receive primary emphasis. RHCAs include traditional streams and riparian corridors, wetlands, intermittent streams, and other areas that help maintain the integrity of aquatic ecosystems by influencing the delivery of coarse sediment; organic matter, and woody debris in streams; providing root strength for channel stability; shading the stream; and protecting water quality (INFISH 1995).

Several RHCAs in the Mill Creek project area are experiencing channel incision or floodplain connectivity issues, shortages of large woody debris, and lack of riparian/hardwood vegetation that is affecting pool frequency, water temperature, and width/depth ratios. Additionally, RHCAs in the project area currently lack natural vegetative complexity and species composition where natural disturbance processes have been interrupted. Vegetative conditions currently exist which are not as resistant to disturbance as they were historically and there is an elevated risk of unwanted loss from stand replacement wildfire and/or insects and disease. Much of this project area, including portions of RHCAs, historically experienced frequent low intensity wildfire as a dominant disturbance process. This disturbance regime maintained areas in a more open, less dense condition that was often dominated by large trees of fire tolerant species. Today large trees are less abundant, stands are dense, within stand spatial diversity has declined, fire intolerant species have become established, and fuel loads have increased. Hardwoods have decreased in abundance or are completely lacking from areas where they occurred historically.

RHCA restoration activities would include placement of large woody debris (e.g. trees or partial trees), pool creation, channel filling and manipulation, hardwood enhancement, and riparian planting in and around streams and floodplains. These activities would place RHCAs on a trajectory to attaining Riparian Management Objectives (RMO) over the long-term by increasing pool frequency, increasing large woody debris, and reducing water temperatures and width/depth ratios. Hardwood enhancement would remove conifers that have encroached into hardwood communities, increasing sunlight, nutrients, and water available to hardwoods.

Commercial thinning and noncommercial thinning are proposed in the upper/outer vegetation zone<sup>1</sup> in RHCAs to maintain and restore the historic distribution, diversity, and complexity of vegetation within RHCAs to protect their function and resiliency. Specific vegetative objectives of these treatments are to:

- Retain and recruit large trees by reducing competition and increasing tree vigor.
- Restore historic fire tolerant species compositions.
- Reduce risk of high severity wildfire and loss of large trees to insects and disease.
- Increase the abundance and vigor of hardwoods.
- Restore meadow habitats that have become dense with encroaching conifer species.

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<sup>1</sup> RHCAs typically have a lowland/inner vegetation zone and an upland/outer vegetation zone. The lowland/inner zone includes riparian vegetation growing on or near banks of a stream or body of water on soils that exhibits wetted soil characteristics during some portion of the growing season. The lowland/inner zone typically includes vegetation that offers shade and large woody material to the stream. The upper/outer vegetation zone is further from the stream or body of water and lacks wetted soil characteristics during some portion of the growing season (i.e. outside the perennially wetted areas).

## Wildlife Habitat

Declines of dry forest habitat are among the most widespread and largest declines among habitat types identified in an analysis of source habitats for terrestrial vertebrates in the *Interior Columbia Basin Ecosystem Management Project*. The increase in the abundance of grand fir and Douglas-fir, increased stand densities, and the development of multiple canopy layers have created an imbalance (compared to historic conditions) in available wildlife habitat, meaning there is an excess of habitat for species that depend on dense, multi-story stands (e.g. pileated woodpecker) and a shortage of habitat for species that depend on open, single-story stands (e.g. whiteheaded woodpecker).

Active management of dry forests in the project area with commercial thinning and noncommercial thinning would reduce stand densities, restore a more historic species composition, and create more open, single-story stands, thereby increasing the amount of habitat for species that depend on these vegetation conditions. Open, single-story stands also allow more sunlight to reach the forest floor, resulting in more herbaceous and shrubby plants and flowering plants that support pollinators such as the Western bumblebee. RHCA restoration would reduce lowering of the water table in some areas, thus allowing moisture levels in wet meadow habitat to be retained or improved, ensuring habitat for pollinators and other species is present in the project area. Hardwood enhancement would remove conifers that have encroached into hardwood communities (e.g. aspen) and meadows increasing sunlight, nutrients, and water available to hardwoods. As hardwoods increase in vigor and abundance, more browse/forage becomes available for species such as Rocky Mountain elk and mule deer

## Proposed Action

The project interdisciplinary team (IDT) developed a proposed action based on management recommendations designed to meet the purpose and need as described above. The proposed action includes activities such as commercial thinning, noncommercial thinning, activity and naturally generated fuels treatments, stream and floodplain enhancement, road maintenance and reconstruction, temporary road construction, and road opening, closing, and decommissioning.

Table 1 provides a brief summary of the proposed actions and Maps 1-7 illustrate the location of the proposed actions.

**Table 1. Mill Creek proposed action**

Proposed Activity	Unit of Measure	Proposed Action
<b>Dry Forest Restoration</b>		
Commercial Thinning (outside RHCA) <sup>1</sup>	Acres	7,282
Noncommercial Thinning (outside RHCA) <sup>2</sup>	Acres	5,033
Activity Generated Fuels Treatments (outside RHCA) <sup>3</sup>	Acres	12,315
Naturally Generated Fuels Treatments (outside RHCA) <sup>4</sup>	Acres	7,876
<b>Riparian Habitat Conservation Area Restoration</b>		
Commercial Thinning in RHCA <sup>5</sup>	Acres	606
Noncommercial Thinning in RHCA <sup>2</sup>	Acres	604
Activity Generated Fuels Treatments <sup>6</sup>	Acres	1,210
Naturally Generated Fuels Treatments <sup>4</sup>	Acres	1,614
Stream and Floodplain Enhancement <sup>7</sup>	Miles	23
<b>Total Acres Treated</b>	<b>Acres</b>	<b>23,015</b>

Proposed Activity	Unit of Measure	Proposed Action
<b>Transportation Activities</b>		
Roads Closed	Miles	1.86
Roads Decommissioned	Miles	3.26
Roads Opened (public use)	Miles	1
Roads Opened (administrative access only)	Miles	.06
Road Closure Reinforcement <sup>8</sup>	--	24
Temporary Road Construction (New)	Miles	5.9
Temporary Road Construction (Existing Disturbance)	Miles	36.9
Road Maintenance	Miles	89
Road Reconstruction	Miles	16

- 1: Biomass removal may occur in commercial thinning units depending on feasibility and available markets.
- 2: Noncommercial thinning would occur in all commercial thinning units; however, the acreage of noncommercial thinning after commercial thinning is not included in the total acres of treated units.
- 3: Treatment of slash (fuels) generated from commercial thinning and noncommercial thinning activities. Fuels generated in commercial thinning and noncommercial thinning units would be treated with prescribed burning which may include underburning and burning of grapple piles or hand piles. The acreage of activity generated fuels is not included in the total acres of treated units.
- 4: Naturally generated fuels would be treated with prescribed burning which may include underburning and burning of hand piles.
- 5: Commercial thinning in RHCAs would take place in the upper/outer vegetation zone outside of the perennially wetted riparian areas where stands are dense, lack diversity, and have increased fuel loads.
- 6: Treatment of slash (fuels) generated from commercial thinning and noncommercial thinning activities. Fuels generated in commercial thinning and noncommercial thinning units in RHCAs would be treated with prescribed burning which may include underburning and burning of hand piles. The acreage of activity generated fuels is not included in the total acres of treated units.
- 7: Stream and floodplain enhancement would include floodplain manipulation and mechanical or handfelling of large woody debris in to streams and floodplain.
- 8: Physical road closures would occur on roads closed in the Mill Creek project and on existing closed roads. Physical road closures may include gates, berms, boulders, or debris.

## Planning and Management Direction

### Forest Plan

The Ochoco National Forest Land and Resource Management Plan (Forest Plan) was approved in 1989 and has since been amended by several decisions. The Forest Plan describes resource management practices, levels of resource production and management, and the availability and suitability of lands for resource management on the Ochoco National Forest. The Forest Plan guides all natural resource management activities on the Ochoco National Forest and provides management direction through the designation of specific management areas and standards and guidelines specific to these designations. The following is a description of management areas in the project area:

*Mill Creek Wilderness (MA-F3)* is managed to protect wilderness ecosystems, maintain a natural setting, and preserve solitude.

*Old Growth (MA-F6)* areas provide habitat for wildlife species dependent on old growth stands.

*Summit Historic Trail (MA-F7)* is approximately 74 miles long and traverses the Ochoco National Forest. The Summit Trail is considered a historic resource and was found eligible for nomination to the National Register of Historic Places in January 1987. The majority of the trail route is along developed roads and provides travel by way of vehicle, horseback, bicycle or foot.

*Developed Recreation (MA-F13)* areas provide safe, healthful, and aesthetic facilities for people to utilize while they are pursuing a variety of recreational experiences within a relatively natural outdoor setting. Timber activities will normally not be visually evident but may be used for safety and visual enhancement. Scenic views may be enhanced through harvest or thinning but will appear natural. Facilities, roads, and trails will have a well-maintained appearance and provide a safe recreational environment.

*Stein’s Pillar Recreation Area (MA-F17)* is managed to maintain a scenic, natural or natural-appearing setting associated with unique geologic formations, particularly Stein’s Pillar. This area provides opportunities for nonmotorized recreation, with various opportunities to enjoy nature.

*Winter Range (MA-F20)* is managed for big game winter range habitat.

*General Forest Winter Range (MA-F21)* areas are managed for timber production with management activities designed and implemented to recognize big game habitat needs. Management activities will take into account vegetation types and successional responses of those types in order to apply prescriptions which have beneficial results for habitat.

*General Forest (MA-F22)* areas are managed to produce timber and forage while meeting the Forest-wide standards and guidelines for all resources. In ponderosa pine stands, management will emphasize production of high value (quality) timber.

*Visual Management Corridors – Partial Retention (MA-F26)* are managed to maintain the natural appearing character of the Forest along major travel routes, where management activities are usually not evident or are visually subordinate to the surrounding landscape.

Table 2 displays Forest Plan management areas and treatment acres in the Mill Creek project. *Treatment acres are total treatments, including commercial thinning, noncommercial thinning, fuels treatments, etc.*

**Table 2. Forest plan management areas in project area and proposed treatment acres**

Forest Plan Management Areas (MA)	Acres in Project Area	Proposed Action Treatment Acres
Mill Creek Wilderness (MA-F3)	13,206	0
Old Growth (MA-F6)	550	550
Summit Historic Trail Retention Corridor (MA-F7)	756	580
Developed Recreation (MA-F13)	65	0
Steins Pillar Recreation Area (MA-F17)	990	990
Winter Range (MA-F20)	5,985	5,985
General Forest Winter Range (MA-F21)	208	208
General Forest (MA-F22)	14,047	14,032
Visual Management Corridor – Partial Retention (MA-F26)	678	670
INFISH Riparian Habitat Conservation Areas (RHCA) <sup>1</sup>	5,022	2,824
<b>Total</b>	<b>36,485</b>	<b>23,015</b>

<sup>1</sup>: Not included in total. RHCAs overlap with other Forest Plan Management Areas.

## Eastside Screens

The Revised Continuation of Interim Management Direction Establishing Riparian, Ecosystem, and Wildlife Standards for Timber Sales amended the Forest Plan in 1995. The direction only applies to the design and preparation of timber sales on eastside Forests and is often referred to as “Regional Forester’s Forest Plan Amendment #2” or as the “Eastside Screens.” The Eastside Screens contain standards and guidelines for

management of timber sales in late and old structured stands relative to the historic range of variability, wildlife corridors, snags, coarse woody debris, and goshawk management. All other noncommercial vegetative management treatments and other activities (e.g. stream restoration) are exempt from the Eastside Screens.

### ***Inland Native Fish Strategy***

The Inland Native Fish Strategy (INFISH) amended the Forest Plan in 1995. INFISH provides direction to protect habitat and populations of resident native fish and to provide options for management. INFISH established Riparian Management Objectives (RMO) and delineated Riparian Habitat Conservation Areas (RHCAs) where riparian-dependent resources receive primary emphasis. These RHCAs include traditional riparian corridors, wetlands, intermittent streams, and other areas that help maintain the integrity of aquatic ecosystems. These areas will be managed to maintain or restore water quality, stream channel integrity, channel processes, sediment regimes, instream flows, diversity and productivity of plant communities in riparian zones, and riparian and aquatic habitats to foster unique genetic fish stocks that evolved within the specific region.

### ***Pacific Northwest Region Invasive Plant Program***

The Region Six Invasive Plant Program for Preventing and Managing Invasive Plants amended the Forest Plan in 2005 and added invasive plant management direction to all National Forest Land and Resource Management Plans in the Pacific Northwest Region (Region Six). The program provides management direction which includes invasive plant prevention and treatment/restoration standards intended to help achieve stated desired future conditions, goals, and objectives. This program is expected to result in decreased rates of spread of invasive plants, while protecting human health and the environment from the adverse effects of invasive plant treatment.

### ***Travel Management Project***

The Deschutes National Forest, Ochoco National Forest, and Crooked River National Grassland Travel Management Project (Travel Management Project) amended the Forest Plan in 2011 to restrict motorized access to designated routes consistent with the provisions of the 2005 Travel Management Rule and establish conditions for motorized access for dispersed camping.

### ***Forest-Wide Travel Analysis and Sustainable Road Systems***

The goal of the Ochoco National Forest is to provide a road system that is safe, affordable, minimizes ecological impacts, and meets immediate and projected long-term public and resource management needs. In keeping with this goal, the Forest Service incorporates road and trail system considerations in project-level planning by maintaining, creating, rerouting, closing, decommissioning, or changing the assigned maintenance level of roads and trails to meet management and restoration needs, improve forest and stream conditions, increase functional wildlife habitat, eliminate redundant roads, and establish an economically sustainable transportation system.

In 2015, the Ochoco National Forest completed a Forest-wide travel analysis which identified the minimum road system needed to meet current and future management objectives, provide safe and efficient travel, and protect important ecological, social, and economic resources. This analysis was used as a starting point to complete a project-level travel analysis for the Mill Creek project area.



## Public Comment

We welcome your thoughts and discussions about the Mill Creek project as your input is valued and important to a successful outcome. We are currently in the preliminary environmental analysis phase of the project. Comments are appreciated anytime, however, for input to be timely and considered in project design, comments should be received by January 30, 2021.

Comments may be submitted online through the Forest Service online comment system available at <https://cara.ecosystem-management.org/Public//CommentInput?Project=58081> or mailed to Elysia Retzlaff, Environmental Coordinator, Ochoco National Forest, 3160 NE 3<sup>rd</sup> Street, Prineville, OR 97754. Electronic comments are encouraged at this time.

## Contact Information

For additional information about the project, please contact Elysia Retzlaff, Environmental Coordinator, at [elysia.retzlaff@usda.gov](mailto:elysia.retzlaff@usda.gov).

## Maps

Maps of the project area and proposed actions may be viewed at <http://www.fs.usda.gov/project/?project=58081>.

### USDA NON-DISCRIMINATION POLICY STATEMENT

[DR 4300.003 USDA Equal Opportunity Public Notification Policy \(June 2, 2015\)](#) In accordance with Federal civil rights law and U.S. Department of Agriculture (USDA) civil rights regulations and policies, the USDA, its Agencies, offices, and employees, and institutions participating in or administering USDA programs are prohibited from discriminating based on race, color, national origin, religion, sex, gender identity (including gender expression), sexual orientation, disability, age, marital status, family/parental status, income derived from a public assistance program, political beliefs, or reprisal or retaliation for prior civil rights activity, in any program or activity conducted or funded by USDA (not all bases apply to all programs). Remedies and complaint filing deadlines vary by program or incident. Persons with disabilities who require alternative means of communication for program information (e.g., Braille, large print, audiotape, American Sign Language, etc.) should contact the responsible Agency or USDA's TARGET Center at (202) 720-2600 (voice and TTY) or contact USDA through the Federal Relay Service at (800) 877-8339. Additionally, program information may be made available in languages other than English. To file a program discrimination complaint, complete the USDA Program Discrimination Complaint Form, AD-3027, found online at [http://www.ascr.usda.gov/complaint\\_filing\\_cust.html](http://www.ascr.usda.gov/complaint_filing_cust.html) and at any USDA office or write a letter addressed to USDA and provide in the letter all of the information requested in the form. To request a copy of the complaint form, call (866) 632-9992. Submit your completed form or letter to USDA by: (1) mail: U.S. Department of Agriculture, Office of the Assistant Secretary for Civil Rights, 1400 Independence Avenue, SW, Washington, D.C. 20250-9410; (2) fax: (202) 690-7442; or (3) email: [program.intake@usda.gov](mailto:program.intake@usda.gov).