Silvicultural Prescription – AFR Block 02, Subunit 28i

Prescriber: Marty Main **Date: June, 2011**

Field Checked by: COA crew, Prescriber, Cert. Silviculturist **Date: June-July, 2011**

Certified Silviculturist: _____ **Date:** 8-5-11

Associated Project: Ashland Forest Resiliency
Associated NEPA: Ashland Forest Resiliency FEIS, ROD
5th Field Watershed: Bear Creek

Stand Identity & Current Condition

Table 1.1 Current Stand Attributes

Location - Stand	Acres	Plant Assoc. *	Site Index (DF, 50yrs)	Elevation (feet)	Average % Slope (range)	Aspect (degrees)	Trees Per Acre (>4.5')	Basal Area (ft^2/ac.)	Estimated Tree Canopy Cover** (>0 dbh)	Quadratic Mean Diameter (>0" dbh)	RDI
6135010-0265	17	ABCO-PSME/ROGY	85-90	4400-4500	39 (25-56)	353-25	255	163	82	10.8	0.47

**Plant Association from Atzet, et al. 1996.*

**Canopy cover is the percent of a stand's ground area covered by the downward projection of all tree canopies within a stand. Individual point data (crown closure) was systematically collected with a densiometer and averaged to arrive at canopy cover estimates.

Subunit Description / Context

Subunit 28i is located on 15-55% northwesterly to northeasterly aspects. The more northerly aspects and deep soils provide for good site productivity, with an estimated 50 year site index of 85-90 for Douglas-fir. Plant Association is borderline between ABCO-PSME/ROGY and ABCO-BENE2.

Subunit 28i was partial cut in the 1960's (perhaps after damage to standing conifers related to the 1959 fire), with an emphasis on more intense cutting in the northern half of the subunit closest to the 400 spur road. This portion of the subunit is currently dominated primarily by a smaller age and size class distribution of trees, with a particularly high amount of Pacific madrone. Smaller vigorous, 10-15" dbh, 40-50 year old Douglas-fir and white fir are also interspersed along with a few large dwarf mistletoe-infected Cohort 1 Douglas-fir. This portion of the subunit is also on the edge, but within the ½ mile home range of a spotted owl nest site. The southern half of Subunit 28i was burned, and harvested, less intensely at that time and currently contains a larger percentage of larger conifers 16-32" dbh, with Douglas-fir the primary overstory conifer (plot data indicated 3 DF and 1 WF > 32" dbh in the subunit as a whole). Many Douglas-fir in this portion of the subunit are less than 100 years of age, vigorous and commonly 24-32" dbh. White fir 16-20"+ dbh are also vigorous. The entire subunit was treated under AWPP where surface and ladder fuels up to 8" dbh were thinned piled and burned, removing ladder fuels and improving canopy base heights to create a more favorable stand structure from a wildfire management perspective. This stand density reduction also improved/maintained good vigor in the overstory Douglas-fir and white fir in the subunit. Currently, the subunit contains a high percentage of Pacific madrone which comprises 56% of the total BA/A, primarily in the 6-12" dbh size class. Only about 75 Douglas-fir and white fir per acre in the 4-16" dbh size class currently exist in the subunit, 64 tpa DF and 11 tpa WF. This is a low stocking level of conifers for a productive site such as this one, and the stocking of conifers tends to be clumped in small patches. Current overall stand densities are moderate, averaging 163 BA/A and 0.47 RDI. Estimated canopy cover is 82%. Dwarf mistletoe rating for Douglas-fir is moderate/high in this subunit (24.8% infected, 3.97 average severity), although there

are a relatively low number of Douglas-fir (62/acre total, with only 15/acre infected). Both snags and coarse woody material are low to moderate as compared with Block 2 as a whole, 13/acre and 19.3 tons/acre respectfully. Low numbers in the larger size classes for both snags and CWM, as well as a lack of older decay classes of CWM, suggest a subunit that has not been an older forest for some time.

Land Management Goals & Parameters:

Table 2.1 Management Direction

Management Allocation:	Middleground Partial Retention (RRNF LRMP), Late Successional Reserve (NWFP)
Project NEPA:	Ashland Forest Resiliency FEIS, ROD
NEPA Purpose & Need:	The **Need** for action is urgent reduction of the potential for large-scale, high-severity wildland fire in the Upper Bear landscape. One hundred years of fire exclusion and fuel accumulations in this forest's wildland/urban interface now presents high potential for large-scale, high-severity wildland fire that could significantly interrupt the supply of clean water and late-successional and old-growth forest ecosystems in this Analysis Area. The **Purpose** of the action is to protect Values at Risk, reduce hazardous fuels, reduce crown fire potential, and create forest conditions that are more resilient to wildland fires.

AFR Strategic Category and Purpose:

Strategic Ridgelines: Treatments along Strategic Ridgelines are designed to: 1) reduce the extent of wildland fire severity by limiting the amount of area affected by wildland fire, 2) create areas where fire suppression efforts can be conducted more safely and effectively, 3) break up continuity of fuels over a large landscape, and 4) serve as anchor points for further area-wide treatments, such as prescribed fire and maintenance burning (AFR FEIS, 2008). All of Block 2 was designated as a Strategic Ridgeline in the ROD except for Subunits 29a and 79a.

Desired Future Dynamics

The utilization of prescribed underburning will begin the process of allowing for frequent low to moderate severity fire to become the primary driver of stand dynamics and ecosystem function. Until fire becomes the primary driver of stand dynamics, other ecologically appropriate silvicultural activities may still be applied, including additional variable density thinning in the future, in order to maintain structural heterogeneity and continue to encourage a more diverse species composition. Increased post-treatment grass and herbaceous understory development following prescribed underburning, especially in openings, should help protect surface soils.

Prescription Objectives:

Table 3.1 Desired Stand Attributes

AFR Subunit	Location-Stand	Existing Forest Type*	Estimated Tree Canopy Cover** (>0 dbh)
28i	6135010-0265	PSME-ARME-ABCO	70-80

* Target ranges are for the stand average. Variations outside of listed range at any one location are expected and desirable.
**Canopy cover is the percent of a stand's ground area covered by the downward projection of all tree canopies within a stand. All canopy covers are targeted to remain above a minimum average of 40% per subunit. "Estimated Tree Canopy Cover" is an estimate of expected post-treatment canopy cover based on desired residual densities. It is intended to be a rough guide only and not an actual target.

Desired Future Condition (DFC): *Conditions change over time and space; this DFC reflects the desired future condition over the majority of the stand one to three growing seasons after treatment:*

A small reduction in stand density from effects of fire (and/or non-commercial surface & ladder fuel thinning) on smaller (<10" dbh) diameter conifers and hardwoods may occur, while releasing preferred overstory conifers and hardwoods and maintaining overall stand vigor. Reduction in surface fuels, and to a lesser extent ladder fuels, will improve stand conditions from a wildfire management perspective. Retained, undamaged overstory conifers and hardwoods should also continue to retard understory ladder fuel development, while continuing to maintain accelerated growth towards larger stand structures and important mature forest values. Spring-time burning will minimize effects on existing trees and coarse woody material, as well as protective duff layers.

Treatments to Achieve Management Objective (DFC):

The following treatments are the primary silvicultural activities to be implemented in Subunit 28i.

Non-commercial surface and ladder fuel thinning

1. Retains most vigorous of trees of desired species and re-distributes growth and vigor onto these trees and helps grow those into larger size classes in shorter periods of time
2. Removes less vigorous and/or other trees with undesirable characteristics for meeting subunit level goals
3. Re-established more desirable species compositions and/or those currently underrepresented in species, size classes, and/or growth forms
4. Reduces ladder fuels and increases height-to-crown base, creating more favorable fire management conditions
5. Prepares the site for safe application of prescribed fire regime of low severity in the future

Ladder and Activity Fuel Piling & Burning

1. Reduces activity generated available fuels within the subunit.
2. Maintains/improves stands ability to modify landscape fire behavior by limiting canopy fire
3. Places piles strategically to minimize damage to retained trees/vegetation and associated resource values
4. Prepares stands for application of low severity prescribed fire
   Leaves 1-2 slash piles per acre as wildlife habitat

Prescribed fire

1. To be implemented on a maintenance schedule and to be a driver of stand dynamics only once conditions are ready and favorable to support desired goals and objectives described previously herein (also refer to resource coordination section; favorable conditions are not expected to be reached after this initial treatment)
2. Maintain low surface and ladder fuels

3. Maintain & improve the stands' ability to modify landscape fire behavior by limiting risk of active crown fire
4. Places special emphasis on protecting desired species from fire related mortality on a schedule that allows for the regeneration and development of multiple cohorts
5. Favors pine establishment and release by reducing competition and preparing favorable light conditions
6. An assessment of fuel conditions, desired tree regeneration, and competing vegetation should be made to determine the need to reduce fuels and the need to protect and/or maintain desired species compositions based on stated desired future dynamics prior to any prescribed fire
7. Assess conditions and consider the need for treatment on a 7 – 15 year cycle

Treatment Narrative

The northern half of the subunit is within the ½ mile home range of an owl nesting site and thus could only be non-commercially thinned. A small amount of commercial thinning-from-below could be undertaken in the south half of the subunit, but it too is not critical and much of what would be appropriate is currently in a designated fisher block. Recent stand density reduction in AWPP through non-commercial thinning reduced densities to more appropriate levels such that commercial density management thinning is not a high priority at this time. Additional understory thinning of primarily Pacific madrone < 10" dbh may be undertaken throughout the subunit if necessary to meet fire effects prescribed, especially around the northeastern portion of the stand along the Ashland loop road (as deemed necessary to meet prescribed effects by the burn boss). An underburn is prescribed to reduce accumulated surface fuels and perhaps kill (rather than non-commercially thin) some of the smaller Pacific madrone. The larger, vigorous conifers retained after the AWPP thinning will likely withstand negative impacts associated with prescribed underburning, especially the larger Douglas-fir which are scattered around the subunit. Site disturbance will likely promote regeneration of Douglas-fir, the desired long-term species on this site. In the interim, lower surface fuels, higher canopy base heights, a somewhat discontinuous canopy with high canopy closures to retard ladder fuel development, and good road access make adding this subunit to the favorable fuel reduction zone in adjacent Subunits 28f and 28o a strategically valuable move from a landscape wildfire management perspective. If fire implementers chose not to implement a non-commercial thinning prior prescribed fire, the site should be assessed post treatment to assess the need to remove activity (fire) created fuels. Frequent underburning on a 7-15 year cycle should help retain minimal surface fuels, decrease white fir establishment and increase the dominance and vigor of overstory Douglas-fir over time. After prescribed underburning, this would be a good unit to plant a light stocking, in openings, of rust-resistant sugar pine.

Applicable Project Criteria, Mitigation Measures, & Resource Coordination:

Slope Stability/Soil Resource Protection	Understory Vegetation- Prescribed underburning should stimulate development of understory grasses, herbaceous vegetation, and other understory vegetation that can also provide protection form excess surface soil erosion.
Forest Health	Dwarf mistletoe in Douglas-fir is moderate to high in this subunit. Prescribed underburning can have some effect on reducing dwarf mistletoe infections low in the crowns of Douglas-fir (severity class 1 and 2).
Wildlife	Efforts will be made to retain trees, vegetation and land formations with evidence of use by wildlife (e.g. bird or wood rat nests, burrows, cavities, and hollows, etc.). Large hardwoods have a disproportionate high amount of use by a number of wildlife species (including fishers elsewhere in their range), particularly given their somewhat uncommon occurrence in Block 2. Unthinned patches in each

	subunit ("skips") will be used to provide additional cover and habitat diversity. Small existing canopy gaps add greater structural and species diversity, essential elements of wildlife habitat improvement, and will be particularly important for those species that utilize the early successional vegetation associated with these openings. Prescribed underburning may have to be done in ways that minimize negative impacts to the designated fisher block.
Snags and Coarse Woody Material	Snags >8" dbh will be retained unless they pose a threat to worker safety or pose a fire risk. Snags greater than 10 inches dbh that require felling for safety reasons will be left long and contour felled across the slope to serve as coarse woody debris. Landscape level management of snags and/or coarse woody material is discussed in "A Landscape Approach to Management of Multiple Values in AFR: Block 2"). Prescribed underburning in spring can minimize loss of larger CWM.
Prescribed Underburning	The following criteria must be met before fire is prescribed and implemented as a maintenance or stand driver under this prescription: -Conditions, including stand vigor and composition, must favor low severity fire effects. -Burning can be accomplished at intensities that will retain duff layers in an amount and distribution that prevents unacceptable levels of surface soil erosion and sediment delivery off-site. Effective ground cover should be protected such that 70% is retained after one season and 85% after 2 seasons. -Stand and individual tree vigor are such that the application of prescribed underburning will not unduly stress preferred leave trees and contribute to untimely mortality. White fir and hardwoods (above ground) will be particularly challenging to maintain undamaged during application of prescribed underburning in Subunit 28i. -Protection of desired structures (i.e. large overstory trees, desired advanced regeneration, Pacific madrone) may require pre-treatment prior to burning (immediately before or up to 2-3 years before) in order to protect them from unnecessary scorch, crown damage, cambial heating, soil heating or other fire-related injury. In these cases practices such as removing duff and ladder fuels and/or fuel accumulations away from the tree bole (ideally 1-2 years prior to burning); spring burning; burning during cool, moist and/or windy conditions to quickly dissipate heat delivery to the tree boles and root systems; slow and careful ignition patterns, and/or other practices can help minimize damage to these features. The assessment by a certified silviculturist of preparatory needs, mitigation measures, and sequence of treatments will ensure integration of the multiple treatment objectives and management goals. Favorable conditions across Subunit 28i currently exist for prescribed underburning.

Botanical Resources	Before marking begins the Forest Botanist must be consulted to address any potential PETS species presence and mitigation measures necessary.
Native Grass Seeding	Seeding when appropriate to encourage native plant establishment in the herbaceous vegetation layer may follow burning activities. Seeding with native grasses may help impede non-native species invasion, discourage development of more fire-prone shrub species, and add diversity to the plant communities. Factors that will influence a choice to initiate native grass seeding are elevation, aspect, proximity to non-native plants already encroaching from the urban and valley areas, pre-treatment herbaceous plant cover and diversity, extent and intensity of disturbance associated with harvest or burning, and if a need is perceived for erosion control seeding. Native forb seed may be included in seed mixes in the future for similar reasons. At this time, the Forest Service has native grass seed grown from local wild ecotypes but no native forb seed meeting the same source criteria. The decision to apply native grass seed will be made collectively by the certified silviculturist and the Forest or District Botanist. Seed mixes tailored to the stand would be provided by the Forest or District Botanist.
Noxious Weeds	If noxious weed sites are discovered during implementation, these need to be mitigated. Project leaders, work crew leaders, and crew members have a choice at noxious weed sites; the infested sites must either be avoided entirely or their noxious weeds must be fully "treated" before silvicultural treatments occur there. Treatment for noxious weed removal normally means pull, cut, or grub out (depending on species) all the noxious weed plants present and pile the material for later burning. Clean pants cuffs, pockets, boot soles, clothing, tools, machinery, and vehicles of soil or plant parts before proceeding to new areas. Identifying these locations on a map, GPS, etc and sharing that information with appropriate AFR personnel will allow for future return to these sites to insure long-term success at eradication, such as during post-burn monitoring efforts. Noxious weed sites along roads traveling to and from work areas do not need to be treated or reported unless those roadsides are part of actual treatment units or are used as work staging areas. Klamath weed (St. John's wort) and bull thistle are common and widespread noxious weeds in SW Oregon. The Forest Service makes no attempt to prevent their spread or control their abundance during project activity. Hence AFR noxious weed mitigations will not be applied to these two species.
Cultural Resources	Any cultural resource, or potential cultural resource, discovered during the implementation of this project will be cause for immediate cessation of any site-altering activity, with immediate notification of appropriate project personnel. Upon review by a qualified cultural resource specialist, the area of significance may be delineated on the ground and removed from the treatment area.

Other Resource Coordination	Respective resource surveys have been completed and there are no other known issues within the stand to be treated. If there are any findings to the contrary at any time, actions to protect resources will be taken immediately and respective specialist(s) will be notified. Activities prescribed would then be reassessed. Cooperation and coordination between all partners, specialists, workers and other interested and involved parties is necessary to protect and promote the multiple values and resources that exist in the project area. This prescription is the vehicle to develop that coordination and integration of objectives, and it is this prescription that ultimately serves to document agreed course of actions and ultimately prescribes treatments and activities (even, and especially, as a need arises to adapt the initial course). Any and all changes needed in treatment activities, timing, and/or sequence of activities prescribed herein as a result of changing conditions on the ground, changes in our partnerships or other organizational capacity, change in scientific understanding, and/or change in management direction; need to be documented and integrated into this or a new prescription by a certified silviculturist prior to those changes being implemented.

Harvest Systems & Transportation:

Logging Systems	No logging is planned for in Subunit 28i.
Hauling and Road Use	The 400 spur of Forest Service Road 2060 will be used to access treatment areas. There is a high level of recreational use of this road. Road signs must be posted on both sides of treatment areas warning forest users of activities during implementation. All vehicles will obey posted speed limits and be constantly aware of potential interaction with recreational users. Signs and/or temporary trail closures may also be needed during on-the-ground application of silvicultural activities in the vicinity of established trails. Road maintenance returning roads to a high standard of functionality following cessation of use will be required under any contract requiring hauling on established roads.

Monitoring:

For implementation monitoring please refer to "Prescription Objectives". This section is presented in both narrative form and in a table format that provides a summary of quantifiable variables to be measured during and after prescribed treatments. Effective implementation monitoring should rely on both quantitative and qualitative monitoring, with analysis of both by knowledgeable personnel. Invariably, integration of the two forms of monitoring will provide the most comprehensive and accurate assessment of outcomes. If this process is done well, it should produce results that provide impetus for adaptive management and improvement of both planning and implementation of future work in AFR. With new information and understandings developing rapidly, additional adjustments to planned activities should also be encouraged in the ongoing spirit of adaptive management.

Treatment effectiveness can be guided by the sections "Land Management Goals and Objectives", "Desired Future Dynamics" and "Desired Future Conditions". Effectiveness will be measured and analyzed over various spatial and temporal scales, including both stand level and landscape level assessments. A strong monitoring component has been integral to the development of AFR. The Ashland Forest Resiliency's Monitoring Plan will provide a comprehensive assessment of the project's overall effectiveness.

Silvicultural Prescription – AFR Block 02, Subunit 28j

Prescriber: Marty Main **Date: June 2011**

Field Checked by: COA crew, Prescriber **Date: June-July, 2011**

Certified Silviculturist: _____ **Date:** 8-5-11

Associated Project: Ashland Forest Resiliency
Associated NEPA: Ashland Forest Resiliency FEIS, ROD
5th Field Watershed: Bear Creek

Stand Identity & Current Condition

Table 1.1 Current Stand Attributes

Location - Stand	Acres	Plant Assoc. *	Site Index (DF, 50yrs)	Elevation (feet)	Average % Slope (range)	Aspect (degrees)	Trees Per Acre (>4.5')	Basal Area (ft^2/ac.)	Estimated Tree Canopy Cover** (>0 dbh)	Quadratic Mean Diameter (>0" dbh)	RDI
6135010-0179	8	ABCO-PSME/ROGY; PSME-ABCO;	85-90	4500-4600	41 (37-46)	270-322	1007	179	86	5.7	0.54

**Plant Association from Atzet, et al. 1996.*

**Canopy cover is the percent of a stand's ground area covered by the downward projection of all tree canopies within a stand. Individual point data (crown closure) was systematically collected with a densiometer and averaged to arrive at canopy cover estimates.

Subunit Description / Context

Subunit 28j is located on 30-50% westerly to northwesterly aspects in upper third slope positions immediately west of and below the main strategic ridgeline in Block 2 (Subunit 28b). Two-thirds of the unit is located within the ½ mile spotted owl home range, with a nest site located over the ridge to the northeast. Plant association is ABCO-PSME/ROGY, but is borderline with a plant association in the Douglas-fir series- PSME-ABCO. Fifty year site index for Douglas-fir is 85-90

Subunit 28j is a mid-seral stand composed of two primary age classes/stand types: 1) an overstory of 25 tpa of Cohort 2 Douglas-fir and a few white fir 16-32"+ dbh that are largely less than 100 years of age, and 2) a Cohort 3 layer dominated by 4-14" dbh Pacific madrone (172 tpa, 74 BA/A) and understory conifers up to 8" dbh (211 white fir/acre and 599 Douglas-fir/acre, but collectively only comprising 24 BA/A), most of which have yet to emerge above the Pacific madrone. The Cohort 2 dominated stands are particularly unique due to the low stocking (25 tpa; 68 BA/A) and large size of the trees in a relatively young stand. This stand is indicative of how individual Douglas-fir can grow if initiated and maintained at lower stand densities. This stand remains vigorous even today, largely due to the initial low stocking, subsequent early stand differentiation, low dwarf mistletoe infection of Douglas-fir (1.6% of trees in plots infected), and subsequent good growth for individual trees. The two primary types in this subunit tend to be mostly spatially separate as well. The second type largely predominates in the upper third of the subunit, while the first type tends to dominate in the lower half to two-thirds of the subunit. Very little recent logging appears to have occurred in this stand. The subunit has lower amounts of coarse woody material (5.6 tons/acre) and snags (38/acre, all but one in the 5-9" dbh size class) than most stands in Block 2, suggesting that this stand is a relatively new stand likely initiated after the 1910 wildfire. Current overall stand densities are moderate overall- 179 BA/A and 0.54 RDI. The lower portions of the subunit tend to have structural characteristics that make it less prone to wildfire, while the upper 1/3 is dominated by dense Cohort 3 vegetation that is more wildfire prone.

Land Management Goals & Parameters:

Table 2.1 Management Direction

Management Allocation:	Middleground Partial Retention (RRNF LRMP), Late Successional Reserve (NWFP)
Project NEPA:	Ashland Forest Resiliency FEIS, ROD
NEPA Purpose & Need:	The **Need** for action is urgent reduction of the potential for large-scale, high-severity wildland fire in the Upper Bear landscape. One hundred years of fire exclusion and fuel accumulations in this forest's wildland/urban interface now presents high potential for large-scale, high-severity wildland fire that could significantly interrupt the supply of clean water and late-successional and old-growth forest ecosystems in this Analysis Area. The **Purpose** of the action is to protect Values at Risk, reduce hazardous fuels, reduce crown fire potential, and create forest conditions that are more resilient to wildland fires.

AFR Strategic Category and Purpose:

Strategic Ridgelines: Treatments along Strategic Ridgelines are designed to: 1) reduce the extent of wildland fire severity by limiting the amount of area affected by wildland fire, 2) create areas where fire suppression efforts can be conducted more safely and effectively, 3) break up continuity of fuels over a large landscape, and 4) serve as anchor points for further area-wide treatments, such as prescribed fire and maintenance burning (AFR FEIS, 2008). All of Block 2 was designated as a Strategic Ridgeline in the ROD except for Subunits 29a and 79a.

Desired Future Dynamics

The goal for management of this subunit is to alter stand structures, densities and composition, and do so in spatial patterns that will encourage the restoration of functional processes more closely resembling the historical occurrence of more frequent but low to moderate severity disturbance, primarily fire. This will allow opportunities to optimize landscape level wildfire management, while indirectly providing for the habitat needs of late successional dependent species and protection of municipal water supplies by reducing the spatial extent of high severity fire. Multi-cohort overstory stand structures on a unit-wide basis remain unchanged, while reducing stand densities increases tree and stand vigor and improves wildfire management possibilities by improving horizontal and vertical fuel discontinuities. Snags and large downed wood will remain low in the foreseeable future in this strategic location. Post-treatment stand structures, reduced fuel levels and spatial arrangements of fuels and vegetation will allow for frequent low to moderate severity fire to become the primary driver of stand dynamics and ecosystem function through wildland fire use and/or the application of prescribed fire in the near future. Increased post-treatment grass and herbaceous understory development following non-commercial thinning, especially in openings, should help protect surface soils.

Prescription Objectives:

Table 3.1 Desired Stand Attributes

AFR Subunit	Location-Stand	Existing Forest Type*	Trees Per Acre* (>4.5')	Basal Area (ft^2/ac.)* (>0 dbh)	Quadratic Mean Diameter* (>0 dbh)	RDI* (>0 dbh)	Estimated Tree Canopy Cover** (>0 dbh)
28j	6135010-0179	PSME-ARME	229-332	120-150	9-10	0.30-0.40	60-70

* Target ranges are for the stand average, including gaps and retention areas outside of riparian areas or landslide hazard zones. Variations outside of listed range at any one location are expected and desirable.

**Canopy cover is the percent of a stands ground area covered by the downward projection of all tree canopies within a stand. All canopy covers are targeted to remain above a minimum average of 40% per subunit. "Estimated Tree Canopy Cover" is an estimate of expected post-treatment canopy cover based on desired residual densities. It is intended to be a rough guide only and not an actual target.

Desired Future Condition (DFC): *Conditions change over time and space; this DFC reflects the desired future condition over the majority of the stand one to three growing seasons after treatment:*

A reduction in stand density by non-commercial thinning of surface and ladder fuels improves stand vigor, while retaining existing structural and species heterogeneity, increasing mean QMD, improving species compositions by decreasing white fir, and building, over time, tree and stand resistance to effects of low-severity disturbances from insects, disease and/or fire. Reduction in abundance of white fir and dwarf mistletoe infected Douglas-fir occurs. Stand density reduction followed by treatment of activity fuels, improves horizontal and vertical fuel discontinuities throughout the stand as a whole. Existing small, gap-scale openings are retained in portions of the subunit where they already exist and treated to produce a range of densities within them but primarily of a significant reduction. Snag and CWM amounts remain moderate (with high numbers of large snags) while the diversity of understory species, including various grasses, nerbaceous vegetation and others more shade intolerant species, is increased, particularly in canopy gaps.

Treatments to Achieve Management Objective (DFC):

Silvicultural treatments are applied in stands with three general classifications of tree structure in Block 2, referred to as cohorts. Cohort 1 trees are generally those that are 150-300+ years of age and 30 to 60" dbh (and occasionally as high as 80" dbh in the project area); Cohort 2 trees 60-140 years of age and 12-30" dbh (and occasionally as high as 35+" dbh); and Cohort 3 trees 1-50 years of age and 1-10" dbh (and occasionally as high as 18" dbh). For a more complete description of cohorts, the following specified treatments, and the landscape context in which they are applied, see "A Landscape Scale Approach to Management of Multiple Values in AFR: Block 2".

The following treatments are the primary silvicultural activities to be implemented in Subunit 28j.

Individual tree and small group thinning of dwarf mistletoe infected Douglas-fir

1. Reduces abundance of dwarf mistletoe in Douglas-fir on a landscape scale by targeting treatment of infected trees, primarily of Cohorts 2 and 3 in order to promote development of large Douglas-fir trees and to limit dwarf mistletoe abundance and spread, on both a stand and landscape level (see Douglas-fir Dwarf Mistletoe Stand Severity Rating Map in "A Landscape Level Approach to Management of Multiple Values in AFR: Block 2")

Non-commercial surface and ladder fuel thinnings

1. Retains most vigorous of trees of desired species and re-distributes growth and vigor onto these trees and helps grow those into larger size classes in shorter periods of time
2. Removes less vigorous and/or other trees with undesirable characteristics for meeting subunit level goals
3. Re-established more desirable species compositions and/or those currently underrepresented in species, size

classes, and/or growth forms
4. Reduces ladder fuels and increases height-to-crown base, creating more favorable fire management conditions
5. Prepares the site for safe application of prescribed fire regime of low severity in the future
6. Can be used to maintain or enhance existing structural diversity in the overstory
7. Can be used to remove all trees of a given species within 50' of a dwarf mistletoe infected retained overstory tree of the same species.

Ladder and Activity Fuel Piling & Burning
1. Reduces activity generated available fuels within the subunit.
2. Maintains/improves stands ability to modify landscape fire behavior by limiting canopy fire
3. Places piles strategically to minimize damage to retained trees/vegetation and associated resource values
4. Prepares stands for application of low severity prescribed fire
5. Leaves 1-2 slash piles per acre as wildlife habitat

Prescribed fire
1. To be implemented on a maintenance schedule and to be a driver of stand dynamics only once conditions are ready and favorable to support desired goals and objectives described previously herein (also refer to resource coordination section; favorable conditions are not expected to be reached after this initial treatment)
2. Maintain low surface and ladder fuels
3. Maintain & improve the stands' ability to modify landscape fire behavior by limiting risk of active crown fire
4. Places special emphasis on protecting desired species from fire related mortality on a schedule that allows for the regeneration and development of multiple cohorts
5. Favors pine establishment and release by reducing competition and preparing favorable light conditions
6. An assessment of fuel conditions, desired tree regeneration, and competing vegetation should be made to determine the need to reduce fuels and the need to protect and/or maintain desired species compositions based on stated desired future dynamics prior to any prescribed fire
7. Assess conditions and consider the need for treatment 1 – 5 years after initial treatment, and then on a 7 – 15 year cycle

Treatment Narrative

Non-commercial thinning, as required within the half mile home range of the owl, will largely meet stand management objectives in the upper half of this subunit. The high stocking of smaller diameter Pacific madrone in this portion of the subunit should be reduced, releasing understory Douglas-fir. Non-commercial thinning should be aggressive to accentuate wildfire management objectives in this area immediately adjacent the important strategic ridgeline of Subunit 28b. In the lower 1/3-1/2 half of the subunit, and outside of the ½ mile home range of the owl, a fisher block additionally reduced the amount of acreage available for commercial density, such that only several acres were possible to implement. Given this operational constraint, the entire subunit should be non-commercially thinned, with treatment in the lower portions of the subunit focusing on releasing established overstory trees and reducing stand densities to variable amounts in canopy openings to create more structural heterogeneity and gap-level dynamics in the stand. These interspersed canopy gaps tend to occur in spatially discontinuous patterns such that maintenance of the horizontally discontinuous canopy can be maintained. White fir and excessive hardwoods should be discriminated against in these locations, with the intent of continuing to accelerate development of the large, vigorous, more widely spaced Douglas-fir. This should result in a stand that continues to function favorably from a wildfire management perspective, with increases in horizontal and vertical discontinuities of fuels. Activity fuels should be piled and burned after these initial treatments, with a follow-up prescribed underburn as soon as practical. The high vigor and larger size of the existing stand of Douglas-fir should allow for underburning with minimal effect on retained overstory trees. Additionally, prescribed underburning in the upper half of the stand will likely result in additional mortality of hardwoods, including stump sprouts, and begin the process of maintaining a stand of reduced fuel loads and improved wildfire management capabilities. Sporax application on true fir will not be needed in this subunit because white fir is not a preferred species and there is a small number of true fir over 12 inches present.

Applicable Project Criteria, Mitigation Measures, & Resource Coordination:

Slope Stability/Soil Resource Protection	Understory Vegetation- Thinning of stands, even lightly, should stimulate development of understory grasses, herbaceous vegetation, and other understory vegetation that can also provide protection form excess surface soil erosion.
Forest Health	Dwarf mistletoe in Douglas-fir is low in this subunit and all Douglas-fir Cohort 2 and 3 trees except those of the lowest severity (Severity Class 1) should be treated by one of the following methods: 1) falling and retaining infected tree 2) girdling infected trees and retaining in place in areas deficient of snags or large woody debris, 3) isolation of dwarf mistletoe infection to reduce spread by converting to non-host species (e.g. hardwoods, other non-host conifers) around an infected conifer(s), 4) retaining infected trees in places where they are less likely to spread, such as in low spots in the topography (e.g., draws), as opposed to ridges or other high locations where seeds can spread much longer distances, 5) encouraging vigorous growth in dense stands of Douglas-fir or white fir that can occasionally shade out and kill low level infections of shade intolerant dwarf mistletoe, 6) clumping the distribution of infected trees into small widely separated groups thereby reducing spread and levels of contiguous infection, and 7) minimizing potential infection in those areas currently free dwarf mistletoe.
Wildlife	Efforts will be made to retain trees, vegetation and land formations with evidence of use by wildlife (e.g. bird or wood rat nests, burrows, cavities, and hollows, etc.). Large hardwoods have a disproportionate high amount of use by a number of wildlife species (including fishers elsewhere in their range), particularly given their somewhat uncommon occurrence in Block 2. Radial thinning and other silvicultural practices that encourage the long-term viability of large hardwoods in Block 2 will be encouraged. Unthinned patches in each subunit ("skips") will be used to provide additional cover and habitat diversity. Small existing canopy gaps add greater structural and species diversity, essential elements of wildlife habitat improvement, and will be particularly important for those species that utilize the early successional vegetation associated with these openings.
Snags and Coarse Woody Material	Snags >8" dbh will be retained unless they pose a threat to worker safety or pose a fire risk. Snags greater than 10 inches dbh that require felling for safety reasons will be left long and contour felled across the slope to serve as coarse woody debris. Landscape level management of snags and/or coarse woody material is discussed in "A Landscape Approach to Management of Multiple Values in AFR: Block 2").
	The following criteria must be met before fire is prescribed and implemented as a maintenance or stand driver under this prescription:

Prescribed Underburning	-Conditions, including stand vigor and composition, must favor low severity fire effects. -Burning can be accomplished at intensities that will retain duff layers in an amount and distribution that prevents unacceptable levels of surface soil erosion and sediment delivery off-site. Effective ground cover should be protected such that 70% is retained after one season and 85% after 2 seasons. -Stand and individual tree vigor are such that the application of prescribed underburning will not unduly stress preferred leave trees and contribute to untimely mortality. White fir and hardwoods will be particularly challenging to maintain undamaged during application of prescribed underburning. -Protection of desired structures (i.e. large overstory trees, desired advanced regeneration, Pacific madrone) may require pre-treatment prior to burning (immediately before or up to 2-3 years before) in order to them from unnecessary scorch, crown damage, cambial heating, soil heating or other fire-related injury. In these cases practices such as removing duff and ladder fuels and/or fuel accumulations away from the tree bole (ideally 1-2 years prior to burning); spring burning; burning during cool, moist and/or windy conditions to quickly dissipate heat delivery to the tree boles and root systems; slow and careful ignition patterns, and/or other practices can help minimize damage to these features. The assessment by a certified silviculturist of preparatory needs, mitigation measures, and sequence of treatments will ensure integration of the multiple treatment objectives and management goals. It is currently expected that favorable conditions across Subunit 28j may occur soon following initial treatments.
Hydrology	The implementation of silvicultural activities in the Ashland watershed is strongly dependent on outcomes that protect the municipal water supply for the City of Ashland. Although the area in Subunit 28j does not drain into Reeder Reservoir, practices implemented (e.g. fuels management and wildfire reduction) will indirectly protect municipal water objectives, as the overall decrease in the likelihood and size of high severity fire decreases the risk associated with increased sediment delivery that accompanies large-scale, high-severity wildfire events; Roads serve as extensions of the hydrologic network, increasing both the rapidity and size of hydrologic response during major storm events, thereby increasing the potential for significant erosion, sediment delivery and flooding. No new roads are proposed in Block 2. Maintenance of existing roads prior to, during and following use is prioritized
Botanical Resources	Before marking begins the Forest Botanist must be consulted to address any potential PETS species presence and mitigation measures necessary.
	Seeding when appropriate to encourage native plant establishment in the

Native Grass Seeding	herbaceous vegetation layer may follow burning activities. Seeding with native grasses may help impede non-native species invasion, discourage development of more fire-prone shrub species, and add diversity to the plant communities. Factors that will influence a choice to initiate native grass seeding are elevation, aspect, proximity to non-native plants already encroaching from the urban and valley areas, pre-treatment herbaceous plant cover and diversity, extent and intensity of disturbance associated with harvest or burning, and if a need is perceived for erosion control seeding. Native forb seed may be included in seed mixes in the future for similar reasons. At this time, the Forest Service has native grass seed grown from local wild ecotypes but no native forb seed meeting the same source criteria. The decision to apply native grass seed will be made collectively by the certified silviculturist and the Forest or District Botanist. Seed mixes tailored to the stand would be provided by the Forest or District Botanist.
Noxious Weeds	If noxious weed sites are discovered during implementation, these need to be mitigated. Project leaders, work crew leaders, and crew members have a choice at noxious weed sites; the infested sites must either be avoided entirely or their noxious weeds must be fully "treated" before silvicultural treatments occur there. Treatment for noxious weed removal normally means pull, cut, or grub out (depending on species) all the noxious weed plants present and pile the material for later burning. Clean pants cuffs, pockets, boot soles, clothing, tools, machinery, and vehicles of soil or plant parts before proceeding to new areas. Identifying these locations on a map, GPS, etc and sharing that information with appropriate AFR personnel will allow for future return to these sites to insure long-term success at eradication, such as during post-burn monitoring efforts. Noxious weed sites along roads traveling to and from work areas do not need to be treated or reported unless those roadsides are part of actual treatment units or are used as work staging areas. Klamath weed (St. John's wort) and bull thistle are common and widespread noxious weeds in SW Oregon. The Forest Service makes no attempt to prevent their spread or control their abundance during project activity. Hence AFR noxious weed mitigations will not be applied to these two species.
Cultural Resources	Any cultural resource, or potential cultural resource, discovered during the implementation of this project will be cause for immediate cessation of any site-altering activity, with immediate notification of appropriate project personnel. Upon review by a qualified cultural resource specialist, the area of significance may be delineated on the ground and removed from the treatment area.
	Respective resource surveys have been completed and there are no other known issues within the stand to be treated. If there are any findings to the contrary at

Other Resource Coordination	any time, actions to protect resources will be taken immediately and respective specialist(s) will be notified. Activities prescribed would then be reassessed. Cooperation and coordination between all partners, specialists, workers and other interested and involved parties is necessary to protect and promote the multiple values and resources that exist in the project area. This prescription is the vehicle to develop that coordination and integration of objectives, and it is this prescription that ultimately serves to document agreed course of actions and ultimately prescribes treatments and activities (even, and especially, as a need arises to adapt the initial course). Any and all changes needed in treatment activities, timing, and/or sequence of activities prescribed herein as a result of changing conditions on the ground, changes in our partnerships or other organizational capacity, change in scientific understanding, and/or change in management direction; need to be documented and integrated into this or a new prescription by a certified silviculturist prior to those changes being implemented.

Harvest Systems & Transportation:

Logging Systems	No logging is planned for Subunit 28j.
Hauling and Road Use	The 400 spur of Forest Service Road 2060 will be used to access treatment areas. There is a high level of recreational use of this road. Road signs must be posted on both sides of treatment areas warning forest users of activities during implementation. All vehicles will obey posted speed limits and be constantly aware of potential interaction with recreational users. Signs and/or temporary trail closures may also be needed during on-the-ground application of silvicultural activities in the vicinity of established trails. Road maintenance returning roads to a high standard of functionality following cessation of use will be required under any contract requiring hauling on established roads.

Monitoring:

For implementation monitoring please refer to "Prescription Objectives". This section is presented in both narrative form and in a table format that provides a summary of quantifiable variables to be measured during and after prescribed treatments. Effective implementation monitoring should rely on both quantitative and qualitative monitoring, with analysis of both by knowledgeable personnel. Invariably, integration of the two forms of monitoring will provide the most comprehensive and accurate assessment of outcomes. If this process is done well, it should produce results that provide impetus for adaptive management and improvement of both planning and implementation of future work in AFR.

With new information and understandings developing rapidly, additional adjustments to planned activities should also be encouraged in the ongoing spirit of adaptive management.

Treatment effectiveness can be guided by the sections "Land Management Goals and Objectives", "Desired Future Dynamics" and "Desired Future Conditions". Effectiveness will be measured and analyzed over various spatial and temporal scales, including both stand level and landscape level assessments. A strong monitoring component has been integral to the development of AFR. The Ashland Forest Resiliency's Monitoring Plan will provide a comprehensive assessment of the project's overall effectiveness.

Silvicultural Prescription – AFR Block 02, Subunit 28l

Prescriber: Marty Main **Date: May, 2011**

Field Checked by: COA crew, Prescriber **Date: May-June 2011**

Certified Silviculturist: _____ **Date:** 8-5-11

Associated Project: Ashland Forest Resiliency
Associated NEPA: Ashland Forest Resiliency FEIS, ROD
5th Field Watershed: Bear Creek

Stand Identity & Current Condition

Table 1.1 Current Stand Attributes

Location - Stand	Acres	Plant Assoc. *	Site Index (DF, 50yrs)	Elevation (feet)	Average % Slope (range)	Aspect (degrees)	Trees Per Acre (>4.5')	Basal Area (ft^2/ac.)	Estimated Tree Canopy Cover** (>0 dbh)	Quadratic Mean Diameter (>0" dbh)	RDI
135010-0260	5	ABCO-BENE2; ABCO-_PSME/ROGY	80-85	4500-4700	44 (33-51)	36-60	457	189	88	8.7	0.52

**Plant Association from Atzet, et al. 1996.*

**Canopy cover is the percent of a stand's ground area covered by the downward projection of all tree canopies within a stand. Individual point data (crown closure) was systematically collected with a densiometer and averaged to arrive at canopy cover estimates.

Subunit Description / Context

Subunit 28l is located on 30-55% northeasterly aspects in an upper third slope location immediately below the ridgeline location of Subunit 31d. It is a productive site dominated by the ABCO-BENE2 Plant Association, but grading into ABCO-PSME/ROGY near the ridgeline. Estimated 50 year site index for Douglas-fir is 80-85. Subunit 28l is a unique stand that appears to have been initiated in the 1930's, perhaps as part of the Skyline Mine operations. It is currently dominated by a multi-species, multi-cohort stand well on its way to developing mature forest values. For an unknown reason, it was retained untreated in the early 1960's harvests in the area and currently offers unique structural diversity in the immediate area, surrounded by younger stands initiated in that 1960's harvest and mostly planted with ponderosa pine. It is also refugia for various wildlife species, although not particularly important for mature forest dependent species in this topographic location. The stand is dominated by healthy, vigorous Cohort 2 Douglas-fir and white fir in the 18-30" dbh size class still growing at excellent rates (6-10 rings per inch). It has the highest stand density index of any subunit in Block 2 for the 16-21" dbh size class, but is only of moderate stocking overall, with a current basal area of 189 BA/A and an RDI of 0.52. Although the overstory is dominated by the taller firs, Pacific madrone dominates most of the middle canopy layers, with over ½ of the total basal area in 8-20"dbh trees of this species, mostly clustered in canopy gaps. Approximately 70 6-10" dbh white fir/acre are intermixed in this layer with an understory of about 250 additional Douglas-fir and white fir up to 4" dbh in the lowest canopy layer. This density, species composition and structural arrangement indicates that excellent growth and vigor of overstory Douglas-fir and white fir can occur even with considerable basal area in retained, mid-canopy Pacific madrone. The north half of the subunit was treated under AWPP, removing understory ladder fuels and piling and burning resulting slash, making this portion of the subunit more open and less wildfire prone. Approximately one acre at the top of the subunit near the ridgeline is dominated by dense Pacific madrone in smaller size classes (primarily 4-14" dbh), amidst a small number of conifer emergent conifers. Dwarf

mistletoe infection and severity in Douglas-fir is also low in this unit. Both snags and coarse woody material are low in this subunit, suggesting that this was not historically an older forest, but rather one that has rapidly grown into the current mid-seral condition. Other subunits adjacent Subunit 28l (28f, 28g, 28h and 28m) were also treated under AWPP and combine to create a good fuel reduction zone around 28l, which will additionally be improved once the old shaded fuelbreak in Subunit 31d to the west is treated in AFR.

Land Management Goals & Parameters:

Table 2.1 Management Direction

Management Allocation:	Restricted Watershed (RRNF LRMP) Foreground Partial Retention (RRNF LRMP), Middleground Partial Retention (RRNF LRMP), Late Successional Reserve (NWFP)
Project NEPA:	Ashland Forest Resiliency FEIS, ROD
NEPA Purpose & Need:	The **Need** for action is urgent reduction of the potential for large-scale, high-severity wildland fire in the Upper Bear landscape. One hundred years of fire exclusion and fuel accumulations in this forest's wildland/urban interface now presents high potential for large-scale, high-severity wildland fire that could significantly interrupt the supply of clean water and late-successional and old-growth forest ecosystems in this Analysis Area. The **Purpose** of the action is to protect Values at Risk, reduce hazardous fuels, reduce crown fire potential, and create forest conditions that are more resilient to wildland fires.

AFR Strategic Category and Purpose:

Strategic Ridgelines: Treatments along Strategic Ridgelines are designed to: 1) reduce the extent of wildland fire severity by limiting the amount of area affected by wildland fire, 2) create areas where fire suppression efforts can be conducted more safely and effectively, 3) break up continuity of fuels over a large landscape, and 4) serve as anchor points for further area-wide treatments, such as prescribed fire and maintenance burning (AFR FEIS, 2008). All of Block 2 was designated as a Strategic Ridgeline in the ROD except for Subunits 29a and 79a.

Desired Future Dynamics

The goal for management of this subunit is to alter stand structures, densities and composition, and do so in spatial patterns that will encourage the restoration of functional processes more closely resembling the historical occurrence of more frequent but lower to moderate severity disturbance, primarily fire. This will allow opportunities to optimize landscape level wildfire management, while indirectly providing for the habitat needs of late successional dependent species and protection of municipal water supplies by reducing the spatial extent of high severity fire. Stand structures will be slightly more open, maintaining high tree and stand vigor while retaining existing species and structural heterogeneity and associated horizontal and vertical fuel discontinuities. Snags and large downed wood will remain low in the foreseeable future in this strategic location. Post-treatment stand structures, reduced fuel levels and spatial arrangements of fuels and vegetation will allow for frequent low to moderate severity fire as the primary driver of stand dynamics and ecosystem function through wildland fire use and/or the application of prescribed fire. Fire may then begin to be the primary driver of stand dynamics, although ecologically appropriate silvicultural activities will likely still

continue to be applied, including additional variable density thinning in the future, in order to maintain structural heterogeneity. These silvicultural activities will be implemented to maintain/restore less fire prone structural characteristics of forests and help provide vegetational characteristics that can emulate those that allowed historic disturbance regimes. Increased post-treatment grass and herbaceous understory development following thinning, especially in openings, should help protect surface soils.

Prescription Objectives:

Table 3.1 Desired Stand Attributes

AFR Subuit	Location-Stand	Existing Forest Type*	Trees Per Acre* (>4.5')	Basal Area (ft^2/ac.)* (>0 dbh)	Quadratic Mean Diameter* (>0 dbh)	RDI* (>0 dbh)	Estimated Tree Canopy Cover** (>0 dbh)
28l	6135010-0260	PSME-ARME-ABCO	262-401	150-174	9-10	0.39-0.47	60-70

* Target ranges are for the stand average, including gaps and retention areas outside of riparian areas or landslide hazard zones. Variations outside of listed range at any one location are expected and desirable.

**Canopy cover is the percent of a stands ground area covered by the downward projection of all tree canopies within a stand. All canopy covers are targeted to remain above a minimum average of 40% per subunit. "Estimated Tree Canopy Cover" is an estimate of expected post-treatment canopy cover based on desired residual densities. It is intended to be a rough guide only and not an actual target.

Desired Future Condition (DFC): *Conditions change over time and space; this DFC reflects the desired future condition over the majority of the stand one to three growing seasons after treatment:*

A slight reduction in stand density, primarily by thinning-from-below maintains good existing stand vigor, while retaining existing structural and species heterogeneity, increasing mean QMD, improving species compositions by favoring larger Pacific madrone in openings and decreasing white fir, while building, over time, tree and stand resistance to effects of low severity disturbances from insects, disease and/or fire. Reduction in abundance of dwarf mistletoe in Douglas-fir occurs. Stand density reduction, both commercial and non-commercial, followed by treatment of activity fuels, and improves horizontal and vertical fuel discontinuities throughout the stand as a whole. Existing small, gap-scale openings are retained in portions of the subunit where they already exist. Snag and CWM amounts remain low while the diversity of understory species, including various grasses, herbaceous vegetation and other shade-intolerant species, is increased particularly in canopy gaps.

Treatments to Achieve Management Objective (DFC):

Silvicultural activities are applied in three general classifications of tree structure in Block 2, referred to as cohorts. Cohort 1 trees are generally those that are 150-300+ years of age and 30 to 60" dbh (and occasionally as high as 80" dbh in the project area); Cohort 2 trees 60-140 years of age and 12-30" dbh (and occasionally as high as 35+" dbh); and Cohort 3 trees 1-50 years of age and 1-10" dbh (and occasionally as high as 18" dbh). For a more complete description of cohorts, the following specified treatments, and the landscape context in which they are applied, see "A Landscape Scale Approach to Management of Multiple Values in AFR: Block 2"

The following treatments are the primary silvicultural activities to be implemented in Subunit 28l.

Thinning-from-below

1. Improves retained tree and stand vigor and minimizes long-term potential for insect related mortality by re-distributing growth onto fewer larger trees, resulting in increased quadratic mean diameter (QMD) for the stand
2. Removes relatively smaller and less vigorous trees from primarily intermediate and suppressed crown classes

3. Maintains sufficient canopy closure and full-site occupancy by retained trees to retard understory ladder fuel development; maintains/promotes high canopy base height and good vertical discontinuity of fuels.
4. Speeds development of older tree structures and potential for development of more mature stand conditions
5. Includes more thorough release of legacy and/or the largest, healthiest trees of desired species, size classes, or growth forms.

Individual tree and small group removal of dwarf mistletoe infected Douglas-fir

1. Reduces abundance of dwarf mistletoe in Douglas-fir on a landscape scale by targeting treatment of infected trees, primarily of Cohorts 2 and 3 in order to promote development of large Douglas-fir trees and to limit dwarf mistletoe abundance and spread, on both a stand and landscape level (see Douglas-fir Dwarf Mistletoe Stand Severity Rating Map in "A Landscape Level Approach to Management of Multiple Values in AFR: Block 2")

Non-commercial surface and ladder fuel thinning

1. Retains most vigorous of trees of desired species and re-distributes growth and vigor onto these trees and helps grow those into larger size classes in shorter periods of time
2. Removes less vigorous and/or other trees with undesirable characteristics for meeting subunit level goals
3. Re-established more desirable species compositions and/or those currently underrepresented in species, size classes, and/or growth forms
4. Reduces ladder fuels and increases height-to-crown base, creating more favorable fire management conditions
5. Prepares the site for safe application of prescribed fire regime of low severity in the future
6. Can be used to maintain or enhance existing structural diversity in the overstory
7. Can be used to remove all trees of a given species within 50' of a dwarf mistletoe infected retained overstory tree of the same species.

Ladder and Activity Fuel Piling & Burning

1. Reduces activity generated available fuels within the subunit.
2. Maintains/improves stands ability to modify landscape fire behavior by limiting canopy fire
3. Places piles strategically to minimize damage to retained trees/vegetation and associated resource values
4. Prepares stands for application of low severity prescribed fire
5. Leaves 1-2 slash piles per acre as wildlife habitat

Prescribed fire

1. To be implemented on a maintenance schedule and to be a driver of stand dynamics only once conditions are ready and favorable to support desired goals and objectives described previously herein (also refer to resource coordination section; favorable conditions are not expected to be reached after this initial treatment)
2. Maintain low surface and ladder fuels
3. Maintain & improve the stands' ability to modify landscape fire behavior by limiting risk of active crown fire
4. Places special emphasis on protecting desired species from fire related mortality on a schedule that allows for the regeneration and development of multiple cohorts
5. Favors pine establishment and release by reducing competition and preparing favorable light conditions
6. An assessment of fuel conditions, desired tree regeneration, and competing vegetation should be made to determine the need to reduce fuels and the need to protect and/or maintain desired species compositions based on stated desired future dynamics prior to any prescribed fire
7. Assess conditions and consider the need for treatment 1 – 5 years after initial treatment, and then on a 7 – 15 year cycle

Treatment Narrative

Only limited treatment is needed in Subunit 28l at this time in order to retain its structurally unique stand condition and be allowed to continue on a stand development trajectory towards older forest conditions. The rapidly growing larger white fir and particularly Douglas-fir 20-30" dbh are beginning to form critical large structural values of older forest conditions. However, the subunit is really too small to form an important mature forest by itself, particularly given its location in the upper third slope position. The multi-canopy structure of the subunit, including the healthy vigorous overstory, currently provides some associated habitat for wildlife in the vicinity, as well as providing a good seed source for native conifers in the slopes below that are currently lacking in these species. This is particularly important for Subunits 28 f, g, and h, most of which were planted with ponderosa pine (possibly offsite) in the 1960s, followed by removal of many of the native incoming firs in the understory in the more recent AWPP treatments. The importance of older, site-specific Douglas-fir as a seed source in this location suggests that thinning of intermediate and suppressed crown classes, both commercially and non-commercially, around the vigorous larger trees in the subunit is important at this time. Smaller competing hardwoods and conifers <12" dbh can also be removed where appropriate, although retention of clumps for cover for wildlife is also appropriate. Removal of dwarfmistletoe infected Douglas-fir of higher severity classes should also be prioritized to minimize spread. The small patch of dense hardwoods at the top of the subunit should also be non-commercially thinned to reduce stand densities, fuel continuities and wildfire spread in this area close to the strategically important ridgeline of Subunit 31d. All activity fuels should be piled and burned. Once fuels reduction in Subunit 31d to the west is completed and adds to excellent fuel reduction in all directions around Subunit 28l, then retaining this well-stocked, mixed species, multi-cohort stand in this location will not compromise wildfire management goals while retaining the unique values of this stand. The existing high vigor of the larger overstory conifers in this subunit suggest that prescribed fire can be re-initiated into this stand in the near future, although retaining the relatively unique abundance of moderate to larger Pacific madrone may be difficult to accomplish without great care in burning.

Applicable Project Criteria, Mitigation Measures, & Resource Coordination:

Slope Stability/Soil Resource Protection	Understory Vegetation- Thinning of stands, even lightly, should stimulate development of understory grasses, herbaceous vegetation, and other understory vegetation that can also provide protection form excess surface soil erosion.
Forest Health	Pines above 3" in diameter that need to be cut may be designated at any time, but they will be cut between August and December *unless t*hey are immediately disposed of by burning, chipping, scoring, or removed as a product prior to the springtime flight of the beetles (usually between March and May). Pines that are above the maximum size required for piling and burning should not be cut unless a specific plan is made for their removal, consumption and/or other practice to make them unavailable for potential beetle habitat (e.g. bark removal). Dwarf mistletoe in Douglas-fir is light in this subunit; any infected trees found should be treated, primarily by falling and removal. Fresh cut stumps of all true fir 12" dbh and larger will be protected from inoculation of Annosus root disease by application of Sporax (or other approved boron-containing product) on fresh cut stumps immediately following falling.

Wildlife	Efforts will be made to retain trees, vegetation and land formations with evidence of use by wildlife (e.g. bird or wood rat nests, burrows, cavities, and hollows, etc.). Large hardwoods have a disproportionate high amount of use by a number of wildlife species (including fishers elsewhere in their range), particularly given their somewhat uncommon occurrence in Block 2. Radial thinning and other silvicultural practices that encourage the long-term viability of large hardwoods in Block 2 will be encouraged. Unthinned patches in each subunit ("skips") will be used to provide additional cover and habitat diversity. Small existing canopy gaps add greater structural and species diversity, essential elements of wildlife habitat improvement, and will be particularly important for those species that utilize the early successional vegetation associated with these openings.
Snags and Coarse Woody Material	Snags will be retained unless they pose a threat to worker safety or pose a fire risk. Snags greater than 10 inches dbh that require felling for safety reasons will be left long and contour felled across the slope to serve as coarse woody debris. Landscape level management of snags and/or coarse woody material is discussed in "A Landscape Approach to Management of Multiple Values in AFR: Block 2").
Prescribed Underburning	The following criteria must be met before fire is prescribed and implemented as a maintenance or stand driver under this prescription: -Conditions, including stand vigor and composition, must favor low severity fire effects. -Burning can be accomplished at intensities that will retain duff layers in an amount and distribution that prevents unacceptable levels of surface soil erosion and sediment delivery off-site. Effective ground cover should be protected such that 70% is retained after one season and 85% after 2 seasons. -Stand and individual tree vigor are such that the application of prescribed underburning will not unduly stress preferred leave trees and contribute to untimely mortality. -Protection of desired structures (i.e. large overstory trees, desired advanced regeneration, large Pacific madrone) may require pre-treatment prior to burning (immediately before or up to 2-3 years before) in order to them from unnecessary scorch, crown damage, cambial heating, soil heating or other fire-related injury. In these cases practices such as removing duff and ladder fuels and/or fuel accumulations away from the tree bole; spring burning; burning during cool, moist and/or windy conditions to quickly dissipate heat delivery to the tree boles and root systems; slow and careful ignition patterns, and/or other practices can help minimize damage to these features. The assessment by a certified silviculturist of preparatory needs, mitigation measures, and sequence of treatments will ensure integration of the multiple treatment objectives and management goals. It is currently expected that favorable

	conditions across Subunit 28l may occur in a relatively short time frame following this initial thinning treatment.
Hydrology	The implementation of silvicultural activities in the Ashland watershed is strongly dependent on outcomes that protect the municipal water supply for the City of Ashland. Although the area in Subunit 28l does not drain directly into Reeder Reservoir, practices implemented (e.g. fuels management and wildfire reduction) will indirectly protect municipal water objectives, as the overall decrease in the likelihood and size of high severity fire decreases the risk associated with increased sediment delivery that accompanies large-scale, high-severity wildfire events; Commercial density management in Subunit 28l will utilize helicopter logging systems, which will minimize ground disturbance and subsequent negative effects on hydrologic function. Roads serve as extensions of the hydrologic network, increasing both the rapidity and size of hydrologic response during major storm events, thereby increasing the potential for significant erosion, sediment delivery and flooding. No new roads are proposed in Block 2. Maintenance of existing roads prior to, during and following use is prioritized
Botanical Resources	Before marking begins the Forest Botanist must be consulted to address any potential PETS species presence and mitigation measures necessary.
Native Grass Seeding	Seeding when appropriate to encourage native plant establishment in the herbaceous vegetation layer may follow burning activities. Seeding with native grasses may help impede non-native species invasion, discourage development of more fire-prone shrub species, and add diversity to the plant communities. Factors that will influence a choice to initiate native grass seeding are elevation, aspect, proximity to non-native plants already encroaching from the urban and valley areas, pre-treatment herbaceous plant cover and diversity, extent and intensity of disturbance associated with harvest or burning, and if a need is perceived for erosion control seeding. Native forb seed may be included in seed mixes in the future for similar reasons. At this time, the Forest Service has native grass seed grown from local wild ecotypes but no native forb seed meeting the same source criteria. The decision to apply native grass seed will be made collectively by the certified silviculturist and the Forest or District Botanist. Seed mixes tailored to the stand would be provided by the Forest or District Botanist.
Noxious Weeds	If noxious weed sites are discovered during implementation, these need to be mitigated. Project leaders, work crew leaders, and crew members have a choice at noxious weed sites; the infested sites must either be avoided entirely or their

	noxious weeds must be fully "treated" before silvicultural treatments occur there. Treatment for noxious weed removal normally means pull, cut, or grub out (depending on species) all the noxious weed plants present and pile the material for later burning. Clean pants cuffs, pockets, boot soles, clothing, tools, machinery, and vehicles of soil or plant parts before proceeding to new areas. Identifying these locations on a map, GPS, etc and sharing that information with appropriate AFR personnel will allow for future return to these sites to insure long-term success at eradication, such as during post-burn monitoring efforts. Noxious weed sites along roads traveling to and from work areas do not need to be treated or reported unless those roadsides are part of actual treatment units or are used as work staging areas. Klamath weed (St. John's wort) and bull thistle are common and widespread noxious weeds in SW Oregon. The Forest Service makes no attempt to prevent their spread or control their abundance during project activity. Hence AFR noxious weed mitigations will not be applied to these two species.
Cultural Resources	Any cultural resource, or potential cultural resource, discovered during the implementation of this project will be cause for immediate cessation of any site-altering activity, with immediate notification of appropriate project personnel. Upon review by a qualified cultural resource specialist, the area of significance may be delineated on the ground and removed from the treatment area.
Other Resource Coordination	Respective resource surveys have been completed and there are no other known issues within the stand to be treated. If there are any findings to the contrary at any time, actions to protect resources will be taken immediately and respective specialist(s) will be notified. Activities prescribed would then be reassessed. Cooperation and coordination between all partners, specialists, workers and other interested and involved parties is necessary to protect and promote the multiple values and resources that exist in the project area. This prescription is the vehicle to develop that coordination and integration of objectives, and it is this prescription that ultimately serves to document agreed course of actions and ultimately prescribes treatments and activities (even, and especially, as a need arises to adapt the initial course). Any and all changes needed in treatment activities, timing, and/or sequence of activities prescribed herein as a result of changing conditions on the ground, changes in our partnerships or other organizational capacity, change in scientific understanding, and/or change in management direction; need to be documented and integrated into this or a new prescription by a certified silviculturist prior to those changes being implemented.

Harvest Systems & Transportation:

Logging Systems	The type of logging system(s) and the feasibility of removals without compromising important ecological objectives will be determined prior to initiation of operations. Such consideration will have to meet soil protection measures and result in no greater than 5% detrimental soil conditions across the subunit's area (not including the permanent transportation system).
Landings	Only existing landings or hot logging on existing roads are currently approved for use. It is expected that only three existing landings will be utilized in Block 2. Any new proposed landings must be approved by the Contracting Office Representative (COR) and amended in this prescription by a certified silviculturist. Landing restoration after completion of use shall be overseen by a qualified soil scientist, botanist, and/or other pertinent resource specialist(s). Seeding of landings with native grasses immediately following cessation of use may minimize noxious, non-native plant establishment. Monitoring for noxious non-native plants invading the landings should be conducted for at least 3 years following cessation of use, and appropriate efforts of eradication undertaken when found. In addition, any opportunities for landing erosion/sediment to enter the aquatic network will be addressed both during use, and during restoration efforts immediately following cessation of landing use.
Hauling and Road Use	Forest Service Road 2060 and the 400 spur will be used to access treatment areas. There is a high level of recreational use of these roads. Road signs must be posted on both sides of treatment areas warning forest users of activities during implementation. All vehicles will obey posted speed limits and be constantly aware of potential interaction with recreational users. Signs and/or temporary trail closures may also be needed during on-the-ground application of silvicultural activities in the vicinity of established trails. Road maintenance returning roads to a high standard of functionality following cessation of use will be required under any contract requiring hauling on established roads.

Monitoring:

For implementation monitoring please refer to "Prescription Objectives". This section is presented in both narrative form and in a table format that provides a summary of quantifiable variables to be measured during and after prescribed treatments. Effective implementation monitoring should rely on both quantitative and qualitative monitoring, with analysis of both by knowledgeable personnel. Invariably, integration of the two forms of monitoring will provide the most comprehensive and accurate assessment of outcomes. If this process is done well, it should produce results that provide impetus for adaptive management and improvement of both planning and implementation of future work in AFR.

With new information and understandings developing rapidly, additional adjustments to planned activities should also be encouraged in the ongoing spirit of adaptive management.

Treatment effectiveness can be guided by the sections "Land Management Goals and Objectives", "Desired Future Dynamics" and "Desired Future Conditions". Effectiveness will be measured and analyzed over various spatial and temporal scales, including both stand level and landscape level assessments. A strong monitoring component has been integral to the development of AFR. The Ashland Forest Resiliency's Monitoring Plan will provide a comprehensive assessment of the project's overall effectiveness.

Silvicultural Prescription – AFR Block 02, Subunit 28m

Prescriber: Marty Main **Date: May, 2011**

Field Checked by: COA crew, Prescriber, Cert. Silviculturist **Date: May-June 2011**

Certified Silviculturist: _____ **Date:** 8-5-11

Associated Project: Ashland Forest Resiliency
Associated NEPA: Ashland Forest Resiliency FEIS, ROD
5th Field Watershed: Bear Creek

Stand Identity & Current Condition

Table 1.1 Current Stand Attributes

Location - Stand	Acres	Plant Assoc. *	Site Index (DF, 50yrs)	Elevation (feet)	Average % Slope (range)	Aspect (degrees)	Trees Per Acre (>4.5')	Basal Area (ft^2/ac.)	Estimated Tree Canopy Cover** (>0 dbh)	Quadratic Mean Diameter (>0" dbh)	RDI
135010-0261	3	ABCO-BENE2; ABCO-_PSME/ROGY	70-80	4500-4600	8 (3-15)	90-187	151	110	60	11.6	0.24

Plant Association from Atzet, et al. 1996.
**Canopy cover is the percent of a stand's ground area covered by the downward projection of all tree canopies within a stand. Individual point data (crown closure) was systematically collected with a densiometer and averaged to arrive at canopy cover estimates.

Subunit Context/Description

Stand 28m is a small unit located on 0-15% southeasterly aspects adjacent the main ridgeline in Block 2. Plant Association is borderline between ABCO-BENE2 and ABCO-PSME/ROGY, with a possible inclusion of the ABCO/XETE Plant Association that is normally found farther north and in higher precipitation zones, but the ridgeline location and the presence of Beargrass (Xerophyllum tenax) make this plant association a possibility in this location.

The gentle slopes of Stand 28m allowed for a recent (estimated 2004) non-commercial surface and ladder fuel treatment with a slashbuster. This resulted in an open mid-seral stand – an unusual occurrence in Block 2. The slashbuster also reconfigured fuels (grinding and spreading) in a manner that reduced fuel continuity, providing a wildfire management benefit in this strategically important location. Horizontal discontinuity of fuels, in both surface and crown fuels, including pruning up to 8 feet, make Stand 28m effective from a wildfire management perspective, especially given the relatively gentle topography of the subunit. In conjunction with Subunits 28f and 28o, this subunit forms a potentially significant lateral ridgeline fuel reduction zone on slopes that rarely exceed 25%. The existing stand is dominated by mostly vigorous 10-24" dbh white fir and Douglas-fir, comprising 59% and 27% of the total BA/A respectively, while 10-16" dbh Pacific madrone is the most common hardwood. These trees tend to be distributed in pockets while leaving understocked openings enhanced by the slashbuster, creating an example of a type of stand structural heterogeneity that is desired long-term both in Block 2 where appropriate, and in the AFR project in general. Individual clumps can be slightly overstocked, but when openings are included, current stand basal areas and RDI's average 110 ft^2/ac. and 0.24 respectively- low densities indicative of the recent stand density reduction work. Douglas-fir dwarfmistletoe is moderate in this stand with perhaps 1/3 of the trees infected, but primarily in the lower third crown positions. Some recent mortality of younger white fir has also occurred. Larger Douglas-fir and white fir >24" dbh are rare in this unit, as well as rare

superdominant ponderosa and sugar pine. Understory vegetation, including conifer seedlings and saplings <1" dbh, are generally sparse and in small patches missed by the slashbuster, although Pacific madrone sprouts up to 10' tall appear poised to increase in abundance and total vegetative cover. Snags average 8/acre, including several very large pine snags, and a recent inclusion of smaller white fir. Coarse woody material averages 30 tons/acre, including a high number of pieces in the 3-10" diameter class, largely due to the work of the slashbuster.

Land Management Goals & Parameters:

Table 2.1 Management Direction

Management Allocation:	Restricted Watershed (RRNF LRMP) Late Successional Reserve (NWFP)
Project NEPA:	Ashland Forest Resiliency FEIS, ROD
NEPA Purpose & Need:	The **Need** for action is urgent reduction of the potential for large-scale, high-severity wildland fire in the Upper Bear landscape. One hundred years of fire exclusion and fuel accumulations in this forest's wildland/urban interface now presents high potential for large-scale, high-severity wildland fire that could significantly interrupt the supply of clean water and late-successional and old-growth forest ecosystems in this Analysis Area. The **Purpose** of the action is to protect Values at Risk, reduce hazardous fuels, reduce crown fire potential, and create forest conditions that are more resilient to wildland fires.

AFR Strategic Category and Purpose:

Strategic Ridgelines: Treatments along Strategic Ridgelines are designed to: 1) reduce the extent of wildland fire severity by limiting the amount of area affected by wildland fire, 2) create areas where fire suppression efforts can be conducted more safely and effectively, 3) break up continuity of fuels over a large landscape, and 4) serve as anchor points for further area-wide treatments, such as prescribed fire and maintenance burning (AFR FEIS, 2008). All of Block 2 was designated as a Strategic Ridgeline in the ROD except for Subunits 29a and 79a.

Desired Future Dynamics

The goal for management of this subunit is to alter stand structures, densities and composition, and do so in spatial patterns that will encourage the restoration of functional processes more closely resembling the historical occurrence of more frequent but lower to moderate severity disturbance, primarily fire. This will allow opportunities to optimize landscape level wildfire management, while indirectly providing for the habitat needs of late successional dependent species and protection of municipal water supplies by reducing the spatial extent of high severity fire. Stand management activities will slightly reduce stand densities and create more open stand structures, retain existing structural heterogeneity and associated horizontal and vertical fuel discontinuities, maintain high tree and stand vigor while slightly altering species composition to favor more pine (ponderosa and sugar) and Douglas-fir establishment and dominance. Snags and large downed wood will remain low in the foreseeable future in this strategic location. Post-treatment stand structures, reduced fuel levels and spatial arrangements of fuels and vegetation will allow for frequent low to moderate severity fire as the primary driver of stand dynamics and ecosystem function through wildland fire use and/or the application of prescribed fire, after establishment of more favorable species compositions. Fire may then begin to be the primary driver of stand dynamics, although ecologically appropriate silvicultural activities will likely still continue to be applied, including additional variable density thinning in the future, in order to maintain structural heterogeneity and desirable

conditions from a wildfire management perspective in this strategically important location. Increased post-treatment grass and herbaceous understory development following thinning, especially in openings, should help protect surface soils.

Prescription Objectives:

Table 3.1 Desired Stand Attributes

AFR Subuit	Location-Stand	Existing Forest Type*	Trees Per Acre* (>4.5')	Basal Area (ft^2/ac.)* (>0 dbh)	Quadratic Mean Diameter* (>0 dbh)	RDI* (>0 dbh)	Estimated Tree Canopy Cover** (>0 dbh)
28m	6135010-0261	PSME-ABCO-ARME	136-148	92-105	11	0.20-0.23	50-55

* Target ranges are for the stand average, including gaps and retention areas outside of riparian areas or landslide hazard zones. Variations outside of listed range at any one location are expected and desirable.

**Canopy cover is the percent of a stands ground area covered by the downward projection of all tree canopies within a stand. All canopy covers are targeted to remain above a minimum average of 40% per subunit. "Estimated Tree Canopy Cover" is an estimate of expected post-treatment canopy cover based on desired residual densities. It is intended to be a rough guide only and not an actual target.

Desired Future Condition (DFC): *Conditions change over time and space; this DFC reflects the desired future condition over the majority of the stand one to three growing seasons after treatment:*

A slight reduction in stand density, primarily by thinning-from-below and removal of diseased and/or poor vigor trees, should improve overall stand vigor, while retaining existing structural heterogeneity and improve species composition by decreasing abundance of white fir and encouraging establishment of more sugar and ponderosa pine. This slight reduction in stand density should help improve tree and stand resistance to effects of low severity disturbances from insects, disease and/or fire. Reduction in abundance of dwarf mistletoe in Douglas-fir occurs. Stand density reduction, both commercial and non-commercial, followed by treatment of activity fuels maintains horizontal and vertical fuel discontinuities throughout the stand as a whole. Existing small, gap-scale openings are retained in portions of the subunit where they already exist. Snag and CWM amounts remain low, while the diversity of understory species, including various grasses, herbaceous vegetation and others more shade intolerant species, is increased, particularly in existing canopy gaps.

Treatments to Achieve Management Objective (DFC):

Silvicultural activities are applied in three general classifications of tree structure in Block 2, referred to as cohorts. Cohort 1 trees are generally those that are 150-300+ years of age and 30 to 60" dbh (and occasionally as high as 80" dbh in the project area); Cohort 2 trees 60-140 years of age and 12-30" dbh (and occasionally as high as 35+" dbh); and Cohort 3 trees 1-50 years of age and 1-10" dbh (and occasionally as high as 18" dbh). For a more complete description of cohorts, the following specified treatments, and the landscape context in which they are applied, see "A Landscape Scale Approach to Management of Multiple Values in AFR: Block 2"

The following treatments are the primary silvicultural activities to be implemented in Subunit 28m.

Thinning-from-below

1. Improves retained tree and stand vigor and minimizes long-term potential for insect related mortality by re-distributing growth onto fewer larger trees, resulting in increased quadratic mean diameter (QMD) for the stand
2. Removes relatively smaller and less vigorous trees from primarily intermediate and suppressed crown classes
3. Maintains sufficient canopy closure and full-site occupancy by retained trees to retard understory ladder fuel development; maintains/promotes high canopy base height and good vertical discontinuity of fuels.
4. Speeds development of older tree structures and potential for development of more mature stand conditions

5. Includes more thorough release of legacy and/or the largest, healthiest trees of desired species, size classes, or growth forms.

Individual tree and small group thinning of dwarf mistletoe infected Douglas-fir

1. Reduces abundance of dwarf mistletoe in Douglas-fir on a landscape scale by targeting treatment of infected trees, primarily of Cohorts 2 and 3 in order to promote development of large Douglas-fir trees and to limit dwarf mistletoe abundance and spread, on both a stand and landscape level (see Douglas-fir Dwarf Mistletoe Stand Severity Rating Map in "A Landscape Level Approach to Management of Multiple Values in AFR: Block 2")

Non-commercial surface and ladder fuel thinnings

1. Retains most vigorous of trees of desired species and re-distributes growth and vigor onto these trees and helps grow those into larger size classes in shorter periods of time
2. Removes less vigorous and/or other trees with undesirable characteristics for meeting subunit level goals
3. Re-established more desirable species compositions and/or those currently underrepresented in species, size classes, and/or growth forms
4. Reduces ladder fuels and increases height-to-crown base, creating more favorable fire management conditions
5. Prepares the site for safe application of prescribed fire regime of low severity in the future
6. Can be used to maintain or enhance existing structural diversity in the overstory
7. Can be used to remove all trees of a given species within 50' of a dwarf mistletoe infected retained overstory tree of the same species.

Ladder and Activity Fuel Piling & Burning

1. Reduces activity generated available fuels within the subunit.
2. Maintains/improves stands ability to modify landscape fire behavior by limiting canopy fire
3. Places piles strategically to minimize damage to retained trees/vegetation and associated resource values
4. Prepares stands for application of low severity prescribed fire
5. Leaves 1-2 slash piles per acre as wildlife habitat

Prescribed fire

1. To be implemented on a maintenance schedule and to be a driver of stand dynamics only once conditions are ready and favorable to support desired goals and objectives described previously herein (also refer to resource coordination section; favorable conditions are not expected to be reached after this initial treatment)
2. Maintain low surface and ladder fuels
3. Maintain & improve the stands' ability to modify landscape fire behavior by limiting risk of active crown fire
4. Places special emphasis on protecting desired species from fire related mortality on a schedule that allows for the regeneration and development of multiple cohorts
5. Favors pine establishment and release by reducing competition and preparing favorable light conditions
6. An assessment of fuel conditions, desired tree regeneration, and competing vegetation should be made to determine the need to reduce fuels and the need to protect and/or maintain desired species compositions based on stated desired future dynamics prior to any prescribed fire
7. Assess conditions and consider the need for treatment 1 – 5 years after initial treatment, and then on a 7 – 15 year cycle

Treatment Narrative

In its current condition, Stand 28m serves as an example of stand density reduction in a style that creates considerable patchiness, spatial heterogeneity and subsequent horizontal discontinuity of fuels. It is suggested that this more open canopy, mid-seral stand condition be maintained well into the future, perhaps even progressing onto an open canopy late seral stand structure type well into the future- a type that is even rarer in the watershed. A light, sanitation-type, ground-based harvest to improve stand vigor and growth in spots, while improving species composition and maintaining fuel

discontinuity in horizontal and vertical directions should be initiated, with an emphasis on removal of dwarf mistletoe nfected Douglas-fir and less vigorous white fir. Some high vigor white fir (40-50+% crown ratios, 5-10 ring/inch growth), regardless of size, will be retained, even if in small clumps to meet current structure objectives. Pacific madrone > 14" dbh and less common chinquapin should be retained, particularly in the rocky bluffs found in several locations in the subunit. Spot post-harvest non-commercial thinning can be included as needed, but will likely be minimal. Resulting activity fuels should be piled and burned. Plant ponderosa and rust-resistant sugar pine in existing openings. Prescribed underburning should be avoided in this stand for at least 5 years as hazard is currently low, to allow the planted pines to get established and to allow further decomposition of slashbuster-generated chips in the soil that could burn at higher intensities and longer durations, affecting soil productivity. This stand should be managed in the long-term to reduce the abundance of white fir and for rapid growth of pines and dwarf mistletoe-free Douglas-fir at lower retained stand densities, while retaining high spatial heterogeneity, horizontal patchiness, and low fuels and understory tree, shrub and ladder fuel development. In the meantime, apply Sporax to all retained white fir sumps 12" dbh and larger to minimize spread of Annosus root disease. Maintaining this stand type long-term will require regular prescribed underburning on a 7-15 year interval, particularly given the tendency for stands at this elevation to rapidly naturally regenerate with shrubs and seedlings of conifers and hardwoods (see adjacent Subunit 31d). Subunit 28m is an integral part of a critical fuels reduction zone that includes adjacent Subunits, 28f, 28o and 31d. Retaining abundant snags and large downed on this topographic and critical fire location wood are not a priority in this subunit long-term.

Applicable Project Criteria, Mitigation Measures, & Resource Coordination:

Slope Stability/Soil Resource Protection	Understory Vegetation- Thinning of stands, even lightly, should stimulate development of understory grasses, herbaceous vegetation, and other understory vegetation that can also provide protection form excess surface soil erosion.
Forest Health	Pines above 3" in diameter that need to be cut may be designated at any time, but they will be cut between August and December *unless t*hey are immediately disposed of by burning, chipping, scoring, or removed as a product prior to the springtime flight of the beetles (usually between March and May). Pines that are above the maximum size required for piling and burning should not be cut unless a specific plan is made for their removal, consumption and/or other practice to make them unavailable for potential beetle habitat (e.g. bark removal). Dwarf mistletoe infection in Douglas-fir is moderate in this subunit; infected trees found should be treated, primarily by falling and removal. Options for treatment of dwarf mistletoe in Douglas-fir include: 1) falling infected tree 2) girdling infected trees and retaining in place in areas deficient of snags or large woody debris, 3) isolation of dwarf mistletoe infection to reduce spread by converting to non-host species (e.g. hardwoods, other non-host conifers) around an infected conifer(s), 4) retaining infected trees in places where they are less likely to spread, such as in low spots in the topography (e.g., draws), as opposed to ridges or other high locations where seeds can spread much longer distances, 5) encouraging vigorous growth in dense stands of Douglas-fir or white fir that can occasionally shade out and kill low level infections of shade intolerant dwarf mistletoe, 6) clumping the distribution of infected trees into small widely separated groups thereby reducing spread and levels of contiguous infection, and 7) minimizing potential infection in those areas currently free dwarf mistletoe. Fresh cut stumps of true fir will be protected from inoculation with Annosus root

	disease by application of Sporax (or other approved boron-containing product) on fresh cut stumps 12" dbh and larger immediately following falling.
Wildlife	Efforts will be made to retain trees, vegetation and land formations with evidence of use by wildlife (e.g. bird or wood rat nests, burrows, cavities, and hollows, etc.). Large hardwoods have a disproportionate high amount of use by a number of wildlife species (including fishers elsewhere in their range), particularly given their somewhat uncommon occurrence in Block 2. Radial thinning and other silvicultural practices that encourage the long-term viability of large hardwoods in Block 2 will be encouraged. Unthinned patches in each subunit ("skips") will be used to provide additional cover and habitat diversity. Small existing canopy gaps add greater structural and species diversity, essential elements of wildlife habitat improvement, and will be particularly important for those species that utilize the early successional vegetation associated with these openings.
Snags and Coarse Woody Material	Snags will be retained unless they pose a threat to worker safety or pose a fire risk. Snags greater than 10 inches dbh that require felling for safety reasons will be left long and contour felled across the slope to serve as coarse woody debris. Landscape level management of snags and/or coarse woody material is discussed in "A Landscape Approach to Management of Multiple Values in AFR: Block 2").
Prescribed Underburning	The following criteria must be met before fire is prescribed and implemented as a maintenance or stand driver under this prescription: -Conditions, including stand vigor and composition, must favor low severity fire effects. -Burning can be accomplished at intensities that will retain duff layers in an amount and distribution that prevents unacceptable levels of surface soil erosion and sediment delivery off-site. Effective ground cover should be protected such that 70% is retained after one season and 85% after 2 seasons. -Stand and individual tree vigor are such that the application of prescribed underburning will not unduly stress preferred leave trees and contribute to untimely mortality. -Protection of desired structures (i.e. Cohort 1 overstory trees, desired Regeneration, Pacific madrone) may require pre-treatment prior to burning (immediately before or up to 2-3 years before) in order to them from unnecessary scorch, crown damage, cambial heating, soil heating or other fire-related injury. In these cases practices such as removing duff and ladder fuels and/or fuel accumulations away from the tree bole; spring burning; burning during cool, moist and/or windy conditions to quickly dissipate heat delivery to the tree boles and root systems; slow and careful ignition patterns, and/or other practices can help minimize damage to these features.

	The assessment by a certified silviculturist of preparatory needs, mitigation measures, and sequence of treatments will ensure integration of the multiple treatment objectives and management goals. It is currently expected that favorable conditions across Subunit 28m will not likely be reached for at least 5 years after these initial treatments and planting of conifers.
Hydrology	The implementation of silvicultural activities in the Ashland watershed is strongly dependent on outcomes that protect the municipal water supply for the City of Ashland. Water from Subunit 28m ultimately drains into Reeder Reservoir and elevates the importance of careful protection of soils and hydrologic function in this subunit. Silvicultural practices implemented (e.g. fuels management and wildfire reduction) will indirectly protect municipal water objectives, as the overall decrease in the likelihood and size of high severity fire decreases the risk associated with increased sediment delivery that accompanies large-scale, high-severity wildfire events; Commercial density management in Subunit 28m will utilize ground-based logging systems, which will be carefully implemented to minimize negative impacts on soils and hydrologic function (see *Harvest Systems and Transportation* below). Roads serve as extensions of the hydrologic network, increasing both the rapidity and size of hydrologic response during major storm events, thereby increasing the potential for significant erosion, sediment delivery and flooding. No new roads are proposed in Block 2. Maintenance of existing roads prior to, during and following use is prioritized
Botanical Resources	Before marking begins the Forest Botanist must be consulted to address any potential PETS species presence and mitigation measures necessary.
Native Grass Seeding	Seeding when appropriate to encourage native plant establishment in the herbaceous vegetation layer may follow burning activities. Seeding with native grasses may help impede non-native species invasion, discourage development of more fire-prone shrub species, and add diversity to the plant communities. Factors that will influence a choice to initiate native grass seeding are elevation, aspect, proximity to non-native plants already encroaching from the urban and valley areas, pre-treatment herbaceous plant cover and diversity, extent and intensity of disturbance associated with harvest or burning, and if a need is perceived for erosion control seeding. Native forb seed may be included in seed mixes in the future for similar reasons. At this time, the Forest Service has native grass seed grown from local wild ecotypes but no native forb seed meeting the same source criteria. The decision to apply native grass seed will be made collectively by the certified

	silviculturist and the Forest or District Botanist. Seed mixes tailored to the stand would be provided by the Forest or District Botanist.
Noxious Weeds	If noxious weed sites are discovered during implementation, these need to be mitigated. Project leaders, work crew leaders, and crew members have a choice at noxious weed sites; the infested sites must either be avoided entirely or their noxious weeds must be fully "treated" before silvicultural treatments occur there. Treatment for noxious weed removal normally means pull, cut, or grub out (depending on species) all the noxious weed plants present and pile the material for later burning. Clean pants cuffs, pockets, boot soles, clothing, tools, machinery, and vehicles of soil or plant parts before proceeding to new areas. Identifying these locations on a map, GPS, etc and sharing that information with appropriate AFR personnel will allow for future return to these sites to insure long-term success at eradication, such as during post-burn monitoring efforts. Noxious weed sites along roads traveling to and from work areas do not need to be treated or reported unless those roadsides are part of actual treatment units or are used as work staging areas. Klamath weed (St. John's wort) and bull thistle are common and widespread noxious weeds in SW Oregon. The Forest Service makes no attempt to prevent their spread or control their abundance during project activity. Hence AFR noxious weed mitigations will not be applied to these two species.
Cultural Resources	Any cultural resource, or potential cultural resource, discovered during the implementation of this project will be cause for immediate cessation of any site-altering activity, with immediate notification of appropriate project personnel. Upon review by a qualified cultural resource specialist, the area of significance may be delineated on the ground and removed from the treatment area.
Other Resource Coordination	Respective resource surveys have been completed and there are no other known issues within the stand to be treated. If there are any findings to the contrary at any time, actions to protect resources will be taken immediately and respective specialist(s) will be notified. Activities prescribed would then be reassessed. Cooperation and coordination between all partners, specialists, workers and other interested and involved parties is necessary to protect and promote the multiple values and resources that exist in the project area. This prescription is the vehicle to develop that coordination and integration of objectives, and it is this prescription that ultimately serves to document agreed course of actions and ultimately prescribes treatments and activities (even, and especially, as a need arises to adapt the initial course). Any and all changes needed in treatment activities, timing, and/or sequence of activities prescribed herein as a result of changing conditions on the ground,

	changes in our partnerships or other organizational capacity, change in scientific understanding, and/or change in management direction; need to be documented and integrated into this or a new prescription by a certified silviculturist prior to those changes being implemented.

Harvest Systems & Transportation:

Logging Systems	The type of logging system(s) and the feasibility of removals without compromising important ecological objectives will be determined prior to initiation of operations. Such consideration will have to meet soil protection measures and result in no greater than 5% detrimental soil conditions across the subunit's area (not including the permanent transportation system). In Subunit 28m, ground-based logging will be the primary system used.
Landings	Only existing landings or hot logging on existing roads are currently approved for use. It is expected that only three existing landings will be utilized in Block 2. Any new proposed landings must be approved by the Contracting Office Representative (COR) and amended in this prescription by a certified silviculturist. Landing restoration after completion of use shall be overseen by a qualified soil scientist, botanist, and/or other pertinent resource specialist(s). Seeding of landings with native grasses immediately following cessation of use may minimize noxious, non-native plant establishment. Monitoring for noxious non-native plants invading the landings should be conducted for at least 3 years following cessation of use, and appropriate efforts of eradication undertaken when found. In addition, any opportunities for landing erosion/sediment to enter the aquatic network will be addressed both during use, and during restoration efforts immediately following cessation of landing use.
Hauling and Road Use	Forest Service Road 2060 and the 400 spur will be used to access treatment areas. There is a high level of recreational use of these roads. Road signs must be posted on both sides of treatment areas warning forest users of activities during implementation. All vehicles will obey posted speed limits and be constantly aware of potential interaction with recreational users. Signs and/or temporary trail closures may also be needed during on-the-ground application of silvicultural activities in the vicinity of established trails. Road maintenance returning roads to a high standard of functionality following cessation of use will be required under any contract requiring hauling on established roads.

Monitoring:

For implementation monitoring please refer to "Prescription Objectives". This section is presented in both narrative form and in a table format that provides a summary of quantifiable variables to be measured during and after prescribed treatments. Effective implementation monitoring should rely on both quantitative and qualitative monitoring, with analysis of both by knowledgeable personnel. Invariably, integration of the two forms of monitoring will provide the most comprehensive and accurate assessment of outcomes. If this process is done well, it should produce results that provide impetus for adaptive management and improvement of both planning and implementation of future work in AFR. With new information and understandings developing rapidly, additional adjustments to planned activities should also be encouraged in the ongoing spirit of adaptive management.

Treatment effectiveness can be guided by the sections "Land Management Goals and Objectives", "Desired Future Dynamics" and "Desired Future Conditions". Effectiveness will be measured and analyzed over various spatial and temporal scales, including both stand level and landscape level assessments. A strong monitoring component has been integral to the development of AFR. The Ashland Forest Resiliency's Monitoring Plan will provide a comprehensive assessment of the project's overall effectiveness.

Silvicultural Prescription – AFR Block 02, Subunit 28n/31e

Prescriber: Marty Main **Date: June 2011**

Field Checked by: COA crew, Prescriber **Date: June-July 2011**

Certified Silviculturist: _____ **Date:** 8-5-11

Associated Project: Ashland Forest Resiliency
Associated NEPA: Ashland Forest Resiliency FEIS, ROD
5th Field Watershed: Bear Creek

Stand Identity & Current Condition

Table 1.1 Current Stand Attributes

Location - Stand	Acres	Plant Assoc. *	Site Index (DF, 50yrs)	Elevation (feet)	Average % Slope (range)	Aspect (degrees)	Trees Per Acre (>4.5')	Basal Area (ft^2/ac.)	Estimated Tree Canopy Cover** (>0 dbh)	Quadratic Mean Diameter (>0" dbh)	RDI
6135010-0334	44	ABCO-BENE2	85-90	4500-4800	24 (10-38)	23-150	470	258	79	10.0	0.72

**Plant Association from Atzet, et al. 1996.*

**Canopy cover is the percent of a stand's ground area covered by the downward projection of all tree canopies within a stand. Individual point data (crown closure) was systematically collected with a densiometer and averaged to arrive at canopy cover estimates.

Subunit Description / Context

Stands 28n and 31e are combined into a single unit because of similarities in stand conditions, site characteristics and recent management history. The stand is located on mostly gentle, 10-25% northeasterly to southeasterly aspects in upper 1/3 slope positions. It is located immediately below the main ridgeline in Block 2 and the old shaded fuelbreak on that ridge, designated as Subunit 31d. One small draw in the northern 1/3 of this stand drains northeasterly, and has sideslopes of 40-45%, but these steeper slope gradients are rare in this subunit. Plant Association is ABCO/BENE2 in this subunit, although it grades partially into two other associations – ABCO-PSME/ROGY on more southeasterly aspects and ABCO-XETE closer to the ridge.

The current condition of the stands was largely influenced by the partial cut harvest of 1962, a high-grading that appears to have removed a large percentage of the large Douglas-fir in the stand. Stands are currently structurally diverse, with a range of age and size classes creating multi-cohort, mixed species stand conditions. Four age/size classes exist- 1) an average of close to 6 tpa (but about 20% of the total stand basal area) of large Cohort 1 32"+ dbh conifers, primarily ponderosa pine but also less commonly sugar pine and white fir, and ranging from 32 to over 60" dbh in somewhat clumpy distribution; 2) a clumpy distribution of moderately-stocked overstory (78tpa) of 14-30" dbh, 70-120 year old white fir (51tpa) and Douglas-fir (27 tpa); 3) a high number (158 tpa) of 6-12" dbh white fir (112 tpa), Pacific madrone (31 tpa) and Douglas-fir (15 tpa) of low to moderate but generally decreasing vigor, all initiated and/or released after the 1960's era partial cutting; 4) abundant (230 tpa) seedlings and small saplings (4.5'- 4" dbh) of primarily white fir in the understory of the other three cohorts. A small portion of the stand above the 400 spur was planted in ponderosa pine immediately after the 1962 harvest, but these trees have generally fared poorly and have mostly been largely outcompeted by the faster growing and more shade tolerant white fir and Douglas-fir on these sites. Hardwoods (primarily Pacific madrone) are not abundant in Stand 28n/31e (approximately 30/acre up to 10" dbh) and are generally in poor condition in

this stand, primarily as single-stemmed individuals largely in excessive shade for this species. Madrone is most abundant n small openings, but is generally less well-suited to survival and growth at these higher elevations of 4500-4800 feet. Overall stand densities are high in this stand, with basal areas averaging 258 ft^2/ac. and RDI= 0.72. Douglas-fir dwarf mistletoe is also high in this stand (49tpa and 96% of Douglas-fir infected in measured plots, with average severity of 2.17). A small amount of root disease (primarily of Armillaria and possibly Annosus) was detected in medium to larger white fir, creating small openings in otherwise dense stands. Snag numbers are high averaging 41/acre, including 14/acre > 9" dbh and 3/acre > 30"dbh. Downed wood was high in this stand, averaging close to 45 tons/acre, with almost 90% of that total in older, rotten decay classes, including leftover logs from the 1962 harvest. Sixty pieces per acre were greater than 10 inches diameter- another measure of a high amount of large downed wood.

Land Management Goals & Parameters:

Table 2.1 Management Direction

Management Allocation:	Restricted Watershed (RRNF LRMP) Late Successional Reserve (NWFP)
Project NEPA:	Ashland Forest Resiliency FEIS, ROD
NEPA Purpose & Need:	The **Need** for action is urgent reduction of the potential for large-scale, high-severity wildland fire in the Upper Bear landscape. One hundred years of fire exclusion and fuel accumulations in this forest's wildland/urban interface now presents high potential for large-scale, high-severity wildland fire that could significantly interrupt the supply of clean water and late-successional and old-growth forest ecosystems in this Analysis Area. The **Purpose** of the action is to protect Values at Risk, reduce hazardous fuels, reduce crown fire potential, and create forest conditions that are more resilient to wildland fires.

AFR Strategic Category and Purpose:

Strategic Ridgelines: Treatments along Strategic Ridgelines are designed to: 1) reduce the extent of wildland fire severity by limiting the amount of area affected by wildland fire, 2) create areas where fire suppression efforts can be conducted more safely and effectively, 3) break up continuity of fuels over a large landscape, and 4) serve as anchor points for further area-wide treatments, such as prescribed fire and maintenance burning (AFR FEIS, 2008). All of Block 2 was designated as a Strategic Ridgeline in the ROD except for Subunits 29a and 79a.

Desired Future Dynamics

The goal for management of this subunit is to alter stand structures, densities and composition, and do so in spatial patterns that will encourage the restoration of functional processes more closely resembling the historical occurrence of more frequent but lower to moderate severity disturbance, primarily fire. This will allow opportunities to optimize landscape level wildfire management, while indirectly providing for the habitat needs of late successional dependent species and protection of municipal water supplies by reducing the spatial extent of high severity fire. Multi-cohort stand structures will be maintained, while reducing stand densities to increase tree and stand vigor and improve wildfire management possibilities through implementation of stand management practices that improve horizontal and vertical fuel discontinuities. In addition, silvicultural activities are designed to reduce, over time, mortality associated with various root and foliage diseases in white fir and Douglas-fir, as well as from various insects in all species Snags and large

downed wood will remain high in the foreseeable future, although snag abundance should begin to decline over time as tand densities are reduced. Post-treatment stand structures, reduced fuel levels and spatial arrangements of fuels and vegetation will allow for frequent low to moderate severity fire to become the primary driver of stand dynamics and ecosystem function through wildland fire use and/or the application of prescribed fire. Until fire becomes the primary driver of stand dynamics, ecologically appropriate silvicultural activities will likely still continue to be applied, including additional variable density thinning in the future, in order to maintain structural heterogeneity and shift species compositions. Increased post-treatment grass and herbaceous understory development following thinning, especially in openings, should help protect surface soils.

Prescription Objectives:

Table 3.1 Desired Stand Attributes

AFR Subuit	Location-Stand	Existing Forest Type*	Trees Per Acre* (>4.5')	Basal Area (ft^2/ac.)* (>0 dbh)	Quadratic Mean Diameter* (>0 dbh)	RDI* (>0 dbh)	Estimated Tree Canopy Cover** (>0 dbh)
28n/31e	6135010-0334	PSME--PIPO-ABCO	113-205	135-165	12-15	0.35-0.45	55-70

* Target ranges are for the stand average, including gaps and retention areas outside of riparian areas or landslide hazard zones. Variations outside of listed range at any one location are expected and desirable.

**Canopy cover is the percent of a stands ground area covered by the downward projection of all tree canopies within a stand. All canopy covers are targeted to remain above a minimum average of 40% per subunit. "Estimated Tree Canopy Cover" is an estimate of expected post-treatment canopy cover based on desired residual densities. It is intended to be a rough guide only and not an actual target.

Desired Future Condition (DFC): *Conditions change over time and space; this DFC reflects the desired future condition over the majority of the stand one to three growing seasons after treatment:*

A reduction in stand density using variable density thinning retains/enhances structural and species heterogeneity, increases mean QMD, improves species compositions by decreasing white fir, and builds, over time, tree and stand resistance to effects of low severity disturbances from insects, disease and/or fire. Reduction in abundance of white fir and dwarf mistletoe infected Douglas-fir occurs. Stand density reduction, both commercial and non-commercial, followed by treatment of activity fuels improves horizontal and vertical fuel discontinuities throughout the stand as a whole. Existing small, gap-scale openings are retained in portions of the subunit where they already exist, and accentuated around root disease pockets, infections of dwarfmistletoe, and through radial thinning around Cohort 1 conifers. Snag and CWM amounts remain moderate to high while the diversity of understory species, including various grasses, herbaceous vegetation and other more shade intolerant species, is increased, particularly in canopy gaps.

Treatments to Achieve Management Objective (DFC):

Silvicultural treatments are applied in stands with three general classifications of tree structure in Block 2, referred to as cohorts. Cohort 1 trees are generally those that are 150-300+ years of age and 30 to 60" dbh (and occasionally as high as 80" dbh in the project area); Cohort 2 trees 60-140 years of age and 12-30" dbh (and occasionally as high as 35+" dbh); and Cohort 3 trees 1-50 years of age and 1-10" dbh (and occasionally as high as 18" dbh). For a more complete description of cohorts, the following specified treatments, and the landscape context in which they are applied, see "A Landscape Scale Approach to Management of Multiple Values in AFR: Block 2".

The following treatments are the primary silvicultural activities to be implemented in Subunit 28n/31e.

Variable density thinning

1. Utilizes thinning-from-below, radial thinning, selection thinning and general stand density reduction.
2. Creates, retains or enhances gaps, skips and/or clumps of vegetation at various spatial scales.
3. Promote establishment and development of vigorous multi-age, multi-species cohorts, including hardwoods.
4. Creates horizontal and vertical discontinuity of ladder and canopy fuels.
5. Promotes spatial, structural, and species diversity favorable for wildlife.

Thinning-from-below

1. Focuses on release of legacy and/or the largest, healthiest trees of desired species, size classes, or growth forms primarily in Cohort 2.
2. Removes relatively smaller and less vigorous trees from primarily intermediate and suppressed crown classes.
3. Maintains canopy closure and full-site occupancy by retained trees sufficient to retard understory ladder fuel development; maintains/promotes high canopy base heights and good vertical discontinuity of fuels.
4. Improves stand vigor and minimizes long-term potential for insect and disease related mortality by re-distributing growth onto fewer larger trees, resulting in increased quadratic mean diameter (QMD) for the stand.
5. Speeds development of older tree structures and potential for development of mature stand conditions.

Radial thinning

1. Originally designed as a stand-alone treatment, radial thinning is combined with other treatment types to aggressively release preferred Cohort 1 trees by removing Cohort 2 and 3 trees to create a separation (up to 20') whenever possible between crowns. Additionally reduces stand densities out to a radius of twice the dripline, or 30-50 feet from legacy bole, while simultaneously considering species, site and stand conditions and other multiple objectives.
2. Promotes resilience and "hang-time" of Cohort 1 legacy trees; retains important seed sources for natural regeneration of more shade intolerant conifers; provides anchors for future variable density thinning.
3. Increases horizontal and vertical discontinuity of ladder and canopy fuels, and begins to build increasing structural heterogeneity is existing stands.

Individual tree and small group thinning of dwarf mistletoe infected Douglas-fir

1. Reduces abundance of dwarf mistletoe in Douglas-fir on a landscape scale by targeting treatment of infected trees, primarily of Cohorts 2 and 3 in order to promote development of large Douglas-fir trees and to limit dwarf mistletoe abundance and spread, on both a stand and landscape level (see Douglas-fir Dwarf Mistletoe Stand Severity Rating Map in "A Landscape Level Approach to Management of Multiple Values in AFR: Block 2").

Non-commercial surface and ladder fuel thinnings

1. Retains most vigorous of trees of desired species and re-distributes growth and vigor onto these trees and helps grow those into larger size classes in shorter periods of time
2. Removes less vigorous and/or other trees with undesirable characteristics for meeting subunit level goals
3. Re-established more desirable species compositions and/or those currently underrepresented in species, size classes, and/or growth forms
4. Reduces ladder fuels and increases height-to-crown base, creating more favorable fire management conditions
5. Prepares the site for safe application of prescribed fire regime of low severity in the future
6. Can be used to maintain or enhance existing structural diversity in the overstory
7. Can be used to remove all trees of a given species within 50' of a dwarf mistletoe infected retained overstory tree of the same species.

Ladder and Activity Fuel Piling & Burning

1. Reduces activity generated available fuels within the subunit.
2. Maintains/improves stands ability to modify landscape fire behavior by limiting canopy fire
3. Places piles strategically to minimize damage to retained trees/vegetation and associated resource values

4. Prepares stands for application of low severity prescribed fire
5. Leaves 1-2 slasb piles per acre as wildlife habitat

Prescribed fire

1. To be implemented on a maintenance schedule and to be a driver of stand dynamics only once conditions are ready and favorable to support desired goals and objectives described previously herein (also refer to resource coordination section; favorable conditions are not expected to be reached after this initial treatment)
2. Maintain low surface and ladder fuels
3. Maintain & improve the stands' ability to modify landscape fire behavior by limiting risk of active crown fire
4. Places special emphasis on protecting desired species from fire related mortality on a schedule that allows for the regeneration and development of multiple cohorts
5. Favors pine establishment and release by reducing competition and preparing favorable light conditions
6. An assessment of fuel conditions, desired tree regeneration, and competing vegetation should be made to determine the need to reduce fuels and the need to protect and/or maintain desired species compositions based on stated desired future dynamics prior to any prescribed fire
7. Assess conditions and consider the need for treatment 1 – 5 years after initial treatment, and then on a 7 – 15 year cycle

Treatment Narrative

Subunit 28n/31e is strategically important from a wildfire management perspective: 1) it expands the strategically important fuel reduction zone of adjacent Stand 31d; 2) topographically gentle slopes make it less prone to the higher rates of spread that occur on steeper slopes; 3) good road access increases potential utilization of the area in a wildfire event; 4) its location protects important emerging wildlife habitat/mature forest values in adjacent Stands 28p, q and r. Stand densities are high throughout the subunit in a relatively contiguous fuel profile, suggesting the need for stand density eduction to achieve both wildfire and stand management objectives, with removal coming from both commercial and non-commercial size classes. Stand density reduction should focus on removal of low vigor Cohort 2 and 3 white fir up to 20" dbh, as well as dwarf mistletoe infected Douglas-fir with a severity rating of 2 or higher. Otherwise, vigorous Douglas-fir should be a high priority for retention. Aggressive radial tbinning around Cohort 1 conifers, particularly the large superdominant pines, is also a priority in this subunit. This is a good location in which to create a larger number of openings of various sizes and shapes through variable density thinning, particularly given that slope stability is not an issue in this location. Openings can naturally be enhanced/created where white fir is particularly dominant, Douglas-fir dwarf mistletoe disease is moderate to severe, and/or around large Cohort 1 conifers. Removal of suppressed understory white fir and dwarf mistletoe infected Douglas-fir should also be a priority in non-commercial thinning. Post-treatment densities after both commercial and non-commercial thinning should be 135-165 ft^2/ac., including openings of variable densities. Desired future conditions would include an open stand with good and variable horizontal and vertical fuel discontinuity, with a higher percentage of overstory Douglas-fir and pines. This species composition shift away from white fir will take several treatments; in the meantime, maintenance of vigorous white fir as an increasingly minor portion of the species mix is desirable. Application of Sporax on all white fir stumps 12" dbh and larger will be needed in this first entry. Activity fuels should be piled and burned following these initial treatments, with future maintenance treatments possible through prescribed underburning after stand vigor improves (2-5 years). Prescribed underburning should be done on a 7-15 year cycle to maintain favorable understory fuels and vegetation from a wildfire perspective, while continuing to reduce the potential for white fir establishment in the understory. The majority of this stand is gentle enough that ground-based logging systems can be utilized first, followed by a non-commercial thinning to reach desired post-treatment stocking levels. This is a good subunit to explore possibilities for utilization of traditionally non-merchantable material.

Applicable Project Criteria, Mitigation Measures, & Resource Coordination:

Slope Stability/Soil Resource Protection	Understory Vegetation- Thinning of stands, even lightly, should stimulate development of understory grasses, herbaceous vegetation, and other understory vegetation that can also provide protection form excess surface soil erosion.
Forest Health	Dwarf mistletoe in Douglas-fir is high in this subunit; infected Cohort 2 and 3 trees should be treated, primarily by falling and removal, and particularly those of severity classes 2-6. Fresh cut stumps of true fir should be protected from inoculation with Annosus root disease by application of Sporax (or other approved boron-containing product) on fresh cut stumps 12" dbh and larger within 24 hours following falling.
Wildlife	Efforts will be made to retain trees, vegetation and land formations with evidence of use by wildlife (e.g. bird or wood rat nests, burrows, cavities, and hollows, etc.). Large hardwoods have a disproportionate high amount of use by a number of wildlife species (including fishers elsewhere in their range), particularly given their somewhat uncommon occurrence in Block 2. Radial thinning and other silvicultural practices that encourage the long-term viability of large hardwoods in Block 2 will be encouraged. Unthinned patches in each subunit ("skips") will be used to provide additional cover and habitat diversity. Small existing canopy gaps add greater structural and species diversity, essential elements of wildlife habitat improvement, and will be particularly important for those species that utilize the early successional vegetation associated with these openings.
Snags and Coarse Woody Material	Snags >8" dbh will be retained unless they pose a threat to worker safety or pose a fire risk. Snags greater than 10 inches dbh that require felling for safety reasons will be left long and contour felled across the slope to serve as coarse woody debris. Landscape level management of snags and/or coarse woody material is discussed in "A Landscape Approach to Management of Multiple Values in AFR: Block 2").
Prescribed Underburning	The following criteria must be met before fire is prescribed and implemented as a maintenance or stand driver under this prescription: -Conditions, including stand vigor and composition, must favor low severity fire effects. -Burning can be accomplished at intensities that will retain duff layers in an amount and distribution that prevents unacceptable levels of surface soil erosion and sediment delivery off-site. Effective ground cover should be protected such that 70% is retained after one season and 85% after 2 seasons.

	-Stand and individual tree vigor are such that the application of prescribed underburning will not unduly stress preferred leave trees and contribute to untimely mortality. -Protection of desired structures (i.e. large overstory trees, desired advanced regeneration, large Pacific madrone) may require pre-treatment prior to burning (immediately before or up to 2-3 years before) in order to them from unnecessary scorch, crown damage, cambial heating, soil heating or other fire-related injury. In these cases practices such as removing duff and ladder fuels and/or fuel accumulations away from the tree bole (ideally 1-2 years prior to burning); spring burning; burning during cool, moist and/or windy conditions to quickly dissipate heat delivery to the tree boles and root systems; slow and careful ignition patterns, and/or other practices can help minimize damage to these features. The assessment by a certified silviculturist of preparatory needs, mitigation measures, and sequence of treatments will ensure integration of the multiple treatment objectives and management goals. It is currently expected that favorable conditions across Subunit 28n/31e may occur within a few years following these initial silvicultural treatments if pre-treatment work is accomplished soon.
Hydrology	The implementation of silvicultural activities in the Ashland watershed is strongly dependent on outcomes that protect the municipal water supply for the City of Ashland. Although the area in Subunit 28n/31e does not drain into Reeder Reservoir, practices implemented (e.g. fuels management and wildfire reduction) will indirectly protect municipal water objectives, as the overall decrease in the likelihood and size of high severity fire decreases the risk associated with increased sediment delivery that accompanies large-scale, high-severity wildfire events; Commercial density management in Subunit 28n/31e will likely utilize carefully applied and mitigated ground-based logging systems in most of the subunit. Helicopter logging systems will likely be used any portions of the subunit where ground-based logging is impractical, and will minimize ground disturbance and subsequent negative effects on hydrologic function. Roads serve as extensions of the hydrologic network, increasing both the rapidity and size of hydrologic response during major storm events, thereby increasing the potential for significant erosion, sediment delivery and flooding. No new roads are proposed in Block 2. Maintenance of existing roads prior to, during and following use is prioritized
Botanical Resources	Before marking begins the Forest Botanist must be consulted to address any potential PETS species presence and mitigation measures necessary.
Native Grass Seeding	Seeding when appropriate to encourage native plant establishment in the herbaceous vegetation layer may follow burning activities. Seeding with native

	grasses may help impede non-native species invasion, discourage development of more fire-prone shrub species, and add diversity to the plant communities. Factors that will influence a choice to initiate native grass seeding are elevation, aspect, proximity to non-native plants already encroaching from the urban and valley areas, pre-treatment herbaceous plant cover and diversity, extent and intensity of disturbance associated with harvest or burning, and if a need is perceived for erosion control seeding. Native forb seed may be included in seed mixes in the future for similar reasons. At this time, the Forest Service has native grass seed grown from local wild ecotypes but no native forb seed meeting the same source criteria. The decision to apply native grass seed will be made collectively by the certified silviculturist and the Forest or District Botanist. Seed mixes tailored to the stand would be provided by the Forest or District Botanist.
Noxious Weeds	If noxious weed sites are discovered during implementation, these need to be mitigated. Project leaders, work crew leaders, and crew members have a choice at noxious weed sites; the infested sites must either be avoided entirely or their noxious weeds must be fully "treated" before silvicultural treatments occur there. Treatment for noxious weed removal normally means pull, cut, or grub out (depending on species) all the noxious weed plants present and pile the material for later burning. Clean pants cuffs, pockets, boot soles, clothing, tools, machinery, and vehicles of soil or plant parts before proceeding to new areas. Identifying these locations on a map, GPS, etc and sharing that information with appropriate AFR personnel will allow for future return to these sites to insure long-term success at eradication, such as during post-burn monitoring efforts. Noxious weed sites along roads traveling to and from work areas do not need to be treated or reported unless those roadsides are part of actual treatment units or are used as work staging areas. Klamath weed (St. John's wort) and bull thistle are common and widespread noxious weeds in SW Oregon. The Forest Service makes no attempt to prevent their spread or control their abundance during project activity. Hence AFR noxious weed mitigations will not be applied to these two species.
Cultural Resources	Any cultural resource, or potential cultural resource, discovered during the implementation of this project will be cause for immediate cessation of any site-altering activity, with immediate notification of appropriate project personnel. Upon review by a qualified cultural resource specialist, the area of significance may be delineated on the ground and removed from the treatment area.
Other Resource Coordination	Respective resource surveys have been completed and there are no other known issues within the stand to be treated. If there are any findings to the contrary at

	any time, actions to protect resources will be taken immediately and respective specialist(s) will be notified. Activities prescribed would then be reassessed. Cooperation and coordination between all partners, specialists, workers and other interested and involved parties is necessary to protect and promote the multiple values and resources that exist in the project area. This prescription is the vehicle to develop that coordination and integration of objectives, and it is this prescription that ultimately serves to document agreed course of actions and ultimately prescribes treatments and activities (even, and especially, as a need arises to adapt the initial course). Any and all changes needed in treatment activities, timing, and/or sequence of activities prescribed herein as a result of changing conditions on the ground, changes in our partnerships or other organizational capacity, change in scientific understanding, and/or change in management direction; need to be documented and integrated into this or a new prescription by a certified silviculturist prior to those changes being implemented.

Harvest Systems & Transportation:

Logging Systems	The type of logging system(s) and the feasibility of removals without compromising important ecological objectives will be determined prior to initiation of operations. Such consideration will have to meet soil protection measures and result in no greater than 5% detrimental soil conditions across the subunit's area (not including the permanent transportation system). In Block 2, helicopter logging will be the primary system used, although ground based logging may be utilized in portions of Subunit 28n/31e.
Landings	Only existing landings or hot logging on existing roads are currently approved for use. It is expected that only three existing landings will be utilized in Block 2. Any new proposed landings must be approved by the Contracting Office Representative (COR) and amended in this prescription by a certified silviculturist. Landing restoration after completion of use shall be overseen by a qualified soil scientist, botanist, and/or other pertinent resource specialist(s). Seeding of landings with native grasses immediately following cessation of use may minimize noxious, non-native plant establishment. Monitoring for noxious non-native plants invading the landings should be conducted for at least 3 years following cessation of use, and appropriate efforts of eradication undertaken when found. In addition, any opportunities for landing erosion/sediment to enter the aquatic network will be addressed both during use, and during restoration efforts immediately following cessation of landing use.
Hauling and Road Use	The 400 spur will be used to access treatment areas. There is a high level of recreational use of this road. Road signs must be posted on both sides of treatment areas warning forest users of activities during implementation. All vehicles will

	obey posted speed limits and be constantly aware of potential interaction with recreational users. Signs and/or temporary trail closures may also be needed during on-the-ground application of silvicultural activities in the vicinity of established trails. Road maintenance returning roads to a high standard of functionality following cessation of use will be required under any contract requiring hauling on established roads.

Monitoring:

For implementation monitoring please refer to "Prescription Objectives". This section is presented in both narrative form and in a table format that provides a summary of quantifiable variables to be measured during and after prescribed treatments. Effective implementation monitoring should rely on both quantitative and qualitative monitoring, with analysis of both by knowledgeable personnel. Invariably, integration of the two forms of monitoring will provide the most comprehensive and accurate assessment of outcomes. If this process is done well, it should produce results that provide impetus for adaptive management and improvement of both planning and implementation of future work in AFR. With new information and understandings developing rapidly, additional adjustments to planned activities should also be encouraged in the ongoing spirit of adaptive management.

Treatment effectiveness can be guided by the sections "Land Management Goals and Objectives", "Desired Future Dynamics" and "Desired Future Conditions". Effectiveness will be measured and analyzed over various spatial and temporal scales, including both stand level and landscape level assessments. A strong monitoring component has been integral to the development of AFR. The Ashland Forest Resiliency's Monitoring Plan will provide a comprehensive assessment of the project's overall effectiveness.

Silvicultural Prescription – AFR Block 02, Subunit 28o

Prescriber: Marty Main **Date: May, 2011**

Field Checked by: COA crew, Prescriber **Date: May-June 2011**

Certified Silviculturist: _____ **Date:** 8-5-11

Associated Project: Ashland Forest Resiliency
Associated NEPA: Ashland Forest Resiliency FEIS, ROD
5th Field Watershed: Bear Creek

Stand Identity & Current Condition

Table 1.1 Current Stand Attributes

Location - Stand	Acres	Plant Assoc. *	Site Index (DF, 50yrs)	Elevation (feet)	Average % Slope (range)	Aspect (degrees)	Trees Per Acre (>4.5')	Basal Area (ft^2/ac.)	Estimated Tree Canopy Cover** (>0 dbh)	Quadratic Mean Diameter (>0" dbh)	RDI
135010-0306	17	ABCO-BENE2; ABCO-PSME/ROGY	85-90	4350-4550	23 (20-27)	54-121	238	129	65	10	0.32

**Plant Association from Atzet, et al. 1996.*

**Canopy cover is the percent of a stand's ground area covered by the downward projection of all tree canopies within a stand. Individual point data (crown closure) was systematically collected with a densiometer and averaged to arrive at canopy cover estimates.

Stand Description / Context

Stand 28o is located on 10-25+% largely easterly aspects above the 2060 Road which forms its easterly boundary. Plant Association is borderline between ABCO/BENE2 and ABCO/PSME-ROGY. Estimated 50 year site index for Douglas-fir is 85-90.

The gentle slopes of Stand 28o allowed for a recent (apprx. 2004) treatment with a slashbuster to reduce fuels and non-commercial sized vegetation. This resulted in an open mid-seral stand- an unusual occurrence in both Block 2 and in the watershed in general. Current stand basal areas and RDI's average 129 and 0.32 respectively- indicative of the reduced stand densities as a result of the recent work. The stand is clumped in distribution with numerous fine-scale canopy gaps and good structural heterogeneity. The stands are characterized by relatively vigorous white fir and Douglas-fir well distributed across two primary cohorts (excepting the 2-8" dbh size class which was largely removed by the slashbuster). Cohort 2 and 3 trees comprise over 80% of the total stand basal area in two primary age/size classes: 1) an age/size class of 8- 20" dbh initiated and/or released after the mid-1960s partial cuts and 2) an older and larger age class of 20"+ dbh trees in the 80- 100+ year age class. These are mostly very vigorous, growing at radial growths 4-10 rpi. However, scattered small pockets and/or individual trees are declining (white fir) or infected with dwarf mistletoe (Douglas-fir), particularly in the lower half of the subunit. Good natural regeneration of seedlings and small saplings of Douglas-fir and white fir, with a much smaller amount of ponderosa pine, has occurred in these openings with bare soil exposed by the slashbuster. Pacific madrone is also abundant as approximately 7 year-old sprouts ranging up to 10-15" tall. Scattered throughout the subunit are an additional 3 tpa of large older Cohort 1 conifers (Douglas-fir and ponderosa pine) 32"+ dbh that comprise almost 20% of the total basal area. The recent slashbuster associated stand density reduction around these trees should improve their long-term vigor and retention in the stand, although evidence of low severity dwarf mistletoe in

these Cohort 1 ponderosa pine will ultimately threaten their long-term viability. The slashbuster work reconfigured fuels grinding and spreading), taking ladder fuels and converting it to small fuel pieces on the ground floor. This reduced potential fire behavior, but retained a high amount of smaller pieces (almost 1700 3-9.9" diameter pieces/acre, the highest recorded in Block 2), creating a potential for long duration fire severity effects on soils during prescribed underburning. The fuels reduction work by the slashbuster also tended to follow existing canopy gaps where Cohort 3 vegetation dominated, thereby partially re-creating inherent structural heterogeneity of the site desired long-term both in Block 2 and in AFR in general. The resulting horizontal discontinuity of fuels, both in surface and crown fuels, make Subunit 28o effective currently from a landscape wildfire management perspective, especially given the relatively gentle topography of the stand and the removal of almost all of the 2-8" dbh ladder fuels by the slashbuster. Douglas-fir dwarf mistletoe occurrence (8.2%) and average severity (1.27) are low in this subunit. Snags are currently also low in this stand, while CWM is moderate overall as a result of the very high number of smaller pieces.

Land Management Goals & Parameters:

Table 2.1 Management Direction

Management Allocation:	Restricted Watershed (RRNF LRMP) Foreground Partial Retention (RRNF LRMP), Late Successional Reserve (NWFP)
Project NEPA:	Ashland Forest Resiliency FEIS, ROD
NEPA Purpose & Need:	The **Need** for action is urgent reduction of the potential for large-scale, high-severity wildland fire in the Upper Bear landscape. One hundred years of fire exclusion and fuel accumulations in this forest's wildland/urban interface now presents high potential for large-scale, high-severity wildland fire that could significantly interrupt the supply of clean water and late-successional and old-growth forest ecosystems in this Analysis Area. The **Purpose** of the action is to protect Values at Risk, reduce hazardous fuels, reduce crown fire potential, and create forest conditions that are more resilient to wildland fires.

AFR Strategic Category and Purpose:

Strategic Ridgelines: Treatments along Strategic Ridgelines are designed to: 1) reduce the extent of wildland fire severity by limiting the amount of area affected by wildland fire, 2) create areas where fire suppression efforts can be conducted more safely and effectively, 3) break up continuity of fuels over a large landscape, and 4) serve as anchor points for further area-wide treatments, such as prescribed fire and maintenance burning (AFR FEIS, 2008). All of Block 2, was designated as a Strategic Ridgeline in the ROD except for Subunits 29a and 79a.

Desired Future Dynamics

The goal for management of this subunit is to alter stand structures, densities and composition, and do so in spatial patterns that will encourage the restoration of functional processes more closely resembling the historical occurrence of more frequent but lower to moderate severity disturbance, primarily fire. This will allow opportunities to optimize landscape level wildfire management, while indirectly providing for the habitat needs of late successional dependent species and protection of municipal water supplies by reducing the spatial extent of high severity fire. Stand structures will be significantly more open with considerably more heterogeneous stand structure and associated with greater

horizontal fuel discontinuities. Following this initial entry that reduces stand densities slightly, maintains high tree and tand vigor and reduces undesirable impacts associated with insects and disease, species composition will shift towards a greater percentage of pines and Douglas-fir, and a decreased percentage of white fir, with a small amount of intermixed hardwoods. Snags and large downed wood will remain low in the foreseeable future, but can logically begin to increase in the larger size classes as the stand develops and a greater number of larger tree structures result. Post-treatment stand structures, reduced fuel levels and spatial arrangements of fuels and vegetation will allow for frequent low to moderate severity fire as the primary driver of stand dynamics and ecosystem function through wildland fire use and/or the application of prescribed fire. Fire may then begin to be the primary driver of stand dynamics, although ecologically appropriate silvicultural activities will likely still continue to be applied, including additional variable density thinning in the future, in order to maintain structural heterogeneity and continue improvements in species compositions towards a more mixed conifer type. These silvicultural activities will be implemented to restore less fire prone structural characteristics of forests and help provide vegetational characteristics that can emulate those that allowed historic disturbance regimes, while favoring return to a species composition more adapted to the site, including a higher percentage of pines and Douglas-fir. Increased post-treatment grass and herbaceous understory development following thinning, especially in openings, should help protect surface soils.

Prescription Objectives:

Table 3.1 Desired Stand Attributes

AFR Subuit	Location-Stand	Existing Forest Type*	Trees Per Acre* (>4.5')	Basal Area (ft^2/ac.)* (>0 dbh)	Quadratic Mean Diameter* (>0 dbh)	RDI* (>0 dbh)	Estimated Tree Canopy Cover** (>0 dbh)	Minimum Down Pieces Created (ave. per acre)
28o	6135010-0306	PSME-ARME-ABCO	95-129	100-120	13-14	0.25-0.30	45-60	na

* Target ranges are for the stand average, including gaps and retention areas outside of riparian areas or landslide hazard zones. Variations outside of listed range at any one location are expected and desirable.

**Canopy cover is the percent of a stands ground area covered by the downward projection of all tree canopies within a stand. All canopy covers are targeted to remain above a minimum average of 40% per subunit. "Estimated Tree Canopy Cover" is an estimate of expected post-treatment canopy cover based on desired residual densities. It is intended to be a rough guide only and not an actual target.

Desired Future Condition (DFC): *Conditions change over time and space; this DFC reflects the desired future condition over the majority of the stand one to three growing seasons after treatment:*

A slight reduction in stand density utilizing variable density thinning maintains good stand vigor, while maintaining/ enhancing structural heterogeneity in the stand, increasing mean QMD, improving species compositions to include more pines and less white fir, and building, over time, tree and stand resistance to effects of low severity disturbances from insects, disease and/or fire. Reduction in abundance of dwarf mistletoe in Douglas-fir occurs. More open stand conditions with numerous small, gap-scale openings increase the vigor of retained overstory pines and Douglas-fir, while allowing for establishment of the next cohort of conifers and hardwoods, aided by planting of both sugar and ponderosa pine in canopy gaps. The diversity of understory species, including various grasses, herbaceous vegetation and other more shade-intolerant species is increased, particularly in canopy gaps.

Treatments to Achieve Management Objective (DFC):

Silvicultural activities are applied in three general classifications of tree structure in Block 2, referred to as cohorts. Cohort 1 trees are generally those that are 150-300+ years of age and 30 to 60" dbh (and occasionally as high as 80" dbh ı the project area); Cohort 2 trees 60-140 years of age and 12-30" dbh (and occasionally as high as 35+" dbh); and

Cohort 3 trees 1-50 years of age and 1-10" dbh (and occasionally as high as 18" dbh). For a more complete description of ohorts, the following specified treatments, and the landscape context in which they are applied, see "A Landscape Scale Approach to Management of Multiple Values in AFR: Block 2"

The following treatments are the primary silvicultural activities to be implemented in Subunit 28o.

Variable density thinning

1. Utilizes thinning from below, radial thinning, and/or general stand density reduction
2. Creates, enhances and/or maintains gaps, skips and/or clumps of vegetation at various spatial scales
3. Promote establishment and development of vigorous multi-age, multi-species cohorts, including hardwoods
4. Creates horizontal and vertical discontinuity of ladder and canopy fuels
5. Promotes spatial, structural, and species diversity favorable for wildlife

Radial thinning

1. Originally designed as a stand-alone treatment, radial thinning is combined with other treatment types to aggressively release preferred Cohort 1 trees by removing Cohort 2 and 3 trees to create a separation (up to 20') whenever possible between crowns. Additionally reduces stand densities out tp a radius of twice the dripline, or 30-50 feet from legacy bole, in order to optimize release of preferred legacy tree, depending on species, while considering other multiple objectives as well.
2. Promotes resilience and "hang-time" of Cohort 1 legacy trees; retains important seed sources for natural regeneration of more shade intolerant conifers; provides anchors for future variable density thinning.
3. Increases horizontal and vertical discontinuity of ladder and canopy fuels, and begins to build increasing structural heterogeneity is existing stands.

Individual tree and small group thinning of dwarf mistletoe infected Douglas-fir

1. Reduces abundance of dwarf mistletoe in Douglas-fir on a landscape scale by targeting treatment of infected trees, primarily of Cohorts 2 and 3 in order to promote development of large Douglas-fir trees and to limit dwarf mistletoe abundance and spread, on both a stand and landscape level (see Douglas-fir Dwarf Mistletoe Stand Severity Rating Map in "A Landscape Level Approach to Management of Multiple Values in AFR: Block 2")

Ladder and Activity Fuel Piling & Burning

1. Reduces activity generated available fuels within the subunit.
2. Maintains/improves stands ability to modify landscape fire behavior by limiting canopy fire
3. Places piles strategically to minimize damage to retained trees/vegetation and associated resource values
4. Prepares stands for application of low severity prescribed fire
5. Leaves 1-2 slash piles per acre as wildlife habitat

Planting

1. Seed native grasses or forbs after pile burning or prescribed fire that exposes patches of more than 100 ft_2 of mineral soil under consultation with the Forest Botanist; also consider seeding any skid roads or areas disturbed during ground-based logging operations.
2. Promptly after treatments, assess the stand for areas with the potential to sustain successful pine regeneration (it is expected that such opportunities will be limited in the first entry associated with the current treatments)
3. As opportunities become available that are favorable to pine establishment, plant ponderosa pine and/or rust resistant sugar pine seedlings to add greater species diversity of favorable seed sources
4. Certified silviculturist will ensure appropriate timing, planting stock, and densities based on present site conditions and planned activities
5. Plant in first season following initial treatment to capture the narrow window of opportunity before incoming vegetation becomes a serious impediment to conifer establishment; take advantage of site resource availability in that first season
6. Assess development of competing vegetation to consider the need for treatment(s) to release any planted (and

desired natural regeneration) seedlings until they are well established

Treatment Narrative

In its current condition, Stand 28o serves as an example of stand density reduction in a style that creates considerable patchiness, spatial heterogeneity and subsequent horizontal discontinuity of fuels. It is suggested that this more open canopy, mid-seral stand condition be maintained well into the future, perhaps even progressing into an open-canopy late-seral stand structure type in the future – a type that is even rarer in the watershed than the open-canopy, mid-seral condition currently existing in this stand. Maintaining this stand type will require regular prescribed underburning on a 7-15 year cycle, particularly given the tendency for stands at this elevation to rapidly naturally regenerate with conifer seedlings (especially white fir), as well as abundant resprouting of hardwoods such as Pacific madrone in this case. Prior to initiating regular underburning, commercial thinning should be utilized to create more optimal stand densities and species compositions, with an emphasis on removal of dwarf mistletoe infected Douglas-fir and poor quality white fir, including those that are infected with mistletoe. Some excellent, vigorous white fir, regardless of size will initially be retained, although in reduced numbers. Additionally, radial thin around large Douglas-fir and ponderosa pine. Post-treatment stand densities should average 100-120 BA/A and 0.25-0.30 RDI, including maintaining/enhancing openings up to ½ acre in size, particularly in close proximity to overstory pines. Desired future conditions would include a greater abundance of developing ponderosa and sugar pine in openings. Understory Pacific madrone should generally be discouraged in this setting, although larger individuals greater than 14" dbh should be fostered. Dwarfmistletoe infected Douglas-fir should be removed from this subunit to create a dwarf mistletoe-free area. Non-host species (any other than Douglas-fir) should be intentionally left within 50' of the boundary with adjacent Stand 28p where retention of dwarf mistletoe in Douglas-fir is prioritized. Following initial thinning treatments and piling and burning of slash, ponderosa and rust-resistant sugar pine should be planted in openings. This stand should be managed in the long-term for rapid growth of pines and mistletoe free Douglas-fir at lower stand densities, while retaining high spatial heterogeneity, horizontal patchiness, a small number of hardwoods in openings and low fuels and understory tree and shrub development. Retaining snags and large downed wood are not a high priority in this subunit in the short term. Wait 5-10 years before initiating the first prescribed underburn to let planted seedlings get established, and to allow further decomposition of slashbuster generated small compacted fuels that could impact soils resources if burned too soon.

Applicable Project Criteria, Mitigation Measures, & Resource Coordination:

Slope Stability/Soil Resource Protection	Understory Vegetation- Thinning of stands, even lightly, should stimulate development of understory grasses, herbaceous vegetation, and other understory vegetation that can also provide protection form excess surface soil erosion.
Forest Health	Pines above 3" in diameter that need to be cut may be designated at any time, but they will be cut between August and December *unless t*hey are immediately disposed of by burning, chipping, scoring, or removed as a product prior to the springtime flight of the beetles (usually between March and May). Pines that are above the maximum size required for piling and burning should not be cut unless a specific plan is made for their removal; consumption and/or other practice to make them unavailable for potential beetle habitat (e.g. bark removal). Dwarf mistletoe in Douglas-fir is light in this subunit; any infected trees found should be treated, primarily by falling and removal.

Wildlife	Efforts will be made to retain trees, vegetation and land formations with evidence of use by wildlife (e.g. bird or wood rat nests, burrows, cavities, and hollows, etc.). Large hardwoods have a disproportionate high amount of use by a number of wildlife species (including fishers elsewhere in their range), particularly given their somewhat uncommon occurrence in Block 2. Radial thinning and other silvicultural practices that encourage the long-term viability of large hardwoods in Block 2 will be encouraged. Unthinned patches in each subunit ("skips") will be used to provide additional cover and habitat diversity. Small gaps of 0.1-0.5 acres and occasionally larger incorporated in appropriate locations will add greater structural and species diversity, essential elements of wildlife habitat improvement, and will be particularly important for those species that utilize the early successional vegetation associated with these openings.
Snags and Coarse Woody Material	Snags will be retained unless they pose a threat to worker safety or pose a fire risk. Snags greater than 10 inches dbh that require felling for safety reasons will be left long and contour felled across the slope to serve as coarse woody debris. Landscape level management of snags and/or coarse woody material is discussed in "A Landscape Approach to Management of Multiple Values in AFR: Block 2").
Prescribed Underburning	The following criteria must be met before fire is prescribed and implemented as a maintenance or stand driver under this prescription: -Conditions, including stand vigor and composition, must favor low severity fire effects. -Burning can be accomplished at intensities that will retain duff layers in an amount and distribution that prevents unacceptable levels of surface soil erosion and sediment delivery off-site. Effective ground cover should be protected such that 70% is retained after one season and 85% after 2 seasons. -Stand and individual tree vigor are such that the application of prescribed underburning will not unduly stress preferred leave trees and contribute to untimely mortality. -Protection of desired structures (i.e. Cohort 1 overstory trees, desired regeneration) may require pre-treatment prior to burning (immediately before or up to 2-3 years before) in order to protect highly desired features from unnecessary scorch, crown damage, cambial heating, soil heating or other fire-related injury. In these cases practices such as removing duff and ladder fuels and/or fuel accumulations away from the tree bole; spring burning; burning during cool, moist and/or windy conditions to quickly dissipate heat delivery to the tree boles and root systems; slow and careful ignition patterns, and/or other practices can help minimize damage to these features.

	The assessment by a certified silviculturist of preparatory needs, mitigation measures, and sequence of treatments will ensure integration of the multiple treatment objectives and management goals. It is currently expected that favorable conditions across Subunit 28o will not likely be reached for at least 5 years after this initial thinning treatment.
Hydrology	The implementation of silvicultural activities in the Ashland watershed is strongly dependent on outcomes that protect the municipal water supply for the City of Ashland. Although the area in Subunit 28o does not drain directly into Reeder Reservoir, practices implemented (e.g. fuels management and wildfire reduction) will indirectly protect municipal water objectives, as the overall decrease in the likelihood and size of high severity fire decreases the risk associated with increase sediment delivery that accompanies large-scale, high-severity wildfire events; Ground-based logging systems may be considered for use in Subunit 28o if soil disturbance can be kept at 5% or less. Mitigation of potential impacts from ground-based logging activities will be needed during and after harvest operations (pre-designated skid roads, dry season only operations, effective skid road drainage structures installed, etc). Portions of the subunit may also be harvested utilizing helicopter logging systems, which would further minimizing ground disturbance and effects on hydrologic function. Roads serve as extensions of the hydrologic network, increasing both the rapidity and size of hydrologic response during major storm events, thereby increasing the potential for significant erosion, sediment delivery and flooding. No new roads are proposed in Block 2. Maintenance of existing roads prior to, during and following use is prioritized
Botanical Resources	Before marking begins the Forest Botanist must be consulted to address any potential PETS species presence and mitigation measures necessary.
Native Grass Seeding	Seeding when appropriate to encourage native plant establishment in the herbaceous vegetation layer may follow burning activities. Seeding with native grasses may help impede non-native species invasion, discourage development of more fire-prone shrub species, and add diversity to the plant communities. Factors that will influence a choice to initiate native grass seeding are elevation, aspect, proximity to non-native plants already encroaching from the urban and valley areas, pre-treatment herbaceous plant cover and diversity, extent and intensity of disturbance associated with harvest or burning, and if a need is perceived for erosion control seeding. Native forb seed may be included in seed mixes in the future for similar reasons. At this time, the Forest Service has native grass seed grown from local wild ecotypes but no native forb seed meeting the same source criteria. The decision to apply native grass seed will be made collectively by the certified

	silviculturist and the Forest or District Botanist. Seed mixes tailored to the stand would be provided by the Forest or District Botanist.
Noxious Weeds	If noxious weed sites are discovered during implementation, these need to be mitigated. Project leaders, work crew leaders, and crew members have a choice at noxious weed sites; the infested sites must either be avoided entirely or their noxious weeds must be fully "treated" before silvicultural treatments occur there. Treatment for noxious weed removal normally means pull, cut, or grub out (depending on species) all the noxious weed plants present and pile the material for later burning. Clean pants cuffs, pockets, boot soles, clothing, tools, machinery, and vehicles of soil or plant parts before proceeding to new areas. Identifying these locations on a map, GPS, etc and sharing that information with appropriate AFR personnel will allow for future return to these sites to insure long-term success at eradication, such as during post-burn monitoring efforts. Noxious weed sites along roads traveling to and from work areas do not need to be treated or reported unless those roadsides are part of actual treatment units or are used as work staging areas. Klamath weed (St. John's wort) and bull thistle are common and widespread noxious weeds in SW Oregon. The Forest Service makes no attempt to prevent their spread or control their abundance during project activity. Hence AFR noxious weed mitigations will not be applied to these two species.
Cultural Resources	Any cultural resource, or potential cultural resource, discovered during the implementation of this project will be cause for immediate cessation of any site-altering activity, with immediate notification of appropriate project personnel. Upon review by a qualified cultural resource specialist, the area of significance may be delineated on the ground and removed from the treatment area.
Other Resource Coordination	Respective resource surveys have been completed and there are no other known issues within the stand to be treated. If there are any findings to the contrary at any time, actions to protect resources will be taken immediately and respective specialist(s) will be notified. Activities prescribed would then be reassessed. Cooperation and coordination between all partners, specialists, workers and other interested and involved parties is necessary to protect and promote the multiple values and resources that exist in the project area. This prescription is the vehicle to develop that coordination and integration of objectives, and it is this prescription that ultimately serves to document agreed course of actions and ultimately prescribes treatments and activities (even, and especially, as a need arises to adapt the initial course). Any and all changes needed in treatment activities, timing, and/or sequence of activities prescribed herein as a result of changing conditions on the ground,

	changes in our partnerships or other organizational capacity, change in scientific understanding, and/or change in management direction; need to be documented and integrated into this or a new prescription by a certified silviculturist prior to those changes being implemented.

Harvest Systems & Transportation:

Logging Systems	The type of logging system(s) and the feasibility of removals without compromising important ecological objectives will be determined prior to initiation of operations. Such consideration will have to meet soil protection measures and result in no greater than 5% detrimental soil conditions across the subunit's area (not including the permanent transportation system). In Block 2, helicopter logging will be the primary system used. Ground-based logging systems may be able to be utilized in Subunit 28o, which contains slope gradients of 20%+/- over portions of the subunit. Utilization of ground-based harvest systems may allow some utilization of some traditionally non-merchantable material.
Landings	Only existing landings or hot logging on existing roads are currently approved for use. It is expected that only three existing landings will be utilized in Block 2. Any new proposed landings must be approved by the Contracting Office Representative (COR) and amended in this prescription by a certified silviculturist. Landing restoration after completion of use shall be overseen by a qualified soil scientist, botanist, and/or other pertinent resource specialist(s). Seeding of landings with native grasses immediately following cessation of use may minimize noxious, non-native plant establishment. Monitoring for noxious non-native plants invading the landings should be conducted for at least 3 years following cessation of use, and appropriate efforts of eradication undertaken when found. In addition, any opportunities for landing erosion/sediment to enter the aquatic network will be addressed both during use, and during restoration efforts immediately following cessation of landing use.
Hauling and Road Use	Forest Service Road 2060 will be used to access treatment areas. There is a high level of recreational use of this road. Road signs must be posted on both sides of treatment areas warning forest users of activities during implementation. All vehicles will obey posted speed limits and be constantly aware of potential interaction with recreational users. Signs and/or temporary trail closures may also be needed during on-the-ground application of silvicultural activities in the vicinity of established trails. Road maintenance returning roads to a high standard of functionality following cessation of use will be required under any contract requiring hauling on established roads.

Monitoring:

For implementation monitoring please refer to "Prescription Objectives". This section is presented in both narrative form and in a table format that provides a summary of quantifiable variables to be measured during and after prescribed treatments. Effective implementation monitoring should rely on both quantitative and qualitative monitoring, with analysis of both by knowledgeable personnel. Invariably, integration of the two forms of monitoring will provide the most comprehensive and accurate assessment of outcomes. If this process is done well, it should produce results that provide impetus for adaptive management and improvement of both planning and implementation of future work in AFR. With new information and understandings developing rapidly, additional adjustments to planned activities should also be encouraged in the ongoing spirit of adaptive management.

Treatment effectiveness can be guided by the sections "Land Management Goals and Objectives", "Desired Future Dynamics" and "Desired Future Conditions". Effectiveness will be measured and analyzed over various spatial and temporal scales, including both stand level and landscape level assessments. A strong monitoring component has been integral to the development of AFR. The Ashland Forest Resiliency's Monitoring Plan will provide a comprehensive assessment of the project's overall effectiveness.

Silvicultural Prescription – AFR Block 02, Subunit 28p

Prescriber: Marty Main **Date: June 2011**

Field Checked by: COA crew, Prescriber, Cert. Silviculturist **Date: June-July 2011**

Certified Silviculturist: _____ **Date:** 8-5-11

Associated Project: Ashland Forest Resiliency
Associated NEPA: Ashland Forest Resiliency FEIS, ROD
5th Field Watershed: Bear Creek

Stand Identity & Current Condition

Table 1.1 Current Stand Attributes

Location - Stand	Acres	Plant Assoc. *	Site Index (DF, 50yrs)	Elevation (feet)	Average % Slope (range)	Aspect (degrees)	Trees Per Acre (>4.5')	Basal Area (ft^2/ac)	Estimated Tree Canopy Cover** (>0 dbh)	Quadratic Mean Diameter (>0" dbh)	RDI
135010-0336	20	ABCO/BENE2; ABCO/BENE2/ LIBOL2	85-95	4500-4600	30 (14-42)	48-98	689	194	81	7.2	0.58

Plant Association from Atzet, et al. 1996.

**Canopy cover is the percent of a stand's ground area covered by the downward projection of all tree canopies within a stand. Individual point data crown closure) was systematically collected with a densiometer and averaged to arrive at canopy cover estimates.

Stand Context/Description

Subunit 28p is located on 10-50% southeasterly to northeasterly aspects situated around two ephemeral/intermittent draws with Riparian Reserve designations. Subunit 28p is a moist productive site, similar in productivity with adjacent stands 28r and 28q. Plant Association is primarily ABCO/BENE2, but grades into ABCO/BENE2/LIBOL2 on the moister sites in topographical low spots and closer to the seasonal drainages. Estimate fifty year site index for Douglas-fir is 85-90.

The stand in Subunit 28p is structurally diverse, in part the result of the 1962 partial cut which focused on removal of large overstory Douglas-fir, along with evidence of a similar type of harvest in approximately 1940. However, a significant component of older overstory white fir was retained in the 1962 harvest, allowing a current closed canopy (85% estimate tree canopy cover), structurally complex, and more mature forest condition. The current stand supports three primary age/size classes exist- 1) a well-stocked overstory (27tpa) of 20-32"+ dbh, 120+ year old white fir, 2) about 68 tpa of 60-120 year, 10-20" dbh trees, primarily white fir (48 tpa) of low to moderate but generally decreasing vigor overtopping smaller stature (primarily 10-12" dbh) uncommon Douglas-fir and hardwoods (primarily 20 tpa of Pacific madrone, with an occasional golden chinquapin); 3) close to 600 saplings and small trees from 4.5' tall to 10" dbh of primarily Douglas-fir, white fir and hardwoods. The hardwoods tend to be of poor vigor in the dense understory (22 tpa of smaller Pacific madrone snagswith an average QMD of 6.8" dbh), but are somewhat more vigorous and abundant in the numerous small openings (1/20 acre or less) created during the 1962 harvest, especially towards the top of the subunit. Seedlings and small saplings <4.5' tall of Douglas-fir are also common. White fir Cohort 1 trees (>30" dbh) are the most common of this size class (5 tpa) and scattered around the subunit. Overall, the stand is currently at high densities (194 ft^2/ac BA/A; 0.58 RDI). Douglas-fir dwarfmistletoe is low overall in this subunit, at least in part due to the removal of the overstory Douglas-fir infection source in the 1960's harvest and additional subsequent mortality over time of those

retained. White fir mistletoe is also low to moderate, but is especially common in the older age classes. It is suspected that Scolytus beetle is also contributing to mortality of the larger white fir. Total snags/acre are moderate relative to Block 2 in this subunit (42/acre), but include 8/acre in the 20"+ dbh size class, including some very large recent mortality from severe dwarf mistletoe infected Cohort 1 Douglas-fir. Down wood levels are high (70 tons/acre) including a high number (129/acre) in the 15"+ diameter size class. These higher numbers of large snags and CWM suggest that this area has retained older forest conditions well into the past, not to be unexpected given the moist conditions at lower topographic position – an area less likely to burn severely over time. These site and stand conditions also suggest habitat types that tend to be utilized by species that prefer older forest conditions, such as fishers, spotted owls and others. A fisher block is located at the bottom of Subunit 28p. A small area on more southerly aspects above and north of the northerly drainage contains a denser mixed species stand that was not harvested as heavily in the 1962 harvest and currently includes less overstory white fir, more Douglas-fir in the 12- 24" dbh size class (including more trees with dwarf mistletoe) and a denser understory stand of trees less than 10" dbh. Most of this particular portion of Subunit 28p is currently in a riparian reserve/LHZ classification.

Land Management Goals & Parameters:

Table 2.1 Management Direction

Management Allocation:	Restricted Watershed (RRNF LRMP) Late Successional Reserve (NWFP)
Project NEPA:	Ashland Forest Resiliency FEIS, ROD
NEPA Purpose & Need:	The **Need** for action is urgent reduction of the potential for large-scale, high-severity wildland fire in the Upper Bear landscape. One hundred years of fire exclusion and fuel accumulations in this forest's wildland/urban interface now presents high potential for large-scale, high-severity wildland fire that could significantly interrupt the supply of clean water and late-successional and old-growth forest ecosystems in this Analysis Area. The **Purpose** of the action is to protect Values at Risk, reduce hazardous fuels, reduce crown fire potential, and create forest conditions that are more resilient to wildland fires.

AFR Strategic Category and Purpose:

Strategic Ridgelines: Treatments along Strategic Ridgelines are designed to: 1) reduce the extent of wildland fire severity by limiting the amount of area affected by wildland fire, 2) create areas where fire suppression efforts can be conducted more safely and effectively, 3) break up continuity of fuels over a large landscape, and 4) serve as anchor points for further area-wide treatments, such as prescribed fire and maintenance burning (AFR FEIS, 2008). All of Block 2, was designated as a Strategic Ridgeline in the ROD except for Subunits 29a and 79a..

Desired Future Dynamics

The goal for management of this subunit is to alter stand structures, densities and composition, and do so in spatial patterns that will encourage the restoration of functional processes more closely resembling the historical occurrence of more frequent but lower to moderate severity disturbance, while concurrently adjusting stand and vegetation conditions to optimize habitat conditions for important mature forest conditions and species such as spotted owls, fishers, and other key species.. Following this initial entry that reduces stand densities, improves tree and stand vigor and maintains existing

structural heterogeneity, species composition will shift towards a greater percentage Douglas-fir and a decreased percentage of white fir, with a small amount of intermixed hardwoods, primarily chinquapin. Fire may then begin to be the primary driver of stand dynamics, through wildland fire use and/or the application of prescribed fire, although ecologically appropriate silvicultural activities will likely still continue to be applied, including additional variable density thinning in the future, in order to maintain structural heterogeneity and continue improvements in species compositions towards a more mixed conifer/hardwood type. Snags and downed wood will remain high in the foreseeable future, with snag numbers decreasing over time while CWM increases, at least until a more regular implementation of frequent underburning occurs. Increased post-treatment grass and herbaceous understory development following thinning, especially in openings, should help protect surface soils.

Prescription Objectives:

Table 3.1 Desired Stand Attributes

AFR Subunit	Location-Stand	Existing Forest Type*	Trees Per Acre* (>4.5')	Basal Area (ft^2/ac.)* (>0 dbh)	Quadratic Mean Diameter* (>0 dbh)	RDI* (>0 dbh)	Estimated Tree Canopy Cover** (>0 dbh)	Minimum Down Pieces Created (ave. per acre)
28p	6135010-0336	ABCO-PSME	325-415	125-165	8	0..35-0.45	60-75	na

* Target ranges are for the stand average, including gaps and retention areas outside of riparian areas or landslide hazard zones. Variations outside of listed range at any one location are expected ad desirable.

**Canopy cover is the percent of a stands ground area covered by the downward projection of all tree canopies within a stand. All canopy covers are targeted to remain above a minimum average of 40% per subunit. "Estimated Tree Canopy Cover" is an estimate of expected post-treatment canopy cover based on desired residual densities. It is intended to be a rough guide only and not an actual target..

Desired Future Condition (DFC): *Conditions change over time and space; this DFC reflects the desired future condition over the majority of the stand one to three growing seasons after treatment:*

A reduction in stand density, primarily of white fir, utilizing variable density thinning, and occurring across age classes; improving stand vigor, while maintaining structural heterogeneity in the stand; increasing mean QMD, improving species compositions by decreasing white fir abundance and increasing Douglas-fir, and building, over time, tree and stand resistance to effects of low severity disturbances from insects, disease and/or fire. Accelerated growth of Douglas-fir occurs, while reduced dwarf mistletoe abundance in Douglas-fir is maintained. Multiple sizes and ages of white fir maintain multi-layered canopy, including existing structural heterogeneity in existing small canopy gaps. The diversity of understory species, including various grasses, herbaceous vegetation and others more shade intolerant species, is increased, particularly in canopy gaps. Snags will decrease over time, but CWM will remain high in the short term, at least until fire returns as a primary driver of stand dynamics.

Treatments to Achieve Management Objective (DFC):

The following treatments are the primary silvicultural activities to be implemented in Subunit 28p. Silvicultural activities are applied in three general classifications of tree structure in Block 2, referred to as cohorts. Cohort 1 trees are generally those that are 150-300+ years of age and 30 to 60" dbh (and occasionally as high as 80" dbh in the project area); Cohort 2 trees 60-140 years of age and 12-30" dbh (and occasionally as high as 35+" dbh); and Cohort 3 trees 1-50 years of age and 1-10" dbh (and occasionally as high as 18" dbh). For a more complete description of cohorts, the following specified treatments, and the landscape context in which they are applied, see "A Landscape Scale Approach to Management of Multiple Values in AFR: Block 2".

The following treatments are the primary silvicultural activities to be implemented in Subunit 28p.

Thinning-from-below

1. Improves retained tree and stand vigor and minimizes long-term potential for insect related mortality by re-distributing growth onto fewer larger trees, resulting in increased quadratic mean diameter (QMD) for the stand
2. Removes relatively smaller and less vigorous trees from primarily intermediate and suppressed crown classes
3. Maintains sufficient canopy closure and full-site occupancy by retained trees to retard understory ladder fuel development; maintains/promotes high canopy base height and good vertical discontinuity of fuels.
4. Speeds development of older tree structures and potential for development of late-seral stand conditions
5. Includes more thorough release of legacy and/or the largest, healthiest trees of desired species, size classes, or growth forms.

Radial thinning

1. Removes Cohort 2 and 3 trees to create up to a 20 foot separation whenever possible between crown of Cohort 1 tree and crowns of other retained trees. Additionally reduces stand densities out to a radius of twice the tree dripline, or 30-50 feet from legacy bole, in order to optimize release of preferred legacy tree, while considering other multiple objectives as necessary.
2. Promotes resilience and "hang-time" of Cohort 1 legacy trees; retains important seed sources for natural regeneration of more shade intolerant conifers; provides anchors for future variable density thinning.
3. Increases horizontal and vertical discontinuity of ladder and canopy fuels, and begins to build increasing structural heterogeneity is existing stands.

Individual tree and small group thinning of dwarf mistletoe infected Douglas-fir

1. Retains/promotes dwarf mistletoe infected Douglas-fir in spatially explicit locations for immediate retention of important late-successional habitat for wildlife species.
2. Encourages long-term development of larger dwarf mistletoe infected Douglas-fir for future replacement habitat in spatially strategic locations.
3. Reduces abundance of dwarf mistletoe in Douglas-fir on a landscape scale by targeting treatment of infected trees, primarily of Cohorts 2 and 3 in order to promote development of large Douglas-fir trees and to limit dwarf mistletoe abundance and spread, on both a stand and landscape level (see Douglas-fir Dwarf Mistletoe Stand Severity Rating Map in "A Landscape Level Approach to Management of Multiple Values in AFR: Block 2".

Non-commercial surface and ladder fuel thinnings

1. Retains most vigorous of trees of desired species and re-distributes growth and vigor onto these trees and helps grow those into larger size classes in shorter periods of time
2. Removes less vigorous and/or other trees with undesirable characteristics for meeting subunit level goals
3. Re-established more desirable species compositions and/or those currently underrepresented in species, size classes, and/or growth forms
4. Reduces ladder fuels and increases canopy base height, creating more favorable fire management conditions
5. Prepares the site for safe application of prescribed fire regime of low severity in the future
6. Can be used to maintain or enhance existing structural diversity in the overstory
7. Can be used to remove all trees of a given species within 50' of a dwarf mistletoe infected retained overstory tree of the same species.

Ladder and Activity Fuel Piling & Burning

1. Reduces activity generated available fuels within the subunit.
2. Maintains/improves stands ability to modify landscape fire behavior by limiting canopy fire
3. Places piles strategically to minimize damage to retained trees/vegetation and associated resource values
4. Prepares stands for application of low severity prescribed fire
5. Leaves 3-4 slash piles per acre as wildlife habitat

Treatment Narrative

Three well-developed cohorts/layers in this stand, the location low in the local topography adjacent two drainages, the high amount of snags and downed wood and the presence of a fisher block at the bottom of the subunit suggest a desirable potential for development and prioritization of mature forest values, although the likelihood of good owl nesting habitat is unlikely in the near term due to a general lack of overstory Douglas-fir and associated dwarfmistletoe brooms in the vicinity. The confluence of the two creeks at the bottom of the subunit and the more perennial source of water add to the importance of this subunit hydrologically. Subunit 28p is not in a critical location from a wildfire management perspective, and the generally moist conditions, higher humidities, higher summer foliar moistures, subsequent shorter fire season and generally gentle to moderate topography all contribute to reduced propensity for wildfire spread during most conditions. For these reasons, stand density reduction should be moderate in this subunit, and across most of the size classes to maintain promote multi-cohort stand structures. Both commercial density management and non-commercial treatments are suggested primarily to reduce stand densities and shift species compositions, primarily away from white fir and towards an increasing amount of Douglas-fir of all size classes. Younger (30-45 year old) Douglas-fir up to 10-12" dbh in small openings should be protected during logging operations, released by enlarging small openings through removal of overstory white fir from around opening edges, and further released by follow-up non-commercial thinning. Without a dwarfmistletoe infected overstory, these released Douglas-fir should be able to grow quickly following release adding critically important structural and species composition values to the developing mature forest. Density management thinning-from-below primarily with removal of poor vigor 8-24" dbh white fir should create more optimal stand densities to accelerate growth of retained trees. Retention of some white fir, but at a reduced percentage, is appropriate in this subunit as the site is well-suited for its growth and white fir will currently be an important structural component. Sporax should be applied to any retained true fir 12" dbh and larger. Radial thinning around uncommon Cohort 1 trees of all species, as well as more aggressive thinning (both commercial and non-commercial) around uninfected Cohort 2 Douglas-fir and uncommon larger hardwoods is also prioritized. Post-treatment stand densities should range from 125-165 BA/A (RDI 0.35-0.45), with increasing densities in the lower slope positions closer to the Riparian Reserves and associated fisher block. Long-term direction is for maintenance of a multi-layered, mixed species stand of complex older forest structures that are currently developing. The relative scarcity of Douglas-fir dwarf mistletoe in this subunit and in the adjacent area suggests that small isolated occurrences can be retained on vigorous Cohort 2 Douglas-fir for future development of potential owl nesting sites, as long as they are not located in close proximity to young uninfected understory Douglas-fir advanced regeneration as described above. In the small portion of the subunit north of the northernmost drainage, long-term retention and promotion of dwarf mistletoe infected overstory Douglas-fir (through light commercial and/or non-commercial radial thinning) is more acceptable, hopefully providing mid-term replacement of brooms for owls, fisher and other wildlife utilization. Following commercial density management, non-commercial treatments should focus on reducing the amount of white fir and the small diameter Pacific madrone that cannot thrive in the denser retained overstory. Activity fuels throughout the subunit should be piled and burned, retaining 3-4 piles/acre for wildlife habitat values.

Applicable Project Criteria, Mitigation Measures, & Resource Coordination:

Slope Stability/Soil Resource Protection	Understory Vegetation- Thinning of stands, even lightly, should stimulate development of understory grasses, herbaceous vegetation, and other understory vegetation that can also provide protection form excess surface soil erosion. In areas outside of LHZ's where slopes are steeper than 75-80%; headwalls and concave slopes are steeper than 65-70%; slope breaks and discontinuities have lower slopes exceeding 65-70%; and/or inner gorges have slopes greater than 60%, stand density reduction should be avoided (e.g. "skips" can be located in these areas), or alternately, increased 10-30-% to increase root holding capacity

	and insure that closed canopy conditions re-occur again withiu 10 years. Hardwoods are not only deep rooted but also rapidly re-sprout following above-ground mortality, and should be favored for retention in these areas. Whenever possible, retaining higher than subunit average densities should be considered on all slopes greater than 65%.
Forest Health	Dwarf mistletoe in Douglas-fir is very limited in this subunit and needs not be treated where it is found. Infected trees may serve as future owl nest sites in this emerging mature forest. Mistletoe infected white fir should be preferentially removed during harvest and non-commercial thinning activities. Fresh cut stumps of true fir will be protected from inoculation by Annosus root disease through the application of Sporax, or other approved product containing borax, on fresh cut stumps 12" dbh and larger within 24 hours following falling.
Wildlife	Efforts will be made to retain trees, vegetation and land formations with evidence of use by wildlife (e.g. bird or wood rat nests, burrows, cavities, and hollows, etc.). Large hardwoods have a disproportionate high amount of use by a number of wildlife species (including fishers elsewhere in their range), particularly given their somewhat uncommon occurrence in Block 2. Radial thinning and other silvicultural practices that encourage the long-term viability of large hardwoods in Block 2 will be encouraged. Unthinned patches in each subunit ("skips") will be used to provide additional cover and habitat diversity. Small existing canopy gaps of 0.1-0.5 acres and occasionally larger add greater structural and species diversity, essential elements of wildlife habitat improvement.
Snags and Coarse Woody Material	Snags will be retained unless they pose a threat to worker safety or pose a fire risk. Snags greater than 10 inches dbh that require felling for safety reasons will be left long and contour felled across the slope to serve as coarse woody debris. Landscape level management of snags and/or coarse woody material are discussed in "A Landscape Approach to Management of Multiple Values in AFR: Block 2").
Hydrology	The implementation of silvicultural activities in the Ashland watershed is strongly dependent on outcomes that protect the municipal water supply for the City of Ashland. Although most of Subunit 28p does not drain into Reeder Reservoir, the high amount of water that originates in this area makes it hydrologically very important. Silvicultural practices implemented (e.g. fuels management and wildfire reduction) can also indirectly protect municipal water objectives, as the overall decrease in the likelihood and size of high severity fire decreases the risk associated with increase sediment delivery that accompanies large-scale, high-severity wildfire events; Helicopter logging systems, will minimize ground disturbance and effects on

	hydrologic function. Roads serve as extensions of the hydrologic network, increasing both the rapidity and size of hydrologic response during major storm events, thereby increasing the potential for significant erosion, sediment delivery and flooding. No new roads are proposed in Block 2, although opening of the old road through the subunit may be considered to facilitate harvesting, with eventual closing and putting-to-bed of the road following use. Maintenance of existing roads prior to, during and following use is prioritized Silvicultural activities are restricted in LHZ's to 50% of the stems over 50% of the area to protect hydrologic function and reduce the potential for slope failure.
Botanical Resources	Before marking begins the Forest Botanist must be consulted to address any potential PETS species presence and mitigation measures necessary.
Native Grass Seeding	Seeding when appropriate to encourage native plant establishment in the herbaceous vegetation layer may follow burning activities. Seeding with native grasses may help impede non-native species invasion, discourage development of more fire-prone shrub species, and add diversity to the plant communities. Factors that will influence a choice to initiate native grass seeding are elevation, aspect, proximity to non-native plants already encroaching from the urban and valley areas, pre-treatment herbaceous plant cover and diversity, extent and intensity of disturbance associated with harvest or burning, and if a need is perceived for erosion control seeding. Native forb seed may be included in seed mixes in the future for similar reasons. At this time, the Forest Service has native grass seed grown from local wild ecotypes but no native forb seed meeting the same source criteria. The decision to apply native grass seed will be made collectively by the certified silviculturist and the Forest or District Botanist. Seed mixes tailored to the stand would be provided by the Forest or District Botanist.
Noxious Weeds	If noxious weed sites are discovered during implementation, these need to be mitigated. Project leaders, work crew leaders, and crew members have a choice at noxious weed sites; the infested sites must either be avoided entirely or their noxious weeds must be fully "treated" before silvicultural treatments occur there. Treatment for noxious weed removal normally means pull, cut, or grub out (depending on species) all the noxious weed plants present and pile the material for later burning. Clean pants cuffs, pockets, boot soles, clothing, tools, machinery, and vehicles of soil or plant parts before proceeding to new areas. Identifying these locations on a map, GPS, etc and sharing that information with appropriate AFR personnel will allow for future return to these sites to insure long-term success at eradication, such as during post-burn monitoring efforts. Noxious weed sites along roads traveling to and from work areas do not need to be treated or reported unless those roadsides are part of actual treatment units or

	are used as work staging areas. Klamath weed (St. John's wort) and bull thistle are common and widespread noxious weeds in SW Oregon. The Forest Service makes no attempt to prevent their spread or control their abundance during project activity. Hence AFR noxious weed mitigations will not be applied to these two species.
Cultural Resources	Any cultural resource, or potential cultural resource, discovered during the implementation of this project will be cause for immediate cessation of any site-altering activity, with immediate notification of appropriate project personnel. Upon review by a qualified cultural resource specialist, the area of significance may be delineated on the ground and removed from the treatment area.
Other Resource Coordination	Respective resource surveys have been completed and there are no other known issues within the stand to be treated. If there are any findings to the contrary at any time, actions to protect resources will be taken immediately and respective specialist(s) will be notified. Activities prescribed would then be reassessed. Cooperation and coordination between all partners, specialists, workers and other interested and involved parties is necessary to protect and promote the multiple values and resources that exist in the project area. This prescription is the vehicle to develop that coordination and integration of objectives, and it is this prescription that ultimately serves to document agreed course of actions and ultimately prescribes treatments and activities (even, and especially, as a need arises to adapt the initial course). Any and all changes needed in treatment activities, timing, and/or sequence of activities prescribed herein as a result of changing conditions on the ground, changes in our partnerships or other organizational capacity, change in scientific understanding, and/or change in management direction; need to be documented and integrated into this or a new prescription by a certified silviculturist prior to those changes being implemented.

Harvest Systems & Transportation:

Logging Systems	The type of logging system(s) and the feasibility of removals without compromising important ecological objectives will be determined prior to initiation of operations. Such consideration will have to meet soil protection measures and result in no greater than 5% detrimental soil conditions across the subunit's area (not including the permanent transportation system). In this subunits, helicopter logging will be the primary system used.
Landings	Only existing landings or hot logging on existing roads are currently approved for

	use. It is expected that only three existing landings will be utilized in Block 2. Any new proposed landings must be approved by the Contracting Office Representative (COR) and amended in this prescription by a certified silviculturalist. Landing restoration after completion of use shall be overseen by a qualified soil scientist, botanist, and/or other pertinent resource specialist(s). Seeding of landings with native grasses immediately following cessation of use may minimize noxious, non-native plant establishment. Monitoring for noxious non-native plants invading the landings should be conducted for at least 3 years following cessation of use, and appropriate efforts of eradication undertaken when found. In addition, any opportunities for landing erosion/sediment to enter the aquatic network will be addressed both during use, and during restoration efforts immediately following cessation of landing use.
Hauling and Road Use	Forest Service Road 2060 will be used to access treatment areas. There is a high level of recreational use of this road. Road signs must be posted on both sides of treatment areas warning forest users of activities during implementation. All vehicles will obey posted speed limits and be constantly aware of potential interaction with recreational users. Signs and/or temporary trail closures may also be needed during on-the-ground application of silvicultural activities in the vicinity of established trails. Road maintenance returning roads to a high standard of functionality following cessation of use will be required under any contract requiring hauling on established roads.

Monitoring:

For implementation monitoring please refer to "Prescription Objectives". This section is presented in both narrative form and in a table format that provides a summary of quantifiable variables to be measured during and after prescribed treatments. Effective implementation monitoring should rely on both quantitative and qualitative monitoring, with analysis of both by knowledgeable personnel. Invariably, integration of the two forms of monitoring will provide the most comprehensive and accurate assessment of outcomes. If this process is done well, it should produce results that provide impetus for adaptive management and improvement of both planning and implementation of future work in AFR. With new information and understandings developing rapidly, additional adjustments to planned activities should also be encouraged in the ongoing spirit of adaptive management.

Treatment effectiveness can be guided by the sections "Land Management Goals and Objectives", "Desired Future Dynamics" and "Desired Future Conditions". Effectiveness will be measured and analyzed over various spatial and temporal scales, including both stand level and landscape level assessments. A strong monitoring component has been integral to the development of AFR. The Ashland Forest Resiliency's Monitoring Plan will provide a comprehensive assessment of the project's overall effectiveness.

Silvicultural Prescription – AFR Block 02, Subunit 28r

Prescriber: Marty Main **Date: June 2011**

Field Checked by: COA crew, Prescriber, Cert. Silviculturist **Date: June-July 2011**

Certified Silviculturist: _____ **Date:** 8-5-11

Associated Project: Ashland Forest Resiliency
Associated NEPA: Ashland Forest Resiliency FEIS, ROD
5th Field Watershed: Bear Creek

Stand Identity & Current Condition

Table 1.1 Current Stand Attributes

Location - Stand	Acres	Plant Assoc. *	Site Index (DF, 50yrs)	Elevation (feet)	Average % Slope (range)	Aspect (degrees)	Trees Per Acre (>4.5')	Basal Area (ft^2/ac)	Estimated Tree Canopy Cover** (>0 dbh)	Quadratic Mean Diameter (>0" dbh)	RDI
113010-0393	21	ABCO/BENE2; ABCO/BENE2/ LIBOL2	85-95	4575-4950	35 (16-56)	1-56	456	227	75	9.6	0.64

Plant Association from Atzet, et al. 1996.
**Canopy cover is the percent of a stand's ground area covered by the downward projection of all tree canopies within a stand. Individual point data 'crown closure) was systematically collected with a densiometer and averaged to arrive at canopy cover estimates.

Stand Context/Description

Subunit 28r is located on 15-55% northerly to northeasterly aspects above an ephemeral draw with a Riparian Reserve designation. The area is a moist productive site, primarily of the ABCO/BENE2 Plant Association, but grading into an ABCO/BENE2/LIBOL Plant Association in the lower third slope positions close to the Riparian Reserve. Fifty year site index for Douglas-fir is estimated at 85-95.

The stands in Subunit 28r are currently mostly closed canopy (75% estimated canopy cover for the subunit as a whole), structurally diverse mid-seral stand, but trending towards mature stand conditions. Current stand densities are high (0.64 RDI, 227 BA/A) and comprised of relatively equal amounts of overstory (> 12" dbh) white fir (34 tpa, 70 BA/A) and Douglas-fir (35 tpa, 88BA/A). About 60 tpa of hardwoods (chinquapin and Pacific madrone) exist in the understory, although the madrone is larger (>12" dbh) and more vigorous than the smaller chinquapin, many of which have died (28/acre) in the understory shade. Dwarf mistletoe infection in Douglas-fir is low to moderate, but is spotty in occurrence, higher in abundance and severity in the vicinity of more open forests created over time, especially in a 3+/- acre root disease pocket at the west end of the subunit. Douglas-fir is more abundant, dominant and vigorous in the eastern half of the subunit. However, on these more northerly aspects at this elevation, white fir is well-adapted for survival and growth, in contrast to most locations in Block 2 where it is an aggressive invader on sites that were likely more dominated by pines and Douglas-fir historically. The higher amounts of chinquapin in this subunit (42/acre 4-14" dbh)) are another indication of a site more adapted for white fir for Block 2. Most of the stands in the subunit have excellent vertical fuel discontinuity, with a well established overstory of 12-30" dbh conifers with high canopy base heights and limited understory ladder fuel development- excellent conditions from a wildfire management perspective. The southwestern boundary of the subunit follows a broad ridgeline that is a key location from a wildfire management perspective, separating the Ashland watershed from the Wagner Creek watershed to the north. Snag totals are high (66/acre), including

11/acre > 20" dbh. Moderately high amounts of CWM exist currently (37.5 tons/acre), and that amount should increase as snags fall over. These characteristics suggest a stand moving towards mature forest conditions, and one that likely escaped significant logging in part because it was dominated by the least preferred species, white fir, during the most recent period of harvesting (1960's). The result is a multi-layered canopy, including large overstory dominants (4 tpa> 32" dbh) over a somewhat more open understory that provides important wildlife habitat values in the area. Root disease, primarily laminated root disease, is well established in an ~ 3 acre area in the westernmost portion of the subunit just east of Skyline Mine. Several infection centers appear to have overlapped in this area, with extensive mortality and falldown of overstory Douglas-fir and white fir, with subsequent significant decreases in stand densities and canopy closures. Within individual pockets that range from 0.1 to 0.5+ acres, white fir and Douglas-fir from 3'-30' currently dominate, with hardwoods (primarily chinquapin and lesser amounts of Pacific madrone) established and thriving around the edges of the openings. Many of the existing live overstory Douglas-fir and white fir in the vicinity are moderately to heavily infected with dwarf mistletoe. Numerous snags and downed wood proliferate in this area, which offers unique structural and age class diversity in the area, as well as compromising wildfire management goals in this critical saddle location (including Skyline Mine and the immediate vicinity) from a wildfire management perspective.

Land Management Goals & Parameters:

Table 2.1 Management Direction

Management Allocation:	Restricted Watershed (RRNF LRMP) Managed Watershed (RRNF LRMP), Late Successional Reserve (NWFP)
Project NEPA:	Ashland Forest Resiliency FEIS, ROD
NEPA Purpose & Need:	The **Need** for action is urgent reduction of the potential for large-scale, high-severity wildland fire in the Upper Bear landscape. One hundred years of fire exclusion and fuel accumulations in this forest's wildland/urban interface now presents high potential for large-scale, high-severity wildland fire that could significantly interrupt the supply of clean water and late-successional and old-growth forest ecosystems in this Analysis Area. The **Purpose** of the action is to protect Values at Risk, reduce hazardous fuels, reduce crown fire potential, and create forest conditions that are more resilient to wildland fires.

AFR Strategic Category and Purpose:

Strategic Ridgelines: Treatments along Strategic Ridgelines are designed to: 1) reduce the extent of wildland fire severity by limiting the amount of area affected by wildland fire, 2) create areas where fire suppression efforts can be conducted more safely and effectively, 3) break up continuity of fuels over a large landscape, and 4) serve as anchor points for further area-wide treatments, such as prescribed fire and maintenance burning (AFR FEIS, 2008). All of Block 2, was designated as a Strategic Ridgeline in the ROD except for Subunits 29a and 79a..

Desired Future Dynamics

The goal for management of this subunit is to alter stand structures, densities and composition, and do so in spatial patterns, that will encourage the restoration of functional processes more closely resembling the historical occurrence of

more frequent but lower to moderate severity disturbance, while concurrently adjusting stand and vegetation conditions to optimize habitat conditions for important mature forest conditions and species such as spotted owls, fishers, and other key species.. Following this initial entry that reduces stand densities, improves tree and stand vigor and maintains existing structural heterogeneity, species composition will shift slightly towards a greater percentage Douglas-fir, with a small amount of intermixed hardwoods, primarily chinquapin. Fire may then begin to be the primary driver of stand dynamics, through wildland fire use and/or the application of prescribed fire, although ecologically appropriate silvicultural activities will likely still continue to be applied, including additional variable density thinning in the future, in order to maintain structural heterogeneity and continue improvements in species compositions towards a more mixed conifer/hardwood type. On these true white fir sites, root disease and associated mortality from *Scolytus ventralis,* the fir engraver beetle, are also important disturbance agents and key parts of desired future dynamics. Snags and downed wood will remain high in the foreseeable future, with snag numbers decreasing over time while CWM increases, at least until a more regnlar implementation of frequent underburning occurs. Increased post-treatment grass and herbaceous understory development following thinning, especially in openings, should help protect surface soils.

Prescription Objectives:

Table 3.1 Desired Stand Attributes

AFR Subunit	Location-Stand	Existing Forest Type*	Trees Per Acre* (>4.5')	Basal Area (ft^2/ac.)* (>0 dbh)	Quadratic Mean Diameter* (>0 dbh)	RDI* (>0 dbh)	Estimated Tree Canopy Cover** (>0 dbh)	Minimum Down Pieces Created (ave. per acre)
28r	6135010-0393	ABCO-PSME	125-215	135-180	12-14	0..35-0.48	60-75	na

* Target ranges are for the stand average, including gaps and retention areas outside of riparian areas or landslide hazard zones. Variations outside of isted range at any one location are expected and desirable.

**Canopy cover is the percent of a stands ground area covered by the downward projection of all tree canopies within a stand. All canopy covers are targeted to remain above a minimum average of 40% per subunit. "Estimated Tree Canopy Cover" is an estimate of expected post-treatment canopy cover based on desired residual densities. It is intended to be a rough guide only and not an actual target.

Desired Future Condition (DFC): *Conditions change over time and space; this DFC reflects the desired future condition over the majority of the stand one to three growing seasons after treatment:*

A reduction in stand density, primarily of white fir, utilizing variable density thinning, and occurring across age classes, improving stand vigor while maintaining structural heterogeneity in the stand, increasing mean QMD, improving species compositions by decreasing white fir abundance, and increasing Douglas-fir; building, over time, tree and stand resistance to effects of low severity disturbances from insects, disease and/or fire. Accelerated growth of Douglas-fir occurs, while reduced dwarf mistletoe abundance in Douglas-fir is maintained, while retaining infected but vigorous trees in lower slope positions for future owl nest site development. Multiple sizes and ages of white fir maintain multi-layered canopy, including existing structural heterogeneity in small canopy gaps. The diversity of understory species, including various grasses, herbaceous vegetation and others more shade intolerant species, is increased, particularly in canopy gaps. Snags will decrease over time, but CWM will remain high in the short term, at least until fire returns as a primary driver of stand dynamics.

Treatments to Achieve Management Objective (DFC):

The following treatments are the primary silvicultural activities to be implemented in Subunit 28r. Silvicultural activities are applied in three general classifications of tree structure in Block 2, referred to as cohorts. Cohort 1 trees are generally those that are 150-300+ years of age and 30 to 60" dbh (and occasionally as high as 80" dbh in the project area); Cohort 2

trees 60-140 years of age and 12-30" dbh (and occasionally as high as 35+" dbh); and Cohort 3 trees 1-50 years of age and 1-10" dbh (and occasionally as high as 18" dbh). For a more complete description of cohorts, the following specified treatments, and the landscape context in which they are applied, see "A Landscape Scale Approach to Management of Multiple Values in AFR: Block 2".

The following treatments are the primary silvicultural activities to be implemented in Subunit 28r.

Variable density thinning

1. Utilizes thinning from below, radial thinning, and/or general stand density reduction
2. Creates, enhances or retains gaps, skips and/or clumps of vegetation at various spatial scales
3. Promote establishment and development of vigorous multi-age, multi-species cohorts, including hardwoods
4. Creates horizontal and vertical discontinuity of ladder and canopy fuels
5. Promotes spatial, structural, and species diversity favorable for wildlife

Radial thinning

1. Originally designed as a stand-alone treatment, radial thinning is combined with other treatment types to aggressively release preferred Cohort 1 trees by removing Cohort 2 and 3 trees to create a separation (up to 20') whenever possible between crowns. Additionally reduces stand densities out to a radius of twice the dripline, or 30-50 feet from legacy bole, in order to optimize release of preferred legacy tree, depending on species, while considering other multiple objectives as well.
2. Promotes resilience and "hang-time" of Cohort 1 legacy trees; retains important seed sources for natural regeneration of more shade intolerant conifers; provides anchors for future variable density thinning.
3. Increases horizontal and vertical discontinuity of ladder and canopy fuels, and begins to build increasing structural heterogeneity is existing stands.

Thinning-from-below

1. Improves retained tree and stand vigor and minimizes long-term potential for insect related mortality by re-distributing growth onto fewer larger trees, resulting in increased quadratic mean diameter (QMD) for the stand
2. Removes relatively smaller and less vigorous trees from primarily intermediate and suppressed crown classes
3. Maintains sufficient canopy closure and full-site occupancy by retained trees to retard understory ladder fuel development; maintains/promotes high canopy base height and good vertical discontinuity of fuels.
4. Speeds development of older tree structures and potential for development of late-seral stand conditions
5. Includes more thorough release of legacy and/or the largest, healthiest trees of desired species, size classes, or growth forms.

Individual tree and small group thinning of dwarf mistletoe infected Douglas-fir

1. Retains/promotes dwarf mistletoe infected Douglas-fir in spatially explicit locations for immediate retention of important late-successional habitat for wildlife species.
2. Encourages long-term development of larger dwarf mistletoe infected Douglas-fir for future replacement habitat in spatially strategic locations. .
3. Reduces abundance of dwarf mistletoe in Douglas-fir on a landscape scale by targeting treatment of infected trees, primarily of Cohorts 2 and 3 in order to promote development of large Douglas-fir trees and to limit dwarf mistletoe abundance and spread, on both a stand and landscape level (see Douglas-fir Dwarf Mistletoe Stand Severity Rating Map in "A Landscape Level Approach to Management of Multiple Values in AFR: Block 2".

Non-commercial surface and ladder fuel thinnings

1. Retains most vigorous of trees of desired species and re-distributes growth and vigor onto these trees and helps grow those into larger size classes in shorter periods of time
2. Removes less vigorous and/or other trees with undesirable characteristics for meeting subunit level goals
3. Re-established more desirable species compositions and/or those currently underrepresented in species, size

classes, and/or growth forms
4. Reduces ladder fuels and increases canopy base height, creating more favorable fire management conditions
5. Prepares the site for safe application of prescribed fire regime of low severity in the future
6. Can be used to maintain or enhance existing structural diversity in the overstory
7. Can be used to remove all trees of a given species within 50' of a dwarf mistletoe infected retained overstory tree of the same species.

Ladder and Activity Fuel Piling & Burning
1. Reduces activity generated available fuels within the subunit.
2. Maintains/improves stands ability to modify landscape fire behavior by limiting canopy fire
3. Places piles strategically to minimize damage to retained trees/vegetation and associated resource values
4. Prepares stands for application of low severity prescribed fire
5. Leaves 3-4 slash piles per acre as wildlife habitat

Treatment Narrative

Subunit 28r has dense white fir and Douglas-fir dominated areas of complex, multi-cohort stand structures that are currently developing important structural values of emerging mature forest habitat. High existing stand densities, however, suggest that commercial density management is appropriate to improve stand densities and species compositions by focusing on removal of white fir in variable density thinning and subsequently improving growth and vigor of retained overstory trees, accelerating their growth and subsequent development of older forest values. Douglas-fir of all age/size classes should be promoted whenever appropriate and particularly if free of dwarf mistletoe. However, some dwarf mistletoe infected Douglas-fir can be retained for future owl/fisher habitat values, particularly when they occur in the lower third slope positions close to the riparian reserve of the intermittent creek at the bottom of the subunit. Most of Subunit 28r is not a high priority from a fire management perspective because of the cooler, moister conditions on these more northerly aspects, with the exception of the upper third slope positions and areas adjacent the major ridgeline in Block 2 – a critically important topographical location from a landscape fire management perspective. Stand density reduction, including both commercial and non-commercial components, should be more aggressive in these locations to break up continuous crowns, while retaining enough stand density to continue to retard understory development. Non-commercial thinning should also be aggressive in these strategically important areas. The remainder of the subunit currently has good structure from a fire management perspective, with good horizontal and vertical separation of fuels in the multi-cohort stand structure, and this condition should be maintained post-treatment. Small openings maintained/enhanced by commercial density management should allow for more abundant natural regeneration of Douglas-fir. In the 3+/- acre laminated root disease pocket at the west end of the subunit, stand management should be a high-diversity approach in which alternate species other than white fir and Douglas-fir are promoted. Non-commercial thinning should be aggressive, particularly of Douglas-fir and white fir, although retaining vigorous trees of both species is appropriate if thinned to wide spacing within infection centers. Retention of pines, hardwoods and various shrubs should be prioritized in this non-commercial thinning. Overall, thinning to low densities and intentional creation of small openings within the root disease pocket is desired and beneficial from a wildfire management perspective in this strategically important saddle location. In all areas within 50 feet of the edge of, and/or in between, root disease pockets, dwarf mistletoe infected merchantable Douglas-fir and/or declining diseased low vigor white fir can be removed (this laminated root disease pocket already retains a high amount of both downed wood and standing snags). Openings created by any of the above strategies in the root disease area should be planted with incense cedar, ponderosa pine and particularly rust-resistant sugar pine. This may apply to other similar situations where they occur in the subunit as well. Application of Sporax to all fresh cut white fir stumps 12" dbh and larger throughout the subunit will prevent inoculation of Annosus root disease. This management strategy will slow down, but not eliminate, expansion of the root diseases in this area, while creating a more favorable vegetational profile from a wildfire management perspective. Long-term management and maintenance of the vegetation on this site will be necessary to continue to maintain this intended direction over time. Any activity fuels in this subunit should be piled and burned, along with down wood accumulations

up to 8" diameter (particularly abundant in the root disease pocket) to create a more favorable fuel profile from a wildfire management perspective. Retain 3-4 piles/acre for wildlife habitat values, except in ridgeline settings where 1-2 piles/acre should be retained. Prescribed underburning is less desirable in this subunit that relies heavily on maturing white fir for developing important mature forest values and for retaining sufficient overstory to retard development of understory ladder fuels.

Applicable Project Criteria, Mitigation Measures, & Resource Coordination:

Slope Stability/Soil Resource Protection	Understory Vegetation- Thinning of stands, even lightly, should stimulate development of understory grasses, herbaceous vegetation, and other understory vegetation that can also provide protection form excess surface soil erosion.
Forest Health	Dwarf mistletoe in Douglas-fir is relatively light in most of the subunit and needs not be treated in the lower portions of the stand closer to the riparian reserve. Infected trees in this location may serve as future owl nest sites in this emerging mature forest. However, in most of the stand where healthy overstory is needed to retard understory vegetation for fire management reasons, or in the vicinity of the root disease pocket, treatment of dwarf mistletoe infected Douglas-fir is more appropriate. Mistletoe infected white fir can also be preferentially removed during harvest and non-commercial thinning activities. Fresh cut stumps of true fir will be protected from inoculation by Annosus root disease through the application of Sporax, or other approved product containing borax, on fresh cut stumps 12" dbh and larger within 24 hours following falling.
Wildlife	Efforts will be made to retain trees, vegetation and land formations with evidence of use by wildlife (e.g. bird or wood rat nests, burrows, cavities, and hollows, etc.). Large hardwoods have a disproportionate high amount of use by a number of wildlife species (including fishers elsewhere in their range), particularly given their somewhat uncommon occurrence in Block 2. Radial thinning and other silvicultural practices that encourage the long-term viability of large hardwoods in Block 2 will be encouraged. Unthinned patches in each subunit ("skips") will be used to provide additional cover and habitat diversity. Small existing canopy gaps of 0.1-0.5 acres and occasionally larger add greater structural and species diversity, essential elements of wildlife habitat improvement.
Snags and Coarse Woody Material	Snags will be retained unless they pose a threat to worker safety or pose a fire risk. Snags greater than 10 inches dbh that require felling for safety reasons will be left long and contour felled across the slope to serve as coarse woody debris. Landscape level management of snags and/or coarse woody material are discussed in "A Landscape Approach to Management of Multiple Values in AFR: Block 2").

Hydrology	The implementation of silvicultural activities in the Ashland watershed is strongly dependent on outcomes that protect the municipal water supply for the City of Ashland. Although water initiated in Subunit 28r does not drain directly into Reeder Reservoir, the high amount of water that originates in this area makes it hydrologically very important. Silvicultural practices implemented (e.g. fuels management and wildfire reduction) can also indirectly protect municipal water objectives, as the overall decrease in the likelihood and size of high severity fire decreases the risk associated with increase sediment delivery that accompanies large-scale, high-severity wildfire events; Helicopter logging systems will be the primary harvest system utilized and will minimize ground disturbance and effects on hydrologic function. A small area in the westernmost portion of the subunit may be harvested utilizing ground-based harvest systems. Roads serve as extensions of the hydrologic network, increasing both the rapidity and size of hydrologic response during major storm events, thereby increasing the potential for significant erosion, sediment delivery and flooding. No new roads are proposed in Block 2, although opening of the old road through the subunit may be considered to facilitate harvesting, with eventual closing and putting-to-bed of the road following use. Maintenance of existing roads prior to, during and following use is prioritized Silvicultural activities are restricted in LHZ's to 50% of the stems over 50% of the area to protect hydrologic function and reduce the potential for slope failure.
Botanical Resources	Before marking begins the Forest Botanist must be consulted to address any potential PETS species presence and mitigation measures necessary.
Native Grass Seeding	Seeding when appropriate to encourage native plant establishment in the herbaceous vegetation layer may follow burning activities. Seeding with native grasses may help impede non-native species invasion, discourage development of more fire-prone shrub species, and add diversity to the plant communities. Factors that will influence a choice to initiate native grass seeding are elevation, aspect, proximity to non-native plants already encroaching from the urban and valley areas, pre-treatment herbaceous plant cover and diversity, extent and intensity of disturbance associated with harvest or burning, and if a need is perceived for erosion control seeding. Native forb seed may be included in seed mixes in the future for similar reasons. At this time, the Forest Service has native grass seed grown from local wild ecotypes but no native forb seed meeting the same source criteria. The decision to apply native grass seed will be made collectively by the certified silviculturist and the Forest or District Botanist. Seed mixes tailored to the stand would be provided by the Forest or District Botanist.

Noxious Weeds	If noxious weed sites are discovered during implementation, these need to be mitigated. Project leaders, work crew leaders, and crew members have a choice at noxious weed sites; the infested sites must either be avoided entirely or their noxious weeds must be fully "treated" before silvicultural treatments occur there. Treatment for noxious weed removal normally means pull, cut, or grub out (depending on species) all the noxious weed plants present and pile the material for later burning. Clean pants cuffs, pockets, boot soles, clothing, tools, machinery, and vehicles of soil or plant parts before proceeding to new areas. Identifying these locations on a map, GPS, etc and sharing that information with appropriate AFR personnel will allow for future return to these sites to insure long-term success at eradication, such as during post-burn monitoring efforts. Noxious weed sites along roads traveling to and from work areas do not need to be treated or reported unless those roadsides are part of actual treatment units or are used as work staging areas. Klamath weed (St. John's wort) and bull thistle are common and widespread noxious weeds in SW Oregon. The Forest Service makes no attempt to prevent their spread or control their abundance during project activity. Hence AFR noxious weed mitigations will not be applied to these two species.
Cultural Resources	Any cultural resource, or potential cultural resource, discovered during the implementation of this project will be cause for immediate cessation of any site-altering activity, with immediate notification of appropriate project personnel. Upon review by a qualified cultural resource specialist, the area of significance may be delineated on the ground and removed from the treatment area.
Other Resource Coordination	Respective resource surveys have been completed and there are no other known issues within the stand to be treated. If there are any findings to the contrary at any time, actions to protect resources will be taken immediately and respective specialist(s) will be notified. Activities prescribed would then be reassessed. Cooperation and coordination between all partners, specialists, workers and other interested and involved parties is necessary to protect and promote the multiple values and resources that exist in the project area. This prescription is the vehicle to develop that coordination and integration of objectives, and it is this prescription that ultimately serves to document agreed course of actions and ultimately prescribes treatments and activities (even, and especially, as a need arises to adapt the initial course). Any and all changes needed in treatment activities, timing, and/or sequence of activities prescribed herein as a result of changing conditions on the ground, changes in our partnerships or other organizational capacity, change in scientific understanding, and/or change in management direction; need to be documented and integrated into this or a new prescription by a certified silviculturist prior to

	those changes being implemented.

Harvest Systems & Transportation:

Logging Systems	The type of logging system(s) and the feasibility of removals without compromising important ecological objectives will be determined prior to initiation of operations. Such consideration will have to meet soil protection measures and result in no greater than 5% detrimental soil conditions across the subunit's area (not including the permanent transportation system). In Subunit 28r, helicopter logging will be the primary system used, except perhaps in a small areas in the westernmost portion of the subunit where ground based system is possible.
Landings	Only existing landings or hot logging on existing roads are currently approved for use. It is expected that only three existing landings will be utilized in Block 2. Any new proposed landings must be approved by the Contracting Office Representative (COR) and amended in this prescription by a certified silviculturalist. Landing restoration after completion of use shall be overseen by a qualified soil scientist, botanist, and/or other pertinent resource specialist(s). Seeding of landings with native grasses immediately following cessation of use may minimize noxious, non-native plant establishment. Monitoring for noxious non-native plants invading the landings should be conducted for at least 3 years following cessation of use, and appropriate efforts of eradication undertaken when found. In addition, any opportunities for landing erosion/sediment to enter the aquatic network will be addressed both during use, and during restoration efforts immediately following cessation of landing use.
Hauling and Road Use	Forest Service Road 2060 and the 400 spur will be used to access treatment areas. There is a high level of recreational use of these roads. Road signs must be posted on both sides of treatment areas warning forest users of activities during implementation. All vehicles will obey posted speed limits and be constantly aware of potential interaction with recreational users. Signs and/or temporary trail closures may also be needed during on-the-ground application of silvicultural activities in the vicinity of established trails. Road maintenance returning roads to a high standard of functionality following cessation of use will be required under any contract requiring hauling on established roads.

Monitoring:

For implementation monitoring please refer to "Prescription Objectives". This section is presented in both narrative form and in a table format that provides a summary of quantifiable variables to be measured during and after prescribed treatments. Effective implementation monitoring should rely on both quantitative and qualitative monitoring, with analysis of both by knowledgeable personnel. Invariably, integration of the two forms of monitoring will provide the most comprehensive and accurate assessment of outcomes. If this process is done well, it should produce results that provide impetus for adaptive management and improvement of both planning and implementation of futnre work in AFR. With new information and understandings developing rapidly, additional adjustments to planned activities should also be encouraged in the ongoing spirit of adaptive management.

Treatment effectiveness can be guided by the sections "Land Management Goals and Objectives", "Desired Future Dynamics" and "Desired Future Conditions". Effectiveness will be measured and analyzed over various spatial and temporal scales, including both stand level and landscape level assessments. A strong monitoring component has been integral to the development of AFR. The Ashland Forest Resiliency's Monitoring Plan will provide a comprehensive assessment of the project's overall effectiveness.

Silvicultural Prescription – AFR Block 02, Subunit 28s

Prescriber: Marty Main **Date: May, 2011**

Field Checked by: COA crew, Prescriber, Cert. Silviculturist **Date: May-June 2011**

Certified Silviculturist: _____ **Date:** 8-5-11

Associated Project: Ashland Forest Resiliency
Associated NEPA: Ashland Forest Resiliency FEIS, ROD
5th Field Watershed: Bear Creek

Stand Identity & Current Condition

Table 1.1 Current Stand Attributes

Location - Stand	Acres	Plant Assoc. *	Site Index (DF, 50yrs)	Elevation (feet)	Average % Slope (range)	Aspect (degrees)	Trees Per Acre (>4.5')	Basal Area ()	Estimated Tree Canopy Cover** (>0 dbh)	Quadratic Mean Diameter (>0" dbh)	RDI
135030-0340	13	ABCO-PSME/ROGY: ABCO/BENE2	75-85	4400-4625	33 (25-38)	42-122	1287	211	81	5.5	0.64

**Plant Association from Atzet, et al. 1996.*
**Canopy cover is the percent of a stand's ground area covered by the downward projection of all tree canopies within a stand. Individual point data (crown closure) was systematically collected with a densiometer and averaged to arrive at canopy cover estimates.

Subunit Description / Context

Stand 28s is located on 15-40% southeasterly to northeasterly aspects immediately southeast of a minor ridgeline separating it from the more northerly/northwesterly aspects of Subunits 28q and 28r. Plant Association in Subunit 28s grades from ABCO-PSME/ROGY on the more southeasterly aspects to ABCO/BENE2 on the more northeasterly aspects at the north end of the unit. These northernmost 3+/- acres are gradational with adjacent Subunit 28q with unique characteristics that separate it from the rest of Subunit 28s. Partial harvest in the 1960s was fairly heavy in this subunit, and removed almost all of the larger Douglas-fir. A major old haul road (now grown over) built during that harvest traverses through Subunit 28s and provided access to the aforementioned lateral ridgeline in the southwestern half of the stand.

The bulk of Subunit 28s is comprised primarily of a closed canopy, mid-seral two-cohort stand, with uncommon though impressive superdominant Cohort 1 pines > 30" dbh scattered throughout the unit. Overall, Subunit 28s is crowded, averaging 1287 tpa, basal areas averaging 211 ft^2/ac., with an RDI of 0.64- well into the stage of competition-related mortality. Most of the unit is dominated by a dense stand of 6-20" dbh Cohort 2 Douglas-fir (101/acre), white fir (62/acre) and Pacific madrone (133/acre, primarily 6-14" dbh), likely initiated following the 1910 wildfire as most are in the 75-100 year old age class. The Cohort 2 conifers tend to be somewhat unevenly distributed in the stand, however- often tending to be in small clumps of 1/20 to ½ acre. Larger size classes are uncommon in this subunit- conifers > 20"dbh account for only about 11% of the total basal area and < 1% of the total tpa. Approximately half of these larger trees are white fir, primarily located in the northernmost 3 acre portion of the stand, and generally of poor to fair vigor. This 1960s harvest also provided the opportunity for establishment of another age class currently dominated by close to 1000 tpa of 2-10"dbh trees, including close to 600 tpa of white fir, 200 tpa of chinquapin and 100 tpa of mostly single-stemmed Pacific madrone. Trees of all species in this size class are generally of poor to fair vigor at best. Pacific

madrone is particularly common on more southeasterly aspect with occasionally larger trees with well-developed crowns present. Chinquapin is generally smaller and less developed in most of the stand, but both hardwoods are more common in shallower soils and/or rocky outcrops along the lateral ridgeline at the top of the southeasterly aspects, a topographic location of minor strategic importance from a wildfire management perspective- at least in part because it has the potential for stopping wildfire spread into some good developing mature forest habitat in adjacent Subunits 28p, q and r to the north. The northernmost 3+/- acre portion on gentler slope gradients contains an abundance of poor to fair vigor overstory white fir, many affected by dwarf mistletoe and possibly laminated root disease, as well as a large number of snags. Smaller white fir up to 5"dbh are also common, as well as a small amount of ponderosa pine planted after the 1960's harvest. Douglas-fir dwarf mistletoe is well-established in the subunit, with 36% of the Douglas-fir infected, with an average severity of 4.37. Dwarf mistletoe was likely increased by the partial harvest in the 1960's that increased light to the middle and lower cohorts once the overstory was removed. Currently, Subunit 28s has a very high number of snags (74/acre), including 20/acre > 16" dbh. Large wood is also abundant in Subunit 28s (59 tons/acre), with over 80% of that total in older decay classes.

Land Management Goals & Parameters:

Table 2.1 Management Direction

Management Allocation:	Restricted Watershed (RRNF LRMP) Late Successional Reserve (NWFP)
Project NEPA:	Ashland Forest Resiliency FEIS, ROD
NEPA Purpose & Need:	The **Need** for action is urgent reduction of the potential for large-scale, high-severity wildland fire in the Upper Bear landscape. One hundred years of fire exclusion and fuel accumulations in this forest's wildland/urban interface now presents high potential for large-scale, high-severity wildland fire that could significantly interrupt the supply of clean water and late-successional and old-growth forest ecosystems in this Analysis Area. The **Purpose** of the action is to protect Values at Risk, reduce hazardous fuels, reduce crown fire potential, and create forest conditions that are more resilient to wildland fires.

AFR Strategic Category and Purpose:

Strategic Ridgelines: Treatments along Strategic Ridgelines are designed to: 1) reduce the extent of wildland fire severity by limiting the amount of area affected by wildland fire, 2) create areas where fire suppression efforts can be conducted more safely and effectively, 3) break up continuity of fuels over a large landscape, and 4) serve as anchor points for further area-wide treatments, such as prescribed fire and maintenance burning (AFR FEIS, 2008). All of Block 2, was designated as a Strategic Ridgeline in the ROD except for Subunits 29a and 79a..

Desired Future Dynamics

The goal for management of this subunit is to alter stand structures, densities and composition, and do so in spatial patterns that will encourage the restoration of functional processes more closely resembling the historical occurrence of more frequent but lower to moderate severity disturbance, primarily fire. This will allow opportunities to optimize landscape level wildfire management, while indirectly providing for the habitat needs of late successional dependent pecies and protection of municipal water supplies by reducing the spatial extent of high severity fire. General thinning-

from-below will improve vertical fuel discontinuity, decreasing the potential for active crown fire. Following this initial entry that reduces stand densities, improves tree and stand vigor and minimizes undesirable impacts associated with insects and disease, species composition will shift towards a greater percentage of pines and Douglas-fir, and a decreased percentage of white fir, with a small amount of retained intermixed hardwoods. This first entry is designed to stabilize and improve overall stand density and vigor, while maintaining an overstory that continues to retard understory ladder fuel development. Future variable density thinning will be implemented to improve structural heterogeneity and continue improvements in species compositions towards a more mixed conifer type. These silvicultural activities will be implemented overtime to restore less fire prone structural characteristics of forests and help provide vegetational characteristics that can emulate those that allowed historic disturbance regimes, while favoring return to a species composition more adapted to the site. Fire may then begin to be the primary driver of stand dynamics, through wildland fire use and/or the application of prescribed fire. Snags and downed wood will remain high in the foreseeable future, with snag numbers decreasing over time while CWM increases, at least until a more regular implementation of frequent underburning occurs. Increased post-treatment grass and herbaceous understory development following thinning, especially in openings, should help protect surface soils.

Prescription Objectives:

Table 3.1 Desired Stand Attributes

AFR Subunit	Location-Stand	Existing Forest Type*	Trees Per Acre* (>4.5')	Basal Area (ft^2/ac.)* (>0 dbh)	Quadratic Mean Diameter* (>0 dbh)	RDI* (>0 dbh)	Estimated Tree Canopy Cover** (>0 dbh)	Minimum Down Pieces Created (ave. per acre)
28s	6135030-0340	PSME-ABCO--ARME	238-405	104-153	8-9	0..30-0.43	45-70	na

* Target ranges are for the stand average, including gaps and retention areas outside of riparian areas or landslide hazard zones. Variations outside of listed range at any one location are expected and desirable.

**Canopy cover is the percent of a stands ground area covered by the downward projection of all tree canopies within a stand. All canopy covers are targeted to remain above a minimum average of 40% per subunit. "Estimated Tree Canopy Cover" is an estimate of expected post-treatment canopy cover based on desired residual densities. It is intended to be a rough guide only and not an actual target.

Desired Future Condition (DFC): *Conditions change over time and space; this DFC reflects the desired future condition over the majority of the stand one to three growing seasons after treatment*

A reduction in stand density primarily utilizing thinning-from-below increases mean QMD, improves species compositions by decreasing white fir abundance and increasing pines and Douglas-fir, and improves tree and stand vigor and subsequent stand resistance to effects of low severity disturbances from insects, disease and/or fire. Treatments significantly reduce stand density, reduce dwarf mistletoe abundance in Douglas-fir and reduce overall abundance of white fir, particularly as an understory species on more southeasterly aspects. The diversity of understory species, including various grasses, herbaceous vegetation and others more shade intolerant species, is increased, particularly in small canopy gaps. Ground-based logging in a portion of the subunit will impact less than 5% of the site, and site mitigation will restore any impacted areas.

Treatments to Achieve Management Objective (DFC):

Silvicultural activities are applied in three general classifications of tree structure in Block 2, referred to as cohorts. Cohort 1 trees are generally those that are 150-300+ years of age and 30 to 60" dbh (and occasionally as high as 80" dbh in the project area); Cohort 2 trees 60-140 years of age and 12-30" dbh (and occasionally as high as 35+" dbh); and Cohort 3 trees 1-50 years of age and 1-10" dbh (and occasionally as high as 18" dbh). For a more complete description of

cohorts, the following specified treatments, and the landscape context in which they are applied, see "A Landscape Scale Approach to Management of Multiple Values in AFR: Block 2".

The following treatments are the primary silvicultural activities to be implemented in Subunit 28s.

Thinning-from-below

1. Improves retained tree and stand vigor and minimizes long-term potential for insect related mortality by re-distributing growth onto fewer larger trees, resulting in increased quadratic mean diameter (QMD) for the stand
2. Removes relatively smaller and less vigorous trees from primarily intermediate and suppressed crown classes
3. Maintains sufficient canopy closure and full-site occupancy by retained trees to retard understory ladder fuel development; maintains/promotes high canopy base height and good vertical discontinuity of fuels.
4. Speeds development of older tree structures and potential for development of late-seral stand conditions
5. Includes more thorough release of legacy and/or the largest, healthiest trees of desired species, size classes, or growth forms.

Radial thinning

1. Originally designed as a stand-alone treatment, radial thinning is combined with other treatment types to aggressively release preferred Cohort 1 trees by removing Cohort 2 and 3 trees to create a separation (up to 20') whenever possible between crowns. Additionally reduces stand densities out tp a radius of twice the dripline, or 30-50 feet from legacy bole, in order to optimize release of preferred legacy tree, depending on species, while considering other multiple objectives as well.
2. Promotes resilience and "hang-time" of Cohort 1 legacy trees; retains important seed sources for natural regeneration of more shade intolerant conifers; provides anchors for future variable density thinning.
3. Increases horizontal and vertical discontinuity of ladder and canopy fuels, and begins to build increasing structural heterogeneity is existing stands.

Individual tree and small group thinning of dwarf mistletoe infected Douglas-fir

1. Reduces abundance of dwarf mistletoe in Douglas-fir on a landscape scale by targeting treatment of infected trees, primarily of Cohorts 2 and 3 in order to promote development of large Douglas-fir trees and to limit dwarf mistletoe abundance and spread, on both a stand and landscape level (see Douglas-fir Dwarf Mistletoe Stand Severity Rating Map in "A Landscape Level Approach to Management of Multiple Values in AFR: Block 2")

Non-commercial surface and ladder fuel thinnings

1. Retains most vigorous of trees of desired species and re-distributes growth and vigor onto these trees and helps grow those into larger size classes in shorter periods of time
2. Removes less vigorous and/or other trees with undesirable characteristics for meeting subunit level goals
3. Re-established more desirable species compositions and/or those currently underrepresented in species, size classes, and/or growth forms
4. Reduces ladder fuels and increases height-to-crown base, creating more favorable fire management conditions
5. Prepares the site for safe application of prescribed fire regime of low severity in the future
6. Can be used to maintain or enhance existing structural diversity in the overstory
7. Can be used to remove all trees of a given species within 50' of a dwarf mistletoe infected retained overstory tree of the same species.

Ladder and Activity Fuel Piling & Burning

1. Reduces activity generated available fuels within the subunit.
2. Maintains/improves stands ability to modify landscape fire behavior by limiting canopy fire
3. Places piles strategically to minimize damage to retained trees/vegetation and associated resource values
4. Prepares stands for application of low severity prescribed fire
5. Leaves 1-2 slash piles per acre as wildlife habitat

Treatment Narrative

High stand densities in Stand 28s suggest that both non-commercial surface and ladder fuel treatment and commercial density management activities are appropriate. Desired post-treatment stand densities following both treatments are 104-137 sq. ft./acre (RDI .35- 45). The large bulk of the commercial density management should occur in the 8-20"dbh size class, removing approximately ½ of these trees in a thinning-from-below, emphasizing removal of smaller size classes and particularly removal of low vigor white fir. Uninfected Douglas-fir in this size class should be the primary leave tree, after other less common species (SP, IC, PP). Most often, preferred leave trees will be larger trees, with 30-40%+ crowns. Scattered large overstory superdominant pines should be radially thinned, increasing stand heterogeneity and horizontal discontinuity of fuels. Similarly, individual tree and small group selection thinning of dwarf mistletoe infected Douglas-fir and/or poor vigor white fir throughout the subnnit can also reduce the prevalence and severity of it, as well as create additional small gap openings. In the 3+/- acre northernmost portion of the subunit, pines, uninfected Douglas-fir and hardwoods should be selected for retention, while most overstory white fir should also be removed, although some are defective and can be retained for snag creation for wildlife benefit. This 3+/- acre area can be harvested using ground-based harvest systems. Retain vigorous chinquapin 8"+ dbh and Pacific madrone 14"+ dbh throughout the subunit where they will have sufficient light to thrive. Retaining these hardwoods is most appropriate on dry, rocky outcrops where they thrive. Followed by piling and burning of all residual slash, the resulting more open stands should function as an important fuel reduction zone in this important topographical location that could provide an opportunity to minimize wildfire intensity before reaching the important wildlife and hydrological values associated with Stands 28p, 28q and 28r to the west. Lower average stand densities and increased opportunities for wildfire suppression should occur along the ridgeline on the westerly/northwesterly boundary of the subunit, and perhaps along the old haul road through the subunit that could provide fire access in a wildfire event if opened. This stand is likely not preferred owl habitat given its topographical location and lack of mature forest conditions. The high percentage of non-commercial size classes up to 8" dbh (41% of the total stand basal area and 90% of the total tpa) suggest that non-commercial thinning should be done first in this subunit to facilitate falling activities during harvest and to quickly release preferred overstory trees struggling amidst the high existing stand densities. Activity fuels from both treatments should be piled and burned; prescribed underburning should wait 2-5 years for retained trees to build vigor.

Applicable Project Criteria, Mitigation Measures, & Resource Coordination:

Slope Stability/Soil Resource Protection	Understory Vegetation- Thinning of stands, even lightly, should stimulate development of understory grasses, herbaceous vegetation, and other understory vegetation that can also provide protection form excess surface soil erosion.
Forest Health	Pines above 3" in diameter that need to be cut may be designated at any time, but they will be cut between August and December *unless t*hey are immediately disposed of by burning, chipping, scoring, or removed as a product prior to the springtime flight of the beetles (usually between March and May). Pines that are above the maximum size required for piling and burning should not be cut unless a specific plan is made for their removal, consumption and/or other practice to make them unavailable for potential beetle habitat (e.g. bark removal). Dwarf mistletoe in Douglas-fir should be significantly reduced in this subunit; any infected trees found should be treated, primarily by falling and removal. Options for treatment of dwarf mistletoe in Douglas-fir include: 1) falling infected tree 2) girdling infected trees and retaining in place in areas deficient of snags or large

	woody debris, 3) isolation of dwarf mistletoe infection to reduce spread by converting to non-host species (e.g. hardwoods, other non-host conifers) around an infected conifer(s), 4) retaining infected trees in places where they are less likely to spread, such as in low spots in the topography (e.g., draws), as opposed to ridges or other high locations where seeds can spread much longer distances, 5) encouraging vigorous growth in dense stands of Douglas-fir or white fir that can occasionally shade out and kill low level infections of shade intolerant dwarf mistletoe, 6) clumping the distribution of infected trees into small widely separated groups thereby reducing spread and levels of contiguous infection, and 7) minimizing potential infection in those areas currently free dwarf mistletoe.
Wildlife	Efforts will be made to retain trees, vegetation and land formations with evidence of use by wildlife (e.g. bird or wood rat nests, burrows, cavities, and hollows, etc.). Large hardwoods have a disproportionate high amount of use by a number of wildlife species (including fishers elsewhere in their range), particularly given their somewhat uncommon occurrence in Block 2. Radial thinning and other silvicultural practices that encourage the long-term viability of large hardwoods in Block 2 will be encouraged. Unthinned patches in each subunit ("skips") will be used to provide additional cover and habitat diversity.
Snags and Coarse Woody Material	Snags will be retained unless they pose a threat to worker safety or pose a fire risk. Snags greater than 10 inches dbh that require felling for safety reasons will be left long and contour felled across the slope to serve as coarse woody debris. Landscape level management of snags and/or coarse woody material are discussed in "A Landscape Approach to Management of Multiple Values in AFR: Block 2").
Prescribed Underburning	The following criteria must be met before fire is prescribed and implemented as a maintenance or stand driver under this prescription: -Conditions, including stand vigor and composition, must favor low severity fire effects. -Burning can be accomplished at intensities that will retain duff layers in an amount and distribution that prevents unacceptable levels of surface soil erosion and sediment delivery off-site. Effective ground cover should be protected such that 70% is retained after one season and 85% after 2 seasons. -Stand and individual tree vigor are such that the application of prescribed underburning will not unduly stress preferred leave trees and contribute to untimely mortality. -Protection of desired structures (i.e. Cohort 1 overstory trees, desired regeneration) may require pre-treatment prior to burning (immediately before or up to 2-3 years before) in order to protect highly desired features from

	unnecessary scorch, crown damage, cambial heating, soil heating or other fire-related injury. In these cases practices such as removing duff and ladder fuels and/or fuel accumulations away from the tree bole; spring burning; burning during cool, moist and/or windy conditions to quickly dissipate heat delivery to the tree boles and root systems; slow and careful ignition patterns, and/or other practices can help minimize damage to these features. The assessment by a certified silviculturist of preparatory needs, mitigation measures, and sequence of treatments will ensure integration of the multiple treatment objectives and management goals. It is currently expected that favorable conditions across Subunit 28s will not likely be reached immediately after this initial thinning treatment and will likely require 2-5 years for retained trees to build vigor and withstand effects of prescribed fire.
Hydrology	The implementation of silvicultural activities in the Ashland watershed is strongly dependent on outcomes that protect the municipal water supply for the City of Ashland. Water from Subunit 28s ultimately drains into Reeder Reservoir and elevates the importance of careful protection of soils and hydrologic function in this subunit. Silvicultural practices implemented (e.g. fuels management and wildfire reduction) can also indirectly protect municipal water objectives, as the overall decrease in the likelihood and size of high severity fire decreases the risk associated with increase sediment delivery that accompanies large-scale, high-severity wildfire events; Ground-based logging systems may be considered for use in portions of Subunit 28s if soil disturbance can be kept at 5% or less. Portions of the subunit may also be harvested utilizing helicopter logging systems, even further minimizing ground disturbance and effects on hydrologic function. Roads serve as extensions of the hydrologic network, increasing both the rapidity and size of hydrologic response during major storm events, thereby increasing the potential for significant erosion, sediment delivery and flooding. No new roads are proposed in Block 2, although opening of the old road through the subunit may be considered to facilitate harvesting, with eventual closing and putting-to-bed of the road following use. Maintenance of existing roads prior to, during and following use is prioritized. Silvicultural activities are restricted in LHZ's to 50% of the stems over 50% of the area to protect hydrologic function and reduce the potential for slope failure.
Botanical Resources	Before marking begins the Forest Botanist must be consulted to address any potential PETS species presence and mitigation measures necessary.
	Seeding when appropriate to encourage native plant establishment in the herbaceous vegetation layer may follow burning activities. Seeding with native grasses may help impede non-native species invasion, discourage development of more fire-prone shrub species, and add diversity to the plant communities.

Native Grass Seeding	Factors that will influence a choice to initiate native grass seeding are elevation, aspect, proximity to non-native plants already encroaching from the urban and valley areas, pre-treatment herbaceous plant cover and diversity, extent and intensity of disturbance associated with harvest or burning, and if a need is perceived for erosion control seeding. Native forb seed may be included in seed mixes in the future for similar reasons. At this time, the Forest Service has native grass seed grown from local wild ecotypes but no native forb seed meeting the same source criteria. The decision to apply native grass seed will be made collectively by the certified silviculturist and the Forest or District Botanist. Seed mixes tailored to the stand would be provided by the Forest or District Botanist.
Noxious Weeds	If noxious weed sites are discovered during implementation, these need to be mitigated. Project leaders, work crew leaders, and crew members have a choice at noxious weed sites; the infested sites must either be avoided entirely or their noxious weeds must be fully "treated" before silvicultural treatments occur there. Treatment for noxious weed removal normally means pull, cut, or grub out (depending on species) all the noxious weed plants present and pile the material for later burning. Clean pants cuffs, pockets, boot soles, clothing, tools, machinery, and vehicles of soil or plant parts before proceeding to new areas. Identifying these locations on a map, GPS, etc and sharing that information with appropriate AFR personnel will allow for future return to these sites to insure long-term success at eradication, such as during post-burn monitoring efforts. Noxious weed sites along roads traveling to and from work areas do not need to be treated or reported unless those roadsides are part of actual treatment units or are used as work staging areas. Klamath weed (St. John's wort) and bull thistle are common and widespread noxious weeds in SW Oregon. The Forest Service makes no attempt to prevent their spread or control their abundance during project activity. Hence AFR noxious weed mitigations will not be applied to these two species.
Cultural Resources	Any cultural resource, or potential cultural resource, discovered during the implementation of this project will be cause for immediate cessation of any site-altering activity, with immediate notification of appropriate project personnel. Upon review by a qualified cultural resource specialist, the area of significance may be delineated on the ground and removed from the treatment area.
Other Resource Coordination	Respective resource surveys have been completed and there are no other known issues within the stand to be treated. If there are any findings to the contrary at any time, actions to protect resources will be taken immediately and respective specialist(s) will be notified. Activities prescribed would then be reassessed.

	Cooperation and coordination between all partners, specialists, workers and other interested and involved parties is necessary to protect and promote the multiple values and resources that exist in the project area. This prescription is the vehicle to develop that coordination and integration of objectives, and it is this prescription that ultimately serves to document agreed course of actions and ultimately prescribes treatments and activities (even, and especially, as a need arises to adapt the initial course). Any and all changes needed in treatment activities, timing, and/or sequence of activities prescribed herein as a result of changing conditions on the ground, changes in our partnerships or other organizational capacity, change in scientific understanding, and/or change in management direction; need to be documented and integrated into this or a new prescription by a certified silviculturist prior to those changes being implemented.

Harvest Systems & Transportation:

Logging Systems	The type of logging system(s) and the feasibility of removals without compromising important ecological objectives will be determined prior to initiation of operations. Such consideration will have to meet soil protection measures and result in no greater than 5% detrimental soil conditions across the subunit's area (not including the permanent transportation system). In Block 2, helicopter logging will be the primary system used. Ground-based logging systems may be able to be utilized in portions of Subunit 28s, which contains slope gradients of less than 20%+/- over portions of the subunit. Utilization of ground-based harvest systems may allow some utilization of some traditionally non-merchantable material.
Landings	Only existing landings or hot logging on existing roads are currently approved for use. It is expected that only three existing landings will be utilized in Block 2. Any new proposed landings must be approved by the Contracting Office Representative (COR) and amended in this prescription by a certified silviculturalist. Landing restoration after completion of use shall be overseen by a qualified soil scientist, botanist, and/or other pertinent resource specialist(s). Seeding of landings with native grasses immediately following cessation of use may minimize noxious, non-native plant establishment. Monitoring for noxious non-native plants invading the landings should be conducted for at least 3 years following cessation of use, and appropriate efforts of eradication undertaken when found. In addition, any opportunities for landing erosion/sediment to enter the aquatic network will be addressed both during use, and during restoration efforts immediately following cessation of landing use.
Hauling and Road Use	Forest Service Road 2060 will be used to access treatment areas. There is a high

	level of recreational use of this road. Road signs must be posted on both sides of treatment areas warning forest users of activities during implementation. All vehicles will obey posted speed limits and be constantly aware of potential interaction with recreational users. Signs and/or temporary trail closures may also be needed during on-the-ground application of silvicultural activities in the vicinity of established trails. Road maintenance returning roads to a high standard of functionality following cessation of use will be required under any contract requiring hauling on established roads.

Monitoring:

For implementation monitoring please refer to "Prescription Objectives". This section is presented in both narrative form and in a table format that provides a summary of quantifiable variables to be measured during and after prescribed treatments. Effective implementation monitoring should rely on both quantitative and qualitative monitoring, with analysis of both by knowledgeable personnel. Invariably, integration of the two forms of monitoring will provide the most comprehensive and accurate assessment of outcomes. If this process is done well, it should produce results that provide impetus for adaptive management and improvement of both planning and implementation of future work in AFR. With new information and understandings developing rapidly, additional adjustments to planned activities should also be encouraged in the ongoing spirit of adaptive management.

Treatment effectiveness can be guided by the sections "Land Management Goals and Objectives", "Desired Future Dynamics" and "Desired Future Conditions". Effectiveness will be measured and analyzed over various spatial and temporal scales, including both stand level and landscape level assessments. A strong monitoring component has been integral to the development of AFR. The Ashland Forest Resiliency's Monitoring Plan will provide a comprehensive assessment of the project's overall effectiveness.

Silvicultural Prescription – AFR Block 02, Subunit 28t

Prescriber: Marty Main **Date: June 2011**

Field Checked by: COA crew, Prescriber **Date: June-July, 2011**

Certified Silviculturist: **Date:** 8-5-11

Associated Project: Ashland Forest Resiliency
Associated NEPA: Ashland Forest Resiliency FEIS, ROD
5th Field Watershed: Bear Creek

Stand Identity & Current Condition

Table 1.1 Current Stand Attributes

Location - Stand	Acres	Plant Assoc. *	Site Index (DF, 50yrs)	Elevation (feet)	Average % Slope (range)	Aspect (degrees)	Trees Per Acre (>4.5')	Basal Area (ft^2/ac)	Estimated Tree Canopy Cover (>0 dbh)	Quadratic Mean Diameter (>0" dbh)	RDI
6135030-0395	8	ABCO-BENE2	85-90	4450-4700	39 (20-65)	10-84	963	214	82	6.4	0.76

**Plant Association from Atzet, et al. 1996.*
**Canopy cover is the percent of a stand's ground area covered by the downward projection of all tree canopies within a stand. Individual point data (crown closure) was systematically collected with a densiometer and averaged to arrive at canopy cover estimates.

Stand Description / Context

Subunit 28t is located on moderate to moderately steep (20-65%) easterly to northerly aspects in middle third slope positions. Plant Association is ABCO-BENE2 and estimated 50 year site index for Douglas-fir is 85-90.

Portions of Subunit 28t were partial cut in 1962, with an emphasis on removing larger diameter Douglas-fir. A midslope haul road at the top of the subunit provided access for the harvest which appears to have been mostly a cable harvest (below the mid-slope road). Natural regeneration and/or advanced regeneration of primarily white fir and to a lesser extent Douglas-fir developed post-harvest in the subunit and are now integral parts of the stands. Currently, the subunit is overstocked (214 BA/A, 0.76 RDI), with the second highest RDI in the commercial density management subunits in Block 2, indicating a high potential for competition-related mortality in the near future. This is in part due to the high percentage of Pacific madrone in the stand (close to 50% of the total basal area, although less than 8% of that total is in trees > 14" dbh.). The remainder of the basal area is relatively equally split between white fir and Douglas-fir, although a subjective analysis suggests that white fir densities are actually higher (especially in the 10-16" dbh size class) and Pacific madrone densities lower than plot data (n=5) alone indicates. There is also more chinquapin than the plot data indicate; this appears to be the lower end of the elevational gradient for chinquapin on more northeasterly aspects in Block 2. The subunit is dominated by trees < 20" dbh, with only 17 tpa 20" dbh or greater, with Douglas-fir more common in this larger size class. Douglas-fir is primarily in size classes 14-24" dbh, while most of the white fir is primarily in size classes 12" dbh and less. Larger Cohort 1 conifers are uncommon (1 tpa), and include Douglas-fir, ponderosa pine and sugar pine. White fir natural regeneration <6" dbh is particularly abundant (500tpa from 4.5' to 5" dbh), with only 40tpa of Douglas-fir and 60 tpa of Pacific madrone in the same size class. Plot data indicate that both snag and CWM are high in Subunit 28t, with the highest amount of snags/acre > 20" dbh (12/acre, mostly due to dwarf mistletoe-related mortality of Douglas-fir) and the second highest number of CWM 20" dbh+ (50/acre) in Block 2. Dwarf mistletoe infection in Douglas-fir is also very high, with plot data indicating 58 tpa of Douglas-fir infected, a 91% infection rate, with an

average severity of 3.4. This is not an important subunit from a fire management perspective nor currently from a mature forest/wildlife habitat perspective, although the high number of snags and CWM suggest that this subunit supported larger forest structures in the recent past (likely prior to the 1960s harvest).

Land Management Goals & Parameters:

Table 2.1 Management Direction

Management Allocation:	Restricted Watershed (RRNF LRMP) Late Successional Reserve (NWFP)
Project NEPA:	Ashland Forest Resiliency FEIS, ROD
NEPA Purpose & Need:	The **Need** for action is urgent reduction of the potential for large-scale, high-severity wildland fire in the Upper Bear landscape. One hundred years of fire exclusion and fuel accumulations in this forest's wildland/urban interface now presents high potential for large-scale, high-severity wildland fire that could significantly interrupt the supply of clean water and late-successional and old-growth forest ecosystems in this Analysis Area. The **Purpose** of the action is to protect Values at Risk, reduce hazardous fuels, reduce crown fire potential, and create forest conditions that are more resilient to wildland fires.

AFR Strategic Category and Purpose:

Strategic Ridgelines: Treatments along Strategic Ridgelines are designed to: 1) reduce the extent of wildland fire severity by limiting the amount of area affected by wildland fire, 2) create areas where fire suppression efforts can be conducted more safely and effectively, 3) break up continuity of fuels over a large landscape, and 4) serve as anchor points for further area-wide treatments, such as prescribed fire and maintenance burning (AFR FEIS, 2008). All of Block 2 was designated as a Strategic Ridgeline in the ROD except for Subunits 29a and 79a.

Desired Future Dynamics

The goal for management of this subunit is to alter stand structures, densities and composition, and do so in spatial patterns that will encourage the restoration of functional processes more closely resembling the historical occurrence of more frequent but lower to moderate severity disturbance from insects, disease and primarily fire. This will allow opportunities to optimize landscape level wildfire management, while indirectly providing for the habitat needs of late successional dependent species and protection of municipal water supplies by reducing the spatial extent of high severity fire. This initial entry reduces stand densities, builds tree and stand vigor, maintains overstory canopies and continues to retard understory ladder fuel development, while accelerating development of mature forest conditions. Snags and downed wood will remain high in the foreseeable future. Increased post-treatment grass and herbaceous understory development following thinning, especially in openings, should help protect surface soils and reduce sediment accumulation in draws.

Stand structures, reduced fuel levels and spatial arrangements of fuels and vegetation will allow for frequent low to moderate severity fire as the primary driver of stand dynamics and ecosystem function. Until low severity fire can be relied upon to be the primary driver of stand dynamics, through wildland fire use and/or the application of prescribed fire, ecologically appropriate silvicultural activities will continue to be applied, including additional variable density thinning

in the future, followed by necessary post-treatment fuels treatments. These silvicultural activities will be implemented to restore less fire prone structural characteristics of forests and help provide vegetational characteristics that can emulate those that allowed historic disturbance regimes, while favoring return to a species composition more adapted to the site, including a higher percentage of Douglas-fir.

Prescription Objectives:

Table 3.1 Desired Stand Attributes

AFR Subunit	Location-Stand	Existing Forest Type*	Trees Per Acre* (>4.5')	Basal Area (ft^2/ac.)* (>0 dbh)	Quadratic Mean Diameter* (>0 dbh)	RDI* (>0 dbh)	Estimated Tree Canopy Cover** (>0 dbh)	Minimum Down Pieces Created (ave. per acre)
28t	6135030-0395	PSME-ABCO-ARME	228-325	115-145	9-10	0.35-0.45	60-70	na

* Target ranges are for the stand average, including gaps and retention areas outside of riparian areas or landslide hazard zones. Variations outside of listed range at any one location are expected and desirable.

**Canopy cover is the percent of a stands ground area covered by the downward projection of all tree canopies within a stand. All canopy covers are targeted to remain above a minimum average of 40% per subunit. "Estimated Tree Canopy Cover" is an estimate of expected post-treatment canopy cover based on desired residual densities. It is intended to be a rough guide only and not an actual target.

Desired Future Condition (DFC): *Conditions change over time and space; this DFC reflects the desired future condition over the majority of the stand one to three growing seasons after treatment:*

A reduction in stand density primarily by variable density thinning, utilizing primarily thinning-from-below with occasional radial thinning, individual and small group selection thinning of dwarf mistletoe, and small gap enhancement/development improves vigor of retained trees, restores more favorable species compositions, increases mean QMD and builds tree and stand resistance to effects of insects, disease and/or low severity fire. Estimated canopy cover remains largely intact in the majority of the stand and continues to retard understory development of ladder fuels through active utilization of site resources by an overstory stand of improving vigor in desired species. More open stand conditions will increase the vigor of retained Douglas-fir, ponderosa pine and white fir, while allowing for establishment of the next cohort of conifers and hardwoods, including the enhanced development of larger golden chinquapin and Pacific madrone in the future stand. The diversity of understory species, including various grasses, herbaceous vegetation and others more shade intolerant species, is increased, particularly in existing canopy gaps. Soils will remain relatively undisturbed and surface erosion minimal.

Treatments to Achieve Management Objective (DFC):

Silvicultural treatments are applied in stands with three general classifications of tree structure in Block 2, referred to as cohorts. Cohort 1 trees are generally those that are 150-300+ years of age and 30 to 60" dbh (and occasionally as high as 80" dbh in the project area); Cohort 2 trees 60-140 years of age and 12-30" dbh (and occasionally as high as 35+" dbh); and Cohort 3 trees 1-50 years of age and 1-10" dbh (and occasionally as high as 18" dbh). For a more complete description of cohorts, the following specified treatments, and the landscape context in which they are applied, see "A Landscape Scale Approach to Management of Multiple Values in AFR: Block 2".

The following treatments are the primary silvicultural activities to be implemented in Subunit 28t.

Variable density thinning

1. Utilizes thinning from below, radial thinning, and/or general stand density reduction
2. Creates, enhances or retains gaps, skips and/or clumps of vegetation at various spatial scales
3. Promote establishment and development of vigorous multi-age, multi-species cohorts, including hardwoods
4. Creates horizontal and vertical discontinuity of ladder and canopy fuels
5. Promotes spatial, structural, and species diversity favorable for wildlife

Radial thinning

1. Originally designed as a stand-alone treatment, radial thinning is combined with other treatment types to aggressively release preferred Cohort 1 trees by removing Cohort 2 and 3 trees to create a separation (up to 20') whenever possible between crowns. Additionally reduces stand densities out to a radius of twice the dripline, or 30-50 feet from legacy bole, while simultaneously considering species, site and stand conditions and other multiple objectives.
2. Promotes resilience and "hang-time" of Cohort 1 legacy trees; retains important seed sources for natural regeneration of more shade intolerant conifers; provides anchors for future variable density thinning.
3. Increases horizontal and vertical discontinuity of ladder and canopy fuels, and begins to build increasing structural heterogeneity is existing stands.

Thinning-from-below

1. Improves retained tree and stand vigor and minimizes long-term potential for insect related mortality by re-distributing growth onto fewer larger trees, resulting in increased quadratic mean diameter (QMD) for the stand
2. Removes relatively smaller and less vigorous trees from primarily intermediate and suppressed crown classes
3. Maintains sufficient canopy closure and full-site occupancy by retained trees to retard understory ladder fuel development; maintains/promotes high canopy base height and good vertical discontinuity of fuels.
4. Speeds development of older tree structures and potential for development of late-seral stand conditions
5. Includes more thorough release of legacy and/or the largest, healthiest trees of desired species, size classes, or growth forms.

Individual tree and small group thinning of dwarf mistletoe infected Douglas-fir

1. Retains/promotes dwarf mistletoe infected Douglas-fir in spatially explicit locations for immediate retention of important late-successional habitat for wildlife species.
2. Encourages long-term development of larger dwarf mistletoe infected Douglas-fir for future replacement habitat in spatially strategic locations.
3. Reduces abundance of dwarf mistletoe in Douglas-fir on a landscape scale by targeting treatment of infected trees, primarily of Cohorts 2 and 3 in order to promote development of large Douglas-fir trees and to limit dwarf mistletoe abundance and spread, on both a stand and landscape level (see Douglas-fir Dwarf Mistletoe Stand Severity Rating Map in "A Landscape Level Approach to Management of Multiple Values in AFR: Block 2".

Non-commercial surface and ladder fuel thinnings

1. Retains most vigorous of trees of desired species and re-distributes growth and vigor onto these trees and helps grow those into larger size classes in shorter periods of time
2. Removes less vigorous and/or other trees with undesirable characteristics for meeting subunit level goals
3. Re-established more desirable species compositions and/or those currently underrepresented in species, size classes, and/or growth forms
4. Reduces ladder fuels and increases canopy base height, creating more favorable fire management conditions
5. Prepares the site for safe application of prescribed fire regime of low severity in the future
6. Can be used to maintain or enhance existing structural diversity in the overstory
7. Can be used to remove all trees of a given species within 50' of a dwarf mistletoe infected retained overstory tree of the same species.

Ladder and Activity Fuel Piling & Burning

1. Reduces activity generated available fuels within the subunit.
2. Maintains/improves stands ability to modify landscape fire behavior by limiting canopy fire
3. Places piles strategically to minimize damage to retained trees/vegetation and associated resource values
4. Prepares stands for application of low severity prescribed fire
5. Leaves 1-2 slash piles per acre as wildlife habitat

Treatment Narrative

Commercial density management primarily by thinning-from-below is prescribed, followed by non-commercial thinning, which collectively lowers stand densities to 115-145 BA/A (0.35-0.45 RDI). Commercial density management should focus on reduction of low to moderate vigor white fir of all size classes and removal of Douglas-fir infected with dwarf mistletoe. Retention of vigorous uninfected Douglas-fir in all size classes should be the highest priority in this subunit. Trees with small levels of infection (i.e. severity classes 1 and 2) can be retained, particularly if the infections are being shaded by adjacent conifer/hardwoods. Retaining that shade to retard dwarf mistletoe may compromise stand density objectives, however, and should be considered on a case-by-case basis. Aggressive thinning around larger uninfected Douglas-fir and/or small gap development in their vicinity is also appropriate to try to increase the vigor of this species. Likewise, non-commercial thinning should emphasize release of vigorous overstory Douglas-fir. Most of the merchantable trees marked for removal will likely be 10-16" dbh white fir with poor crowns and vigor. Aggressive understory thinning of Pacific madrone < 14" dbh will be required in order to reach desired stand densities. Retention of less common chinquapin> 10" dbh is a priority. Radial thinning around uncommon Cohort 1 trees of all species is also a priority in this subunit. Activity fuels should be piled and burned. Prescribed underburning should be avoided until vigor of leave trees is improved and more fire resistant conifer species form a greater percentage of the species composition in the subunit. In the meantime (until the next entry), retained white fir should be protected by applying Sporax to fresh cut stumps ≥12 inches diameter.

Applicable Project Criteria, Mitigation Measures, & Resource Coordination:

Slope Stability/Soil Resource Protection	Understory Vegetation- Thinning of stands, even lightly, should stimulate development of understory grasses, herbaceous vegetation, and other understory vegetation that can also provide protection form excess surface soil erosion. In areas outside of LHZ's where slopes are steeper than 75-80%; headwalls and concave slopes are steeper than 65-70%; slope breaks and discontinuities have lower slopes exceeding 65-70%; and/or inner gorges have slopes greater than 60%, stand density reduction should be avoided (e.g. "skips" can be located in these areas), or alternately, increased 10-30-% to increase root holding capacity and insure that closed canopy conditions re-occur again within 10 years. Hardwoods are not only deep rooted but also rapidly re-sprout following above-ground mortality, and should be favored for retention in these areas. Whenever possible, retaining higher than subunit average densities should be considered on all slopes greater than 65%.
Forest Health	Pines above 3" in diameter that need to be cut may be designated at any time, but they will be cut between August and December *unless t*hey are immediately disposed of by burning, chipping, scoring, or removed as a product prior to the

	springtime flight of the beetles (usually between March and May). Pines that are above the maximum size required for piling and burning should not be cut unless a specific plan is made for their removal, consumption and/or other practice to make them unavailable for potential beetle habitat (e.g. bark removal). Dwarf mistletoe in Douglas-fir is high this subunit. Falling and removal of Cohort 2 and 3 infected trees is the primary method of treatment in this subunit. Other options for treatment: 1) falling and retaining infected tree 2) girdling infected trees and retaining in place in areas deficient of snags or large woody debris, 3) isolation of dwarf mistletoe infection to reduce spread by converting to non-host species (e.g. hardwoods, other non-host conifers) around an infected conifer(s), 4) retaining infected trees in places where they are less likely to spread, such as in low spots in the topography (e.g., draws), as opposed to ridges or other high locations where seeds can spread much longer distances, 5) encouraging vigorous growth in dense stands of Douglas-fir or white fir that can occasionally shade out and kill low level infections of shade intolerant dwarf mistletoe, 6) clumping the distribution of infected trees into small widely separated groups thereby reducing spread and levels of contiguous infection, and 7) minimizing potential infection in those areas currently free dwarfmistletoe. Fresh cut stumps of true fir will be protected from inoculation by Annosus root disease through the application of Sporax, or other approved product containing borax, on fresh cut stumps 12" dbh and larger within 24 hours following falling.
Wildlife	Efforts will be made to retain trees, vegetation and land formations with evidence of use by wildlife (e.g. bird or wood rat nests, burrows, cavities, and hollows, etc.). Large hardwoods have a disproportionate high amount of use by a number of wildlife species (including fishers elsewhere in their range), particularly given their somewhat uncommon occurrence in Block 2. Radial thinning and other silvicultural practices that encourage the long-term viability of large hardwoods in Block 2 will be encouraged, although larger hardwoods are uncommon.
Snags and Coarse Woody Material	Snags will be retained unless they pose a threat to worker safety or pose a fire risk. Snags greater than 10 inches dbh that require felling for safety reasons will be left long and contour felled across the slope to serve as coarse woody debris. Landscape level management of snags and/or coarse woody material are discussed in "A Landscape Approach to Management of Multiple Values in AFR: Block 2").
	The implementation of silvicultural activities in the Ashland watershed is strongly dependent on outcomes that protect the municipal water supply for the City of Ashland. Water from Subunit 28t ultimately drains into Reeder Reservoir and elevates the importance of careful protection of soils and hydrologic function in this subunit. Practices implemented (e.g. fuels management and wildfire reduction) will indirectly protect municipal water objectives, as the overall

Hydrology	decrease in the likelihood and size of high severity fire decreases the risk associated with increase sediment delivery that accompanies large-scale, high-severity wildfire events. Helicopter logging systems only will be used in Subunit 28t, minimizing ground disturbance and effects on hydrologic function. Some utilization of material may occur within 50' of existing roads. Roads serve as extensions of the hydrologic network, increasing both the rapidity and size of hydrologic response during major storm events, thereby increasing the potential for significant erosion, sediment delivery and flooding. No new roads are proposed in Block 2. Maintenance of existing roads prior to, during and following use is prioritized
Botanical Resources	Before marking begins the Forest Botanist must be consulted to address any potential PETS species presence and mitigation measures necessary.
Native Grass Seeding	Seeding when appropriate to encourage native plant establishment in the herbaceous vegetation layer may follow burning activities. Seeding with native grasses may help impede non-native species invasion, discourage development of more fire-prone shrub species, and add diversity to the plant communities. Factors that will influence a choice to initiate native grass seeding are elevation, aspect, proximity to non-native plants already encroaching from the urban and valley areas, pre-treatment herbaceous plant cover and diversity, extent and intensity of disturbance associated with harvest or burning, and if a need is perceived for erosion control seeding. Native forb seed may be included in seed mixes in the future for similar reasons. At this time, the Forest Service has native grass seed grown from local wild ecotypes but no native forb seed meeting the same source criteria. The decision to apply native grass seed will be made collectively by the certified silviculturist and the Forest or District Botanist. Seed mixes tailored to the stand would be provided by the Forest or District Botanist.
Noxious Weeds	If noxious weed sites are discovered during implementation, these need to be mitigated. Project leaders, work crew leaders, and crew members have a choice at noxious weed sites; the infested sites must either be avoided entirely or their noxious weeds must be fully "treated" before silvicultural treatments occur there. Treatment for noxious weed removal normally means pull, cut, or grub out (depending on species) all the noxious weed plants present and pile the material for later burning. Clean pants cuffs, pockets, boot soles, clothing, tools, machinery, and vehicles of soil or plant parts before proceeding to new areas. Identifying these locations on a map, GPS, etc and sharing that information with appropriate AFR personnel will allow for future return to these sites to insure

	long-term success at eradication, such as during post-burn monitoring efforts. Noxious weed sites along roads traveling to and from work areas do not need to be treated or reported unless those roadsides are part of actual treatment units or are used as work staging areas. Klamath weed (St. John's wort) and bull thistle are common and widespread noxious weeds in SW Oregon. The Forest Service makes no attempt to prevent their spread or control their abundance during project activity. Hence AFR noxious weed mitigations will not be applied to these two species.
Cultural Resources	Any cultural resource, or potential cultural resource, discovered during the implementation of this project will be cause for immediate cessation of any site-altering activity, with immediate notification of appropriate project personnel. Upon review by a qualified cultural resource specialist, the area of significance may be delineated on the ground and removed from the treatment area.
Other Resource Coordination	Respective resource surveys have been completed and there are no other known issues within the stand to be treated. If there are any findings to the contrary at any time, actions to protect resources will be taken immediately and respective specialist(s) will be notified. Activities prescribed would then be reassessed. Cooperation and coordination between all partners, specialists, workers and other interested and involved parties is necessary to protect and promote the multiple values and resources that exist in the project area. This prescription is the vehicle to develop that coordination and integration of objectives, and it is this prescription that ultimately serves to document agreed course of actions and ultimately prescribes treatments and activities (even, and especially, as a need arises to adapt the initial course). Any and all changes needed in treatment activities, timing, and/or sequence of activities prescribed herein as a result of changing conditions on the ground, changes in our partnerships or other organizational capacity, change in scientific understanding, and/or change in management direction; need to be documented and integrated into this or a new prescription by a certified silviculturist prior to those changes being implemented.

Harvest Systems & Transportation:

Logging Systems	The type of logging system(s) and the feasibility of removals without compromising important ecological objectives will be determined prior to initiation of operations. Such consideration will have to meet soil protection measures and result in no greater than 5% detrimental soil conditions across the subunit's area (not including the permanent transportation system). In Block 2, helicopter logging will be the primary system used. Where applicable, some utilization of merchantable and traditionally non-merchantable material may occur

	along roadsides in Block 2.
Landings	Only existing landings or hot logging on existing roads are currently approved for use. It is expected that only three existing landings will be utilized in Block 2. Any new proposed landings must be approved by the Contracting Office Representative (COR) and amended in this prescription by a certified silviculturist. Landing restoration after completion of use shall be overseen by a qualified soil scientist, botanist, and/or other pertinent resource specialist(s). Seeding of landings with native grasses immediately following cessation of use may minimize noxious, non-native plant establishment. Monitoring for noxious non-native plants invading the landings should be conducted for at least 3 years following cessation of use, and appropriate efforts of eradication undertaken when found. In addition, any opportunities for landing erosion/sediment to enter the aquatic network will be addressed both during use, and during restoration efforts immediately following cessation of landing use.
Hauling and Road Use	Forest Service Road 2060 will be used to access treatment areas. There is a high level of recreational use of this road. Road signs must be posted on both sides of treatment areas warning forest users of activities during implementation. All vehicles will obey posted speed limits and be constantly aware of potential interaction with recreational users. Signs and/or temporary trail closures may also be needed during on-the-ground application of silvicultural activities in the vicinity of established trails. Road maintenance returning roads to a high standard of functionality following cessation of use will be required under any contract requiring hauling on established roads.

Monitoring:

For implementation monitoring please refer to "Prescription Objectives". This section is presented in both narrative form and in a table format that provides a summary of quantifiable variables to be measured during and after prescribed treatments. Effective implementation monitoring should rely on both quantitative and qualitative monitoring, with analysis of both by knowledgeable personnel. Invariably, integration of the two forms of monitoring will provide the most comprehensive and accurate assessment of outcomes. If this process is done well, it should produce results that provide impetus for adaptive management and improvement of both planning and implementation of future work in AFR. With new information and understandings developing rapidly, additional adjustments to planned activities should also be encouraged in the ongoing spirit of adaptive management.

Treatment effectiveness can be guided by the sections "Land Management Goals and Objectives", "Desired Future Dynamics" and "Desired Future Conditions". Effectiveness will be measured and analyzed over various spatial and temporal scales, including both stand level and landscape level assessments. A strong monitoring component has been integral to the development of AFR. The Ashland Forest Resiliency's Monitoring Plan will provide a comprehensive assessment of the project's overall effectiveness.

Silvicultural Prescription – AFR Block 02, Subunit 28u

Prescriber: Marty Main **Date: May, 2011**

Field Checked by: COA crew, Prescriber, Cert. Silviculturist **Date: May-June 2011**

Certified Silviculturist: **Date:** 8-5-11

Associated Project: Ashland Forest Resiliency
Associated NEPA: Ashland Forest Resiliency FEIS, ROD
5th Field Watershed: Bear Creek

Stand Identity & Current Condition

Table 1.1 Current Stand Attributes

Location - Stand	Acres	Plant Assoc. *	Site Index (DF, 50yrs)	Elevation (feet)	Average % Slope (range)	Aspect (degrees)	Trees Per Acre (>4.5')	Basal Area (ft^2/ac)	Estimated Tree Canopy Cover (>0 dbh)	Quadratic Mean Diameter (>0" dbh)	RDI
6135030-0396	12	ABCO-BENE2	85-90	4550-4850	44 (30-55)	10-84	795	236	76	7.4	0.73

**Plant Association from Atzet, et al. 1996.*
**Canopy cover is the percent of a stand's ground area covered by the downward projection of all tree canopies within a stand. Individual point data (crown closure) was systematically collected with a densiometer and averaged to arrive at canopy cover estimates.

Stand Description / Context

Subunit 28 u is located on moderate (30-55%) easterly to northerly aspects in middle third slope positions towards the south end of Block 2. Plant Association is ABCO-BENE2 and estimated 50 year site index for Douglas-fir is 85-90

Subunit 28u was clearcut in 1962 in which almost all trees were cut and removed, leaving a small number of advanced regeneration of primarily Douglas- fir and white fir. A midslope skid road provided access for the harvest which included both cable (below the mid-slope road) and ground-based (above the road) logging, with more retained conifers and hardwoods left post-harvest above the mid-slope road. Following logging, the subunit was planted with ponderosa pine from an unknown seed source. Natural regeneration and/or advanced regeneration (now up to 75 years of age) of primarily white fir and to a lesser extent Douglas-fir developed in the subunit and are now integral parts of the stands. The more productive sites in this subunit also allowed this plantation to grow to larger size classes than most of the other areas clearcut in the early 1960's. Currently, the subunit is overstocked (236 BA/A, 0.73 RDI) and carrying a high basal area in just 50 years, indicative of the high productive potential of the site, but also the potential for competition-related mortality in the near future. Current basal area (based on 11 total BA only plots) is distributed mostly to planted pines (52% of the total), white fir (40%), with a small amount of Douglas-fir (5%) and scattered Pacific madrone, chinquapin, and rare incense cedar. although the shade tolerant white fir and to a lesser extent Douglas-fir are more abundant as understory seedlings and saplings. Ponderosa pine is primarily currently in the 8-16" dbh size class and are most abundant above the mid-slope road, where soils are rockier and site productivities slightly less than below the road.. Average QMD>0 is larger in the pine than white fir (10.0" vs. 6.8") largely because of the lack of shade intolerant pines in the dense shady understory. Vigor of the pines is moderate in the larger size classes 12" dbh and larger if they have been able to maintain dominance and full light conditions. However, vigor appears to be rapidly declining in pine in these dense

stand conditions (estimated tree canopy cover = 76%) on more northerly aspects, particularly for the smaller size classes 8-12" dbh in partial shade. Considerable mortality of the pines, particularly in the smaller size classes, has occurred from insects, snow breakage, tipping over, and generally poor vigor. Douglas-fir, although uncommon in this stand, is thriving and usually is the most vigorous overstory dominant conifer (generally 14-20" dbh) where it occurs. It is generally 5-15' taller than ponderosa pine of the same age and diameter class, and generally growing at better radial growths These trees either naturally regenerated or were small advanced regeneration that survived the harvest activities and quickly responded to available site resources with rapid growth. The relatively isolated occurrence of Douglas-fir currently on the unit has resulted in little if any dwarf mistletoe in this species. White fir is also generally vigorous in the larger size classes 10-16" dbh and is also abundant in the understory due to its shade tolerance. A small amount of incense cedar and golden chinquapin <2" dbh are also growing in the understory. Snag numbers are low, primarily ponderosa pine less than 12" dbh that were shaded out in the stand development process. Coarse woody debris tonnages are moderate (28.8/acre) and almost entirely of rotten heavily decayed pieces, suggesting the history of the previous stand, although there were few in the 10"+ diameter class given that the subunit was clearcut and almost no trees above 20" dbh currently exist.

Land Management Goals & Parameters:

Table 2.1 Management Direction

Management Allocation:	Restricted Watershed (RRNF LRMP) Late Successional Reserve (NWFP)
Project NEPA:	Ashland Forest Resiliency FEIS, ROD
NEPA Purpose & Need:	The **Need** for action is urgent reduction of the potential for large-scale, high-severity wildland fire in the Upper Bear landscape. One hundred years of fire exclusion and fuel accumulations in this forest's wildland/urban interface now presents high potential for large-scale, high-severity wildland fire that could significantly interrupt the supply of clean water and late-successional and old-growth forest ecosystems in this Analysis Area. The **Purpose** of the action is to protect Values at Risk, reduce hazardous fuels, reduce crown fire potential, and create forest conditions that are more resilient to wildland fires.

AFR Strategic Category and Purpose:

Strategic Ridgelines: Treatments along Strategic Ridgelines are designed to: 1) reduce the extent of wildland fire severity by limiting the amount of area affected by wildland fire, 2) create areas where fire suppression efforts can be conducted more safely and effectively, 3) break up continuity of fuels over a large landscape, and 4) serve as anchor points for further area-wide treatments, such as prescribed fire and maintenance burning (AFR FEIS, 2008). All of Block 2 was designated as a Strategic Ridgeline in the ROD except for Subunits 29a and 79a.

Desired Future Dynamics

The goal for management of this subunit is to alter stand structures, densities and composition, and do so in spatial patterns that will encourage the restoration of functional processes more closely resembling the historical occurrence of more frequent but lower to moderate severity disturbance, primarily fire. This will allow opportunities to optimize landscape level wildfire management, while indirectly providing for the habitat needs of late successional dependent species and protection of municipal water supplies by reducing the spatial extent of high severity fire. This initial entry reduces stand densities, builds tree and stand vigor, maintains overstory canopies and continues to retard understory

ladder fuel development, while accelerating development of mature forest conditions. Snags and downed wood will remain low in the foreseeable future, but can begin to increase in the larger size classes as the stand develops and a greater number of larger tree structures result. Increased post-treatment grass and herbaceous understory development following thinning, especially in openings, should help protect surface soils and reduce sediment accumulation in draws.

Stand structures, reduced fuel levels and spatial arrangements of fuels and vegetation will allow for frequent low to moderate severity fire as the primary driver of stand dynamics and ecosystem function. Until low severity fire can be relied upon to be the primary driver of stand dynamics, through wildland fire use and/or the application of prescribed fire, ecologically appropriate silvicultural activities will continue to be applied, including additional variable density thinning in the future, followed by necessary post-treatment fuels treatments. These silvicultural activities will be implemented to restore less fire prone structural characteristics of forests and help provide vegetational characteristics that can emulate those that allowed historic disturbance regimes, while favoring return to a species composition more adapted to the site, including a higher percentage of Douglas-fir.

Prescription Objectives:

Table 3.1 Desired Stand Attributes

AFR Subunit	Location-Stand	Existing Forest Type*	Trees Per Acre* (>4.5")	Basal Area (ft^2/ac.)* (>0 dbh)	Quadratic Mean Diameter* (>0 dbh)	RDI* (>0 dbh)	Estimated Tree Canopy Cover** (>0 dbh)
28u	6135030-0396	ABCO-PIPO-PSME	274-357	101-154	8-9	0.30-0.45	50-65

* Target ranges are for the stand average, including gaps and retention areas outside of riparian areas or landslide hazard zones. Variations outside of listed range at any one location are expected and desirable.

**Canopy cover is the percent of a stands ground area covered by the downward projection of all tree canopies within a stand. All canopy covers are targeted to remain above a minimum average of 40% per subunit. "Estimated Tree Canopy Cover" is an estimate of expected post-treatment canopy cover based on desired residual densities. It is intended to be a rough guide only and not an actual target.

Desired Future Condition (DFC): *Conditions change over time and space; this DFC reflects the desired future condition over the majority of the stand one to three growing seasons after treatment:*

A reduction in stand density primarily by thinning-from-below improves vigor of retained trees, restores more favorable species compositions, increases mean QMD, and builds tree and stand resistance to effects of insects and/or low severity fire. Estimated canopy cover remains largely intact in the bulk of the stand and continues to retard understory development of ladder fuels through active utilization of site resources by an overstory stand of improving vigor in desired species. More open stand conditions will increase the vigor of retained Douglas-fir, ponderosa pine and white fir, while allowing for establishment of the next cohort of conifers and hardwoods, including the enhanced development of golden chinquapin and Pacific madrone in the future stand. The diversity of understory species, including various grasses, herbaceous vegetation and others more shade intolerant species, is increased, particularly in existing canopy gaps. Soils will remain relatively undisturbed and surface erosion minimal.

Treatments to Achieve Management Objective (DFC):

Silvicultural activities are applied in three general classifications of tree structure in Block 2, referred to as cohorts. Cohort 1 trees are generally those that are 150-300+ years of age and 30 to 60" dbh (and occasionally as high as 80" dbh in the project area); Cohort 2 trees 60-140 years of age and 12-30" dbh (and occasionally as high as 35+" dbh); and Cohort 3 trees 1-50 years of age and 1-10" dbh (and occasionally as high as 18" dbh). For a more complete description of

cohorts, the following specified treatments, and the landscape context in which they are applied, see "A Landscape Scale Approach to Management of Multiple Values in AFR: Block 2".

The following treatments are the primary silvicultural activities to be implemented in Subunit 28u.

Thinning-from-below

1. Improves retained tree and stand vigor and minimizes long-term potential for insect related mortality by re-distributing growth onto fewer larger trees, resulting in increased quadratic mean diameter (QMD) for the stand
2. Removes relatively smaller and less vigorous trees from primarily intermediate and suppressed crown classes
3. Maintains sufficient canopy closure and full-site occupancy by retained trees to retard understory ladder fuel development; maintains/promotes high canopy base height and good vertical discontinuity of fuels.
4. Speeds development of older tree structures and potential for development of more mature stand conditions
5. Includes more thorough release of legacy and/or the largest, healthiest trees of desired species, size classes, or growth forms.

Non-commercial surface and ladder fuel thinnings

1. Retains most vigorous of trees of desired species and re-distributes growth and vigor onto these trees and helps grow those into larger size classes in shorter periods of time
2. Removes less vigorous and/or other trees with undesirable characteristics for meeting subunit level goals
3. Re-established more desirable species compositions and/or those currently underrepresented in species, size classes, and/or growth forms
4. Reduces ladder fuels and increases height-to-crown base, creating more favorable fire management conditions
5. Prepares the site for safe application of prescribed fire regime of low severity in the future
6. Can be used to maintain or enhance existing structural diversity in the overstory
7. Can be used to remove all trees of a given species within 50' of a dwarf mistletoe infected retained overstory tree of the same species.

Ladder and Activity Fuel Piling & Burning

1. Reduces activity generated available fuels within the subunit.
2. Maintains/improves stands ability to modify landscape fire behavior by limiting canopy fire
3. Places piles strategically to minimize damage to retained trees/vegetation and associated resource values
4. Prepares stands for application of low severity prescribed fire
5. Leaves 1-2 slash piles per acre as wildlife habitat

Planting

1. Seed native grasses or forbs after pile burning or prescribed fire that exposes patches of more than 100 ft_2 of mineral soil under consultation with the Forest Botanist
2. Promptly after treatments, assess the stand for areas with the potential to sustain successful pine regeneration (it is expected that such opportunities will be limited in the first entry associated with the current treatments)
3. As opportunities become available that are favorable to pine establishment, plant ponderosa pine and/or rust resistant sugar pine seedlings to add greater species diversity of favorable seed sources
4. Certified silviculturist will ensure appropriate timing, planting stock, and densities based on present site conditions and planned activities
5. Plant in first season following initial treatment to capture the narrow window of opportunity before incoming vegetation becomes a serious impediment to conifer establishment; take advantage of site resource availability in that first season
6. Assess development of competing vegetation to consider the need for treatment(s) to release any planted (and desired natural regeneration) seedlings until they are well established

Treatment Narrative

Commercial density management primarily by thinning-from-below is followed by spotty non-commercial thinning, which collectively should lower stand densities to 101-138 BA/A (0.30-0.40 RDI). This is an aggressive thinning from below in this stand to encourage continued rapid growth into larger age classes and developing older forest conditions. Opening the stand up is the only way to maintain an overstory pine component, although ponderosa pine is not particularly well adapted to compete on these more northerly aspects at this elevation. Maintaining pine in this stand will require aggressive thinning around vigorous pines 12" dbh and larger. Naturally regenerated, vigorous Douglas-fir of any size are the preferred leave tree in this subunit and should be vigorously released. Some white fir 10"+ dbh are also appropriate as leave trees because of their current numbers and need as a structural component that will continue to grow well on these sites. This subunit is not a priority from a wildfire management perspective, nor is it currently a priority from a wildlife management perspective. However, continuing rapid growth will quickly allow vertical fuel discontinuity to begin to occur, as well as accelerate development of larger tree structures of an older forest. Following harvest, understory non-commercial thinning should focus on removing any non-commercial pine and suppressed understory white fir, particularly those in the 4-8"dbh size class. Slash form both commercial and non-commercial treatments should be piled and burned. White fir stumps created greater than 12" dbh should be treated with Sporax to prevent inoculation of Annosus root disease.

Applicable Project Criteria, Mitigation Measures, & Resource Coordination:

Slope Stability/Soil Resource Protection	Understory Vegetation- Thinning of stands, even lightly, should stimulate development of understory grasses, herbaceous vegetation, and other understory vegetation that can also provide protection form excess surface soil erosion. In areas outside of LHZ's where slopes are steeper than 75-80%; headwalls and concave slopes are steeper than 65-70%; slope breaks and discontinuities have lower slopes exceeding 65-70%; and/or inner gorges have slopes greater than 60%, stand density reduction should be avoided (e.g. "skips" can be located in these areas), or alternately, increased 10-30-% to increase root holding capacity and insure that closed canopy conditions re-occur again within 10 years. Hardwoods are not only deep rooted but also rapidly re-sprout following above-ground mortality, and should be favored for retention in these areas. Whenever possible, retaining higher than subunit average densities should be considered on all slopes greater than 65%.
Forest Health	Pines above 3" in diameter that need to be cut may be designated at any time, but they will be cut between August and December *unless t*hey are immediately disposed of by burning, chipping, scoring, or removed as a product prior to the springtime flight of the beetles (usually between March and May). Pines that are above the maximum size required for piling and burning should not be cut unless a specific plan is made for their removal, consumption and/or other practice to make them unavailable for potential beetle habitat (e.g. bark removal). Dwarf mistletoe in Douglas-fir is light or non-existent in this subunit; any infected trees found should be treated.

	Options for treatment of dwarf mistletoe in Douglas-fir include: 1) falling infected tree 2) girdling infected trees and retaining in place in areas deficient of snags or large woody debris, 3) isolation of dwarf mistletoe infection to reduce spread by converting to non-host species (e.g. hardwoods, other non-host conifers) around an infected conifer(s), 4) retaining infected trees in places where they are less likely to spread, such as in low spots in the topography (e.g., draws), as opposed to ridges or other high locations where seeds can spread much longer distances, 5) encouraging vigorous growth in dense stands of Douglas-fir or white fir that can occasionally shade out and kill low level infections of shade intolerant dwarf mistletoe, 6) clumping the distribution of infected trees into small widely separated groups thereby reducing spread and levels of contiguous infection, and 7) minimizing potential infection in those areas currently free dwarfmistletoe. Fresh cut stumps of true fir will be protected from inoculation by Annosus root disease through the application of Sporax, or other approved product containing borax, on fresh cut stumps 12" dbh and larger within 24 hours following falling.
Wildlife	Efforts will be made to retain trees, vegetation and land formations with evidence of use by wildlife (e.g. bird or wood rat nests, burrows, cavities, and hollows, etc.). Large hardwoods have a disproportionate high amount of use by a number of wildlife species (including fishers elsewhere in their range), particularly given their somewhat uncommon occurrence in Block 2. Radial thinning and other silvicultural practices that encourage the long-term viability of large hardwoods in Block 2 will be encouraged, although larger hardwoods are rare..
Snags and Coarse Woody Material	Snags will be retained unless they pose a threat to worker safety or pose a fire risk. Snags greater than 10 inches dbh that require felling for safety reasons will be left long and contour felled across the slope to serve as coarse woody debris. Landscape level management of snags and/or coarse woody material are discussed in "A Landscape Approach to Management of Multiple Values in AFR: Block 2").
Hydrology	The implementation of silvicultural activities in the Ashland watershed is strongly dependent on outcomes that protect the municipal water supply for the City of Ashland. Water from Subunit 28u ultimately drains into Reeder Reservoir and elevates the importance of careful protection of soils and hydrologic function in this subunit. Practices implemented (e.g. fuels management and wildfire reduction) will indirectly protect municipal water objectives, as the overall decrease in the likelihood and size of high severity fire decreases the risk associated with increase sediment delivery that accompanies large-scale, high-severity wildfire events. Helicopter logging systems only will be used in Subunit 28u, minimizing ground disturbance and effects on hydrologic function. Some utilization of material may occur within 50' of existing roads.

	Roads serve as extensions of the hydrologic network, increasing both the rapidity and size of hydrologic response during major storm events, thereby increasing the potential for significant erosion, sediment delivery and flooding. No new roads are proposed in Block 2. Maintenance of existing roads prior to, during and following use is prioritized
Botanical Resources	Before marking begins the Forest Botanist must be consulted to address any potential PETS species presence and mitigation measures necessary.
Native Grass Seeding	Seeding when appropriate to encourage native plant establishment in the herbaceous vegetation layer may follow burning activities. Seeding with native grasses may help impede non-native species invasion, discourage development of more fire-prone shrub species, and add diversity to the plant communities. Factors that will influence a choice to initiate native grass seeding are elevation, aspect, proximity to non-native plants already encroaching from the urban and valley areas, pre-treatment herbaceous plant cover and diversity, extent and intensity of disturbance associated with harvest or burning, and if a need is perceived for erosion control seeding. Native forb seed may be included in seed mixes in the future for similar reasons. At this time, the Forest Service has native grass seed grown from local wild ecotypes but no native forb seed meeting the same source criteria. The decision to apply native grass seed will be made collectively by the certified silviculturist and the Forest or District Botanist. Seed mixes tailored to the stand would be provided by the Forest or District Botanist.
Noxious Weeds	If noxious weed sites are discovered during implementation, these need to be mitigated. Project leaders, work crew leaders, and crew members have a choice at noxious weed sites; the infested sites must either be avoided entirely or their noxious weeds must be fully "treated" before silvicultural treatments occur there. Treatment for noxious weed removal normally means pull, cut, or grub out (depending on species) all the noxious weed plants present and pile the material for later burning. Clean pants cuffs, pockets, boot soles, clothing, tools, machinery, and vehicles of soil or plant parts before proceeding to new areas. Identifying these locations on a map, GPS, etc and sharing that information with appropriate AFR personnel will allow for future return to these sites to insure long-term success at eradication, such as during post-burn monitoring efforts. Noxious weed sites along roads traveling to and from work areas do not need to be treated or reported unless those roadsides are part of actual treatment units or are used as work staging areas. Klamath weed (St. John's wort) and bull thistle are common and widespread

	noxious weeds in SW Oregon. The Forest Service makes no attempt to prevent their spread or control their abundance during project activity. Hence AFR noxious weed mitigations will not be applied to these two species.
Cultural Resources	Any cultural resource, or potential cultural resource, discovered during the implementation of this project will be cause for immediate cessation of any site-altering activity, with immediate notification of appropriate project personnel. Upon review by a qualified cultural resource specialist, the area of significance may be delineated on the ground and removed from the treatment area.
Other Resource Coordination	Respective resource surveys have been completed and there are no other known issues within the stand to be treated. If there are any findings to the contrary at any time, actions to protect resources will be taken immediately and respective specialist(s) will be notified. Activities prescribed would then be reassessed. Cooperation and coordination between all partners, specialists, workers and other interested and involved parties is necessary to protect and promote the multiple values and resources that exist in the project area. This prescription is the vehicle to develop that coordination and integration of objectives, and it is this prescription that ultimately serves to document agreed course of actions and ultimately prescribes treatments and activities (even, and especially, as a need arises to adapt the initial course). Any and all changes needed in treatment activities, timing, and/or sequence of activities prescribed herein as a result of changing conditions on the ground, changes in our partnerships or other organizational capacity, change in scientific understanding, and/or change in management direction; need to be documented and integrated into this or a new prescription by a certified silviculturist prior to those changes being implemented.

Harvest Systems & Transportation:

Logging Systems	The type of logging system(s) and the feasibility of removals without compromising important ecological objectives will be determined prior to initiation of operations. Such consideration will have to meet soil protection measures and result in no greater than 5% detrimental soil conditions across the subunit's area (not including the permanent transportation system). In Block 2, helicopter logging will be the primary system used. Where applicable, some utilization of merchantable and traditionally non-merchantable material may occur along roadsides in Block 2.
Landings	Only existing landings or hot logging on existing roads are currently approved for

	use. It is expected that only three existing landings will be utilized in Block 2. Any new proposed landings must be approved by the Contracting Office Representative (COR) and amended in this prescription by a certified silviculturalist. Landing restoration after completion of use shall be overseen by a qualified soil scientist, botanist, and/or other pertinent resource specialist(s). Seeding of landings with native grasses immediately following cessation of use may minimize noxious, non-native plant establishment. Monitoring for noxious non-native plants invading the landings should be conducted for at least 3 years following cessation of use, and appropriate efforts of eradication undertaken when found. In addition, any opportunities for landing erosion/sediment to enter the aquatic network will be addressed both during use, and during restoration efforts immediately following cessation of landing use.
Hauling and Road Use	Forest Service Road 2060 will be used to access treatment areas. There is a high level of recreational use of this road. Road signs must be posted on both sides of treatment areas warning forest users of activities during implementation. All vehicles will obey posted speed limits and be constantly aware of potential interaction with recreational users. Signs and/or temporary trail closures may also be needed during on-the-ground application of silvicultural activities in the vicinity of established trails. Road maintenance returning roads to a high standard of functionality following cessation of use will be required under any contract requiring hauling on established roads.

Monitoring:

For implementation monitoring please refer to "Prescription Objectives". This section is presented in both narrative form and in a table format that provides a summary of quantifiable variables to be measured during and after prescribed treatments. Effective implementation monitoring should rely on both quantitative and qualitative monitoring, with analysis of both by knowledgeable personnel. Invariably, integration of the two forms of monitoring will provide the most comprehensive and accurate assessment of outcomes. If this process is done well, it should produce results that provide impetus for adaptive management and improvement of both planning and implementation of future work in AFR. With new information and understandings developing rapidly, additional adjustments to planned activities should also be encouraged in the ongoing spirit of adaptive management.

Treatment effectiveness can be guided by the sections "Land Management Goals and Objectives", "Desired Future Dynamics" and "Desired Future Conditions". Effectiveness will be measured and analyzed over various spatial and temporal scales, including both stand level and landscape level assessments. A strong monitoring component has been integral to the development of AFR. The Ashland Forest Resiliency's Monitoring Plan will provide a comprehensive assessment of the project's overall effectiveness.

Silvicultural Prescription – AFR Block 02, Subunit 28v

Prescriber: Marty Main **Date: June 2011**

Field Checked by: COA crew, Prescriber **Date: June-July, 2011**

Certified Silviculturist: _____ **Date:** 8-5-11

Associated Project: Ashland Forest Resiliency
Associated NEPA: Ashland Forest Resiliency FEIS, ROD
5th Field Watershed: Bear Creek

Stand Identity & Current Condition

Table 1.1 Current Stand Attributes

Location - Stand	Acres	Plant Assoc. *	Site Index (DF, 50yrs)	Elevation (feet)	Average % Slope (range)	Aspect (degrees)	Trees Per Acre (>4.5')	Basal Area (ft^2/ac)	Estimated Tree Canopy Cover** (>0 dbh)	Quadratic Mean Diameter (>0" dbh)	RDI
135030-0340	31	ABCO/BENE2	80-90	4550-4950	42 (30-55)	38-137	584	183	88	7.6	0.61

**Plant Association from Atzet, et al. 1996.*
**Canopy cover is the percent of a stand's ground area covered by the downward projection of all tree canopies within a stand. Individual point data (crown closure) was systematically collected with a densiometer and averaged to arrive at canopy cover estimates.

Subunit Description / Context

Subunit 28v is located on primarily 20-55% northeasterly to southeasterly aspects stretching from the 2060 road up to two small peaks and an interspersed saddle along the major ridgeline in Block 2. The Plant Association is ABCO-BENE2, although small rocky portions of the subunit along the ridgeline grade into the ABCO-PSME/ROGY Plant Association. Site productivity ranges somewhat, from more productive forests on more easterly/northeasterly aspects with a 50 year site index for Douglas-fir of 85-90 to less productive, rockier soils in more ridgeline locations at the top of the subunit.

Subunit 28v was lightly harvested in the early 1960s as compared to other areas in the vicinity that were heavily high-graded. Consequently, the current stand is more structurally complex with good species diversity and a range of stand conditions and size classes trending towards more mature stand conditions. A relatively high number of conifers 32"+ (6 tpa), including at least 1 tpa of the 5 major conifer species, provide the older structural features critical for developing mature forests, although their vigor is generally poor. The subunit is comprised of 75% (by basal area) Douglas-fir and white fir, with Douglas-fir commonly represented across all age/size classes, including 12 tpa 20-30" dbh. White fir as an overstory tree > 20" dbh is less common, but rather occurs primarily up to 16" dbh, although generally with reduced crown ratios and poor to fair vigor. White fir is also the most common non-commercial tree in age/size classes less than 8 " dbh (~250 tpa), with smaller numbers of Douglas-fir (~175/acre), incense cedar (primarily seedlings and small saplings < 2" dbh) and small diameter Pacific madrone (11/acre). Small amounts of mid-sized Pacific madrone 8-12" dbh (9/acre) are located primarily in openings where light availability is sufficient to retain vigor of these shade-intolerant species. The other three primary Cohort 1 species- ponderosa pine, sugar pine and incense cedar- occur almost solely in the largest size classes 32"+ dbh. Overall, the subunit exhibits good structural heterogeneity, with multiple cohort and layers of trees of multiple species, although changes in disturbance regimes has shifted species composition to a higher percentage of shade olerant white fir, particularly in Cohort 3. Small openings in canopies (0.1 acre and less) have in part been the result root disease (primarily *Armillaria* and *Annosus*) in white fir, usually in association with *Scolytus* beetle. Dwarfmistletoe is

well established in Douglas-fir in the subunit, with 77 tpa (34%) of Douglas-fir infected, with an average severity of 2.24. This includes large overstory Cohort 1 Douglas-fir as well as trees in other smaller size classes. Dwarf mistletoe is also established in white fir, although not in the same abundance or severity. Snag numbers are high in this subunit (65/acre), the third highest in Block 2, and well–represented across all size classes, including 11/acre > 20"dbh. CWM amounts are moderate for Block 2, but somewhat lacking in the largest 20"+ size class, although that will likely increase in the near future as existing snags fall.

Land Management Goals & Parameters:

Table 2.1 Management Direction

Management Allocation:	Restricted Watershed (RRNF LRMP) Managed Watershed (RRNF LRMP) Late Successional Reserve (NWFP)
Project NEPA:	Ashland Forest Resiliency FEIS, ROD
NEPA Purpose & Need:	The **Need** for action is urgent reduction of the potential for large-scale, high-severity wildland fire in the Upper Bear landscape. One hundred years of fire exclusion and fuel accumulations in this forest's wildland/urban interface now presents high potential for large-scale, high-severity wildland fire that could significantly interrupt the supply of clean water and late-successional and old-growth forest ecosystems in this Analysis Area. The **Purpose** of the action is to protect Values at Risk, reduce hazardous fuels, reduce crown fire potential, and create forest conditions that are more resilient to wildland fires.

AFR Strategic Category and Purpose:

Strategic Ridgelines: Treatments along Strategic Ridgelines are designed to: 1) reduce the extent of wildland fire severity by limiting the amount of area affected by wildland fire, 2) create areas where fire suppression efforts can be conducted more safely and effectively, 3) break up continuity of fuels over a large landscape, and 4) serve as anchor points for further area-wide treatments, such as prescribed fire and maintenance burning (AFR FEIS, 2008). All of Block 2 was designated as a Strategic Ridgeline in the ROD except for Subunits 29a and 79a.

Desired Future Dynamics

The goal for management of this subunit is to alter stand structures, densities and composition, and do so in spatial patterns that will encourage the restoration of functional processes more closely resembling the historical occurrence of more frequent but lower to moderate severity disturbance from insects, disease and primarily fire. This will allow opportunities to optimize landscape level wildfire management, while indirectly providing for the habitat needs of late successional dependent species and protection of municipal water supplies by reducing the spatial extent of high severity fire. General thinning-from-below will improve vertical fuel discontinuity, decreasing the potential for active crown fire. Following this initial entry that reduces stand densities, improves tree and stand vigor and minimizes undesirable impacts associated with insects and disease, species composition will shift towards a greater percentage of pines and Douglas-fir, and a decreased percentage of white fir, with a small amount of retained intermixed hardwoods. This first entry is designed to stabilize and improve overall stand density and vigor, while maintaining an overstory that continues to retard understory ladder fuel development. Future variable density thinning will be implemented to improve structural heterogeneity and continue improvements in species compositions towards a more mixed conifer type. These silvicultural

activities will be implemented overtime to restore less fire prone structural characteristics of forests and help provide vegetational characteristics that can emulate those that allowed historic disturbance regimes, while favoring return to a species composition more adapted to the site. Fire may then begin to be the primary driver of stand dynamics, through wildland fire use and/or the application of prescribed fire. Snags and downed wood will remain high in the foreseeable future, with snag numbers decreasing over time while CWM increases, at least until a more regular implementation of frequent underburning occurs. Increased post-treatment grass and herbaceous understory development following thinning, especially in openings, should help protect surface soils.

Prescription Objectives:

Table 3.1 Desired Stand Attributes

AFR Subunit	Location-Stand	Existing Forest Type*	Trees Per Acre* (>4.5')	Basal Area (ft^2/ac.)* (>0 dbh)	Quadratic Mean Diameter* (>0 dbh)	RDI* (>0 dbh)	Estimated Tree Canopy Cover** (>0 dbh)
28v	6135030-0431	PSME-ABCO	180-277	140-170	11-12	0..35-0.45	60-70

* Target ranges are for the stand average, including gaps and retention areas outside of riparian areas or landslide hazard zones. Variations outside of listed range at any one location are expected and desirable.

**Canopy cover is the percent of a stands ground area covered hy the downward projection of all tree canopies within a stand. All canopy covers are targeted to remain above a minimum average of 40% per subunit. "Estimated Tree Canopy Cover" is an estimate of expected post-treatment canopy cover based on desired residual densities. It is intended to he a rough guide only and not an actual target.

Desired Future Condition (DFC): *Conditions change over time and space; this DFC reflects the desired future condition over the majority of the stand one to three growing seasons after treatment*

A reduction in stand density utilizing variable density thinning increases mean QMD, improves species compositions by decreasing white fir abundance and increasing pines and Douglas-fir, improves tree and stand vigor and subsequent stand resistance to effects of low severity disturbances from insects, disease and/or fire. Treatments significantly reduce dwarf mistletoe abundance in Douglas-fir and small gap development increases the diversity of understory species, including various grasses, herbaceous vegetation and others more shade intolerant species, particularly in small canopy gaps. Structural heterogeneity and the more multi-canopied, multi-layered, mixed species structure of the stands in this subunit are maintained.

Treatments to Achieve Management Objective (DFC):

Silvicultural treatments are applied in stands with three general classifications of tree structure in Block 2, referred to as cohorts. Cohort 1 trees are generally those that are 150-300+ years of age and 30 to 60" dbh (and occasionally as high as 80" dbh in the project area); Cohort 2 trees 60-140 years of age and 12-30" dbh (and occasionally as high as 35+" dbh); and Cohort 3 trees 1-50 years of age and 1-10" dbh (and occasionally as high as 18" dbh). For a more complete description of cohorts, the following specified treatments, and the landscape context in which they are applied, see "A Landscape Scale Approach to Management of Multiple Values in AFR: Block 2".

The following treatments are the primary silvicultural activities to be implemented in Subunit 28v.

Variable density thinning

1. Utilizes thinning from below, radial thinning, and/or general stand density reduction
2. Creates, enhances or retains gaps, skips and/or clumps of vegetation at various spatial scales
3. Promote establishment and development of vigorous multi-age, multi-species cohorts, including hardwoods
4. Creates horizontal and vertical discontinuity of ladder and canopy fuels

5. Promotes spatial, structural, and species diversity favorable for wildlife

Radial thinning

1. Originally designed as a stand-alone treatment, radial thinning is combined with other treatment types to aggressively release preferred Cohort 1 trees by removing Cohort 2 and 3 trees to create a separation (up to 20') whenever possible between crowns. Additionally reduces stand densities out to a radius of twice the dripline, or 30-50 feet from legacy bole, while simultaneously considering species, site and stand conditions and other multiple objectives.
2. Promotes resilience and "hang-time" of Cohort 1 legacy trees; retains important seed sources for natural regeneration of more shade intolerant conifers; provides anchors for future variable density thinning.
3. Increases horizontal and vertical discontinuity of ladder and canopy fuels, and begins to build increasing structural heterogeneity is existing stands.

Thinning-from-below

1. Improves retained tree and stand vigor and minimizes long-term potential for insect related mortality by re-distributing growth onto fewer larger trees, resulting in increased quadratic mean diameter (QMD) for the stand
2. Removes relatively smaller and less vigorous trees from primarily intermediate and suppressed crown classes
3. Maintains sufficient canopy closure and full-site occupancy by retained trees to retard understory ladder fuel development; maintains/promotes high canopy base height and good vertical discontinuity of fuels.
4. Speeds development of older tree structures and potential for development of late-seral stand conditions
5. Includes more thorough release of legacy and/or the largest, healthiest trees of desired species, size classes, or growth forms.

Individual tree and small group thinning of dwarf mistletoe infected Douglas-fir

1. Encourages long-term development of larger dwarf mistletoe infected Douglas-fir for future replacement habitat in spatially strategic locations.
2. Reduces abundance of dwarf mistletoe in Douglas-fir on a landscape scale by targeting treatment of infected trees, primarily of Cohorts 2 and 3 in order to promote development of large Douglas-fir trees and to limit dwarf mistletoe abundance and spread, on both a stand and landscape level (see Douglas-fir Dwarf Mistletoe Stand Severity Rating Map in "A Landscape Level Approach to Management of Multiple Values in AFR: Block 2".

Non-commercial surface and ladder fuel thinnings

1. Retains most vigorous of trees of desired species and re-distributes growth and vigor onto these trees and helps grow those into larger size classes in shorter periods of time
2. Removes less vigorous and/or other trees with undesirable characteristics for meeting subunit level goals
3. Re-established more desirable species compositions and/or those currently underrepresented in species, size classes, and/or growth forms
4. Reduces ladder fuels and increases height-to-crown base, creating more favorable fire management conditions
5. Prepares the site for safe application of prescribed fire regime of low severity in the future
6. Can be used to maintain or enhance existing structural diversity in the overstory
7. Can be used to remove all trees of a given species within 50' of a dwarf mistletoe infected retained overstory tree of the same species.

Ladder and Activity Fuel Piling & Burning

1. Reduces activity generated available fuels within the subunit.
2. Maintains/improves stands ability to modify landscape fire behavior by limiting canopy fire
3. Places piles strategically to minimize damage to retained trees/vegetation and associated resource values
4. Prepares stands for application of low severity prescribed fire
5. Leaves 2-3 slash piles per acre as wildlife habitat

Treatment Narrative

Stand density reduction is prescribed in this subunit to accentuate important values and continue this stand on its trajectory towards mature forest values. Maintaining/promoting existing structural heterogeneity through variable density thinning is a high priority in this subunit, while improving species composition primarily through reductions in white fir abundance. Radial thinning around existing Cohort 1 trees of all species is a priority, including overstory Douglas-fir if they are less than a dwarf mistletoe infection severity class 5 or 6. Reduction, but not elimination of dwarf mistletoe in Douglas-fir in this subunit is desired, and should be addressed with treatment options in both commercial and non-commercial entries, including converting to non-host species around infected Cohort 1 Douglas-fir. Abundant and reasonably vigorous white fir and hardwoods can be retained as other non-host species. Merchantable infected Cohort 2 Douglas-fir should generally be felled and removed, unless they are severity classes 1 or 2 and in denser stands where the mistletoe may be shaded out. In these situations, consider retaining a "skip" with the small stand surrounding dwarfmistletoe infected Douglas-fir left intact to continue shading out the low level infections of dwarf mistletoe. Alternatively, thinning around these lightly infected Douglas-firs may result in development of future replacement infected trees. However, vigorous, uninfected Douglas-fir are a priority to retain, release and grow free of dwarf mistletoe whenever possible. Care during non-commercial thinning to remove infected Douglas-fir should be a priority as well. This stand will have to be carefully managed in the future to retain some infected Douglas-fir, while reducing overall occurrence of dwarf mistletoe in order to retain sufficient long-term stocking of this important tree species.

White fir should also be selected for removal in both commercial and non-commercial thinning operations to reduce its overall abundance, although healthy, vigorous white fir may be considered for retention in appropriate locations, especially if they are larger, growing well, and providing important structure. White fir with crowns > 40% are generally preferred as potential desired leave trees. Variable density thinning is especially appropriate in this subunit to retain, if not enhance, the existing structural heterogeneity. Up to 10-15 % (approximately 3-4.5 acres total) of small scale canopy gaps ranging from 0.1-0.5 acres and occasionally larger should be present in post-treatment stands – an amount that may be close to currently existing and/or easily achieved by enhancing existing gaps. Strategically locating these in the vicinity of Cohort 1 sugar and ponderosa pine may encourage natural regeneration of these species that are currently lacking in most size classes. These productive more easterly aspects at this elevation may be particularly good sites for development of sugar pine and increasing its abundance in the species mix. These small gaps will also allow the opportunity for initiation and ongoing recruitment of the next cohort of trees (with established shrubs and hardwoods in the interim) of multiple species. Resulting stand densities following both commercial and non-commercial treatments should range from 140-170 BA/A (RDI 0.35-0.45). Activity fuels should be piled and burned. White fir stumps > 12" dbh should receive an application of Sporax to prevent long-term development of Annosus root disease, important here because white fir will continue to be a part of these developing stands, although in the long-term its abundance should decrease. Prescribed underburning can begin to be utilized as a silvicultural treatment once the existing leave trees have begun to build vigor (likely in 2-5 years); perform pretreatment around preferred Cohort 1 legacy trees 1-2 years prior to prescribed underburning. Assess the need to plant pines (particularly rust-resistant sugar pine), especially on more southeasterly aspects, immediately after the first prescribed underburn.

Applicable Project Criteria, Mitigation Measures, & Resource Coordination:

Slope Stability/Soil Resource Protection	Understory Vegetation- Thinning of stands, even lightly, should stimulate development of understory grasses, herbaceous vegetation, and other understory vegetation that can also provide protection form excess surface soil erosion.
Forest Health	Pines above 3" in diameter that need to be cut may be designated at any time, but

	they will be cut between August and December *unless t*hey are immediately disposed of by burning, chipping, scoring, or removed as a product prior to the springtime flight of the beetles (usually between March and May). Pines that are above the maximum size required for piling and burning should not be cut unless a specific plan is made for their removal, consumption and/or other practice to make them unavailable for potential beetle habitat (e.g. bark removal). Dwarf mistletoe in Douglas-fir should be significantly reduced in this subunit; infected trees found should be treated, primarily by falling and removal. Other options for treatment of dwarf mistletoe in Douglas-fir include: 1) falling and retaining infected tree 2) girdling infected trees and retaining in place in areas deficient of snags or large woody debris, 3) isolation of dwarf mistletoe infection to reduce spread by converting to non-host species (e.g. hardwoods, other non-host conifers) around an infected conifer(s), 4) retaining infected trees in places where they are less likely to spread, such as in low spots in the topography (e.g., draws), as opposed to ridges or other high locations where seeds can spread much longer distances, 5) encouraging vigorous growth in dense stands of Douglas-fir or white fir that can occasionally shade out and kill low level infections of shade intolerant dwarf mistletoe, 6) clumping the distribution of infected trees into small widely separated groups thereby reducing spread and levels of contiguous infection, and 7) minimizing potential infection in those areas currently free dwarf mistletoe. Fresh cut stumps of true fir will be protected from inoculation by Annosus root disease through the application of Sporax, or other approved product containing borax, on fresh cut stumps 12" dbh and larger within 24 hours following falling.
Wildlife	Efforts will be made to retain trees, vegetation and land formations with evidence of use by wildlife (e.g. bird or wood rat nests, burrows, cavities, and hollows, etc.). Large hardwoods have a disproportionate high amount of use by a number of wildlife species (including fishers elsewhere in their range), particularly given their somewhat uncommon occurrence in Block 2. Radial thinning and other silvicultural practices that encourage the long-term viability of large hardwoods in Block 2 will be encouraged. Unthinned patches in each subunit ("skips") will be used to provide additional cover and habitat diversity.
Snags and Coarse Woody Material	Snags will be retained unless they pose a threat to worker safety or pose a fire risk. Snags greater than 10 inches dbh that require felling for safety reasons will be left long and contour felled across the slope to serve as coarse woody debris. Landscape level management of snags and/or coarse woody material are discussed in "A Landscape Approach to Management of Multiple Values in AFR: Block 2").
Prescribed Underburning	The following criteria must be met before fire is prescribed and implemented as a maintenance or stand driver under this prescription:

	-Conditions, including stand vigor and composition, must favor low severity fire effects. -Burning can be accomplished at intensities that will retain duff layers in an amount and distribution that prevents unacceptable levels of surface soil erosion and sediment delivery off-site. Effective ground cover should be protected such that 70% is retained after one season and 85% after 2 seasons. -Stand and individual tree vigor are such that the application of prescribed underburning will not unduly stress preferred leave trees and contribute to untimely mortality. This can vary on a stand-by-stand basis. Prescribed underburning of subunits with very high stand densities, poor vigor and/or a high likelihood of imminent bark beetle related mortality should be deferred 2-5+ years after silvicultural treatment before prescribed underburning (i.e. allow trees/stands to "release" and improve in vigor and subsequently withstand and/or recover from stress related injury associated with prescribed underburning). Retention of white fir, particularly younger trees with thin bark, is difficult to accomplish with prescribed underburning -Protection of desired structures (i.e. Cohort 1 overstory trees, desired regeneration) may require pre-treatment prior to burning (immediately before or up to 2-3 years before) in order to protect highly desired features from unnecessary scorch, crown damage, cambial heating, soil heating or other fire-related injury. In these cases practices such as removing duff and ladder fuels and/or fuel accumulations away from the tree bole; spring burning; burning during cool, moist and/or windy conditions to quickly dissipate heat delivery to the tree boles and root systems; slow and careful ignition patterns, and/or other practices can help minimize damage to these features. The assessment by a certified silviculturist of preparatory needs, mitigation measures, and sequence of treatments will ensure integration of the multiple treatment objectives and management goals. It is currently expected that favorable conditions across Subunit 28v will not likely be reached immediately after this initial thinning treatment and will likely require 2-5 years for retained trees to build vigor and withstand effects of prescribed fire.
Hydrology	The implementation of silvicultural activities in the Ashland watershed is strongly dependent on outcomes that protect the municipal water supply for the City of Ashland. Water from Subunit 28v ultimately drains into Reeder Reservoir and elevates the importance of careful protection of soils and hydrologic function in this subunit. Silvicultural practices implemented (e.g. fuels management and wildfire reduction) can also indirectly protect municipal water objectives, as the overall decrease in the likelihood and size of high severity fire decreases the risk associated with increase sediment delivery that accompanies large-scale, high-severity wildfire events; Ground-based logging systems may be considered for use in portions of Subunit 28v that are less than 20% slopes if soil disturbance can be kept at 5% or less, although access to allow use of ground-based systems may be difficult to achieve.

	The subunit may also be harvested utilizing helicopter logging systems, even further minimizing ground disturbance and effects on hydrologic function. Roads serve as extensions of the hydrologic network, increasing both the rapidity and size of hydrologic response during major storm events, thereby increasing the potential for significant erosion, sediment delivery and flooding. No new roads are proposed in Block 2, although opening of the old road through the subunit may be considered to facilitate harvesting, with eventual closing and putting-to-bed of the road following use. Maintenance of existing roads prior to, during and following use is prioritized. Silvicultural activities are restricted in LHZ's to 50% of the stems over 50% of the area to protect hydrologic function and reduce the potential for slope failure.
Botanical Resources	Before marking begins the Forest Botanist must be cousulted to address any potential PETS species presence and mitigation measures necessary.
Native Grass Seeding	Seeding when appropriate to encourage native plant establishment in the herbaceous vegetation layer may follow burning activities. Seeding with native grasses may help impede non-native species invasion, discourage development of more fire-prone shrub species, and add diversity to the plant communities. Factors that will influence a choice to initiate native grass seeding are elevation, aspect, proximity to non-native plants already encroaching from the urban and valley areas, pre-treatment herbaceous plant cover and diversity, extent and intensity of disturbance associated with harvest or burning, and if a need is perceived for erosion control seeding. Native forb seed may be included in seed mixes in the future for similar reasons. At this time, the Forest Service has native grass seed grown from local wild ecotypes but no native forb seed meeting the same source criteria. The decision to apply native grass seed will be made collectively by the certified silviculturist and the Forest or District Botanist. Seed mixes tailored to the stand would be provided by the Forest or District Botanist.
Noxious Weeds	If noxious weed sites are discovered during implementation, these need to be mitigated. Project leaders, work crew leaders, and crew members have a choice at noxious weed sites; the infested sites must either be avoided entirely or their noxious weeds must be fully "treated" before silvicultural treatments occur there. Treatment for noxious weed removal normally means pull, cut, or grub out (depending on species) all the noxious weed plants present and pile the material for later burning. Clean pants cuffs, pockets, boot soles, clothing, tools, machinery, and vehicles of soil or plant parts before proceeding to new areas. Identifying these locations on a map, GPS, etc and sharing that information with appropriate AFR personnel will allow for future return to these sites to insure long-term success at eradication, such as during post-burn monitoring efforts. Noxious weed sites along roads traveling to and from work areas do not need to

	be treated or reported unless those roadsides are part of actual treatment units or are used as work staging areas. Klamath weed (St. John's wort) and bull thistle are common and widespread noxious weeds in SW Oregon. The Forest Service makes no attempt to prevent their spread or control their abundance during project activity. Hence AFR noxious weed mitigations will not be applied to these two species.
Cultural Resources	Any cultural resource, or potential cultural resource, discovered during the implementation of this project will be cause for immediate cessation of any site-altering activity, with immediate notification of appropriate project personnel. Upon review by a qualified cultural resource specialist, the area of significance may be delineated on the ground and removed from the treatment area.
Other Resource Coordination	Respective resource surveys have been completed and there are no other known issues within the stand to be treated. If there are any findings to the contrary at any time, actions to protect resources will be taken immediately and respective specialist(s) will be notified. Activities prescribed would then be reassessed. Cooperation and coordination between all partners, specialists, workers and other interested and involved parties is necessary to protect and promote the multiple values and resources that exist in the project area. This prescription is the vehicle to develop that coordination and integration of objectives, and it is this prescription that ultimately serves to document agreed course of actions and ultimately prescribes treatments and activities (even, and especially, as a need arises to adapt the initial course). Any and all changes needed in treatment activities, timing, and/or sequence of activities prescribed herein as a result of changing conditions on the ground, changes in our partnerships or other organizational capacity, change in scientific understanding, and/or change in management direction; need to be documented and integrated into this or a new prescription by a certified silviculturist prior to those changes being implemented.

Harvest Systems & Transportation:

Logging Systems	The type of logging system(s) and the feasibility of removals without compromising important ecological objectives will be determined prior to initiation of operations. Such consideration will have to meet soil protection measures and result in no greater than 5% detrimental soil conditions across the subunit's area (not including the permanent transportation system). In Block 2, helicopter logging will be the primary system used. Ground-based logging systems may be able to be utilized in portions of Subunit 28v, which contains slope gradients of less than 20%+/- over portions of the subunit. Utilization of

	ground-based harvest systems may allow some utilization of some traditionally non-merchantable material.
Landings	Only existing landings or hot logging on existing roads are currently approved for use. It is expected that only three existing landings will be utilized in Block 2. Any new proposed landings must be approved by the Contracting Office Representative (COR) and amended in this prescription by a certified silviculturist. Landing restoration after completion of use shall be overseen by a qualified soil scientist, botanist, and/or other pertinent resource specialist(s). Seeding of landings with native grasses immediately following cessation of use may minimize noxious, non-native plant establishment. Monitoring for noxious non-native plants invading the landings should be conducted for at least 3 years following cessation of use, and appropriate efforts of eradication undertaken when found. In addition, any opportunities for landing erosion/sediment to enter the aquatic network will be addressed both during use, and during restoration efforts immediately following cessation of landing use.
Hauling and Road Use	Forest Service Road 2060 will be used to access treatment areas. There is a high level of recreational use of this road. Road signs must be posted on both sides of treatment areas warning forest users of activities during implementation. All vehicles will obey posted speed limits and be constantly aware of potential interaction with recreational users. Signs and/or temporary trail closures may also be needed during on-the-ground application of silvicultural activities in the vicinity of established trails. Road maintenance returning roads to a high standard of functionality following cessation of use will be required under any contract requiring hauling on established roads.

Monitoring:

For implementation monitoring please refer to "Prescription Objectives". This section is presented in both narrative form and in a table format that provides a summary of quantifiable variables to be measured during and after prescribed treatments. Effective implementation monitoring should rely on both quantitative and qualitative monitoring, with analysis of both by knowledgeable personnel. Invariably, integration of the two forms of monitoring will provide the most comprehensive and accurate assessment of outcomes. If this process is done well, it should produce results that provide impetus for adaptive management and improvement of both planning and implementation of future work in AFR. With new information and understandings developing rapidly, additional adjustments to planned activities should also be encouraged in the ongoing spirit of adaptive management.

Treatment effectiveness can be guided by the sections "Land Management Goals and Objectives", "Desired Future Dynamics" and "Desired Future Conditions". Effectiveness will be measured and analyzed over various spatial and temporal scales, including both stand level and landscape level assessments. A strong monitoring component has been integral to the development of AFR. The Ashland Forest Resiliency's Monitoring Plan will provide a comprehensive assessment of the project's overall effectiveness.

Silvicultural Prescription – AFR Block 02, Subunit 28w

Prescriber: Marty Main **Date: May, 2011**

Field Checked by: COA crew, Prescriber, Cert. Silviculturist **Date: May-June 2011**

Certified Silviculturist: _____ **Date:** 8-5-11

Associated Project: Ashland Forest Resiliency
Associated NEPA: Ashland Forest Resiliency FEIS, ROD
5th Field Watershed: Bear Creek

Stand Identity & Current Condition

Table 1.1 Current Stand Attributes

Location - Stand	Acres	Plant Assoc. *	Site Index (DF, 50yrs)	Elevation (feet)	Average % Slope (range)	Aspect (degrees)	Trees Per Acre (>4.5')	Basal Area (ft^2/ac)	Estimated Tree Canopy Cover** (>0 dbh)	Quadratic Mean Diameter (>0" dbh)	RDI
135070-0429	17	ABCO/BENE2; ABCO-PSME/ROGY:	80-85	4700-4850	23 (10-34)	92-174	642	153	72	6.6	0.38

**Plant Association from Atzet, et al. 1996.*

**Canopy cover is the percent of a stand's ground area covered by the downward projection of all tree canopies within a stand. Individual point data (crown closure) was systematically collected with a densiometer and averaged to arrive at canopy cover estimates.

Subunit Description / Context

Subunit 28w is situated on gentle (10-25%) easterly to southeasterly aspects. The upper westernmost portion of the stand is located in a saddle of the major ridgeline system that is a key topographical feature from a wildfire management perspective. The Plant Association is primarily ABCO-BENE2, but grading into the ABCO-PSME/ROGY Plant Association in the upper portions of the subunit along the rocky ridgeline. Estimated 50 year site index for Douglas-fir is 80-85.

The lower portion of the subunit was clearcut (along with adjacent Subunit 28x) in the early 1960s, with a few scattered residual conifers left at that time. Growth and vigor of the developing stand on these more easterly aspects in this subunit has been better than in the more southerly aspects of Subunit 28x, and now contains a more significant component of larger conifers. It is currently a closed canopy, mid-seral, relatively even-aged 50-65 year old dense stand not uncommonly ranging up to 200 BA/A. Good stand differentiation has produced vigorous 14-22" dbh relatively disease-free WF and DF (and a few Shasta fir!). The clearcut was particularly effective at removing any existing dwarf mistletoe in Douglas-fir, although patches of retained severely infected overstory exist in small patches, especially on the edges of the subunit adjacent Stands 28v, 28y and 31f where dwarf mistletoe infected Douglas-fir was retained and is now in advanced severity classes. Ponderosa pine planted following the clearcut are rarely part of the current overstory, although there are few pine that are currently dominant in the subunit. . The upper northwesterly portion of the subunit comprising the saddle and ridgeline was not harvested in the 1960's and currently contains an active laminated root disease pocket which has produced a high number of snags and CWM from mortality of overstory white fir and Douglas-fir (in combination with high severity dwarf mistletoe in overstory Douglas-firin this area). This has resulted in an existing canopy gap in this saddle, which has mostly been naturally regenerated with Cohort 3 conifers and hardwoods, primarily white fir, Douiglas-fir, Pacific madrone and chinquapin, with a resulting low estimated canopy cover (compared with 80% or greater throughout most of the remainder of the stand). The dense Cohort 3 vegetation, coupled with high fuel loading

rom root-disease related downed wood, has resulted in a very fire-prone fuel profile, particularly undesirable in this strategically important location from a wildfire management perspective. The existing canopy gap is continuing to expand as the root diseases expand, with ongoing mortality of overstory white fir and Douglas-fir on the edges. The gentler slopes and possibilities for ground-based harvest systems allowed inclusion of this saddle/ridgeline area into a single subunit. Overall, the total subunit is comprised of primarily 8-22" dbh Douglas-fir (43 TPA, 40 BA/A) and white fir (71tpa, 60ba), which collectively comprise close to 90% of the total stand basal area. About 5 additional larger DF and WF (currently 26-32"+ dbh) are scattered throughout the subunit, but are particularly evident in the upper westernmost portion of the stand in or near the small saddle along the ridgeline. Pacific madrone is relatively uncommon (25 tpa) in Subunit 28w except in the northernmost corner of the stand along the ridge where rockier shallower soils encourage more hardwood development. Several large superdominant pines, both sugar and ponderosa, exist but are rare. Current stand densities are moderate for the stand as a whole (153 BA/A; RDI= 0.38), but that includes the several areas at the top of the subunit in which stocking levels are reduced from either laminated root disease and/or rockier shallow soils on the ridgeline. Average dwarf mistletoe infection in the subunit is low to moderate overall, with 9.5% infected, but at a relatively high average severity of 3.89. Although snag totals are moderate (17/acre), they are all Douglas-fir > 10" dbh (especially abundant in the laminated root disease pocket) and have a QMD of 18.4". Downed wood >3" diameter is also moderate, averaging 31 tons/acre for the subunit as a whole.

Land Management Goals & Parameters:

Table 2.1 Management Direction

Management Allocation:	Restricted Watershed (RRNF LRMP) Managed Watershed (RRNF LRMP) Late Successional Reserve (NWFP)
Project NEPA:	Ashland Forest Resiliency FEIS, ROD
NEPA Purpose & Need:	The **Need** for action is urgent reduction of the potential for large-scale, high-severity wildland fire in the Upper Bear landscape. One hundred years of fire exclusion and fuel accumulations in this forest's wildland/urban interface now presents high potential for large-scale, high-severity wildland fire that could significantly interrupt the supply of clean water and late-successional and old-growth forest ecosystems in this Analysis Area. The **Purpose** of the action is to protect Values at Risk, reduce hazardous fuels, reduce crown fire potential, and create forest conditions that are more resilient to wildland fires.

AFR Strategic Category and Purpose:

Strategic Ridgelines: Treatments along Strategic Ridgelines are designed to: 1) reduce the extent of wildland fire severity by limiting the amount of area affected by wildland fire, 2) create areas where fire suppression efforts can be conducted more safely and effectively, 3) break up continuity of fuels over a large landscape, and 4) serve as anchor points for further area-wide treatments, such as prescribed fire and maintenance burning (AFR FEIS, 2008). All of Block 2 was designated as a Strategic Ridgeline in the ROD except for Subunits 29a and 79a.

Desired Future Dynamics

The goal for management of this subunit is to alter stand structures, densities and composition, and do so in spatial patterns that will encourage the restoration of functional processes more closely resembling the historical occurrence of

more frequent but lower to moderate severity disturbance, primarily fire. This will allow opportunities to optimize landscape level wildfire management, while indirectly providing for the habitat needs of late successional dependent species and protection of municipal water supplies by reducing the spatial extent of high severity fire. Stand structures will be more open with increased structural heterogeneity and small gap development with associated with greater horizontal fuel discontinuities. General thinning-from-below will also improve vertical fuel discontinuity, decreasing the potential for active crown fire. Following this initial entry that reduces stand densities, improves tree and stand vigor and minimizes undesirable impacts associated with insects and disease, species composition will shift towards a greater percentage of pines and Douglas-fir, and a decreased percentage of white fir, with a small amount of intermixed hardwoods (especially in the rockier soils and laminated root disease pocket in the upper portions of the subunit). Fire may then begin to be the primary driver of stand dynamics, through wildland fire use and/or the application of prescribed fire, although ecologically appropriate silvicultural activities will likely still continue to be applied, including additional variable density thinning in the future, in order to maintain structural heterogeneity and continue improvements in species compositions towards a more mixed conifer type. Snags and downed wood will remain high in the foreseeable future, with snag numbers decreasing over time while CWM increases, at least until a more regular implementation of frequent fire occurs. Increased post-treatment grass and herbaceous understory development following thinning, especially in openings, should help protect surface soils, although potential for surface soil erosion is low on these gentle slopes.

Prescription Objectives:

Table 3.1 Desired Stand Attributes

AFR Subunit	Location-Stand	Existing Forest Type*	Trees Per Acre* (>4.5')	Basal Area (ft^2/ac.)* (>0 dbh)	Quadratic Mean Diameter* (>0 dbh)	RDI* (>0 dbh)	Estimated Tree Canopy Cover** (>0 dbh)
28w	6135070-0429	PSME-ABCO	168-281	106-141	10-11	0..25-0. 34	50-65

* Target ranges are for the stand average, including gaps and retention areas outside of riparian areas or landslide hazard zones. Variations outside of listed range at any one location are expected and desirable.

**Canopy cover is the percent of a stands ground area covered by the downward projection of all tree canopies within a stand. All canopy covers are targeted to remain above a minimum average of 40% per subunit. "Estimated Tree Canopy Cover" is an estimate of expected post-treatment canopy cover based on desired residual densities. It is intended to be a rough guide only and not an actual target.

Desired Future Condition (DFC): *Conditions change over time and space; this DFC reflects the desired future condition over the majority of the stand one to three growing seasons after treatment:*

A reduction in stand density utilizing variable density thinning improves stand vigor, while enhancing structural heterogeneity in the stand, increasing mean QMD, improving species compositions by decreasing white fir abundance and increasing pines and Douglas-fir, while building, over time, tree and stand resistance to effects of low severity disturbances from insects, disease and/or fire. More open stand conditions with small, gap-scale openings increase the vigor of retained overstory pines and Douglas-fir, reduce dwarf mistletoe abundance in Douglas-fir and allow for establishment of the next cohort of trees, particularly more shade intolerant pines, and hardwoods in the laminated root disease pocket. The diversity of understory species, including various grasses, herbaceous vegetation and others more shade intolerant species, is increased, particularly in canopy gaps.

Treatments to Achieve Management Objective (DFC):

Silvicultural activities are applied in three general classifications of tree structure in Block 2, referred to as cohorts. Cohort 1 trees are generally those that are 150-300+ years of age and 30 to 60" dbh (and occasionally as high as 80" dbh in the project area); Cohort 2 trees 60-140 years of age and 12-30" dbh (and occasionally as high as 35+" dbh); and

Cohort 3 trees 1-50 years of age and 1-10" dbh (and occasionally as high as 18" dbh). For a more complete description of cohorts, the following specified treatments, and the landscape context in which they are applied, see "A Landscape Scale Approach to Management of Multiple Values in AFR: Block 2".

The following treatments are the primary silvicultural activities to be implemented in Subunit 28w.

Variable density thinning

1. Utilizes thinning from below, radial thinning, and/or general stand density reduction
2. Creates, enhances and/or maintains gaps, skips and/or clumps of vegetation at various spatial scales
3. Promote establishment and development of vigorous multi-age, multi-species cohorts, including hardwoods
4. Creates horizontal and vertical discontinuity of ladder and canopy fuels
5. Promotes spatial, structural, and species diversity favorable for wildlife

Radial thinning

1. Originally designed as a stand-alone treatment, radial thinning is combined with other treatment types to aggressively release preferred Cohort 1 trees by removing Cohort 2 and 3 trees to create a separation (up to 20') whenever possible between crowns. Additionally reduces stand densities out tp a radius of twice the dripline, or 30-50 feet from legacy bole, in order to optimize release of preferred legacy tree, depending on species, while considering other multiple objectives as well.
2. Promotes resilience and "hang-time" of Cohort 1 legacy trees; retains important seed sources for natural regeneration of more shade intolerant conifers; provides anchors for future variable density thinning.
3. Increases horizontal and vertical discontinuity of ladder and canopy fuels, and begins to build increasing structural heterogeneity is existing stands.

Thinning-from-below

1. Improves retained tree and stand vigor and minimizes long-term potential for insect related mortality by re-distributing growth onto fewer larger trees, resulting in increased quadratic mean diameter (QMD) for the stand
2. Removes relatively smaller and less vigorous trees from primarily intermediate and suppressed crown classes
3. Maintains sufficient canopy closure and full-site occupancy by retained trees to retard understory ladder fuel development; maintains/promotes high canopy base height and good vertical discontinuity of fuels.
4. Speeds development of older tree structures and potential for development of late-seral stand conditions
5. Includes more thorough release of legacy and/or the largest, healthiest trees of desired species, size classes, or growth forms.

Individual tree and small group thinning of dwarf mistletoe infected Douglas-fir

1. Reduces abundance of dwarf mistletoe in Douglas-fir on a landscape scale by targeting treatment of infected trees, primarily of Cohorts 2 and 3 in order to promote development of large Douglas-fir trees and to limit dwarf mistletoe abundance and spread, on both a stand and landscape level (see Douglas-fir Dwarf Mistletoe Stand Severity Rating Map in "A Landscape Level Approach to Management of Multiple Values in AFR: Block 2")

Non-commercial surface and ladder fuel thinnings

1. Retains most vigorous of trees of desired species and re-distributes growth and vigor onto these trees and helps grow those into larger size classes in shorter periods of time
2. Removes less vigorous and/or other trees with undesirable characteristics for meeting subunit level goals
3. Re-established more desirable species compositions and/or those currently underrepresented in species, size classes, and/or growth forms; reduces abundance of white fir
4. Reduces ladder fuels and increases height-to-crown base, creating more favorable fire management conditions
5. Prepares the site for safe application of prescribed fire regime of low severity in the future
6. Can be used to maintain or enhance existing structural diversity in the overstory
7. Can be used to remove all trees of a given species within 50' of a dwarf mistletoe infected retained overstory tree

of the same species.

Ladder and Activity Fuel Piling & Burning

1. Reduces activity generated available fuels within the subunit.
2. Maintains/improves stands ability to modify landscape fire behavior by limiting canopy fire
3. Places piles strategically to minimize damage to retained trees/vegetation and associated resource values
4. Prepares stands for application of low severity prescribed fire
5. Leaves 1-2 slash piles per acre as wildlife habitat

Planting

1. Seed native grasses or forbs after pile burning or prescribed fire that exposes patches of more than 100 ft_2 of mineral soil under consultation with the Forest Botanist; also consider seeding any skid roads or areas disturbed during ground-based logging operations.
2. Promptly after treatments, assess the stand for areas with the potential to sustain successful pine regeneration (it is expected that such opportunities will be limited in the first entry associated with the current treatments)
3. As opportunities become available that are favorable to pine establishment, plant ponderosa pine and/or rust resistant sugar pine seedlings to add greater species diversity of favorable seed sources
4. Certified silviculturist will ensure appropriate timing, planting stock, and densities based on present site conditions and planned activities
5. Plant in first season following initial treatment to capture the narrow window of opportunity before incoming vegetation becomes a serious impediment to conifer establishment; take advantage of site resource availability in that first season
6. Assess development of competing vegetation to consider the need for treatment(s) to release any planted (and desired natural regeneration) seedlings until they are well established

Treatment Narrative

An aggressive stand density reduction, both commercial and non-commercial, to create more optimal fire management conditions, improve tree vigor, shift species composition and deal with root disease-related issues is suggested for Stand 28w. This is particularly important given the saddle location and associated ridge at the upper end of the subunit, a strategically important location from a wildfire management perspective. Variable density thinning is recommended for the subunit as a whole, given the wide range of issues and opportunities, and the inherent need for flexibility in treatment type. In dense younger stands initiated after the early 1960s clearcut, thinning-from-below is the primary treatment type. Vigorous Douglas-fir greater than 8" dbh should be a priority for retention with aggressive thinning in their vicinity in order to grow uninfected larger Douglas-fir as quickly as possible. White fir, although less preferred than Douglas-fir in most locations in this subunit, is still a reasonable leave tree when currently large and vigorous. Non-host white fir should be retained in areas where dwarf mistletoe infected overstory Douglas-fir are going to be retained, such as in a 50' strip on the edges of the subunit with adjacent Stand 28y. Uncommon vigorous overstory ponderosa pine and unusual (at this elevation) Shasta fir should also be retained to optimize species diversity in this stand – a hedge against long-term expansion of root disease into this area. Creation/enhancement of small canopy gaps in this area by removing dwarf mistletoe infected Douglas-fir and aggressive removal of low vigor white fir can also be utilized to create structural and species diversity, perhaps with a small amount of planting of pines and incense cedar in these small openings when appropriate. In the laminated root disease pocket in the high priority wildfire management area, non-commercial thinning and pruning should be aggressive to reduce horizontal continuity of fuels and vegetation. Emphasize retention of non-host species (pines, hardwoods) as much as possible, with retention of Douglas-fir and white fir not desirable in this setting. Low densities and intentional creation of small openings are also desired in this area to maximize wildfire management opportunities in this strategically important saddle location. Planting of ponderosa pine, rust-resistant sugar pine and incense cedar should occur post-treatment in these small openings created in the Cohort 3 vegetation. Removal

f merchantable Douglas-fir and white fir on the edges of the expanding root disease pocket is also important, especially Douglas-fir with moderate to high severities of dwarf mistletoe that are an elevated wildfire management issue in this strategically important location. In the rocky areas along the ridge in the northern most portion of the stand, non-commercially thinning to create reduced stand densities and more favorable wildfire management opportunities is also prioritized, while specifically retaining larger Pacific madrone and/or chinquapin well-selected for survival on these harsher sites. Activity fuels should be piled and burned in this subunit; some utilization of traditionally non-commercial by-products of thinning may be possible if ground-based harvesting is feasible. Fuel treatment should be particularly aggressive in the saddle/ laminated root disease pocket, with additional root disease related downed fuels aggressively piled and burned as well. Ongoing monitoring of treatments and response over time will be particularly important in this area, in the least to insure that ongoing root disease related mortality of white fir and Douglas-fir of all sizes and resulting compromise of wildfire management potentials is addressed through ongoing fuels treatments. Post-treatment stand densities following these initial treatments should be 106-141 BA/A (RDI 0.25-0.34) for the subunit as a whole, although considerable variation should occur given the range of site conditions and associated stand objectives, including maintenance/creation/enhancement of openings. Radially thinning around Cohort 1 conifers and hardwoods, although rare in the subunit, is also a priority.

Applicable Project Criteria, Mitigation Measures, & Resource Coordination:

Slope Stability/Soil Resource Protection	Understory Vegetation- Thinning of stands, even lightly, should stimulate development of understory grasses, herbaceous vegetation, and other understory vegetation that can also provide protection form excess surface soil erosion.
Forest Health	Pines above 3" in diameter that need to be cut may be designated at any time, but they will be cut between August and December *unless t*hey are immediately disposed of by burning, chipping, scoring, or removed as a product prior to the springtime flight of the beetles (usually between March and May). Pines that are above the maximum size required for piling and burning should not be cut unless a specific plan is made for their removal, consumption and/or other practice to make them unavailable for potential beetle habitat (e.g. bark removal). Dwarf mistletoe in Douglas-fir should be significantly reduced in this subunit; any infected trees found should be treated, primarily by falling and removal. Options for treatment of dwarf mistletoe in Douglas-fir include: 1) falling infected tree 2) girdling infected trees and retaining in place in areas deficient of snags or large woody debris, 3) isolation of dwarf mistletoe infection to reduce spread by converting to non-host species (e.g. hardwoods, other non-host conifers) around an infected conifer(s), 4) retaining infected trees in places where they are less likely to spread, such as in low spots in the topography (e.g., draws), as opposed to ridges or other high locations where seeds can spread much longer distances, 5) encouraging vigorous growth in dense stands of Douglas-fir or white fir that can occasionally shade out and kill low level infections of shade intolerant dwarf mistletoe, 6) clumping the distribution of infected trees into small widely separated groups thereby reducing spread and levels of contiguous infection, and 7) minimizing potential infection in those areas currently free dwarf mistletoe. Retain non-host species (pines, hardwoods, incense cedar, shrubs) in laminated root disease pocket in subunit. Pile and burn both existing and created slash to

	reduce fuels and fire potential. Fresh cut stumps of true fir will be protected from inoculation by Annosus root disease through the application of Sporax, or other approved product containing borax, on fresh cut stumps 12" dbh and larger within 24 hours following falling.
Wildlife	Efforts will be made to retain trees, vegetation and land formations with evidence of use by wildlife (e.g. bird or wood rat nests, burrows, cavities, and hollows, etc.). Large hardwoods have a disproportionate high amount of use by a number of wildlife species (including fishers elsewhere in their range), particularly given their somewhat uncommon occurrence in Block 2. Radial thinning and other silvicultural practices that encourage the long-term viability of large hardwoods in Block 2 will be encouraged. Unthinned patches in each subunit ("skips") will be used to provide additional cover and habitat diversity. Small gaps of 0.1-0.5 acres and occasionally larger incorporated in appropriate locations will add greater structural and species diversity, essential elements of wildlife habitat improvement, and will be particularly important for those species that utilize the early successional vegetation associated with these openings.
Snags and Coarse Woody Material	Snags will be retained unless they pose a threat to worker safety or pose a fire risk. Snags greater than 10 inches dbh that require felling for safety reasons will be left long and contour felled across the slope to serve as coarse woody debris. Landscape level management of snags and/or coarse woody material are discussed in "A Landscape Approach to Management of Multiple Values in AFR: Block 2").
Prescribed Underburning	The following criteria must be met before fire is prescribed and implemented as a maintenance or stand driver under this prescription: -Conditions, including stand vigor and composition, must favor low severity fire effects. -Burning can be accomplished at intensities that will retain duff layers in an amount and distribution that prevents unacceptable levels of surface soil erosion and sediment delivery off-site. Effective ground cover should be protected such that 70% is retained after one season and 85% after 2 seasons. -Stand and individual tree vigor are such that the application of prescribed underburning will not unduly stress preferred leave trees and contribute to untimely mortality. -Protection of desired structures (i.e. Cohort 1 overstory trees, desired regeneration) may require pre-treatment prior to burning (immediately before or up to 2-3 years before) in order to protect highly desired features from unnecessary scorch, crown damage, cambial heating, soil heating or other fire-related injury. In these cases practices such as removing duff and ladder fuels

	and/or fuel accumulations away from the tree bole; spring burning; burning during cool, moist and/or windy conditions to quickly dissipate heat delivery to the tree boles and root systems; slow and careful ignition patterns, and/or other practices can help minimize damage to these features. The assessment by a certified silviculturist of preparatory needs, mitigation measures, and sequence of treatments will ensure integration of the multiple treatment objectives and management goals. It is currently expected that favorable conditions across Subunit 28w will not likely be reached immediately after this initial thinning treatment.
Hydrology	The implementation of silvicultural activities in the Ashland watershed is strongly dependent on outcomes that protect the municipal water supply for the City of Ashland, and water and sediment from Subunit 28w ultimately drains into Reeder Reservoir. The absence of draws and drainages in Subunit 28w, and the long distance to these hydrological features, make the subunit less of an issue from this perspective. Silvicultural practices implemented (e.g. fuels management and wildfire reduction) can also indirectly protect municipal water objectives, as the overall decrease in the likelihood and size of high severity fire decreases the risk associated with increase sediment delivery that accompanies large-scale, high-severity wildfire events; Ground-based logging systems may be considered for use in Subunit 28w if soil disturbance can be kept at 5% or less; mitigation of potential impacts from ground-based logging activities will be needed during and after harvest operations (pre-designated skid roads, dry season only operations, effective skid road drainage structures installed, etc). Portions of the subunit may also be harvested utilizing helicopter logging systems, even further minimizing ground disturbance and effects on hydrologic function. Roads serve as extensions of the hydrologic network, increasing both the rapidity and size of hydrologic response during major storm events, thereby increasing the potential for significant erosion, sediment delivery and flooding. No new roads are proposed in Block 2, although opening of the old road through the subunit may be considered to facilitate harvesting, with eventual closing and putting-to-bed of the road following use. Maintenance of existing roads prior to, during and following use is prioritized
Botanical Resources	Before marking begins the Forest Botanist must be consulted to address any potential PETS species presence and mitigation measures necessary.
Native Grass Seeding	Seeding when appropriate to encourage native plant establishment in the herbaceous vegetation layer may follow burning activities. Seeding with native grasses may help impede non-native species invasion, discourage development of more fire-prone shrub species, and add diversity to the plant communities. Factors that will influence a choice to initiate native grass seeding are elevation, aspect, proximity to non-native plants already encroaching from the urban and

	valley areas, pre-treatment herbaceous plant cover and diversity, extent and intensity of disturbance associated with harvest or burning, and if a need is perceived for erosion control seeding. Native forb seed may be included in seed mixes in the future for similar reasons. At this time, the Forest Service has native grass seed grown from local wild ecotypes but no native forb seed meeting the same source criteria. The decision to apply native grass seed will be made collectively by the certified silviculturist and the Forest or District Botanist. Seed mixes tailored to the stand would be provided by the Forest or District Botanist.
Noxious Weeds	If noxious weed sites are discovered during implementation, these need to be mitigated. Project leaders, work crew leaders, and crew members have a choice at noxious weed sites; the infested sites must either be avoided entirely or their noxious weeds must be fully "treated" before silvicultural treatments occur there. Treatment for noxious weed removal normally means pull, cut, or grub out (depending on species) all the noxious weed plants present and pile the material for later burning. Clean pants cuffs, pockets, boot soles, clothing, tools, machinery, and vehicles of soil or plant parts before proceeding to new areas. Identifying these locations on a map, GPS, etc and sharing that information with appropriate AFR personnel will allow for future return to these sites to insure long-term success at eradication, such as during post-burn monitoring efforts. Noxious weed sites along roads traveling to and from work areas do not need to be treated or reported unless those roadsides are part of actual treatment units or are used as work staging areas. Klamath weed (St. John's wort) and bull thistle are common and widespread noxious weeds in SW Oregon. The Forest Service makes no attempt to prevent their spread or control their abundance during project activity. Hence AFR noxious weed mitigations will not be applied to these two species.
Cultural Resources	Any cultural resource, or potential cultural resource, discovered during the implementation of this project will be cause for immediate cessation of any site-altering activity, with immediate notification of appropriate project personnel. Upon review by a qualified cultural resource specialist, the area of significance may be delineated on the ground and removed from the treatment area.
Other Resource Coordination	Respective resource surveys have been completed and there are no other known issues within the stand to be treated. If there are any findings to the contrary at any time, actions to protect resources will be taken immediately and respective specialist(s) will be notified. Activities prescribed would then be reassessed. Cooperation and coordination between all partners, specialists, workers and other interested and involved parties is necessary to protect and promote the multiple

	values and resources that exist in the project area. This prescription is the vehicle to develop that coordination and integration of objectives, and it is this prescription that ultimately serves to document agreed course of actions and ultimately prescribes treatments and activities (even, and especially, as a need arises to adapt the initial course). Any and all changes needed in treatment activities, timing, and/or sequence of activities prescribed herein as a result of changing conditions on the ground, changes in our partnerships or other organizational capacity, change in scientific understanding, and/or change in management direction; need to be documented and integrated into this or a new prescription by a certified silviculturist prior to those changes being implemented.

Harvest Systems & Transportation:

Logging Systems	The type of logging system(s) and the feasibility of removals without compromising important ecological objectives will be determined prior to initiation of operations. Such consideration will have to meet soil protection measures and result in no greater than 5% detrimental soil conditions across the subunit's area (not including the permanent transportation system). In Block 2, helicopter logging will be the primary system used. Ground-based logging systems may be able to be utilized in Subunit 28w, which contains slope gradients of less than 20%+/- over portions of the subunit. Utilization of ground-based harvest systems may allow some utilization of some traditionally non-merchantable material.
Landings	Only existing helicopter landings or hot logging on existing roads are currently approved for use during helicopter logging. It is expected that only three existing landings will be utilized in Block 2. Any new proposed landings must be approved by the Contracting Office Representative (COR) and amended in this prescription by a certified silviculturalist. Landing restoration after completion of use shall be overseen by a qualified soil scientist, botanist, and/or other pertinent resource specialist(s). Seeding of landings with native grasses immediately following cessation of use may minimize noxious, non-native plant establishment. Monitoring for noxious non-native plants invading the landings should be conducted for at least 3 years following cessation of use, and appropriate efforts of eradication undertaken when found. In addition, any opportunities for landing erosion/sediment to enter the aquatic network will be addressed both during use, and during restoration efforts immediately following cessation of landing use. A pre-existing old landing and associated access road (now grown over) from the 1962 harvest may be able to be re-opened and utilized if utilization of ground-based systems is desired.
Hauling and Road Use	Forest Service Road 2060 will be used to access treatment areas. There is a high

	level of recreational use of this road. Road signs must be posted on both sides of treatment areas warning forest users of activities during implementation. All vehicles will obey posted speed limits and be constantly aware of potential interaction with recreational users. Signs and/or temporary trail closures may also be needed during on-the-ground application of silvicultural activities in the vicinity of established trails. Road maintenance returning roads to a high standard of functionality following cessation of use will be required under any contract requiring hauling on established roads.

Monitoring:

For implementation monitoring please refer to "Prescription Objectives". This section is presented in both narrative form and in a table format that provides a summary of quantifiable variables to be measured during and after prescribed treatments. Effective implementation monitoring should rely on both quantitative and qualitative monitoring, with analysis of both by knowledgeable personnel. Invariably, integration of the two forms of monitoring will provide the most comprehensive and accurate assessment of outcomes. If this process is done well, it should produce results that provide impetus for adaptive management and improvement of both planning and implementation of future work in AFR. With new information and understandings developing rapidly, additional adjustments to planned activities should also be encouraged in the ongoing spirit of adaptive management.

Treatment effectiveness can be guided by the sections "Land Management Goals and Objectives", "Desired Future Dynamics" and "Desired Future Conditions". Effectiveness will be measured and analyzed over various spatial and temporal scales, including both stand level and landscape level assessments. A strong monitoring component has been integral to the development of AFR. The Ashland Forest Resiliency's Monitoring Plan will provide a comprehensive assessment of the project's overall effectiveness.

Silvicultural Prescription – AFR Block 02, Subunit 28y

Prescriber: Marty Main **Date: May, 2011**

Field Checked by: COA crew, Prescriber, Cert. Silviculturist **Date: May-June 2011**

Certified Silviculturist: _____ **Date:** 8-5-11

Associated Project: Ashland Forest Resiliency
Associated NEPA: Ashland Forest Resiliency FEIS, ROD
5th Field Watershed: Bear Creek

Stand Identity & Current Condition

Table 1.1 Current Stand Attributes

Location - Stand	Acres	Plant Assoc. *	Site Index (DF, 50yrs)	Elevation (feet)	Average % Slope (range)	Aspect (degrees)	Trees Per Acre (>4.5')	Basal Area (ft^2/ac)	Estimated Tree Canopy Cover** (>0 dbh)	Quadratic Mean Diameter (>0" dbh)	RDI
135010-0430	8	ABCO/BENE2	80-90	4600-4900	35 (24-48)	79-114	524	338	81	10.9	0.85

Plant Association from Atzet, et al. 1996.
**Canopy cover is the percent of a stand's ground area covered by the downward projection of all tree canopies within a stand. Individual point data (crown closure) was systematically collected with a densiometer and averaged to arrive at canopy cover estimates.

Subunit Context/Description

Stand 28y is located on 10 to 50% easterly slopes towards the south end of Block 2. It is a productive site dominated by the ABCO-BENE2 Plant Association, grading into the ABCO-PSME/ROGY Plant Association in the rockier sites at the top of the subunit along the main ridgeline.

The stand in 28y is unique in Block 2 in that it is a small remnant of a largely unharvested mature forest. The stand in the subunit is dominated by a dense overstory of primarily 18"+ dbh Douglas-fir (48tpa) and to a lesser extent ponderosa pine (19tpa), including 22 tpa> 32" dbh. This is the closest representation of a mature forest condition in Block 2 even though the Douglas-fir in the stand were initiated around 140 years ago (i.e it does not fit the age classification for Cohort 1). Estimated canopy cover of 81% and QMD>=5 of 22.1 for the stand and 27-28 for ponderosa pine and Douglas-fir certainly fit the traditional definitions of older mature forest. Surprisingly, coarse woody material amounts are low (12 tons/acre; 436 total pieces/acre, with none in the 20"+ size class) which might not be surprising given that most of the trees are even-aged, without significant mortality during the last 140 years. A less abundant older tree component of ponderosa pine and Douglas-fir 35-50" dbh suggest that the older forest condition was more of a mixed species composition than the stand initiated around 1870+/-, much more dominated by Douglas-fir. Most of the existing stand is primarily a two cohort stand, missing the middle layer found more commonly in other harvested portions of Block 2. Only 34 tpa (all WF) comprise the 10-16" dbh size class, and these primarily occur in the uppermost rocky portions along the ridge where smaller stature conifers and Pacific madrone are more abundant. The understory includes 400 seedlings and small saplings of primarily white fir and Douglas-fir 4.5'-4"dbh per acre. This stand expresses the dominance of Douglas-fir that likely existed throughout much of Block 2 on more southeasterly to northerly aspects prior to high-grading of this species in the early-to-mid 1960's harvests. Dwarf mistletoe is abundant (22% infection; average severity .28- a high number given the height of the stand in this subunit) in this subunit, especially in the lower half, likely aggravated by early changes in disturbance regimes (i.e. less fire) and harvesting in adjacent subunits on the edges of this

narrow stand, allowing more light to stimulate growth of dwarf mistletoe. The long term prognosis for these infected overstory Douglas-fir is poor given the advanced stages of the dwarf mistletoe, as well as the existing high basal areas (338 ft^2/ac.) and relative density index (0.85). In fact, considerable mortality of the overstory has already occurred-currently at 40 Douglas-fir snags per acre 12" dbh and larger, including 12/acre ranging from 16-30" dbh. As these fall down, coarse woody material amounts will increase quickly, further improving habitat values for the Pacific fisher, for which a block of retained habitat was set-aside at the bottom of Subunit 28y. In its current condition, the mature forest in Stand 28 is excellent wildlife habitat, of a type that is rare in Block2. It is too small to be of significant value, however, although it does serve as an example of a habitat type that was likely more common prior to the harvesting in the area in the mid-1960s.

Land Management Goals & Parameters:

Table 2.1 Management Direction

Management Allocation:	Restricted Watershed (RRNF LRMP) Late Successional Reserve (NWFP)
Project NEPA:	Ashland Forest Resiliency FEIS, ROD
NEPA Purpose & Need:	The **Need** for action is urgent reduction of the potential for large-scale, high-severity wildland fire in the Upper Bear landscape. One hundred years of fire exclusion and fuel accumulations in this forest's wildland/urban interface now presents high potential for large-scale, high-severity wildland fire that could significantly interrupt the supply of clean water and late-successional and old-growth forest ecosystems in this Analysis Area. The **Purpose** of the action is to protect Values at Risk, reduce hazardous fuels, reduce crown fire potential, and create forest conditions that are more resilient to wildland fires.

AFR Strategic Category and Purpose:

Strategic Ridgelines: Treatments along Strategic Ridgelines are designed to: 1) reduce the extent of wildland fire severity by limiting the amount of area affected by wildland fire, 2) create areas where fire suppression efforts can be conducted more safely and effectively, 3) break up continuity of fuels over a large landscape, and 4) serve as anchor points for further area-wide treatments, such as prescribed fire and maintenance burning (AFR FEIS, 2008). All of Block 2, was designated as a Strategic Ridgeline in the ROD except for Subunits 29a and 79a..

Desired Future Dynamics

The goal for management of this subunit is to alter stand structures, densities and composition and do so in spatial patterns that will encourage the restoration of functional processes more closely resembling the historical occurrence of more frequent but lower to moderate severity disturbance, while concurrently adjusting stand and vegetation conditions to optimize habitat conditions for important mature forest conditions and species such as spotted owls, fishers, and other key species. This initial entry in a portion of the subunit will reduce stand densities, improves tree and stand vigor, maintain existing structural heterogeneity, accelerate large tree development and improve stand characteristics fro a wildfire management perspective Fire may then begin to be the primary driver of stand dynamics, through wildland fire use nd/or the application of prescribed fire, although ecologically appropriate silvicultural activities will likely still continue to be applied, including additional variable density thinning in the future, in order to maintain structural heterogeneity and

continue improvements in development of older mature forest characteristics. Snags and downed wood will remain high in the foreseeable future and with falling will increase CWM (including larger diameter pieces favorable for fisher habitat), at least until a more regular implementation of frequent underburning occurs. Increased post-treatment grass and herbaceous understory development following thinning should help protect surface soils.

Prescription Objectives:

Table 3.1 Desired Stand Attributes

AFR Subunit	Location-Stand	Existing Forest Type*	Trees Per Acre* (>4.5')	Basal Area (ft^2/ac.)* (>0 dbh)	Quadratic Mean Diameter* (>0 dbh)	RDI* (>0 dbh)	Estimated Tree Canopy Cover** (>0 dbh)
28y	6135010-o430	PSME-PIPO	350-480	240-270	10-11	0..60-0.70	65-75

* Target ranges are for the stand average, including gaps and retention areas outside of riparian areas or landslide hazard zones. Variations outside of listed range at any one location are expected and desirable.

**Canopy cover is the percent of a stands ground area covered by the downward projection of all tree canopies within a stand. All canopy covers are targeted to remain above a minimum average of 40% per subunit. "Estimated Tree Canopy Cover" is an estimate of expected post-treatment canopy cover based on desired residual densities. It is intended to be a rough guide only and not an actual target.

Desired Future Condition (DFC): *Conditions change over time and space; this DFC reflects the desired future condition over the majority of the stand one to three growing seasons after treatment:*

A reduction in stand density through thinning-from-below and limited radial thinning in the upper half (approximate) of he subunit improves leave tree vigor and accelerates development of large trees, while maintaining structural heterogeneity in the stand and slowly increasing replacement dwarfmistletoe infected overstory Douglas-fir. Non-commercial thinning in the upper half of the subunit and treatment of all activity fuels from both activities maintains vertical fuel discontinuities and improves wildfire management potentials along the ridgeline at the top of the subunit. The bottom half of the subunit remains mostly untreated, retaining mature forest values adjacent the fisher block located at the bottom of the subunit. The diversity of understory species, including various grasses, herbaceous vegetation and other more shade intolerant species, is increased in thinned areas. Snag numbers will remain high, and CWM will increase as snags fall, at least until fire returns as a primary driver of stand dynamics in the future.

Treatments to Achieve Management Objective (DFC):

Silvicultural activities are applied in three general classifications of tree structure in Block 2, referred to as cohorts. Cohort 1 trees are generally those that are 150-300+ years of age and 30 to 60" dbh (and occasionally as high as 80" dbh in the project area); Cohort 2 trees 60-140 years of age and 12-30" dbh (and occasionally as high as 35+" dbh); and Cohort 3 trees 1-50 years of age and 1-10" dbh (and occasionally as high as 18" dbh). For a more complete description of cohorts, the following specified treatments, and the landscape context in which they are applied, see "A Landscape Scale Approach to Management of Multiple Values in AFR: Block 2".

The following treatments are the primary silvicultural activities to be implemented in Subunit 28y.

Thinning-from-below

1. Improves retained tree and stand vigor and minimizes long-term potential for insect related mortality by re-distributing growth onto fewer larger trees, resulting in increased quadratic mean diameter (QMD) for the stand
2. Removes relatively smaller and less vigorous trees from primarily intermediate and suppressed crown classes
3. Maintains sufficient canopy closure and full-site occupancy by retained trees to retard understory ladder fuel

development; maintains/promotes high canopy base height and good vertical discontinuity of fuels.
4. Speeds development of older tree structures and potential for development of late-seral stand conditions
5. Includes more thorough release of legacy and/or the largest, healthiest trees of desired species, size classes, or growth forms.

Radial thinning

1. Originally designed as a stand-alone treatment, radial thinning is combined with other treatment types to aggressively release preferred Cohort 1 trees by removing Cohort 2 and 3 trees to create a separation (up to 20') whenever possible between crowns. Additionally reduces stand densities out tp a radius of twice the dripline, or 30-50 feet from legacy bole, in order to optimize release of preferred legacy tree, depending on species, while considering other multiple objectives as well.
2. Promotes resilience and "hang-time" of Cohort 1 legacy trees; retains important seed sources for natural regeneration of more shade intolerant conifers; provides anchors for future variable density thinning.
3. Increases horizontal and vertical discontinuity of ladder and canopy fuels, and begins to build increasing structural heterogeneity in existing stands.

Individual tree and small group thinning of dwarf mistletoe infected Douglas-fir

1. Retains/promotes dwarf mistletoe infected Douglas-fir in spatially explicit locations for immediate retention of important late-successional habitat for wildlife species.
2. Encourages long-term development of larger dwarf mistletoe infected Douglas-fir for future replacement habitat in spatially strategic locations.
3. Reduces abundance of dwarf mistletoe in Douglas-fir on a landscape scale by targeting treatment of infected trees, primarily of Cohorts 2 and 3 in order to promote development of large Douglas-fir trees and to limit dwarf mistletoe abundance and spread, on both a stand and landscape level (see Douglas-fir Dwarf Mistletoe Stand Severity Rating Map in "A Landscape Level Approach to Management of Multiple Values in AFR: Block 2".

Non-commercial surface and ladder fuel thinnings

1. Retains most vigorous of trees of desired species and re-distributes growth and vigor onto these trees and helps grow those into larger size classes in shorter periods of time
2. Removes less vigorous and/or other trees with undesirable characteristics for meeting subunit level goals
3. Re-established more desirable species compositions and/or those currently underrepresented in species, size classes, and/or growth forms
4. Reduces ladder fuels and increases height-to-crown base, creating more favorable fire management conditions
5. Prepares the site for safe application of prescribed fire regime of low severity in the future
6. Can be used to maintain or enhance existing structural diversity in the overstory
7. Can be used to remove all trees of a given species within 50' of a dwarf mistletoe infected retained overstory tree of the same species.

Ladder and Activity Fuel Piling & Burning

1. Reduces activity generated available fuels within the subunit.
2. Maintains/improves stands ability to modify landscape fire behavior by limiting canopy fire
3. Places piles strategically to minimize damage to retained trees/vegetation and associated resource values
4. Prepares stands for application of low severity prescribed fire
5. Leaves 3-4 slash piles per acre as wildlife habitat

Treatment Narrative

t is suggested that the lower half of Subunit 28y be largely left untreated at this time in order to retain its somewhat unique structural and species composition, and associated wildlife habitat values in Block 2. It is unlikely that

silvicultural treatments could retard the significant decline of the overstory Douglas-fir already heavily infected with dwarf mistletoe (severity classes 4, 5 and 6 are common). It is suspected that ongoing mortality of Douglas-fir in this area will continue to provide an ongoing supply of large Douglas-fir snags and coarse woody material well into the future, releasing the associated overstory pine and releasing developing understory vegetation, thereby moving this area on yet another stand development trajectory. The lack of a mid-story cohort allows for a moderate level of vertical fuel discontinuity currently, making the stand less prone to wildfire, although the relatively continuous overstory canopy with a high amount of dwarf mistletoe could certainly carry an active crown fire under the right fire weather conditions. In this lower half of the subunit, and outside of the fisher block, non-commercial surface and ladder fuel treatment around the several large, 200+ year old Cohort 1 pines is appropriate and prescribed. In the upper half of the subunit, dwarf mistletoe infection in Douglas-fir is patchier and includes some areas that appear to be largely devoid of dwarf mistletoe at this time. Commercial thinning-from-below in these areas can improve the vigor of retained trees, allowing them to grow into even larger size classes more rapidly in the future. Too, this partial harvest will likely increase dwarf mistletoe development in some of the retained Douglas-fir, and become replacement infected trees and sources for future snags and coarse woody material for fisher habitat and utilization. Radial thin around large Cohort 1 trees in this upper half of the subunit as well, particularly ponderosa pine. It is recommended that the uppermost 1-2 acres along the ridgeline at the top of Subunit 28y be non-commercially thinned to reduce ladder fuels and maintain fire management effectiveness in this strategically important location. Larger Pacific madrone is a good leave tree in this rocky, more open location. No non-commercial thinning is needed in the remainder of the subunit. Activity fuels from all treatments should be piled and burned.

Applicable Project Criteria, Mitigation Measures, & Resource Coordination:

Slope Stability/Soil Resource Protection	Understory Vegetation- Thinning of stands, even lightly, should stimulate development of understory grasses, herbaceous vegetation, and other understory vegetation that can also provide protection form excess surface soil erosion.
Forest Health	Options for treatment of dwarf mistletoe in Douglas-fir include: 1) falling infected tree 2) girdling infected trees and retaining in place in areas deficient of snags or large woody debris, 3) isolation of dwarf mistletoe infection to reduce spread by converting to non-host species (e.g. hardwoods, other non-host conifers) around an infected conifer(s), 4) retaining infected trees in places where they are less likely to spread, such as in low spots in the topography (e.g., draws), as opposed to ridges or other high locations where seeds can spread much longer distances, 5) encouraging vigorous growth in dense stands of Douglas-fir or white fir that can occasionally shade out and kill low level infections of shade intolerant dwarf mistletoe, 6) clumping the distribution of infected trees into small widely separated groups thereby reducing spread and levels of contiguous infection, and 7) minimizing potential infection in those areas currently free dwarf mistletoe. In the upper half of the subunit, falling and removal of dwarf mistletoe infected (severity classes 2-6) Douglas-fir should be the primary treatment type.
	Efforts will be made to retain trees, vegetation and land formations with evidence of use by wildlife (e.g. bird or wood rat nests, burrows, cavities, and hollows, etc.). Large hardwoods have a disproportionate high amount of use by a number

Wildlife	of wildlife species (including fishers elsewhere in their range), particularly given their somewhat uncommon occurrence in Block 2. Radial thinning and other silvicultural practices that encourage the long-term viability of large hardwoods in Block 2 will be encouraged. Unthinned patches in each subunit ("skips") will be used to provide additional cover and habitat diversity. Small existing canopy gaps of 0.1-0.5 acres and occasionally larger add greater structural and species diversity, essential elements of wildlife habitat improvement. No silvicultural treatments are allowed in fisher blocks
Snags and Coarse Woody Material	Snags will be retained unless they pose a threat to worker safety or pose a fire risk. Snags greater than 10 inches dbh that require felling for safety reasons will be left long and contour felled across the slope to serve as coarse woody debris. Landscape level management of snags and/or coarse woody material are discussed in "A Landscape Approach to Management of Multiple Values in AFR: Block 2").
Hydrology	The implementation of silvicultural activities in the Ashland watershed is strongly dependent on outcomes that protect the municipal water supply for the City of Ashland. Water from Subunit 28y ultimately drains into Reeder Reservoir and elevates the importance of careful protection of soils and hydrologic function in this subunit. Silvicultural practices implemented (e.g. fuels management and wildfire reduction) can also indirectly protect municipal water objectives. Overall decrease in the likelihood and size of high severity fire decreases the risk associated with increase sediment delivery that accompanies large-scale, high-severity wildfire events; Helicopter logging systems, will minimize ground disturbance and effects on hydrologic function. A small portion of the subunit could be considered for ground-based logging which would require careful application and mitigation (see *Harvest Systems and Transportation* below. Roads serve as extensions of the hydrologic network, increasing both the rapidity and size of hydrologic response during major storm events, thereby increasing the potential for significant erosion, sediment delivery and flooding. No new roads are proposed in Block 2. Maintenance of existing roads prior to, during and following use is prioritized
Botanical Resources	Before marking begins the Forest Botanist must be consulted to address any potential PETS species presence and mitigation measures necessary.
	Seeding when appropriate to encourage native plant establishment in the herbaceous vegetation layer may follow burning activities. Seeding with native grasses may help impede non-native species invasion, discourage development of more fire-prone shrub species, and add diversity to the plant communities. Factors that will influence a choice to initiate native grass seeding are elevation,

Native Grass Seeding	aspect, proximity to non-native plants already encroaching from the urban and valley areas, pre-treatment herbaceous plant cover and diversity, extent and intensity of disturbance associated with harvest or burning, and if a need is perceived for erosion control seeding. Native forb seed may be included in seed mixes in the future for similar reasons. At this time, the Forest Service has native grass seed grown from local wild ecotypes but no native forb seed meeting the same source criteria. The decision to apply native grass seed will be made collectively by the certified silviculturist and the Forest or District Botanist. Seed mixes tailored to the stand would be provided by the Forest or District Botanist.
Noxious Weeds	If noxious weed sites are discovered during implementation, these need to be mitigated. Project leaders, work crew leaders, and crew members have a choice at noxious weed sites; the infested sites must either be avoided entirely or their noxious weeds must be fully "treated" before silvicultural treatments occur there. Treatment for noxious weed removal normally means pull, cut, or grub out (depending on species) all the noxious weed plants present and pile the material for later burning. Clean pants cuffs, pockets, boot soles, clothing, tools, machinery, and vehicles of soil or plant parts before proceeding to new areas. Identifying these locations on a map, GPS, etc and sharing that information with appropriate AFR personnel will allow for future return to these sites to insure long-term success at eradication, such as during post-burn monitoring efforts. Noxious weed sites along roads traveling to and from work areas do not need to be treated or reported unless those roadsides are part of actual treatment units or are used as work staging areas. Klamath weed (St. John's wort) and bull thistle are common and widespread noxious weeds in SW Oregon. The Forest Service makes no attempt to prevent their spread or control their abundance during project activity. Hence AFR noxious weed mitigations will not be applied to these two species.
Cultural Resources	Any cultural resource, or potential cultural resource, discovered during the implementation of this project will be cause for immediate cessation of any site-altering activity, with immediate notification of appropriate project personnel. Upon review by a qualified cultural resource specialist, the area of significance may be delineated on the ground and removed from the treatment area.
Other Resource Coordination	Respective resource surveys have been completed and there are no other known issues within the stand to be treated. If there are any findings to the contrary at any time, actions to protect resources will be taken immediately and respective specialist(s) will be notified. Activities prescribed would then be reassessed. Cooperation and coordination between all partners, specialists, workers and other

	interested and involved parties is necessary to protect and promote the multiple values and resources that exist in the project area. This prescription is the vehicle to develop that coordination and integration of objectives, and it is this prescription that ultimately serves to document agreed course of actions and ultimately prescribes treatments and activities (even, and especially, as a need arises to adapt the initial course). Any and all changes needed in treatment activities, timing, and/or sequence of activities prescribed herein as a result of changing conditions on the ground, changes in our partnerships or other organizational capacity, change in scientific understanding, and/or change in management direction; need to be documented and integrated into this or a new prescription by a certified silviculturist prior to those changes being implemented.

Harvest Systems & Transportation:

Logging Systems	The type of logging system(s) and the feasibility of removals without compromising important ecological objectives will be determined prior to initiation of operations. Such consideration will have to meet soil protection measures and result in no greater than 5% detrimental soil conditions across the subunit's area (not including the permanent transportation system). In this subunit, helicopter logging will be the primary system used, although there is a possibility that ground-based logging could be considered in a portion of the subunit.
Landings	Only existing landings or hot logging on existing roads are currently approved for use. It is expected that only three existing landings will be utilized in Block 2. Any new proposed landings must be approved by the Contracting Office Representative (COR) and amended in this prescription by a certified silviculturalist. Landing restoration after completion of use shall be overseen by a qualified soil scientist, botanist, and/or other pertinent resource specialist(s). Seeding of landings with native grasses immediately following cessation of use may minimize noxious, non-native plant establishment. Monitoring for noxious non-native plants invading the landings should be conducted for at least 3 years following cessation of use, and appropriate efforts of eradication undertaken when found. In addition, any opportunities for landing erosion/sediment to enter the aquatic network will be addressed both during use, and during restoration efforts immediately following cessation of landing use.
Hauling and Road Use	Forest Service Road 2060 will be used to access treatment areas. There is a high level of recreational use of this road. Road signs must be posted on both sides of treatment areas warning forest users of activities during implementation. All vehicles will obey posted speed limits and be constantly aware of potential interaction with recreational users. Signs and/or temporary trail closures may also be needed during on-the-ground application of silvicultural activities in the

	vicinity of established trails. Road maintenance returning roads to a high standard of functionality following cessation of use will be required under any contract requiring hauling on established roads.

Monitoring:

For implementation monitoring please refer to "Prescription Objectives". This section is presented in both narrative form and in a table format that provides a summary of quantifiable variables to be measured during and after prescribed treatments. Effective implementation monitoring should rely on both quantitative and qualitative monitoring, with analysis of both by knowledgeable personnel. Invariably, integration of the two forms of monitoring will provide the most comprehensive and accurate assessment of outcomes. If this process is done well, it should produce results that provide impetus for adaptive management and improvement of both planning and implementation of future work in AFR. With new information and understandings developing rapidly, additional adjustments to planned activities should also be encouraged in the ongoing spirit of adaptive management.

Treatment effectiveness can be guided by the sections "Land Management Goals and Objectives", "Desired Future Dynamics" and "Desired Future Conditions". Effectiveness will be measured and analyzed over various spatial and temporal scales, including both stand level and landscape level assessments. A strong monitoring component has been integral to the development of AFR. The Ashland Forest Resiliency's Monitoring Plan will provide a comprehensive assessment of the project's overall effectiveness.

Silvicultural Prescription – AFR Block 02, Subunit 28z

Prescriber: Marty Main **Date: May, 2011**

Field Checked by: COA crew, Prescriber, Cert. Silviculturist **Date: May-June 2011**

Certified Silviculturist: _____ **Date:** 8-5-11

Associated Project: Ashland Forest Resiliency
Associated NEPA: Ashland Forest Resiliency FEIS, ROD
5th Field Watershed: Bear Creek

Stand Identity & Current Condition

Table 1.1 Current Stand Attributes

Location - Stand	Acres	Plant Assoc. *	Site Index (DF, 50yrs)	Elevation (feet)	Average % Slope (range)	Aspect (degrees)	Trees Per Acre (>4.5')	Basal Area (ft^2/ac.)	Estimated Tree Canopy Cover (>0 dbh)	Quadratic Mean Diameter (>0" dbh)	RDI
6135090-0474	17	ABCO-PSME/ROGY	70-80	4750-5000	39 (27-50)	86-190	809	253	87	7.6	0.74

**Plant Association from Atzet, et al. 1996.*
*Canopy cover is the percent of a stand's ground area covered by the downward projection of all tree canopies within a stand. Individual point data (crown closure) was systematically collected with a densiometer and averaged to arrive at canopy cover estimates.

Stand Description / Context

Subunit 28z is located on 25-55% southerly to southeasterly aspects at the south end of Block 2 next to Horn Gap. The Plant Association is ABCO-PSME/ROGY, the driest plant association in the White Fir series. On the more southerly aspects in the subunit, it is transitional with the Dry Douglas-fir PAG (PSME-ABCO/SYMO Plant Association), but the higher elevation of this subunit (4750-5000') produces cooler, moister conditions and vegetation outside of the Dry Douglas-fir PAG. Fifty year site index for Douglas-fir is 70-80, with site productivity increasing on more easterly aspects and decreasing on southerly aspects and towards ridgeline locations. A small area in the westernmost portion of the subunit is within the home range of a spotted owl nest site.

Subunit 28z is a very dense stand, particularly for a more southerly aspect, with the second highest RDI in Block 2- 0.74 and an associated high estimated canopy cover of 87%. This is due to an extremely high number (658) of white fir and Douglas-fir up to 12" dbh, with white fir more abundant on more easterly aspects. Pacific madrone is an uncommon hardwood (32/acre) in this size class, and tends to be most prevalent in rocky outcrops, particularly in ridgeline locations, where it occurs with more drought tolerant greenleaf manzanita. Golden chinquapin is uncommon in the subunit. Larger Cohort 2 size classes are less common in the subunit- only 18 tpa of DF and 11 tpa of white fir in the 14-22" dbh size class, and rarely ponderosa pine. Both ponderosa and sugar pine of all sizes are significantly more vigorous than the firs on the more southerly aspects in this subunit. Subunit 28z is also unique in the presence of 10 tpa of larger ponderosa pine 28"+ dbh, of which 6 tpa are 33-50"+ dbh. In addition, there are scattered considerably less common older sugar pine, Douglas-fir and incense cedar of a similar age and size class. However, all of these larger, older conifers are immediately threatened with density and insect-related mortality; there are already 5 snags/acre of this age/size class in the unit. Dwarf mistletoe is also lightly to moderately established in spots in these Cohort 1 ponderosa pine. Original stand conditions were likely a much more open mixed-conifer stand condition heavily dominated by large pines on these

nore southerly aspects. It has since filled in with abundant conifers since the last major disturbance event , in this case, suspected to have been the 1910 wildfire event which started in the Wagner Creek drainage and burned southeasterly up and through this area, and underburned through this subunit before proceeding into the mid to upper portions of the Ashland watershed above the 2060 Road- an area that forms a large part of the current drainage area for Reeder Reservoir and the water supply for the City of Ashland. Ridgelines like at the top of Subunit 28z, and associated more open southerly aspects on the back side of an advancing wildfire, are critical locations providing opportunities for stopping an advancing wildfire that would likely burn today with even greater severities than in 1910 given the high fuel loading in the Inventoried Roadless Area to the north and west of Subunit 28z. The high ridgeline and upper third slope location, low QMD's (7.6 for >0; 11.7 for >5) and low amounts of coarse woody material (169 pieces/acre; 2nd lowest in Block 2, but not unexpected in these historically more open forests with likely frequent low-to-moderate fire) suggest this is not high priority owl or fisher habitat. Total snags are also low (13/acre), although this includes a high number of larger snags 30"+ dbh (5/acre). Dwarf mistletoe is well-established in Douglas-fir throughout the subunit, with a high infection rate (30.8%) and average severity (4.67). The generally smaller size classes of Douglas-fir in the subunit makes it unlikely that future large brooms for wildlife utilization will develop and be supported in these smaller trees. Dwarf mistletoe also occurs in white fir and ponderosa pine in the subunit.

Land Management Goals & Parameters:

Table 2.1 Management Direction

Management Allocation:	Restricted Watershed (RRNF LRMP) Late Successional Reserve (NWFP)
Project NEPA:	Ashland Forest Resiliency FEIS, ROD
NEPA Purpose & Need:	The **Need** for action is urgent reduction of the potential for large-scale, high-severity wildland fire in the Upper Bear landscape. One hundred years of fire exclusion and fuel accumulations in this forest's wildland/urban interface now presents high potential for large-scale, high-severity wildland fire that could significantly interrupt the supply of clean water and late-successional and old-growth forest ecosystems in this Analysis Area. The **Purpose** of the action is to protect Values at Risk, reduce hazardous fuels, reduce crown fire potential, and create forest conditions that are more resilient to wildland fires.

AFR Strategic Category and Purpose:

Strategic Ridgelines: Treatments along Strategic Ridgelines are designed to: 1) reduce the extent of wildland fire severity by limiting the amount of area affected by wildland fire, 2) create areas where fire suppression efforts can be conducted more safely and effectively, 3) break up continuity of fuels over a large landscape, and 4) serve as anchor points for further area-wide treatments, such as prescribed fire and maintenance burning (AFR FEIS, 2008). All of Block 2 was designated as a Strategic Ridgeline in the ROD except for Subunits 29a and 79a.

Desired Future Dynamics

The goal for management of this subunit is to alter stand structures, densities and composition, and do so in spatial patterns that will encourage the restoration of functional processes more closely resembling the historical occurrence of nore frequent but lower to moderate severity disturbance, primarily fire. This will allow opportunities to optimize landscape level wildfire management, while indirectly providing for the habitat needs of late successional dependent

pecies and protection of municipal water supplies by reducing the spatial extent of high severity fire. Stand structures will be more open and heterogeneous, with greater horizontal fuel discontinuities after this initial entry reduces stand densities and builds tree and stand vigor. Post-treatment stand structures, reduced fuel levels and spatial arrangements of fuels and vegetation will begin to allow for frequent low to moderate severity fire as the primary driver of stand dynamics and ecosystem function through wildland fire use and/or the application of prescribed fire, although ecologically appropriate silvicultural activities will likely still continue to be applied, including additional variable density thinning in the future, in order to maintain structural heterogeneity and continue improvements in species compositions towards a more mixed conifer type. Stand structures, reduced fuel levels and spatial arrangements of fuels and vegetation will allow for frequent low to moderate severity fire as the primary driver of stand dynamics and ecosystem function. Until low severity fire can be relied upon to be the primary driver of stand dynamics, through wildland fire use and/or the application of prescribed fire, ecologically appropriate silvicultural activities will continue to be applied, including additional variable density thinning in the future, followed by necessary post-treatment fuels treatments. These silvicultural activities will be implemented to restore less fire prone structural characteristics of forests and help provide vegetational characteristics that can emulate those that allowed historic disturbance regimes, while favoring return to a species composition more adapted to the site, including a higher percentage of pines and Douglas-fir. Snags and downed wood will increase in the near future due to expected snag recruitment and ongoing incorporation into down wood, but will decrease in the long run once fire becomes the primary driver of stand dynamics. Increased post-treatment grass and herbaceous understory development following thinning, as well as establishment of shade intolerant pines, especially in openings, should help protect surface soils and reduce sediment accumulation in draws.

Prescription Objectives:

Table 3.1 Desired Stand Attributes

AFR Subunit	Location-Stand	Existing Forest Type*	Trees Per Acre* (>4.5')	Basal Area (ft^2/ac.)* (>0 dbh)	Quadratic Mean Diameter* (>0 dbh)	RDI* (>0 dbh)	Estimated Tree Canopy Cover** (>0 dbh)	Minimum Down Pieces Created (ave. per acre)
28z	6135090-0474	PIPO-PSME	138-253	114-159	11-12	0.33-0.45	55-70	na

* Target ranges are for the stand average, including gaps and retention areas outside of riparian areas or landslide hazard zones. Variations outside of listed range at any one location are expected and desirable.

**Canopy cover is the percent of a stands ground area covered by the downward projection of all tree canopies within a stand. All canopy covers are targeted to remain above a minimum average of 40% per subunit. "Estimated Tree Canopy Cover" is an estimate of expected post-treatment canopy cover based on desired residual densities. It is intended to be a rough guide only and not an actual target.

Desired Future Condition (DFC): *Conditions change over time and space; this DFC reflects the desired future condition over the majority of the stand one to three growing seasons after treatment:*

A reduction in stand density utilizing variable density thinning releases overstory Cohort 1 conifers, develops canopy gaps and creates greater structural heterogeneity in the stand, reduces abundance of white fir,, improves leave tree vigor (including reduction of dwarf mistletoe in white fir and Douglas-fir), increases mean QMD and builds tree and stand resistance to fire, insect and/or disease-related mortality. Fuel amounts and continuities are reduced in both horizontal and vertical directions, increasing fire tolerance and wildfire management potentials. More open stand conditions with numerous small, gap-scale openings allow for establishment of the next cohort, including planted or naturally regenerated pines. The diversity of understory species, including various grasses, herbaceous vegetation and others more shade intolerant species, is increased, particularly in existing canopy gaps. Soils will remain relatively undisturbed and surface erosion minimal.

Treatments to Achieve Management Objective (DFC):

Silvicultural activities are applied in three general classifications of tree structure in Block 2, referred to as cohorts. Cohort 1 trees are generally those that are 150-300+ years of age and 30 to 60" dbh (and occasionally as high as 80" dbh in the project area); Cohort 2 trees 60-140 years of age and 12-30" dbh (and occasionally as high as 35+" dbh); and Cohort 3 trees 1-50 years of age and 1-10" dbh (and occasionally as high as 18" dbh). For a more complete description of cohorts, the following specified treatments, and the landscape context in which they are applied, see "A Landscape Scale Approach to Management of Multiple Values in AFR: Block 2".

The following treatments are the primary silvicultural activities to be implemented in Subunit 28z.

Variable density thinning

1. Utilizes thinning from below, radial thinning, selection thinning and/or general stand density reduction
2. Creates, enhances and/or maintains gaps, skips and/or clumps of vegetation at various spatial scales
3. Promote establishment and development of vigorous multi-age, multi-species cohorts, including hardwoods
4. Creates horizontal and vertical discontinuity of ladder and canopy fuels
5. Promotes spatial, structural, and species diversity favorable for wildlife

Radial thinning

1. Originally designed as a stand-alone treatment, radial thinning is combined with other treatment types to aggressively release preferred Cohort 1 trees by removing Cohort 2 and 3 trees to create a separation (up to 20') whenever possible between crowns. Additionally reduces stand densities out tp a radius of twice the dripline, or 30-50 feet from legacy bole, in order to optimize release of preferred legacy tree, depending on species, while considering other multiple objectives as well.
2. Promotes resilience and "hang-time" of Cohort 1 legacy trees; retains important seed sources for natural regeneration of more shade intolerant conifers; provides anchors for future variable deusity thinning.
3. Increases horizontal and vertical discontinuity of ladder and canopy fuels, and begins to build increasing structural heterogeneity is existing stands.

Thinning-from-below

1. Improves retained tree and stand vigor and minimizes long-term potential for insect related mortality by re-distributing growth onto fewer larger trees, resulting in increased quadratic mean diameter (QMD) for the stand
2. Removes relatively smaller and less vigorous trees from primarily intermediate and suppressed crown classes
3. Maintains sufficient canopy closure and full-site occupancy by retained trees to retard uuderstory ladder fuel development; maintains/promotes high canopy base height and good vertical discontinuity of fuels.
4. Speeds development of older tree structures and potential for development of more mature stand conditions
5. Includes more thorough release of legacy and/or the largest, healthiest trees of desired species, size classes, or growth forms.

Individual tree and small group thinning of dwarf mistletoe infected Douglas-fir

1. Reduces abundance of dwarf mistletoe in Douglas-fir on a landscape scale by targeting treatment of infected trees, primarily of Cohorts 2 and 3 in order to promote development of large Douglas-fir trees and to limit dwarf mistletoe abundance and spread, on both a stand and landscape level (see Douglas-fir Dwarf Mistletoe Stand Severity Rating Map in "A Landscape Level Approach to Management of Multiple Values in AFR: Block 2")

Non-commercial surface and ladder fuel thinnings

1. Retains most vigorous of trees of desired species and re-distributes growth and vigor onto these trees and helps grow those into larger size classes in shorter periods of time
2. Removes less vigorous and/or other trees with undesirable characteristics for meeting subunit level goals
3. Re-established more desirable species compositions and/or those currently underrepresented in species, size classes, and/or growth forms

4. Reduces ladder fuels and increases height-to-crown base, creating more favorable fire management conditions
5. Prepares the site for safe application of prescribed fire regime of low severity in the future
6. Can be used to maintain or enhance existing structural diversity in the overstory
7. Can be used to remove all trees of a given species within 50' of a dwarf mistletoe infected retained overstory tree of the same species.

Ladder and Activity Fuel Piling & Burning

1. Reduces activity generated available fuels within the subunit.
2. Maintains/improves stands ability to modify landscape fire behavior by limiting canopy fire
3. Places piles strategically to miuimize damage to retained trees/vegetation and associated resource values
4. Prepares stands for application of low severity prescribed fire
5. Leaves 1-2 slash piles per acre as wildlife habitat

Planting

1. Seed native grasses or forbs after pile burning or prescribed fire that exposes patches of more than 100 ft_2 of mineral soil under consultation with the Forest Botanist
2. Promptly after treatments, assess the stand for areas with the potential to sustain successful pine regeneration (it is expected that such opportunities will be limited in the first entry associated with the current treatments)
3. As opportunities become available that are favorable to pine establishment, plant ponderosa pine and/or rust resistant sugar pine seedlings to add greater species diversity of favorable seed sources
4. Certified silviculturist will ensure appropriate timing, planting stock, and densities based on present site conditions and planned activities
5. Plant in first season following initial treatment to capture the narrow window of opportunity before incoming vegetation becomes a serious impediment to conifer establishment; take advantage of site resource availability in that first season
6. Assess development of competing vegetation to consider the need for treatment(s) to release any planted (and desired natural regeneration) seedlings until they are well established

Treatment Narrative

Stand density reduction in both commercial and non-commercial conifer size classes (only non-commercial thinning within the 0.5 mile radius of the spotted owl nest in the westernmost portion of the subunit) should be a high priority in Subunit 28z, particularly given the very low vigor of the large overstory conifers. Treatment of non-commercial, surface and ladder fuels should be done in the 2011 operating season if possible to hasten release to the highly stressed desirable overstory, with additional commercial density management to follow where needed. During the non-commercial treatments, care should be taken to retain merchantable size classes of conifers (generally 8-9" dbh and larger) to be removed within 1-2 years following in the first helicopter thinning in the project. Piling and burning will have to occur after both silvicultural thinnings, with special care given to removing both activity fuels and dead/downed fuels into piles at least 50' away from preferred overstory trees to minimize potential impacts during the burning process. Desired future condition is for a much more open stand, with an average basal area and RDI of 114-159 and .33-.45 respectively. Radial thinning around preferred Cohort 1 conifers (including ponderosa pine infected with dwarf mistletoe) is a high priority during silvicultural thinnings, and can contribute to the creation of small gaps 0.1-0.5 acres, ultimately comprising up to 15% (2.5 acres) of the post-treatment stands in the subunit. Although uncommon in the subunit, smaller size classes of pines should be retained if they can release following silvicultural thinnings; retaining pines with less than 25% crown ratios and >70 H:D ratios is not advised as they are unlikely to persist even after release.

In addition to the older larger desired Cohort 1 trees, retained leave trees should be the most vigorous of the 12- 22" dbh size class, with rare pines and incense cedar being the first choice, followed by vigorous Pacific madrone and dwarfmistletoe-free Douglas-fir. Increasing amounts of retained Douglas-fir and/or white fir are more appropriate on more easterly aspects. Retention of overstory trees at higher canopy closures to retard understory development is not a

priority in this subunit. Rather, greater horizontal fuel discontinuity and more open stand conditions should be created and maintained over time to provide important fire management benefits. This will require frequent application of low intensity prescribed underburning on a 7-15 year cycle, although it should not occur until at least 2-5 years after completion of the two silvicultural thinnings in order to allow the preferred leave trees to release, build vigor and resistance to potential fire induced damage and stress. Fireline intensity should be carefully moderated around the larger Cohort 1 trees, which should include pretreatment (rake duff, remove ladder fuels and other fuel accumulations, etc) prior to burning. Duff accumulations are higher on more easterly aspects than on more southerly aspects. Planting of ponderosa pine and rust-resistant sugar pine, and perhaps seeding of native grasses, should be considered after these initial treatments, and re-assessed after the first prescribed underburn. It is hoped that this series of treatments stabilizes decline of the larger tree component, and that future variable density thinnings can further improve stand densities to encourage more pine development over time.

Applicable Project Criteria, Mitigation Measures, & Resource Coordination:

Slope Stability/Soil Resource Protection	Understory Vegetation- Thinning of stands, even lightly, should stimulate development of understory grasses, herbaceous vegetation, and other understory vegetation that can also provide protection form excess surface soil erosion. Cool, low severity prescribed underburning should be conducted to protect effective ground cover such that 70% is retained after one season and 85% after 2 seasons. In areas outside of LHZ's where slopes are steeper than 75-80%; headwalls and concave slopes are steeper than 65-70%; slope breaks and discontinuities have lower slopes exceeding 65-70%; and/or inner gorges have slopes greater than 60%, stand density reduction should be avoided (e.g. "skips" can be located in these areas), or alternately, increased 10-30-% to increase root holding capacity and insure that closed canopy conditions re-occur again within 10 years. Hardwoods are not only deep rooted but also rapidly re-sprout following above-ground mortality, and should be favored for retention in these areas. Whenever possible, retaining higher than subunit average densities should be considered on all slopes greater than 65%.
Forest Health	Pines above 3" in diameter that need to be cut may be designated at any time, but they will be cut between August and December *unless t*hey are immediately disposed of by burning, chipping, scoring, or removed as a product prior to the springtime flight of the beetles (usually between March and May). Pines that are above the maximum size required for piling and burning should not be cut unless a specific plan is made for their removal, consumption and/or other practice to make them unavailable for potential beetle habitat (e.g. bark removal). Dwarf mistletoe in Douglas-fir should be significantly reduced in this subunit; any infected trees found should be treated, primarily by falling and removal (except in the portion of the subunit within the 0.5 mile radius of the spotted owl nest site). Overstory ponderosa pine with dwarf mistletoe should be retained and released in this entry, although falling and removal is one of the treatment types. White fir

	with dwarfmistletoe should be felled, and removed if merchantable. Options for treatment of dwarf mistletoe in Douglas-fir include: 1) falling infected tree 2) girdling infected trees and retaining in place in areas deficient of snags or large woody debris, 3) isolation of dwarf mistletoe infection to reduce spread by converting to non-host species (e.g. hardwoods, other non-host conifers) around an infected conifer(s), 4) retaining infected trees in places where they are less likely to spread, such as in low spots in the topography (e.g., draws), as opposed to ridges or other high locations where seeds can spread much longer distances, 5) encouraging vigorous growth in dense stands of Douglas-fir or white fir that can occasionally shade out and kill low level infections of shade intolerant dwarf mistletoe, 6) clumping the distribution of infected trees into small widely separated groups thereby reducing spread and levels of contiguous infection, and 7) minimizing potential infection in those areas currently free dwarf mistletoe.
Wildlife	Efforts will be made to retain trees, vegetation and land formations with evidence of use by wildlife (e.g. bird or wood rat nests, burrows, cavities, and hollows, etc.). Large hardwoods have a disproportionate high amount of use by a number of wildlife species (including fishers elsewhere in their range), particularly given their somewhat uncommon occurrence in Block 2. Radial thinning and other silvicultural practices that encourage the long-term viability of large hardwoods in Block 2 will be encouraged. Unthinned patches in each subunit ("skips") will be used to provide additional cover and habitat diversity. Small gaps of 0.1-0.5 acres and occasionally larger incorporated in appropriate locations will add greater structural and species diversity, essential elements of wildlife habitat improvement, and will be particularly important for those species that utilize the early successional vegetation associated with these openings. In the portion of the subunit that is within the 0.5 mile radius of a spotted owl nest site, only non-commercial thinning will be implemented.
Snags and Coarse Woody Material	Snags will be retained unless they pose a threat to worker safety or pose a fire risk. Snags greater than 10 inches dbh that require felling for safety reasons will be left long and contour felled across the slope to serve as coarse woody debris. Landscape level management of snags and/or coarse woody material are discussed in "A Landscape Approach to Management of Multiple Values in AFR: Block 2").
Prescribed Underburning	The following criteria must be met before fire is prescribed and implemented as a maintenance or stand driver under this prescription: -Conditions, including stand vigor and composition, must favor low severity fire effects. -Burning can be accomplished at intensities that will retain duff layers in an

	amount and distribution that prevents unacceptable levels of surface soil erosion and sediment delivery off-site. Effective ground cover should be protected such that 70% is retained after one season and 85% after 2 seasons. -Stand and individual tree vigor are such that the application of prescribed underburning will not unduly stress preferred leave trees and contribute to untimely mortality. -Protection of desired structures (i.e. Cohort 1 overstory trees, desired regeneration) may require pre-treatment prior to burning (immediately before or up to 2-3 years before) in order to protect highly desired features from unnecessary scorch, crown damage, cambial heating, soil heating or other fire-related injury. In these cases practices such as removing duff and ladder fuels and/or fuel accumulations away from the tree bole; spring burning; burning during cool, moist and/or windy conditions to quickly dissipate heat delivery to the tree boles and root systems; slow and careful ignition patterns, and/or other practices can help minimize damage to these features. The assessment by a certified silviculturist of preparatory needs, mitigation measures, and sequence of treatments will ensure integration of the multiple treatment objectives and management goals. It is currently expected that favorable conditions across Subunit 28z will not likely be reached immediately after this initial thinning treatment.
Hydrology	The implementation of silvicultural activities in the Ashland watershed is strongly dependent on outcomes that protect the municipal water supply for the City of Ashland. Water from Subunit 28z ultimately drains into Reeder Reservoir and elevates the importance of careful protection of soils and hydrologic function in this subunit. Practices implemented (e.g. fuels management and wildfire reduction) will indirectly protect municipal water objectives, as the overall decrease in the likelihood and size of high severity fire decreases the risk associated with increase sediment delivery that accompanies large-scale, high-severity wildfire events; Helicopter logging systems only will be used in Subunit 28z, minimizing ground disturbance and effects on hydrologic function. Some utilization of material may occur within 50' of existing roads. Roads serve as extensions of the hydrologic network, increasing both the rapidity and size of hydrologic response during major storm events, thereby increasing the potential for significant erosion, sediment delivery and flooding. No new roads are proposed in Block 2. Maintenance of existing roads prior to, during and following use is prioritized
Botanical Resources	Before marking begins the Forest Botanist must be consulted to address any potential PETS species presence and mitigation measures necessary.

Native Grass Seeding	Seeding when appropriate to encourage native plant establishment in the herbaceous vegetation layer may follow burning activities. Seeding with native grasses may help impede non-native species invasion, discourage development of more fire-prone shrub species, and add diversity to the plant communities. Factors that will influence a choice to initiate native grass seeding are elevation, aspect, proximity to non-native plants already encroaching from the urban and valley areas, pre-treatment herbaceous plant cover and diversity, extent and intensity of disturbance associated with harvest or burning, and if a need is perceived for erosion control seeding. Native forb seed may be included in seed mixes in the future for similar reasons. At this time, the Forest Service has native grass seed grown from local wild ecotypes but no native forb seed meeting the same source criteria. The decision to apply native grass seed will be made collectively by the certified silviculturist and the Forest or District Botanist. Seed mixes tailored to the stand would be provided by the Forest or District Botanist.
Noxious Weeds	If noxious weed sites are discovered during implementation, these need to be mitigated. Project leaders, work crew leaders, and crew members have a choice at noxious weed sites; the infested sites must either be avoided entirely or their noxious weeds must be fully "treated" before silvicultural treatments occur there. Treatment for noxious weed removal normally means pull, cut, or grub out (depending on species) all the noxious weed plants present and pile the material for later burning. Clean pants cuffs, pockets, boot soles, clothing, tools, machinery, and vehicles of soil or plant parts before proceeding to new areas. Identifying these locations on a map, GPS, etc and sharing that information with appropriate AFR personnel will allow for future return to these sites to insure long-term success at eradication, such as during post-burn monitoring efforts. Noxious weed sites along roads traveling to and from work areas do not need to be treated or reported unless those roadsides are part of actual treatment units or are used as work staging areas. Klamath weed (St. John's wort) and bull thistle are common and widespread noxious weeds in SW Oregon. The Forest Service makes no attempt to prevent their spread or control their abundance during project activity. Hence AFR noxious weed mitigations will not be applied to these two species.
Cultural Resources	Any cultural resource, or potential cultural resource, discovered during the implementation of this project will be cause for immediate cessation of any site-altering activity, with immediate notification of appropriate project personnel. Upon review by a qualified cultural resource specialist, the area of significance may be delineated on the ground and removed from the treatment area.
Other Resource	Respective resource surveys have been completed and there are no other known

Coordination	issues within the stand to be treated. If there are any findings to the contrary at any time, actions to protect resources will be taken immediately and respective specialist(s) will be notified. Activities prescribed would then be reassessed. Cooperation and coordination between all partners, specialists, workers and other interested and involved parties is necessary to protect and promote the multiple values and resources that exist in the project area. This prescription is the vehicle to develop that coordination and integration of objectives, and it is this prescription that ultimately serves to document agreed course of actions and ultimately prescribes treatments and activities (even, and especially, as a need arises to adapt the initial course). Any and all changes needed in treatment activities, timing, and/or sequence of activities prescribed herein as a result of changing conditions on the ground, changes in our partnerships or other organizational capacity, change in scientific understanding, and/or change in management direction; need to be documented and integrated into this or a new prescription by a certified silviculturist prior to those changes being implemented.

Harvest Systems & Transportation:

Logging Systems	The type of logging system(s) and the feasibility of removals without compromising important ecological objectives will be determined prior to initiation of operations. Such consideration will have to meet soil protection measures and result in no greater than 5% detrimental soil conditions across the subunit's area (not including the permanent transportation system). In Block 2, helicopter logging will be the primary system used. Where applicable, some utilization of merchantable and traditionally non-merchantable material may occur along roadsides in Block 2.
Landings	Only existing landings or hot logging on existing roads are currently approved for use. It is expected that only three existing landings will be utilized in Block 2. Any new proposed landings must be approved by the Contracting Office Representative (COR) and amended in this prescription by a certified silviculturalist. Landing restoration after completion of use shall be overseen by a qualified soil scientist, botanist, and/or other pertinent resource specialist(s). Seeding of landings with native grasses immediately following cessation of use may minimize noxious, non-native plant establishment. Monitoring for noxious non-native plants invading the landings should be conducted for at least 3 years following cessation of use, and appropriate efforts of eradication undertaken when found. In addition, any opportunities for landing erosion/sediment to enter the aquatic network will be addressed both during use, and during restoration efforts immediately following cessation of landing use.

Hauling and Road Use	Forest Service Road 2060 will be used to access treatment areas. There is a high level of recreational use of this road. Road signs must be posted on both sides of treatment areas warning forest users of activities during implementation. All vehicles will obey posted speed limits and be constantly aware of potential interaction with recreational users. Signs and/or temporary trail closures may also be needed during on-the-ground application of silvicultural activities in the vicinity of established trails. Road maintenance returning roads to a high standard of functionality following cessation of use will be required under any contract requiring hauling on established roads.

Monitoring:

For implementation monitoring please refer to "Prescription Objectives". This section is presented in both narrative form and in a table format that provides a summary of quantifiable variables to be measured during and after prescribed treatments. Effective implementation monitoring should rely on both quantitative and qualitative monitoring, with analysis of both by knowledgeable personnel. Invariably, integration of the two forms of monitoring will provide the most comprehensive and accurate assessment of outcomes. If this process is done well, it should produce results that provide impetus for adaptive management and improvement of both planning and implementation of future work in AFR. With new information and understandings developing rapidly, additional adjustments to planned activities should also be encouraged in the ongoing spirit of adaptive management.

Treatment effectiveness can be guided by the sections "Land Management Goals and Objectives", "Desired Future Dynamics" and "Desired Future Conditions". Effectiveness will be measured and analyzed over various spatial and temporal scales, including both stand level and landscape level assessments. A strong monitoring component has been integral to the development of AFR. The Ashland Forest Resiliency's Monitoring Plan will provide a comprehensive assessment of the project's overall effectiveness.

Silvicultural Prescription – AFR Block 02, Subunit 31a

Prescriber: Marty Main **Date: June 2011**

Field Checked by: COA crew, Prescriber **Date: June-July 2011**

Certified Silviculturist: _____ **Date:** 8-5-11

Associated Project: Ashland Forest Resiliency
Associated NEPA: Ashland Forest Resiliency FEIS, ROD
5th Field Watershed: Bear Creek

Stand Identity & Current Condition

Table 1.1 Current Stand Attributes

Location - Stand	Acres	Plant Assoc. *	Site Index (DF, 50yrs)	Elevation (feet)	Average % Slope (range)	Aspect (degrees)	Trees Per Acre (>4.5')	Basal Area (ft^2/ac.)	Estimated Tree Canopy Cover** (>0 dbh)	Quadratic Mean Diameter (>0" dbh)	RDI
6129050-0188	15	ABCO-PSME/ROGY; ABCO-BENE-;	85-90	4500-4750	42 (28-54)	242-59	452	174	78	8.4	0.53

Plant Association from Atzet, et al. 1996.

*Canopy cover is the percent of a stand's ground area covered by the downward projection of all tree canopies within a stand. Individual point data (crown closure) was systematically collected with a densiometer and averaged to arrive at canopy cover estimates.

Subunit Description / Context

Subunit 31a is located on moderate 30-50% westerly to northerly aspects in the upper third slope positions immediately below the ridgeline and old shaded fuel break of Subunit 31d. Plant Association in the subunit is primarily ABCO-PSME/ROGY, but grading into ABCO-BENE on more northerly aspects, with an estimated 50 year site index for Douglas-fir of 85-90.

Subunit 31a is dominated by a mixed species stand of hardwoods and conifers of all three cohorts, although primarily of Cohorts 2 and 3. It is moderately densely stocked with 174 BA/A (RDI 0.53) of primarily white fir (240 tpa > 4.5', 93 BA/A), Douglas-fir (51 tpa > 4.5', 19 BA/A) and Pacific madrone (146 tpa > 4.5', 28 BA/A). The madrone is smaller than the conifers (QMD>0 5.9), most commonly in the 6-10" dbh size class initiated within the last 50 years. A small amount of chinquapin is also found in the understory. White fir is the most common species in all size classes except those trees 32"+ dbh where 1-2 tpa of ponderosa pine, sugar pine, Douglas-fir and white fir exist. This is at least in part due to previous harvesting that focused on removal of larger Douglas-fir. Both Douglas-fir and white fir vigor is fair to poor in all size classes in this subunit, Douglas-fir dwarf mistletoe infection is of moderate abundance, but of high average severity. White fir is also infected with white fir dwarf mistletoe and associated Cytospora canker across all age classes. Overstory Cohort 1 of both species are generally heavily infected and in poor condition, with a number of snags of both species, but especially in the Cohort 2 size class, largely the result of dwarf mistletoe-related mortality. There are 50 total snags/acre, a moderately high number. Several small pockets of root disease are evident, with Armillaria suspected as the most abundant in this situation in both Douglas-fir and white fir. Coarse woody material is moderately high in the subunit (38 tons/acre, all less than 25" diameter).

Land Management Goals & Parameters:

Table 2.1 Management Direction

Management Allocation:	Restricted Watershed (RRNF LRMP) Middleground Partial Retention (RRNF LRMP), Late Successional Reserve (NWFP)
Project NEPA:	Ashland Forest Resiliency FEIS, ROD
NEPA Purpose & Need:	The **Need** for action is urgent reduction of the potential for large-scale, high-severity wildland fire in the Upper Bear landscape. One hundred years of fire exclusion and fuel accumulations in this forest's wildland/urban interface now presents high potential for large-scale, high-severity wildland fire that could significantly interrupt the supply of clean water and late-successional and old-growth forest ecosystems in this Analysis Area. The **Purpose** of the action is to protect Values at Risk, reduce hazardous fuels, reduce crown fire potential, and create forest conditions that are more resilient to wildland fires.

AFR Strategic Category and Purpose:

Strategic Ridgelines: Treatments along Strategic Ridgelines are designed to: 1) reduce the extent of wildland fire severity by limiting the amount of area affected by wildland fire, 2) create areas where fire suppression efforts can be conducted more safely and effectively, 3) break up continuity of fuels over a large landscape, and 4) serve as anchor points for further area-wide treatments, such as prescribed fire and maintenance burning (AFR FEIS, 2008). All of Block 2 was designated as a Strategic Ridgeline in the ROD except for Subunits 29a and 79a.

Desired Future Dynamics

The goal for management of this subunit is to alter stand structures, densities and composition, and do so in spatial patterns that will encourage the restoration of functional processes more closely resembling the historical occurrence of more frequent but lower to moderate severity disturbance, primarily fire. This will allow opportunities to optimize landscape level wildfire management, while indirectly providing for the habitat needs of late successional dependent species and protection of municipal water supplies by reducing the spatial extent of high severity fire. Multi-cohort stand structures will be maintained over the unit as a whole, while reducing stand densities to increase tree and stand vigor and improve wildfire management possibilities through implementation of stand management practices that improve horizontal and vertical fuel discontinuities. In addition, silvicultural activities are designed to reduce, over time, mortality associated with various root and foliage diseases in white fir and Douglas-fir, as well as from various insects in all species Snags and large downed wood will remain moderate to high in the foreseeable future in this strategic location. Post-treatment stand structures, reduced fuel levels and spatial arrangements of fuels and vegetation will allow for frequent low to moderate severity fire as the primary driver of stand dynamics and ecosystem function through wildland fire use and/or the application of prescribed fire. Fire may then begin to be the primary driver of stand dynamics, although ecologically appropriate silvicultural activities will likely still continue to be applied as needed. These silvicultural activities will be implemented to maintain/restore less fire prone structural characteristics of forests and help provide vegetational characteristics that can emulate those that allowed historic disturbance regimes. Increased post-treatment grass and herbaceous understory development following thinning, especially in openings, should help protect surface soils.

Prescription Objectives:

Table 3.1 Desired Stand Attributes

AFR Subunit	Location-Stand	Existing Forest Type*	Trees Per Acre* (>4.5')	Basal Area (ft^2/ac.)* (>0 dbh)	Quadratic Mean Diameter* (>0 dbh)	RDI* (>0 dbh)	Estimated Tree Canopy Cover** (>0 dbh)
31c	6129050-0188	PSME-PIPO-ARME-ABCO-	192-278	120-150	10-11	0.35-0.43	60-70

* Target ranges are for the stand average, including gaps and retention areas outside of riparian areas or landslide hazard zones. Variations outside of listed range at any one location are expected and desirable.
**Canopy cover is the percent of a stands ground area covered by the downward projection of all tree canopies within a stand. All canopy covers are targeted to remain above a minimum average of 40% per subunit. "Estimated Tree Canopy Cover" is an estimate of expected post-treatment canopy cover based on desired residual densities. It is intended to be a rough guide only and not an actual target.

Desired Future Condition (DFC): *Conditions change over time and space; this DFC reflects the desired future condition over the majority of the stand one to three growing seasons after treatment:*

A reduction in stand density, primarily by thinning-from-below of white fir and dwarfmistletoe infected Douglas-fir improves stand vigor, while retaining existing structural and species heterogeneity, increasing mean QMD, improving species compositions by decreasing white fir, and building, over time, tree and stand resistance to effects of low severity disturbances from insects, disease and/or primarily fire. Reduction in abundance of white fir and dwarf mistletoe infected Douglas-fir occurs. Stand density reduction, both commercial and non-commercial, followed by treatment of activity fuels, improves horizontal and vertical fuel discontinuities throughout the stand as a whole, especially in the upper 1/3 of the subunit. Existing small, gap-scale openings are retained in portions of the subunit where they already exist, and accentuated around root disease pockets, infections of dwarfmistletoe, and through radial thinning around Cohort 1 conifers. Snag and CWM amounts remain moderate (with high numbers of large snags) while the diversity of understory species, including various grasses, herbaceous vegetation and others more shade intolerant species, is increased, particularly in canopy gaps.

Treatments to Achieve Management Objective (DFC):

The following treatments are the primary silvicultural activities to be implemented in Subunit 31a. Silvicultural activities are applied in three general classifications of tree structure in Block 2, referred to as cohorts. Cohort 1 trees are generally those that are 150-300+ years of age and 30 to 60" dbh (and occasionally as high as 80" dbh in the project area); Cohort 2 trees 60-140 years of age and 12-30" dbh (and occasionally as high as 35+" dbh); and Cohort 3 trees 1-50 years of age and 1-10" dbh (and occasionally as high as 18" dbh). For a more complete description of cohorts, the following specified treatments, and the landscape context in which they are applied, see "A Landscape Scale Approach to Management of Multiple Values in AFR: Block 2".

The following treatments are the primary silvicultural activities to be implemented in Subunit 31a.

Variable density thinning

1. Utilizes thinning-from-below, radial thinning, selection thinning and general stand density reduction.
2. Creates, retains or enhances gaps, skips and/or clumps of vegetation at various spatial scales.
3. Promote establishment and development of vigorous multi-age, multi-species cohorts, including hardwoods.
4. Creates horizontal and vertical discontinuity of ladder and canopy fuels.
5. Promotes spatial, structural, and species diversity favorable for wildlife.

Thinning-from-below

1. Improves retained tree and stand vigor and minimizes long-term potential for insect related mortality by re-distributing growth onto fewer larger trees, resulting in increased quadratic mean diameter (QMD) for the stand
2. Removes relatively smaller and less vigorous trees from primarily intermediate and suppressed crown classes
3. Maintains sufficient canopy closure and full-site occupancy by retained trees to retard understory ladder fuel development; maintains/promotes high canopy base height and good vertical discontinuity of fuels.
4. Speeds development of older tree structures and potential for development of more mature stand conditions
5. Includes more thorough release of legacy and/or the largest, healthiest trees of desired species, size classes, or growth forms.

Radial thinning

1. Originally designed as a stand-alone treatment, radial thinning is combined with other treatment types to aggressively release preferred Cohort 1 trees by removing Cohort 2 and 3 trees to create a separation (up to 20') whenever possible between crowns. Additionally reduces stand densities out to a radius of twice the dripline, or 30-50 feet from legacy bole, in order to optimize release of preferred legacy tree, depending on species, while considering other multiple objectives as well.
2. Promotes resilience and "hang-time" of Cohort 1 legacy trees; retains important seed sources for natural regeneration of more shade intolerant conifers; provides anchors for future variable density thinning.
3. Increases horizontal and vertical discontinuity of ladder and canopy fuels, and begins to build increasing structural heterogeneity is existing stands.

Individual tree and small group thinning of dwarf mistletoe infected Douglas-fir

1. Reduces abundance of dwarf mistletoe in Douglas-fir on a landscape scale by targeting treatment of infected trees, primarily of Cohorts 2 and 3 in order to promote development of large Douglas-fir trees and to limit dwarf mistletoe abundance and spread, on both a stand and landscape level (see Douglas-fir Dwarf Mistletoe Stand Severity Rating Map in "A Landscape Level Approach to Management of Multiple Values in AFR: Block 2")

Non-commercial surface and ladder fuel thinnings

1. Retains most vigorous of trees of desired species and re-distributes growth and vigor onto these trees and helps grow those into larger size classes in shorter periods of time
2. Removes less vigorous and/or other trees with undesirable characteristics for meeting subunit level goals
3. Re-established more desirable species compositions and/or those currently underrepresented in species, size classes, and/or growth forms
4. Reduces ladder fuels and increases height-to-crown base, creating more favorable fire management conditions
5. Prepares the site for safe application of prescribed fire regime of low severity in the future
6. Can be used to maintain or enhance existing structural diversity in the overstory
7. Can be used to remove all trees of a given species within 50' of a dwarf mistletoe infected retained overstory tree of the same species.

Ladder and Activity Fuel Piling & Burning

1. Reduces activity generated available fuels within the subunit.
2. Maintains/improves stands ability to modify landscape fire behavior by limiting canopy fire
3. Places piles strategically to minimize damage to retained trees/vegetation and associated resource values
4. Prepares stands for application of low severity prescribed fire
5. Leaves 1-2 slash piles per acre as wildlife habitat

Prescribed fire

1. To be implemented on a maintenance schedule and to be a driver of stand dynamics only once conditions are ready and favorable to support desired goals and objectives described previously herein (also refer to resource coordination section; favorable conditions are not expected to be reached after this initial treatment)

2. Maintain low surface and ladder fuels
3. Maintain & improve the stands' ability to modify landscape fire behavior by limiting risk of active crown fire
4. Places special emphasis on protecting desired species from fire related mortality on a schedule that allows for the regeneration and development of multiple cohorts
5. Favors pine establishment and release by reducing competition and preparing favorable light conditions
6. An assessment of fuel conditions, desired tree regeneration, and competing vegetation should be made to determine the need to reduce fuels and the need to protect and/or maintain desired species compositions based on stated desired future dynamics prior to any prescribed fire
7. Assess conditions and consider the need for treatment 1 – 5 years after initial treatment, and then on a 7 – 20 year cycle

Treatment Narrative

This subunit lends itself to aggressive variable density thinning to encourage development of less shade tolerant Douglas-fir throughout the subunit. Vigorous, dwarf mistletoe-free Cohort 2 and 3 Douglas-fir should be anchor points for restoration throughout this subunit, as well as the uncommon Cohort 1 sugar pine throughout the subunit and ponderosa pine on more westerly aspects. This can be facilitated with aggressive thinning and/or gap development within their vicinity. White fir should generally be discouraged, although vigorous white fir in the 14-20+" dbh size class may be necessarily retained for needed structure. Retained BA/A overall post-treatment (i.e. following both commercial and non-commercial) should be 120-150 BA/A (RDI 0.35-0.43) with the lower end of that spectrum in the 100'-200' immediately below the old shaded fuelbreak of Subunit 31d. This area prioritized for wildfire management opportunities should also be an area, in association with small lateral ridges and/or rocky outcrops, where ponderosa pine and the hardwoods are the preferred species. Pines and hardwoods are also preferred for retention or establishment (through planting if necessary) in small existing root disease pockets in the subunit. Enlargement of gaps around small root disease centers by removing white fir may slow spread of root diseases in these areas. Gaps can also be created/enlarged in pockets of heavy dwarf mistletoe infected Douglas-fir and/or other pockets of low vigor white fir. Retention of dwarf mistletoe in Douglas-fir is a low priority in this subunit not topographically suitable for spotted owls, but strategically important from a wildfire management perspective. A recommended 15% of the subunit in can have 0.1-0.5 acre gaps created and occasionally larger ones maintained/enhanced on these more moderate slopes, with these areas contributing to final retained basal area targets. Stand management is designed to shift species compositions towards species more tolerant of and resistant to frequent low severity fire in the long-term. In the interim, white fir will be managed as a decreasing part of the stand composition, and Sporax should be applied to all white fir stumps 12" dbh and larger. Non-commercial thinning should focus on reducing ladder fuels in the subunit, maintaining/releasing healthy understory Douglas-fir where it occurs, and retaining a small amount of both hardwoods, especially in the vicinity of root disease pockets. All activity fuels and accumulations of downed natural fuels should be piled and burned in this treatment. Prescribed underburning can be initiated within several years following treatment (after retained trees have built vigor) and should be continued on a 7-15 year cycle. Following prescribed underburning, planting of pines (especially rust-resistant sugar pine) on more westerly aspects, and Douglas-fir and incense cedar throughout the subunit (and especially in canopy gaps), may be considered to assist in species composition shifts and successfully compete with abundant natural regeneration of white fir. The lack of an overstory seed source in the vicinity of these two species necessitates at least some planting of them; there are currently only 10 tpa of Douglas-fir > 4" dbh. Ongoing release from competing vegetation and incoming trees of other species (especially white fir) will be needed to insure the establishment and growth of planted seedlings.

Applicable Project Criteria, Mitigation Measures, & Resource Coordination:

Slope Stability/Soil Resource Protection	Understory Vegetation- Thinning of stands, even lightly, should stimulate development of understory grasses, herbaceous vegetation, and other understory vegetation that can also provide protection form excess surface soil erosion.

Forest Health	Dwarf mistletoe in Douglas-fir is moderate to high in this subunit; infected trees with severity classes 3-6 should be treated, primarily by falling and removal. Fresh cut stumps of true fir will be protected from inoculation by Annosus root disease through the application of Sporax, or other approved product containing borax, on fresh cut stumps 12" dbh and larger within 24 hours following falling.
Wildlife	Efforts will be made to retain trees, vegetation and land formations with evidence of use by wildlife (e.g. bird or wood rat nests, burrows, cavities, and hollows, etc.). Large hardwoods have a disproportionate high amount of use by a number of wildlife species (including fishers elsewhere in their range), particularly given their somewhat uncommon occurrence in Block 2. Radial thinning and other silvicultural practices that encourage the long-term viability of large hardwoods in Block 2 will be encouraged. Unthinned patches in each subunit ("skips") will be used to provide additional cover and habitat diversity. Small existing canopy gaps add greater structural and species diversity, essential elements of wildlife habitat improvement, and will be particularly important for those species that utilize the early successional vegetation associated with these openings.
Snags and Coarse Woody Material	Snags >8" dbh will be retained unless they pose a threat to worker safety or pose a fire risk. Snags greater than 10 inches dbh that require felling for safety reasons will be left long and contour felled across the slope to serve as coarse woody debris. Landscape level management of snags and/or coarse woody material are discussed in "A Landscape Approach to Management of Multiple Values in AFR: Block 2").
Prescribed Underburning	The following criteria must be met before fire is prescribed and implemented as a maintenance or stand driver under this prescription: -Conditions, including stand vigor and composition, must favor low severity fire effects. -Burning can be accomplished at intensities that will retain duff layers in an amount and distribution that prevents unacceptable levels of surface soil erosion and sediment delivery off-site. Effective ground cover should be protected such that 70% is retained after one season and 85% after 2 seasons. -Stand and individual tree vigor are such that the application of prescribed underburning will not unduly stress preferred leave trees and contribute to untimely mortality. -Protection of desired structures (i.e. large overstory trees, desired advanced regeneration, Pacific madrone) may require pre-treatment prior to burning (immediately before or up to 2-3 years before) in order to them from unnecessary scorch, crown damage, cambial heating, soil heating or other fire-

	related injury. In these cases practices such as removing duff and ladder fuels and/or fuel accumulations away from the tree bole (ideally 1-2 years prior to burning); spring burning; burning during cool, moist and/or windy conditions to quickly dissipate heat delivery to the tree boles and root systems; slow and careful ignition patterns, and/or other practices can help minimize damage to these features. The assessment by a certified silviculturist of preparatory needs, mitigation measures, and sequence of treatments will ensure integration of the multiple treatment objectives and management goals. It is not expected that favorable conditions across Subunit 31a will occur until vigor of retained trees improves following thinning treatments.
Hydrology	The implementation of silvicultural activities in the Ashland watershed is strongly dependent on outcomes that protect the municipal water supply for the City of Ashland. Although the area in Subunit 31a does not drain directly into Reeder Reservoir, practices implemented (e.g. fuels management and wildfire reduction) will indirectly protect municipal water objectives, as the overall decrease in the likelihood and size of high severity fire decreases the risk associated with increased sediment delivery that accompanies large-scale, high-severity wildfire events; Commercial density management in portions of Subunit 31a will likely utilize carefully applied and mitigated ground-based logging systems. Helicopter logging systems may also be used in areas where groiund-based logging is impractical, which will minimize ground disturbance and subsequent negative effects on hydrologic function. Roads serve as extensions of the hydrologic network, increasing both the rapidity and size of hydrologic response during major storm events, thereby increasing the potential for significant erosion, sediment delivery and flooding. No new roads are proposed in Block 2. Maintenance of existing roads prior to, during and following use is prioritized
Botanical Resources	Before marking begins the Forest Botanist must be consulted to address any potential PETS species presence and mitigation measures necessary.
Native Grass Seeding	Seeding when appropriate to encourage native plant establishment in the herbaceous vegetation layer may follow burning activities. Seeding with native grasses may help impede non-native species invasion, discourage development of more fire-prone shrub species, and add diversity to the plant communities. Factors that will influence a choice to initiate native grass seeding are elevation, aspect, proximity to non-native plants already encroaching from the urban and valley areas, pre-treatment herbaceous plant cover and diversity, extent and intensity of disturbance associated with harvest or burning, and if a need is perceived for erosion control seeding. Native forb seed may be included in seed mixes in the future for similar reasons.

	At this time, the Forest Service has native grass seed grown from local wild ecotypes but no native forb seed meeting the same source criteria. The decision to apply native grass seed will be made collectively by the certified silviculturist and the Forest or District Botanist. Seed mixes tailored to the stand would be provided by the Forest or District Botanist.
Noxious Weeds	If noxious weed sites are discovered during implementation, these need to be mitigated. Project leaders, work crew leaders, and crew members have a choice at noxious weed sites; the infested sites must either be avoided entirely or their noxious weeds must be fully "treated" before silvicultural treatments occur there. Treatment for noxious weed removal normally means pull, cut, or grub out (depending on species) all the noxious weed plants present and pile the material for later burning. Clean pants cuffs, pockets, boot soles, clothing, tools, machinery, and vehicles of soil or plant parts before proceeding to new areas. Identifying these locations on a map, GPS, etc and sharing that information with appropriate AFR personnel will allow for future return to these sites to insure long-term success at eradication, such as during post-burn monitoring efforts. Noxious weed sites along roads traveling to and from work areas do not need to be treated or reported unless those roadsides are part of actual treatment units or are used as work staging areas. Klamath weed (St. John's wort) and bull thistle are common and widespread noxious weeds in SW Oregon. The Forest Service makes no attempt to prevent their spread or control their abundance during project activity. Hence AFR noxious weed mitigations will not be applied to these two species.
Cultural Resources	Any cultural resource, or potential cultural resource, discovered during the implementation of this project will be cause for immediate cessation of any site-altering activity, with immediate notification of appropriate project personnel. Upon review by a qualified cultural resource specialist, the area of significance may be delineated on the ground and removed from the treatment area.
Other Resource Coordination	Respective resource surveys have been completed and there are no other known issues within the stand to be treated. If there are any findings to the contrary at any time, actions to protect resources will be taken immediately and respective specialist(s) will be notified. Activities prescribed would then be reassessed. Cooperation and coordination between all partners, specialists, workers and other interested and involved parties is necessary to protect and promote the multiple values and resources that exist in the project area. This prescription is the vehicle to develop that coordination and integration of objectives, and it is this prescription that ultimately serves to document agreed course of actions and ultimately prescribes treatments and activities (even, and especially, as a need arises to adapt the initial course).

	Any and all changes needed in treatment activities, timing, and/or sequence of activities prescribed herein as a result of changing conditions on the ground, changes in our partnerships or other organizational capacity, change in scientific understanding, and/or change in management direction; need to be documented and integrated into this or a new prescription by a certified silviculturist prior to those changes being implemented.

Harvest Systems & Transportation:

Logging Systems	The type of logging system(s) and the feasibility of removals without compromising important ecological objectives will be determined prior to initiation of operations. Such consideration will have to meet soil protection measures and result in no greater than 5% detrimental soil conditions across the subunit's area (not including the permanent transportation system). In Block 2, helicopter logging will be the primary system used, although ground-based logging may be utilized in Subunit 31c..
Landings	Only existing landings or hot logging on existing roads are currently approved for use. It is expected that only three existing landings will be utilized in Block 2. Any new proposed landings must be approved by the Contracting Office Representative (COR) and amended in this prescription by a certified silviculturist. Landing restoration after completion of use shall be overseen by a qualified soil scientist, botanist, and/or other pertinent resource specialist(s). Seeding of landings with native grasses immediately following cessation of use may minimize noxious, non-native plant establishment. Monitoring for noxious non-native plants invading the landings should be conducted for at least 3 years following cessation of use, and appropriate efforts of eradication undertaken when found. In addition, any opportunities for landing erosion/sediment to enter the aquatic network will be addressed both during use, and during restoration efforts immediately following cessation of landing use.
Hauling and Road Use	The 405 spur of Forest Service Road 2060 will be used to access treatment areas. There is a high level of recreational use of this road. Road signs must be posted on both sides of treatment areas warning forest users of activities during implementation. All vehicles will obey posted speed limits and be constantly aware of potential interaction with recreational users. Signs and/or temporary trail closures may also be needed during on-the-ground application of silvicultural activities in the vicinity of established trails. Road maintenance returning roads to a high standard of functionality following cessation of use will be required under any contract requiring hauling on established roads.

Monitoring:

For implementation monitoring please refer to "Prescription Objectives". This section is presented in both narrative form and in a table format that provides a summary of quantifiable variables to be measured during and after prescribed treatments. Effective implementation monitoring should rely on both quantitative and qualitative monitoring, with analysis of both by knowledgeable personnel. Invariably, integration of the two forms of monitoring will provide the most comprehensive and accurate assessment of outcomes. If this process is done well, it should produce results that provide impetus for adaptive management and improvement of both planning and implementation of future work in AFR. With new information and understandings developing rapidly, additional adjustments to planned activities should also be encouraged in the ongoing spirit of adaptive management.

Treatment effectiveness can be guided by the sections "Land Management Goals and Objectives", "Desired Future Dynamics" and "Desired Future Conditions". Effectiveness will be measured and analyzed over various spatial and temporal scales, including both stand level and landscape level assessments. A strong monitoring component has been integral to the development of AFR. The Ashland Forest Resiliency's Monitoring Plan will provide a comprehensive assessment of the project's overall effectiveness.

Silvicultural Prescription – AFR Block 02, Subunit 31c

Prescriber: Marty Main **Date: June 2011**

Field Checked by: COA crew, Prescriber **Date: June-July 2011**

Certified Silviculturist: _____ **Date:** 8-5-11

Associated Project: Ashland Forest Resiliency
Associated NEPA: Ashland Forest Resiliency FEIS, ROD
5th Field Watershed: Bear Creek

Stand Identity & Current Condition

Table 1.1 Current Stand Attributes

Location - Stand	Acres	Plant Assoc. *	Site Index (DF, 50yrs)	Elevation (feet)	Average % Slope (range)	Aspect (degrees)	Trees Per Acre (>4.5')	Basal Area (ft^2/ac.)	Estimated Tree Canopy Cover** (>0 dbh)	Quadratic Mean Diameter (>0" dbh)	RDI
135010-0208	8	ABCO-BENE2;	85-95	4650-4800	23 (15-31)	242-356	331	240	81	11.5	0.57

Plant Association from Atzet, et al. 1996.

**Canopy cover is the percent of a stand's ground area covered by the downward projection of all tree canopies within a stand. Individual point data crown closure) was systematically collected with a densiometer and averaged to arrive at canopy cover estimates.

Subunit Description / Context

Subunit 31c is located on 10 to 30% westerly to northerly aspects in the Wagner Creek drainage just west/northwest of the major ridgeline of Subunit 31d. It is located on productive forestland of estimated 50 year site index for Douglas-fir of 90-95 in the ABCO-BENE2 Plant Association. Small portions of the subunit were lightly harvested in the last 50 years, with access either from the top of the subunit in Subunit 31d or from the road at the bottom of the subunit. Harvesting was minimal, however, unlike the typical partial cutting/high-grading that was implemented throughout much of Block 2. It appears that the last major disturbance, likely logging, occurred in the early 1930s. Currently the subunit is stocked with primarily merchantable size classes (8" dbh+) of relatively equal amounts (by basal area) of Douglas-fir and white fir. White fir is relatively equally distributed across all age/size classes in the subunit (234 tpa), while Douglas-fir is primarily a mid-story and overstory occupant >16" dbh (38 tpa), with very little understory or advanced regeneration. This is evident in the QMD's for the two species, with white fir QMD>0 at 9"dbh and Douglas-fir 21" dbh. At this elevation, Douglas-fir benefits from soil disturbance (e.g. fire, logging, etc) to facilitate natural regeneration (e.g. the old landing along the 405 spur road at the bottom of the subunit is heavily dominated by Douglas-fir advanced regeneration), while white fir can get established and continue to survive underneath established canopies with little soil disturbance. Small amounts (~50 tpa) of 8-14" dbh Pacific madrone exist primarily in canopy openings where sufficient light is available, while chinquapin is primarily an understory tree that is slowly dying out in the shade of the dominant conifer overstory (estimated canopy cover of 81% for the subunit). A few older, larger Cohort 1 ponderosa pine exist in the subunit (2 tpa), as well as occasional large Cohort 1 white fir which add an important element of structural diversity to this stand. The understory is relatively sparse amidst this well-stocked stand (RDI 0.57, BA/A 240) and generally good vertical fuel discontinuity exists, largely due to the relative lack of ladder fuels in most places. Subunit 31c has more uniformity in size class distribution than perhaps any other stand in Block 2, with SDI equally distributed across all classes from 5" to 24" dbh (and including moderate SDI from 24-32"+ dbh as well), providing a multi-layered, multi cohort stand structure. Douglas-fir is moderately infected with dwarf mistletoe (28.7% infection on 11 Douglas-fir/acre; average severity 1.74), more so in the south half of the subunit. Root disease (Annosus and Armillaria) is primarily

estricted to white fir in small clumps, where mortality of white fir has occurred in combination with attack from the fir engraver beetle. These spots are characterized by numerous white firs boles on the ground and often a higher abundance of hardwoods. Both snags and CWM are moderate for Block 2 in this subunit, although it has the highest number of large 30"+ snags/acre (6) of any subunit in Block 2, largely large white fir.

Land Management Goals & Parameters:

Table 2.1 Management Direction

Management Allocation:	Restricted Watershed (RRNF LRMP) Late Successional Reserve (NWFP)
Project NEPA:	Ashland Forest Resiliency FEIS, ROD
NEPA Purpose & Need:	The **Need** for action is urgent reduction of the potential for large-scale, high-severity wildland fire in the Upper Bear landscape. One hundred years of fire exclusion and fuel accumulations in this forest's wildland/urban interface now presents high potential for large-scale, high-severity wildland fire that could significantly interrupt the supply of clean water and late-successional and old-growth forest ecosystems in this Analysis Area. The **Purpose** of the action is to protect Values at Risk, reduce hazardous fuels, reduce crown fire potential, and create forest conditions that are more resilient to wildland fires.

\FR Strategic Category and Purpose:

Strategic Ridgelines: Treatments along Strategic Ridgelines are designed to: 1) reduce the extent of wildland fire severity by limiting the amount of area affected by wildland fire, 2) create areas where fire suppression efforts can be conducted more safely and effectively, 3) break up continuity of fuels over a large landscape, and 4) serve as anchor points for further area-wide treatments, such as prescribed fire and maintenance burning (AFR FEIS, 2008). All of Block 2 was designated as a Strategic Ridgeline in the ROD except for Subunits 29a and 79a.

Desired Future Dynamics

The goal for management of this subunit is to alter stand structures, densities and composition, and do so in spatial patterns that will encourage the restoration of functional processes more closely resembling the historical occurrence of more frequent but lower to moderate severity disturbance, primarily fire. This will allow opportunities to optimize landscape level wildfire management, while indirectly providing for the habitat needs of late successional dependent species and protection of municipal water supplies by reducing the spatial extent of high severity fire. Multi-cohort stand structures will be maintained, while reducing stand densities to increase tree and stand vigor and improve wildfire management possibilities through implementation of stand management practices that improve horizontal and vertical fuel discontinuities. In addition, silvicultural activities are designed to reduce, over time, mortality associated with various root and foliage diseases in white fir and Douglas-fir, as well as from various insects in all species Snags and large downed wood will remain moderate in the foreseeable future in this strategic location. Post-treatment stand structures, reduced fuel levels and spatial arrangements of fuels and vegetation will allow for frequent low to moderate severity fire as the primary driver of stand dynamics and ecosystem function through wildland fire use and/or the application of prescribed fire. Fire may then begin to be the primary driver of stand dynamics, although ecologically appropriate ilvicultural activities will likely still continue to be applied, including additional variable density thinning in the future, in order to maintain structural heterogeneity. These silvicultural activities will be implemented to maintain/restore less fire

rone structural characteristics of forests and help provide vegetational characteristics that can emulate those that allowed historic disturbance regimes. Increased post-treatment grass and herbaceous understory development following thinning, especially in openings, should help protect surface soils.

Prescription Objectives:

Table 3.1 Desired Stand Attributes

AFR Subuit	Location-Stand	Existing Forest Type*	Trees Per Acre* (>4.5')	Basal Area (ft^2/ac.)* (>0 dbh)	Quadratic Mean Diameter* (>0 dbh)	RDI* (>0 dbh)	Estimated Tree Canopy Cover** (>0 dbh)	Minimum Down Pieces Created (ave. per acre)
31c	6135050-0208	ABCO-PSME-	146-195	156-185	13-14	0.35-0.43	60-70	na

* Target ranges are for the stand average, including gaps and retention areas outside of riparian areas or landslide hazard zones. Variations outside of listed range at any one location are expected and desirable.
**Canopy cover is the percent of a stands ground area covered by the downward projection of all tree canopies within a stand. All canopy covers are targeted to remain above a minimum average of 40% per subunit. "Estimated Tree Canopy Cover" is an estimate of expected post-treatment canopy cover based on desired residual densities. It is intended to be a rough guide only and not an actual target.

Desired Future Condition (DFC): *Conditions change over time and space; this DFC reflects the desired future condition over the majority of the stand one to three growing seasons after treatment:*

A reduction in stand density, primarily by thinning-from-below of white fir and dwarfmistletoe infected Douglas-fir improves stand vigor, while retaining existing structural and species heterogeneity, increasing mean QMD, improving species compositions by decreasing white fir, and building, over time, tree and stand resistance to effects of low severity disturbances from insects, disease and/or fire. Reduction in abundance of white fir and dwarf mistletoe infected Douglas-fir occurs. Stand density reduction, both commercial and non-commercial, followed by treatment of activity fuels, improves horizontal and vertical fuel discontinuities throughout the stand as a whole. Existing small, gap-scale openings are retained in portions of the subunit where they already exist, and accentuated around root disease pockets, infections of dwarfmistletoe, and through radial thinning around Cohort 1 conifers. Snag and CWM amounts remain moderate (with high numbers of large snags) while the diversity of understory species, including various grasses, herbaceous vegetation and others more shade intolerant species, is increased, particularly in canopy gaps.

Treatments to Achieve Management Objective (DFC):

Silvicultural treatments are applied in stands with three general classifications of tree structure in Block 2, referred to as cohorts. Cohort 1 trees are generally those that are 150-300+ years of age and 30 to 60" dbh (and occasionally as high as 80" dbh in the project area); Cohort 2 trees 60-140 years of age and 12-30" dbh (and occasionally as high as 35+" dbh); and Cohort 3 trees 1-50 years of age and 1-10" dbh (and occasionally as high as 18" dbh). For a more complete description of cohorts, the following specified treatments, and the landscape context in which they are applied, see "A Landscape Scale Approach to Management of Multiple Values in AFR: Block 2".

The following treatments are the primary silvicultural activities to be implemented in Subunit 28n/31e.

Variable density thinning

1. Utilizes thinning-from-below, radial thinning, selection thinning and general stand density reduction.
2. Creates, retains or enhances gaps, skips and/or clumps of vegetation at various spatial scales.
3. Promote establishment and development of vigorous multi-age, multi-species cohorts, including hardwoods.

4. Creates horizontal and vertical discontinuity of ladder and canopy fuels.
5. Promotes spatial, structural, and species diversity favorable for wildlife.

Thinning-from-below

1. Focuses on release of legacy and/or the largest, healthiest trees of desired species, size classes, or growth forms primarily in Cohort 2.
2. Removes relatively smaller and less vigorous trees from primarily intermediate and suppressed crown classes.
3. Maintains canopy closure and full-site occupancy by retained trees sufficient to retard understory ladder fuel development; maintains/promotes high canopy base heights and good vertical discontinuity of fuels.
4. Improves stand vigor and minimizes long-term potential for insect and disease related mortality by re-distributing growth onto fewer larger trees, resulting in increased quadratic mean diameter (QMD) for the stand.
5. Speeds development of older tree structures and potential for development of mature stand conditions.

Radial thinning

1. Removes Cohort 2 and 3 trees to create a minimum 20 foot separation whenever possible between crown of Cohort 1 tree and crowns of other retained trees. Additionally reduces stand densities out to a radius of twice the dripline, or 30-50 feet from legacy bole, while simultaneously considering species, site and stand conditions and other multiple objectives.
2. Promotes resilience and "hang-time" of Cohort 1 legacy trees; retains important seed sources for natural regeneration of more shade intolerant conifers; provides anchors for future variable density thinning.
3. Increases horizontal and vertical discontinuity of ladder and canopy fuels, and begins to build increasing structural heterogeneity is existing stands.

Individual tree and small group thinning of dwarf mistletoe infected Douglas-fir

1. Reduces abundance of dwarf mistletoe in Douglas-fir on a landscape scale by targeting treatment of infected trees, primarily of Cohorts 2 and 3 in order to promote development of large Douglas-fir trees and to limit dwarf mistletoe abundance and spread, on both a stand and landscape level (see Douglas-fir Dwarf Mistletoe Stand Severity Rating Map in "A Landscape Level Approach to Management of Multiple Values in AFR: Block 2")

Non-commercial surface and ladder fuel thinnings

1. Retains most vigorous of trees of desired species and re-distributes growth and vigor onto these trees and helps grow those into larger size classes in shorter periods of time
2. Removes less vigorous and/or other trees with undesirable characteristics for meeting subunit level goals
3. Re-established more desirable species compositions and/or those currently underrepresented in species, size classes, and/or growth forms
4. Reduces ladder fuels and increases height-to-crown base, creating more favorable fire management conditions
5. Prepares the site for safe application of prescribed fire regime of low severity in the future
6. Can be used to maintain or enhance existing structural diversity in the overstory
7. Can be used to remove all trees of a given species within 50' of a dwarf mistletoe infected retained overstory tree of the same species.

Ladder and Activity Fuel Piling & Burning

1. Reduces activity generated available fuels within the subunit.
2. Maintains/improves stands ability to modify landscape fire behavior by limiting canopy fire
3. Places piles strategically to minimize damage to retained trees/vegetation and associated resource values
4. Prepares stands for application of low severity prescribed fire
5. Leaves 1-2 slash piles per acre as wildlife habitat

'rescribed fire

1. To be implemented on a maintenance schedule and to be a driver of stand dynamics only once conditions are ready and favorable to support desired goals and objectives described previously herein (also refer to resource coordination section; favorable conditions are not expected to be reached after this initial treatment)
2. Maintain low surface and ladder fuels
3. Maintain & improve the stands' ability to modify landscape fire behavior by limiting risk of active crown fire
4. Places special emphasis on protecting desired species from fire related mortality on a schedule that allows for the regeneration and development of multiple cohorts
5. Favors pine establishment and release by reducing competition and preparing favorable light conditions
6. An assessment of fuel conditions, desired tree regeneration, and competing vegetation should be made to determine the need to reduce fuels and the need to protect and/or maintain desired species compositions based on stated desired future dynamics prior to any prescribed fire
7. Assess conditions and consider the need for treatment 1 – 5 years after initial treatment, and then on a 7 – 20 year cycle

Treatment Narrative

Maintaining wildfire management effectiveness of this subunit is a high priority given its topographic location adjacent the main ridgeline of Subunit 31d. Treatments are designed to retain sufficient overstory in most locations to maintain low to moderate understory development. The limited amount of ladder fuels currently should be maintained through spot non-commercial thinning following commercial density management. Thinning aggressively around larger older Douglas-fir, particularly those with no or little dwarfmistletoe will encourage more rapid development of this larger tree cohort. Simultaneously, remove spot groupings of Douglas-fir infected with dwarfmistletoe (severity class 2-6). Radial thin around the rare Cohort 1 trees, including white fir > 30" dbh, to maintain the existing larger tree cohort of this tructurally diverse, multi-cohort stand. Aggressive thinning and removal of 8-20" dbh white fir should occur throughout the subunit, emphasizing thinning of those with < 40% crown ratios. Thinning should also be more aggressive in the upper portions of the subunit adjacent the ridgeline Subunit 31d. Pacific madrone > 14" dbh and chinquapin> 10" dbh should be retained where they have (around openings) or where sufficient light can be created around them. Openings can be expanded, particularly emphasizing removal of white fir to restrict spread of any existing root disease. White fir stumps >12"dbh should receive a treatment of Sporax immediately after falling. This subunit can likely be ground-based logged which should scarify soils and, coupled with slightly more open stand conditions, should accentuate natural regeneration of Douglas-fir and to some extent ponderosa pine. All activity fuels should be piled and burned, including small snags <8" dbh and accumulations of pre-existing downed fuels. Follow-up prescribed underburning can occur within 2-5 years, then continuing on a 7-15 year periodicity to maintain more open stand conditions, while favoring more fire tolerant pines (especially on more westerly aspects) and larger Douglas-fir and continuing to discourage excessive development of white fir. Assess the need to plant pines (especially rust-resistant sugar pine) and Douglas-fir after completing the first prescribed underburn.

Applicable Project Criteria, Mitigation Measures, & Resource Coordination:

Slope Stability/Soil Resource Protection	Understory Vegetation- Thinning of stands, even lightly, should stimulate development of understory grasses, herbaceous vegetation, and other understory vegetation that can also provide protection form excess surface soil erosion.
Forest Health	Dwarf mistletoe in Douglas-fir is moderate in this subunit; infected trees with severity classes 2-6 should be treated, primarily by falling and removal.

	Fresh cut stumps of true fir will be protected from inoculation by Annosus root disease through the application of Sporax, or other approved product containing borax, on fresh cut stumps 12" dbh and larger within 24 hours following falling.
Wildlife	Efforts will be made to retain trees, vegetation and land formations with evidence of use by wildlife (e.g. bird or wood rat nests, burrows, cavities, and hollows, etc.). Large hardwoods have a disproportionate high amount of use by a number of wildlife species (including fishers elsewhere in their range), particularly given their somewhat uncommon occurrence in Block 2. Radial thinning and other silvicultural practices that encourage the long-term viability of large hardwoods in Block 2 will be encouraged. Unthinned patches in each subunit ("skips") will be used to provide additional cover and habitat diversity. Small existing canopy gaps add greater structural and species diversity, essential elements of wildlife habitat improvement, and will be particularly important for those species that utilize the early successional vegetation associated with these openings.
Snags and Coarse Woody Material	Snags >8" dbh will be retained unless they pose a threat to worker safety or pose a fire risk. Snags greater than 10 inches dbh that require felling for safety reasons will be left long and contour felled across the slope to serve as coarse woody debris. Landscape level management of snags and/or coarse woody material is discussed in "A Landscape Approach to Management of Multiple Values in AFR: Block 2").
Prescribed Underburning	The following criteria must be met before fire is prescribed and implemented as a maintenance or stand driver under this prescription: -Conditions, including stand vigor and composition, must favor low severity fire effects. -Burning can be accomplished at intensities that will retain duff layers in an amount and distribution that prevents unacceptable levels of surface soil erosion and sediment delivery off-site. Effective ground cover should be protected such that 70% is retained after one season and 85% after 2 seasons. -Stand and individual tree vigor are such that the application of prescribed underburning will not unduly stress preferred leave trees and contribute to untimely mortality. -Protection of desired structures (i.e. large overstory trees, desired advanced regeneration, Pacific madrone) may require pre-treatment prior to burning (immediately before or up to 2-3 years before) in order to them from unnecessary scorch, crown damage, cambial heating, soil heating or other fire-related injury. In these cases practices such as removing duff and ladder fuels and/or fuel accumulations away from the tree bole (ideally 1-2 years prior to burning); spring burning; burning during cool, moist and/or windy conditions to quickly dissipate heat delivery to the tree boles and root systems; slow and careful

	ignition patterns, and/or other practices can help minimize damage to these features. The assessment by a certified silviculturist of preparatory needs, mitigation measures, and sequence of treatments will ensure integration of the multiple treatment objectives and management goals. It is currently expected that favorable conditions across Subunit 31c may occur within several years following these initial silvicultural treatments.
Hydrology	The implementation of silvicultural activities in the Ashland watershed is strongly dependent on outcomes that protect the municipal water supply for the City of Ashland. Although the area in Subunit 31c does not drain directly into Reeder Reservoir, practices implemented (e.g. fuels management and wildfire reduction) will indirectly protect municipal water objectives, as the overall decrease in the likelihood and size of high severity fire decreases the risk associated with increased sediment delivery that accompanies large-scale, high-severity wildfire events; Commercial density management in Subunit 31c will likely utilize carefully applied and mitigated ground-based logging systems. Helicopter logging systems may also be used in areas where ground-based logging is impractical (i.e. >20% slopes), which results in even less ground disturbance and potential for subsequent negative effects on hydrologic function. Roads serve as extensions of the hydrologic network, increasing both the rapidity and size of hydrologic response during major storm events, thereby increasing the potential for significant erosion, sediment delivery and flooding. No new roads are proposed in Block 2. Maintenance of existing roads prior to, during and following use is prioritized
Botanical Resources	Before marking begins the Forest Botanist must be consulted to address any potential PETS species presence and mitigation measures necessary.
Native Grass Seeding	Seeding when appropriate to encourage native plant establishment in the herbaceous vegetation layer may follow burning activities. Seeding with native grasses may help impede non-native species invasion, discourage development of more fire-prone shrub species, and add diversity to the plant communities. Factors that will influence a choice to initiate native grass seeding are elevation, aspect, proximity to non-native plants already encroaching from the urban and valley areas, pre-treatment herbaceous plant cover and diversity, extent and intensity of disturbance associated with harvest or burning, and if a need is perceived for erosion control seeding. Native forb seed may be included in seed mixes in the future for similar reasons. At this time, the Forest Service has native grass seed grown from local wild ecotypes but no native forb seed meeting the same source criteria. The decision to apply native grass seed will be made collectively by the certified

	silviculturist and the Forest or District Botanist. Seed mixes tailored to the stand would be provided by the Forest or District Botanist.
Noxious Weeds	If noxious weed sites are discovered during implementation, these need to be mitigated. Project leaders, work crew leaders, and crew members have a choice at noxious weed sites; the infested sites must either be avoided entirely or their noxious weeds must be fully "treated" before silvicultural treatments occur there. Treatment for noxious weed removal normally means pull, cut, or grub out (depending on species) all the noxious weed plants present and pile the material for later burning. Clean pants cuffs, pockets, boot soles, clothing, tools, machinery, and vehicles of soil or plant parts before proceeding to new areas. Identifying these locations on a map, GPS, etc and sharing that information with appropriate AFR personnel will allow for future return to these sites to insure long-term success at eradication, such as during post-burn monitoring efforts. Noxious weed sites along roads traveling to and from work areas do not need to be treated or reported unless those roadsides are part of actual treatment units or are used as work staging areas. Klamath weed (St. John's wort) and bull thistle are common and widespread noxious weeds in SW Oregon. The Forest Service makes no attempt to prevent their spread or control their abundance during project activity. Hence AFR noxious weed mitigations will not be applied to these two species.
Cultural Resources	Any cultural resource, or potential cultural resource, discovered during the implementation of this project will be cause for immediate cessation of any site-altering activity, with immediate notification of appropriate project personnel. Upon review by a qualified cultural resource specialist, the area of significance may be delineated on the ground and removed from the treatment area.
Other Resource Coordination	Respective resource surveys have been completed and there are no other known issues within the stand to be treated. If there are any findings to the contrary at any time, actions to protect resources will be taken immediately and respective specialist(s) will be notified. Activities prescribed would then be reassessed. Cooperation and coordination between all partners, specialists, workers and other interested and involved parties is necessary to protect and promote the multiple values and resources that exist in the project area. This prescription is the vehicle to develop that coordination and integration of objectives, and it is this prescription that ultimately serves to document agreed course of actions and ultimately prescribes treatments and activities (even, and especially, as a need arises to adapt the initial course). Any and all changes needed in treatment activities, timing, and/or sequence of activities prescribed herein as a result of changing conditions on the ground, changes in our partnerships or other organizational capacity, change in scientific

	understanding, and/or change in management direction; need to be documented and integrated into this or a new prescription by a certified silviculturist prior to those changes being implemented.

Harvest Systems & Transportation:

Logging Systems	The type of logging system(s) and the feasibility of removals without compromising important ecological objectives will be determined prior to initiation of operations. Such consideration will have to meet soil protection measures and result in no greater than 5% detrimental soil conditions across the subunit's area (not including the permanent transportation system). In Block 2, helicopter logging will be the primary system used, although ground-based logging may be utilized in Subunit 31c.
Landings	Only existing landings or hot logging on existing roads are currently approved for use. It is expected that only three existing landings will be utilized in Block 2. Any new proposed landings must be approved by the Contracting Office Representative (COR) and amended in this prescription by a certified silviculturist. Landing restoration after completion of use shall be overseen by a qualified soil scientist, botanist, and/or other pertinent resource specialist(s). Seeding of landings with native grasses immediately following cessation of use may minimize noxious, non-native plant establishment. Monitoring for noxious non-native plants invading the landings should be conducted for at least 3 years following cessation of use, and appropriate efforts of eradication undertaken when found. In addition, any opportunities for landing erosion/sediment to enter the aquatic network will be addressed both during use, and during restoration efforts immediately following cessation of landing use.
Hauling and Road Use	The 405 spur of Forest Service Road 2060 will be used to access treatment areas. There is a high level of recreational use of this road. Road signs must be posted on both sides of treatment areas warning forest users of activities during implementation. All vehicles will obey posted speed limits and be constantly aware of potential interaction with recreational users. Signs and/or temporary trail closures may also be needed during on-the-ground application of silvicultural activities in the vicinity of established trails. Road maintenance returning roads to a high standard of functionality following cessation of use will be required under any contract requiring hauling on established roads.

Monitoring:

For implementation monitoring please refer to "Prescription Objectives". This section is presented in both narrative form and in a table format that provides a summary of quantifiable variables to be measured during and after prescribed treatments. Effective implementation monitoring should rely on both quantitative and qualitative monitoring, with analysis of both by knowledgeable personnel. Invariably, integration of the two forms of monitoring will provide the most comprehensive and accurate assessment of outcomes. If this process is done well, it should produce results that provide impetus for adaptive management and improvement of both planning and implementation of future work in AFR. With new information and understandings developing rapidly, additional adjustments to planned activities should also be encouraged in the ongoing spirit of adaptive management.

Treatment effectiveness can be guided by the sections "Land Management Goals and Objectives", "Desired Future Dynamics" and "Desired Future Conditions". Effectiveness will be measured and analyzed over various spatial and temporal scales, including both stand level and landscape level assessments. A strong monitoring component has been integral to the development of AFR. The Ashland Forest Resiliency's Monitoring Plan will provide a comprehensive assessment of the project's overall effectiveness.

Silvicultural Prescription – AFR Block 02, Subunit 31d

Prescriber: Marty Main **Date: May, 2011**

Field Checked by: COA crew, Prescriber, Cert. Silviculturist **Date: May-June 2011**

Certified Silviculturist: _____ **Date:** 8-5-11

Associated Project: Ashland Forest Resiliency
Associated NEPA: Ashland Forest Resiliency FEIS, ROD
5th Field Watershed: Bear Creek

Stand Identity & Current Condition

Table 1.1 Current Stand Attributes

Location - Stand	Acres	Plant Assoc. *	Site Index (DF, 50yrs)	Elevation (feet)	Average % Slope (range)	Aspect (degrees)	Trees Per Acre (>4.5')	Basal Area (ft^2/ac.)	Estimated Tree Canopy Cover (>0 dbh)	Quadratic Mean Diameter (>0" dbh)	RDI
6135010-0259	21	ABCO-PSME /ROGY	70-80	4550-4850	13 (3-39)	327-43	445	118	39	7.0	0. 29

Plant Association from Atzet, et al. 1996.
**Canopy cover is the percent of a stand's ground area covered by the downward projection of all tree canopies within a stand. Individual point data (crown closure) was systematically collected with a densiometer and averaged to arrive at canopy cover estimates.

Subunit Description / Context

Stand 31d is a long narrow subunit comprising an old shaded fuelbreak along the major east:west running ridgeline in Block 2. It straddles the ridgeline in most places, generally about 200 feet wide. Slopes are gentle throughout the stand, typically no more than 20% except for small pitches. Road access is available at both the north and south end of the subunit. Plant Association is borderline between ABCO/BENE2 and ABCO-PSME/ROGY, with small inclusions of a somewhat unusual ABCO/XETE. The ABCO/XETE Plant Association is normally found farther north and in higher precipitation zones, but the location on the ridgeline and the presence of beargrass (Xerophyllum tenax) make this plant association a possibility in this location. Estimated 50 year site index for Douglas-fir is 70-80.

Stand 31d is characterized by complex and variable stand conditions, the result of a combination of changing site conditions and past management history. The subunit was logged and created as a shaded fuelbreak likely in the late 70's or early 80's, although there was a history of some harvesting in the area prior to that in the operation of the Skyline Mine located at the south end of the subunit. Incoming understory vegetation appears to also have been treated within the last 10-20 years as well. Currently, close to 400 tpa of small conifers and stump sprouting hardwoods (especially Pacific madrone) from 4.5' to 4" dbh, in combination with various shrubs (especially greenleaf manzanita) have become well-established throughout most of the subunit and are currently compromising wildfire management effectiveness in the subunit. This is at least in part because densities of overstory trees have been, and still are low- currently averaging BA/A of 118 ft^2/ac., an RDI of 0.29 and an estimated canopy cover averaging 39%, but ranging from 15-68%. These are generally very open stand conditions, not likely to retard ladder fuels and understory vegetation in most places, particularly ar the higher productivities and increased precipitation of this higher elevation site. Over 90% of the total basal area occurs on 42 trees per acre 14" dbh and larger- 39% white fir, 32% Douglas-fir, 19% ponderosa pine, 9%

Pacific madrone and a small amount of sugar pine across a range of sizes in the 14-32+ inch dbh size class. White fir is generally more abundant on more northerly aspects in the subunit, but is typically of poor vigor throughout, with considerable defect and dwarfmistletoe, and many in significant decline and/or dead/dying, and comprising almost all of the 14 snags per acre for the subunit. White fir was the least merchantable of the conifers at the time of the last logging and many poor quality individuals were retained. Douglas-fir is generally vigorous where it occurs although dwarf mistletoe is abundant in spots (7.6% of Douglas-fir infected, with a high average severity of 4.07) likely aggravated by harvesting that significantly opened the stand. It is also abundant in adjacent subunits on the edges of Subunit 31d. Another key feature is the scattered large superdominant Cohort 1 Douglas-fir, white fir and particularly ponderosa pine. These are particularly evident at the south end of the subunit near Skyline Mine, where more open stand conditions under these large and vigorous overstory conifers create an excellent condition form a wildfire management perspective, and a good example of idealized stand conditions from a restoration perspective. However, this is only one of several stand types in Subunit 31d. Portions are even more open with fewer overstory trees, most notably towards the north end of the subunit, while other areas support basal areas ranging up to 200 ft^2/ac.. The more open stand conditions tend to support a greater number of mid-sized, 10-20" dbh Pacific madrone, located mostly in the rather rocky soil conditions and outcrops. There is considerable spatial diversity in stand density within the subunit, with patches of extremely dense advanced regeneration of conifers and hardwoods up to 10-20' tall. Large downed woody debris averages 21 tons per acre, mostly in advanced stages of decay, while snag totals are low (14/acre, with 3/acre >21" dbh).

Land Management Goals & Parameters:

Table 2.1 Management Direction

Management Allocation:	Restricted Watershed (RRNF LRMP) Managed Watershed (RRNF LRMP) Middleground Partial Retention (RRNF LRMP), Late Successional Reserve (NWFP)
Project NEPA:	Ashland Forest Resiliency FEIS, ROD
NEPA Purpose & Need:	The **Need** for action is urgent reduction of the potential for large-scale, high-severity wildland fire in the Upper Bear landscape. One hundred years of fire exclusion and fuel accumulations in this forest's wildland/urban interface now presents high potential for large-scale, high-severity wildland fire that could significantly interrupt the supply of clean water and late-successional and old-growth forest ecosystems in this Analysis Area. The **Purpose** of the action is to protect Values at Risk, reduce hazardous fuels, reduce crown fire potential, and create forest conditions that are more resilient to wildland fires.

AFR Strategic Category and Purpose:

Strategic Ridgelines: Treatments along Strategic Ridgelines are designed to: 1) reduce the extent of wildland fire severity by limiting the amount of area affected by wildland fire, 2) create areas where fire suppression efforts can be conducted more safely and effectively, 3) break up continuity of fuels over a large landscape, and 4) serve as anchor points for further area-wide treatments, such as prescribed fire and maintenance burning (AFR FEIS, 2008). All of Block 2 was designated as a Strategic Ridgeline in the ROD except for Subunits 29a and 79a.

Desired Future Dynamics

The goal for management of this subunit is to alter stand structures, densities and composition, and do so in spatial patterns that will encourage the restoration of functional processes more closely resembling the historical occurrence of more frequent but lower to moderate severity disturbance, primarily fire. This will allow opportunities to optimize landscape level wildfire management, while indirectly providing for the habitat needs of late successional dependent species and protection of municipal water supplies by reducing the spatial extent of high severity fire. Stand structures will remain more open and heterogeneous, with continued significant horizontal fuel discontinuities. Stand structures, reduced fuel levels and spatial arrangements of fuels and vegetation will allow for frequent low to moderate severity fire as the primary driver of stand dynamics and ecosystem function. This can occur immediately after initial silvicultural treatments, and low severity fire can be relied upon to be the primary driver of stand dynamics, through wildland fire use and/or the application of prescribed fire. Snags and downed wood will remain low in the near future, particularly once fire becomes the primary driver of stand dynamics. Increased post-treatment grass and herbaceous understory development following thinning should help protect surface soils, although surface soil erosion will likely not be an issue on these gentle, ridgeline locations a long ways fro the hydrologic network.

Prescription Objectives:

Table 3.1 Desired Stand Attributes

AFR Subunit	Location-Stand	Existing Forest Type*	Trees Per Acre* (>4.5')	Basal Area (ft^2/ac.)* (>0 dbh)	Quadratic Mean Diameter* (>0 dbh)	RDI* (>0 dbh)	Estimated Tree Canopy Cover** (>0 dbh)
31d	6135010-0259	PSME-PIPO-ABCO-ARME	172-250	74-100	9-10	0.20-0.25	30-40

* Target ranges are for the stand average, including gaps and retention areas outside of riparian areas or landslide hazard zones. Variations outside of listed range at any one location are expected and desirable.

**Canopy cover is the percent of a stands ground area covered by the downward projection of all tree canopies within a stand. All canopy covers are targeted to remain above a minimum average of 40% per subunit. "Estimated Tree Canopy Cover" is an estimate of expected post-treatment canopy cover based on desired residual densities. It is intended to be a rough guide only and not an actual target.

Desired Future Condition (DFC): *Conditions change over time and space; this DFC reflects the desired future condition over the majority of the stand one to three growing seasons after treatment:*

A small reduction in stand density utilizing variable density thinning releases larger overstory and Cohort 1 conifers and hardwoods, while reducing abundance of poor vigor white fir and dwarf mistletoe infected Douglas-fir. Open canopies and discontinuous canopy fuels are maintained in most places, and reduced in both horizontal and vertical directions, increasing fire tolerance and wildfire management potentials. Non-commercial understory surface and ladder fuels are significantly decreased, providing improved wildfire management opportunities, while encouraging establishment of a diversity of understory species, including various grasses, herbaceous vegetation and others more shade intolerant species, such as the pines. Soils will remain relatively undisturbed and surface erosion minimal.

Treatments to Achieve Management Objective (DFC):

Silvicultural activities are applied in three general classifications of tree structure in Block 2, referred to as cohorts. Cohort 1 trees are generally those that are 150-300+ years of age and 30 to 60" dbh (and occasionally as high as 80" dbh in the project area); Cohort 2 trees 60-140 years of age and 12-30" dbh (and occasionally as high as 35+" dbh); and Cohort 3 trees 1-50 years of age and 1-10" dbh (and occasionally as high as 18" dbh). For a more complete description of

cohorts, the following specified treatments, and the landscape context in which they are applied, see "A Landscape Scale Approach to Management of Multiple Values in AFR: Block 2".

The following treatments are the primary silvicultural activities to be implemented in Subunit 31d.

Variable density thinning

1. Utilizes thinning from below, radial thinning, selection thinning and/or general stand density reduction
2. Creates, enhances and/or maintains gaps, skips and/or clumps of vegetation at various spatial scales
3. Promote establishment and development of vigorous multi-age, multi-species cohorts, including hardwoods
4. Creates horizontal and vertical discontinuity of ladder and canopy fuels
5. Promotes spatial, structural, and species diversity favorable for wildlife

Radial thinning

1. Originally designed as a stand-alone treatment, radial thinning is combined with other treatment types to aggressively release preferred Cohort 1 trees by removing Cohort 2 and 3 trees to create a separation (up to 20') whenever possible between crowns. Additionally reduces stand densities out tp a radius of twice the dripline, or 30-50 feet from legacy bole, in order to optimize release of preferred legacy tree, depending on species, while considering other multiple objectives as well.
2. Promotes resilience and "hang-time" of Cohort 1 legacy trees; retains important seed sources for natural regeneration of more shade intolerant conifers; provides anchors for future variable density thinning.
3. Increases horizontal and vertical discontinuity of ladder and canopy fuels, and begins to build increasing structural heterogeneity is existing stands.

Individual tree and small group thinning of dwarf mistletoe infected Douglas-fir

1. Reduces abundance of dwarf mistletoe in Douglas-fir on a landscape scale by targeting treatment of infected trees, primarily of Cohorts 2 and 3 in order to promote development of large Douglas-fir trees and to limit dwarf mistletoe abundance and spread, on both a stand and landscape level (see Douglas-fir Dwarf Mistletoe Stand Severity Rating Map in "A Landscape Level Approach to Management of Multiple Values in AFR: Block 2")

Non-commercial surface and ladder fuel thinnings

1. Retains most vigorous of trees of desired species and re-distributes growth and vigor onto these trees and helps grow those into larger size classes in shorter periods of time
2. Removes less vigorous and/or other trees with undesirable characteristics for meeting subunit level goals
3. Re-established more desirable species compositions and/or those currently underrepresented in species, size classes, and/or growth forms
4. Reduces ladder fuels and increases height-to-crown base, creating more favorable fire management conditions
5. Prepares the site for safe application of prescribed fire regime of low severity in the future
6. Can be used to maintain or enhance existing structural diversity in the overstory
7. Can be used to remove all trees of a given species within 50' of a dwarf mistletoe infected retained overstory tree of the same species.

Ladder and Activity Fuel Piling & Burning

1. Reduces activity generated available fuels within the subunit.
2. Maintains/improves stands ability to modify landscape fire behavior by limiting canopy fire
3. Places piles strategically to minimize damage to retained trees/vegetation and associated resource values
4. Prepares stands for application of low severity prescribed fire
5. Leaves 1-2 slash piles per acre as wildlife habitat

Prescribed fire

1. To be implemented on a maintenance schedule and to be a driver of stand dynamics only once conditions are ready and favorable to support desired goals and objectives described previously herein (also refer to resource coordination section; favorable conditions are not expected to be reached after this initial treatment)
2. Maintain low surface and ladder fuels
3. Maintain & improve the stands' ability to modify landscape fire behavior by limiting risk of active crown fire
4. Places special emphasis on protecting desired species from fire related mortality on a schedule that allows for the regeneration and development of multiple cohorts
5. Favors pine establishment and release by reducing competition and preparing favorable light conditions
6. An assessment of fuel conditions, desired tree regeneration, and competing vegetation should be made to determine the need to reduce fuels and the need to protect and/or maintain desired species compositions based on stated desired future dynamics prior to any prescribed fire
7. Assess conditions and consider the need for treatment 1 – 5 years after initial treatment, and then on a 7 – 15 year cycle

Treatment Narrative

Stand 31d is a high priority for management to maintain wildfire management benefits in this key topographical location. The gentle topography suggests that ground-based logging be accomplished first in the subunit to primarily remove dwarf mistletoe infected Douglas-fir (this is not a desired topographic location for owl or fisher use) and declining white fir. Reasonably vigorous overstory trees should be retained to form the long-term overstory component in the stand, although it will be many years before the overstory begins to effectively suppress understory vegetation in most places. Initial commercial treatments will likely reduce stand densities to low amounts, as diseased, declining and poor vigor trees are removed, in addition to radial thinning around preferred Cohort 1 overstory trees. Non-commercial surface and ladder fuel treatments should immediately follow ground-based logging, including consideration of prescribed fire, reducing non-commercial tree numbers to 100-200+/- tpa (15-20' spacing). Small isolated skips of these smaller trees and associated greenleaf manzanita and other vegetation can be retained, but in numbers and locations that do not compromise wildfire management goals for the subunit. Although initial post-treatment stand densities will average 74-100 BA/A by removing undesirable trees, ultimately basal areas should be maintained at an average closer to 100-125 over time, as a result of the slow development of increased numbers of overstory pines, Douglas-fir, and occasional Pacific madrone. To maintain wildfire management effectiveness over time, non-commercial surface and ladder fuel treatments and/or prescribed underburning will have to be a high priority to be completed every 5-10 years in this stand in order to reduce developing vegetation and maintain more open stand understories and wildfire management effectiveness. The south end of the subunit near Skyline Mine serves as an excellent example of a desirable vegetation type from a wildfire management perspective, and one that can be maintained through time almost strictly with prescribed fire. Initial burns will require special attention to the large (1'+) duff mounds around the very large, old ponderosa pine in the subunit. Snag and down wood are currently low and do not compromise wildfire management objectives at this time, although it is suspected that the ongoing mortality of overstory white fir will continue to provide additional snags and downed wood in the future.

Applicable Project Criteria, Mitigation Measures, & Resource Coordination:

Slope Stability/Soil Resource Protection	Understory Vegetation- Thinning of stands, even lightly, should stimulate development of understory grasses, herbaceous vegetation, and other understory vegetation that can also provide protection form excess surface soil erosion. Cool, low severity prescribed underburning should be conducted to protect

	effective ground cover such that 70% is retained after one season and 85% after 2 seasons.
Forest Health	Pines above 3" in diameter that need to be cut may be designated at any time, but they will be cut between August and December *unless t*hey are immediately disposed of by burning, chipping, scoring, or removed as a product prior to the springtime flight of the beetles (usually between March and May). Pines that are above the maximum size required for piling and burning should not be cut unless a specific plan is made for their removal, consumption and/or other practice to make them unavailable for potential beetle habitat (e.g. bark removal). Dwarf mistletoe in Douglas-fir should be significantly reduced in this subunit primarily by falling and removal of infected Cohort 2 and 3 tree. Options for treatment of dwarf mistletoe in Douglas-fir include: 1) falling infected tree 2) girdling infected trees and retaining in place in areas deficient of snags or large woody debris, 3) isolation of dwarf mistletoe infection to reduce spread by converting to non-host species (e.g. hardwoods, other non-host conifers) around an infected conifer(s), 4) retaining infected trees in places where they are less likely to spread, such as in low spots in the topography (e.g., draws), as opposed to ridges or other high locations where seeds can spread much longer distances, 5) encouraging vigorous growth in dense stands of Douglas-fir or white fir that can occasionally shade out and kill low level infections of shade intolerant dwarf mistletoe, 6) clumping the distribution of infected trees into small widely separated groups thereby reducing spread and levels of contiguous infection, and 7) minimizing potential infection in those areas currently free dwarf mistletoe.
Wildlife	Efforts will be made to retain trees, vegetation and land formations with evidence of use by wildlife (e.g. bird or wood rat nests, burrows, cavities, and hollows, etc.). Large hardwoods have a disproportionate high amount of use by a number of wildlife species (including fishers elsewhere in their range), particularly given their somewhat uncommon occurrence in Block 2. Radial thinning and other silvicultural practices that encourage the long-term viability of large hardwoods in Block 2 will be encouraged. The more open stand conditions offer greater structural and species diversity on a landscape level, and are essential elements of wildlife habitat improvement, particularly important for those species that utilize the early successional vegetation associated with these openings. .
Snags and Coarse Woody Material	Snags will be retained unless they pose a threat to worker safety or pose a fire risk. Snags greater than 10 inches dbh that require felling for safety reasons will be left long and contour felled across the slope to serve as coarse woody debris. No new snags or down wood will be created in this subunit. Landscape level management of snags and/or coarse woody material are discussed in "A Landscape Approach to Management of Multiple Values in AFR: Block 2").

Prescribed Underburning	The following criteria must be met before fire is prescribed and implemented as a maintenance or stand driver under this prescription: -Conditions, including stand vigor and composition, must favor low severity fire effects. -Burning can be accomplished at intensities that will retain duff layers in an amount and distribution that prevents unacceptable levels of surface soil erosion and sediment delivery off-site. Effective ground cover should be protected such that 70% is retained after one season and 85% after 2 seasons. -Stand and individual tree vigor are such that the application of prescribed underburning will not unduly stress preferred leave trees and contribute to untimely mortality. -Protection of desired structures (i.e. Cohort 1 overstory trees, desired regeneration) may require pre-treatment prior to burning (immediately before or up to 2-3 years before) in order to protect highly desired features from unnecessary scorch, crown damage, cambial heating, soil heating or other fire-related injury. In these cases practices such as removing duff and ladder fuels and/or fuel accumulations away from the tree bole; spring burning; burning during cool, moist and/or windy conditions to quickly dissipate heat delivery to the tree boles and root systems; slow and careful ignition patterns, and/or other practices can help minimize damage to these features. The assessment by a certified silviculturist of preparatory needs, mitigation measures, and sequence of treatments will ensure integration of the multiple treatment objectives and management goals.
Hydrology	The implementation of silvicultural activities in the Ashland watershed is strongly dependent on outcomes that protect the municipal water supply for the City of Ashland. Portions (but not all) of Subunit 31d ultimately drain into Reeder Reservoir, but the ridgeline location and general lack of drainages in this subunit make sediment delivery to the hydrologic network unlikely as a result of management practices implemented in this subunit. Practices implemented (e.g. fuels management and wildfire reduction) will indirectly protect municipal water objectives, as the overall decrease in the likelihood and size of high severity fire decreases the risk associated with increase sediment delivery that accompanies large-scale, high-severity wildfire events; Ground-based logging systems will be carefully implemented in this subunit, using such features as pre-designated skid roads to minimize impacts to less than 5% detrimental soil conditions. Other mitigation of potential impacts from ground-based logging activities will be needed during and after harvest operations (dry season only operations, effective skid road drainage structures installed, etc). Also consider seeding any skid roads or areas disturbed during ground-based

	logging operations. Roads serve as extensions of the hydrologic network, increasing both the rapidity and size of hydrologic response during major storm events, thereby increasing the potential for significant erosion, sediment delivery and flooding. No new roads are proposed in Block 2. Maintenance of existing roads prior to, during and following use is prioritized
Botanical Resources	Before marking begins the Forest Botanist must be consulted to address any potential PETS species presence and mitigation measures necessary.
Native Grass Seeding	Seeding when appropriate to encourage native plant establishment in the herbaceous vegetation layer may follow burning activities. Seeding with native grasses may help impede non-native species invasion, discourage development of more fire-prone shrub species, and add diversity to the plant communities. Factors that will influence a choice to initiate native grass seeding are elevation, aspect, proximity to non-native plants already encroaching from the urban and valley areas, pre-treatment herbaceous plant cover and diversity, extent and intensity of disturbance associated with harvest or burning, and if a need is perceived for erosion control seeding. Native forb seed may be included in seed mixes in the future for similar reasons. At this time, the Forest Service has native grass seed grown from local wild ecotypes but no native forb seed meeting the same source criteria. The decision to apply native grass seed will be made collectively by the certified silviculturist and the Forest or District Botanist. Seed mixes tailored to the stand would be provided by the Forest or District Botanist.
Noxious Weeds	If noxious weed sites are discovered during implementation, these need to be mitigated. Project leaders, work crew leaders, and crew members have a choice at noxious weed sites; the infested sites must either be avoided entirely or their noxious weeds must be fully "treated" before silvicultural treatments occur there. Treatment for noxious weed removal normally means pull, cut, or grub out (depending on species) all the noxious weed plants present and pile the material for later burning. Clean pants cuffs, pockets, boot soles, clothing, tools, machinery, and vehicles of soil or plant parts before proceeding to new areas. Identifying these locations on a map, GPS, etc and sharing that information with appropriate AFR personnel will allow for future return to these sites to insure long-term success at eradication, such as during post-burn monitoring efforts. Noxious weed sites along roads traveling to and from work areas do not need to be treated or reported unless those roadsides are part of actual treatment units or are used as work staging areas. Klamath weed (St. John's wort) and bull thistle are common and widespread noxious weeds in SW Oregon. The Forest Service makes no attempt to prevent

	their spread or control their abundance during project activity. Hence AFR noxious weed mitigations will not be applied to these two species.
Recreational	There is a trail that runs the full length of Subunit 31d
Cultural Resources	Any cultural resource, or potential cultural resource, discovered during the implementation of this project will be cause for immediate cessation of any site-altering activity, with immediate notification of appropriate project personnel. Upon review by a qualified cultural resource specialist, the area of significance may be delineated on the ground and removed from the treatment area.
Other Resource Coordination	Respective resource surveys have been completed and there are no other known issues within the stand to be treated. If there are any findings to the contrary at any time, actions to protect resources will be taken immediately and respective specialist(s) will be notified. Activities prescribed would then be reassessed. Cooperation and coordination between all partners, specialists, workers and other interested and involved parties is necessary to protect and promote the multiple values and resources that exist in the project area. This prescription is the vehicle to develop that coordination and integration of objectives, and it is this prescription that ultimately serves to document agreed course of actions and ultimately prescribes treatments and activities (even, and especially, as a need arises to adapt the initial course). Any and all changes needed in treatment activities, timing, and/or sequence of activities prescribed herein as a result of changing conditions on the ground, changes in our partnerships or other organizational capacity, change in scientific understanding, and/or change in management direction; need to be documented and integrated into this or a new prescription by a certified silviculturist prior to those changes being implemented.

Harvest Systems & Transportation:

Logging Systems	The type of logging system(s) and the feasibility of removals without compromising important ecological objectives will be determined prior to initiation of operations. Such consideration will have to meet soil protection measures and result in no greater than 5% detrimental soil conditions across the subunit's area (not including the permanent transportation system). In Subunit 31d, ground-based logging will be the primary system utilized.
Landings	Only existing landings or hot logging on existing roads are currently approved for use. It is expected that only three existing landings will be utilized in Block 2.

	Any new proposed landings must be approved by the Contracting Office Representative (COR) and amended in this prescription by a certified silviculturalist. Landing restoration after completion of use shall be overseen by a qualified soil scientist, botanist, and/or other pertinent resource specialist(s). Seeding of landings with native grasses immediately following cessation of use may minimize noxious, non-native plant establishment. Monitoring for noxious non-native plants invading the landings should be conducted for at least 3 years following cessation of use, and appropriate efforts of eradication undertaken when found. In addition, any opportunities for landing erosion/sediment to enter the aquatic network will be addressed both during use, and during restoration efforts immediately following cessation of landing use.
Hauling and Road Use	Forest Service Road 2060 and the 400 spur will be used to access treatment areas. There is a high level of recreational use of these roads. Road signs must be posted on both sides of treatment areas warning forest users of activities during implementation. All vehicles will obey posted speed limits and be constantly aware of potential interaction with recreational users. Signs and/or temporary trail closures may also be needed during on-the-ground application of silvicultural activities in the vicinity of established trails. Road maintenance returning roads to a high standard of functionality following cessation of use will be required under any contract requiring hauling on established roads.

Monitoring:

For implementation monitoring please refer to "Prescription Objectives". This section is presented in both narrative form and in a table format that provides a summary of quantifiable variables to be measured during and after prescribed treatments. Effective implementation monitoring should rely on both quantitative and qualitative monitoring, with analysis of both by knowledgeable personnel. Invariably, integration of the two forms of monitoring will provide the most comprehensive and accurate assessment of outcomes. If this process is done well, it should produce results that provide impetus for adaptive management and improvement of both planning and implementation of future work in AFR. With new information and understandings developing rapidly, additional adjustments to planned activities should also be encouraged in the ongoing spirit of adaptive management.

Treatment effectiveness can be guided by the sections "Land Management Goals and Objectives", "Desired Future Dynamics" and "Desired Future Conditions". Effectiveness will be measured and analyzed over various spatial and temporal scales, including both stand level and landscape level assessments. A strong monitoring component has been integral to the development of AFR. The Ashland Forest Resiliency's Monitoring Plan will provide a comprehensive assessment of the project's overall effectiveness.

Silvicultural Prescription – AFR Block 02, Subunit 31f

Prescriber: Marty Main **Date: June 2011**

Field Checked by: COA crew, Prescriber, Cert. Silviculturist **Date: June-July, 2011**

Certified Silviculturist: _____ **Date:** 8-5-11

Associated Project: Ashland Forest Resiliency
Associated NEPA: Ashland Forest Resiliency FEIS, ROD
5th Field Watershed: Bear Creek

Stand Identity & Current Condition

Table 1.1 Current Stand Attributes

Location - Stand	Acres	Plant Assoc. *	Site Index (DF, 50yrs)	Elevation (feet)	Average % Slope (range)	Aspect (degrees)	Trees Per Acre (>4.5')	Basal Area (ft^2/ac.)	Estimated Tree Canopy Cover** (>0 dbh)	Quadratic Mean Diameter (>0" dbh)	RDI
129070-0296	16	ABCO-BENE2;	80-90	4700-4900	31 (30-40)	254-318	436	218	87	9.6	0.55

Plant Association from Atzet, et al. 1996.

**Canopy cover is the percent of a stand's ground area covered by the downward projection of all tree canopies within a stand. Individual point data crown closure) was systematically collected with a densiometer and averaged to arrive at canopy cover estimates.

Subunit Description / Context

Subunit 31f is located on 30-40% westerly to northwesterly aspects. It is topographically situated on the west side of the major ridgeline in Block 2, and includes two small peaks and an associated saddle between the two peaks. Although the ridgeline was incorrectly flagged outside of this subunit to the northeast, the prescription here extends all the way to the ridgeline, both peaks and the associated saddle, including all of these westerly aspects under one prescription. This prescription also includes a narrow finger of westerly aspects at the south end of Subunit 31g (see map). Plant Association in Subunit 31f is ABCO-BENE2, with an estimated 50 year site index for Douglas-fir of 85-90, increasing in downslope directions away from the harsher site conditions and shallower, rockier soils along the ridgeline. The subunit is dominated by a mixed stand of primarily Douglas-fir and white fir, with occasional (3 tpa) of very large, Cohort 1 ponderosa pine. Most of this stand, particularly the white fir and Douglas-fir, appears to have been initiated in the 1930's. White fir is generally smaller and more abundant as an understory species, with slightly less than 200 tpa 8" dbh or less. In addition, it is a common mid-story tree 10-16" dbh. Douglas-fir is primarily 8-24" dbh, with a QMD>0 of 12", as compared to 7" for white fir. Douglas-fir comprises slightly over ½ of the total basal area in the subunit, but also has a generally high amount of dwarf mistletoe (22.7% infection on 32 tpa, with an average severity of 3.59), particularly in the southern half of the subunit. Chinquapin is more common in this subunit than Pacific madrone, primarily as an understory species < 10" dbh. One patch of largely single stemmed Pacific madrone < 12" dbh is located just west of the saddle in the subunit, perhaps not surprising given the propensity for this topographic position to experience high severity fire and the ability of Pacific madrone to immediately respond to this disturbance through stump-sprouting and subsequently dominate a site. Both madrone and chinquapin are also more common in harsher ridgeline locations and in pockets of significant white fir mortality as a result of root diseases (primarily Annosus and Armillaria) and associated attacks from the fir engraver beetle. Stand density index is relatively uniformly distributed throughout all size classes, although there is a fairly distinct separation of species, with ponderosa pine only occurring as large overstory super dominants, Douglas-fir primarily as overstory dominants and co-dominants in the larger Cohort 2 size classes, and white fir and the hardwoods primarily in the smaller size classes up to 14-16" dbh. Both CWM and snags are low for Block 2 in this subunit that is

ominated by trees of younger age classes (80 years and less)- 10 tons and 394 pieces CWM/acre (with few larger pieces), and 27 snags/acre, all < 16 " dbh.

Land Management Goals & Parameters:

Table 2.1 Management Direction

Management Allocation:	Managed Watershed (RRNF LRMP)
Project NEPA:	Ashland Forest Resiliency FEIS, ROD
NEPA Purpose & Need:	The **Need** for action is urgent reduction of the potential for large-scale, high-severity wildland fire in the Upper Bear landscape. One hundred years of fire exclusion and fuel accumulations in this forest's wildland/urban interface now presents high potential for large-scale, high-severity wildland fire that could significantly interrupt the supply of clean water and late-successional and old-growth forest ecosystems in this Analysis Area. The **Purpose** of the action is to protect Values at Risk, reduce hazardous fuels, reduce crown fire potential, and create forest conditions that are more resilient to wildland fires.

AFR Strategic Category and Purpose:

Strategic Ridgelines: Treatments along Strategic Ridgelines are designed to: 1) reduce the extent of wildland fire everity by limiting the amount of area affected by wildland fire, 2) create areas where fire suppression efforts can be conducted more safely and effectively, 3) break up continuity of fuels over a large landscape, and 4) serve as anchor points for further area-wide treatments, such as prescribed fire and maintenance burning (AFR FEIS, 2008). All of Block 2 was designated as a Strategic Ridgeline in the ROD except for Subunits 29a and 79a.

Desired Future Dynamics

The goal for management of this subunit is to alter stand structures, densities and composition, and do so in spatial patterns that will encourage the restoration of functional processes more closely resembling the historical occurrence of more frequent but lower to moderate severity disturbance, primarily fire. This will allow opportunities to optimize landscape level wildfire management, while indirectly providing for the habitat needs of late successional dependent species and protection of municipal water supplies by reducing the spatial extent of high severity fire. Multi-cohort stand structures will be maintained, while reducing stand densities to increase tree and stand vigor and improve wildfire management possibilities through implementation of stand management practices that improve horizontal and vertical fuel discontinuities. In addition, silvicultural activities are designed to reduce, over time, mortality associated with various root and foliage diseases in white fir and Douglas-fir, as well as from various insects in all species Snags and large downed wood will remain low in the foreseeable future in this strategic location. Post-treatment stand structures, reduced fuel levels and spatial arrangements of fuels and vegetation will allow for frequent low to moderate severity fire to become the primary driver of stand dynamics and ecosystem function through wildland fire use and/or the application of prescribed fire. Until fire becomes the primary driver of stand dynamics, ecologically appropriate silvicultural activities will likely still continue to be applied, including additional variable density thinning in the future, in order to maintain structural heterogeneity. These silvicultural activities will be implemented to maintain/restore less fire prone structural characteristics of forests and help provide vegetational characteristics that can emulate those that allowed historic disturbance regimes. Increased post-treatment grass and herbaceous understory development following thinning, especially in openings, should help protect surface soils.

Prescription Objectives:

Table 3.1 Desired Stand Attributes

AFR Subuit	Location-Stand	Existing Forest Type*	Trees Per Acre* (>4.5')	Basal Area (ft^2/ac.)* (>0 dbh)	Quadratic Mean Diameter* (>0 dbh)	RDI* (>0 dbh)	Estimated Tree Canopy Cover** (>0 dbh)	Minimum Down Pieces Created (ave. per acre)
31f	6129070-0296	PSME-ABCO-PIPO	187-242	121-159	11	0.30-0.40	55-70	na

* Target ranges are for the stand average, including gaps and retention areas outside of riparian areas or landslide hazard zones. Variations outside of listed range at any one location are expected and desirable.

**Canopy cover is the percent of a stands ground area covered by the downward projection of all tree canopies within a stand. All canopy covers are targeted to remain above a minimum average of 40% per subunit. "Estimated Tree Canopy Cover" is an estimate of expected post-treatment canopy cover based on desired residual densities. It is intended to be a rough guide only and not an actual target.

Desired Future Condition (DFC): *Conditions change over time and space; this DFC reflects the desired future condition over the majority of the stand one to three growing seasons after treatment:*

A reduction in stand density, primarily by thinning-from-below of white fir and dwarfmistletoe infected Douglas-fir improves stand vigor, while retaining existing structural and species heterogeneity, increasing mean QMD, improving species compositions by decreasing white fir, and building, over time, tree and stand resistance to effects of low severity disturbances from insects, disease and/or fire. Reduction in abundance of white fir and dwarf mistletoe infected Douglas-fir occurs. Stand density reduction, both commercial and non-commercial, followed by treatment of activity fuels,, improves horizontal and vertical fuel discontinuities throughout the stand as a whole. Existing small, gap-scale openings are retained in portions of the subunit where they already exist, and accentuated around root disease pockets, infections of dwarfmistletoe, and through radial thinning around Cohort 1 conifers. Snag and CWM amounts remain moderate (with high numbers of large snags) while the diversity of understory species, including various grasses, herbaceous vegetation and others more shade intolerant species, is increased, particularly in canopy gaps.

Treatments to Achieve Management Objective (DFC):

Silvicultural treatments are applied in stands with three general classifications of tree structure in Block 2, referred to as cohorts. Cohort 1 trees are generally those that are 150-300+ years of age and 30 to 60" dbh (and occasionally as high as 80" dbh in the project area); Cohort 2 trees 60-140 years of age and 12-30" dbh (and occasionally as high as 35+" dbh); and Cohort 3 trees 1-50 years of age and 1-10" dbh (and occasionally as high as 18" dbh). For a more complete description of cohorts, the following specified treatments, and the landscape context in which they are applied, see "A Landscape Scale Approach to Management of Multiple Values in AFR: Block 2".

The following treatments are the primary silvicultural activities to be implemented in Subunit 31f.

Variable density thinning

1. Utilizes thinning-from-below, radial thinning, selection thinning and general stand density reduction.
2. Creates, retains or enhances gaps, skips and/or clumps of vegetation at various spatial scales.
3. Promote establishment and development of vigorous multi-age, multi-species cohorts, including hardwoods.
4. Creates horizontal and vertical discontinuity of ladder and canopy fuels.
5. Promotes spatial, structural, and species diversity favorable for wildlife.

Thinning-from-below

1. Focuses on release of legacy and/or the largest, healthiest trees of desired species, size classes, or growth forms primarily in Cohort 2.
2. Removes relatively smaller and less vigorous trees from primarily intermediate and suppressed crown classes.
3. Maintains canopy closure and full-site occupancy by retained trees sufficient to retard understory ladder fuel development; maintains/promotes high canopy base heights and good vertical discontinuity of fuels.
4. Improves stand vigor and minimizes long-term potential for insect and disease related mortality by re-distributing growth onto fewer larger trees, resulting in increased quadratic mean diameter (QMD) for the stand.
5. Speeds development of older tree structures and potential for development of mature stand conditions.

Radial thinning

1. Originally designed as a stand-alone treatment, radial thinning is combined with other treatment types to aggressively release preferred Cohort 1 trees by removing Cohort 2 and 3 trees to create a separation (up to 20') whenever possible between crowns. Additionally reduces stand densities out to a radius of twice the dripline, or 30-50 feet from legacy bole, while simultaneously considering species, site and stand conditions and other multiple objectives.
2. Promotes resilience and "hang-time" of Cohort 1 legacy trees; retains important seed sources for natural regeneration of more shade intolerant conifers; provides anchors for future variable density thinning.
3. Increases horizontal and vertical discontinuity of ladder and canopy fuels, and begins to build increasing structural heterogeneity is existing stands.

Individual tree and small group thinning of dwarf mistletoe infected Douglas-fir

1. Reduces abundance of dwarf mistletoe in Douglas-fir on a landscape scale by targeting treatment of infected trees, primarily of Cohorts 2 and 3 in order to promote development of large Douglas-fir trees and to limit dwarf mistletoe abundance and spread, on both a stand and landscape level (see Douglas-fir Dwarf Mistletoe Stand Severity Rating Map in "A Landscape Level Approach to Management of Multiple Values in AFR: Block 2")

Non-commercial surface and ladder fuel thinnings

1. Retains most vigorous of trees of desired species and re-distributes growth and vigor onto these trees and helps grow those into larger size classes in shorter periods of time
2. Removes less vigorous and/or other trees with undesirable characteristics for meeting subunit level goals
3. Re-established more desirable species compositions and/or those currently underrepresented in species, size classes, and/or growth forms
4. Reduces ladder fuels and increases canopy base height, creating more favorable fire management conditions
5. Prepares the site for safe application of prescribed fire regime of low severity in the future
6. Can be used to maintain or enhance existing structural diversity in the overstory
7. Can be used to remove all trees of a given species within 50' of a dwarf mistletoe infected retained overstory tree of the same species.

Ladder and Activity Fuel Piling & Burning

1. Reduces activity generated available fuels within the subunit.
2. Maintains/improves stands ability to modify landscape fire behavior by limiting canopy fire
3. Places piles strategically to minimize damage to retained trees/vegetation and associated resource values
4. Prepares stands for application of low severity prescribed fire
5. Leaves 1-2 slash piles per acre as wildlife habitat

Prescribed fire

1. To be implemented on a maintenance schedule and to be a driver of stand dynamics only once conditions are ready and favorable to support desired goals and objectives described previously herein (also refer to resource coordination section; favorable conditions are not expected to be reached after this initial treatment)

2. Maintain low surface and ladder fuels
3. Maintain & improve the stands' ability to modify landscape fire behavior by limiting risk of active crown fire
4. Places special emphasis on protecting desired species from fire related mortality on a schedule that allows for the regeneration and development of multiple cohorts
5. Favors pine establishment and release by reducing competition and preparing favorable light conditions
6. An assessment of fuel conditions, desired tree regeneration, and competing vegetation should be made to determine the need to reduce fuels and the need to protect and/or maintain desired species compositions based on stated desired future dynamics prior to any prescribed fire
7. Assess conditions and consider the need for treatment 1 – 5 years after initial treatment, and then on a 7 – 15 year cycle

Treatment Narrative

Both commercial and follow-up non-commercial thinning are needed in Subunit 31f to meet several important objectives- 1) create less wildfire prone conditions by reducing fuel continuity in both horizontal and vertical directions 2) releasing and promoting larger dwarf mistletoe-free Douglas-fir and shifting species composition away from white fir, and 3) improving vigor of the large Cohort 1 ponderosa pine through radial thinning. These more westerly aspects are less advantageous for the growth of white fir and this species should be aggressively thinned to reduce overall stocking levels in the subunit. Retained white fir should be vigorous, with crown ratios of 40% or greater, and maintained only where needed to meet structural objectives. In addition, variable density thinning should improve overall structural heterogeneity by radially thinning around Cohort 1 pines, as well as creating spot openings in the existing stands through individual and small group thinning of dwarf mistletoe infected Douglas-fir, enlarging root disease pockets by additional removal of white fir, and thinning groups of less vigorous white fir, particularly if in so doing vigorous overstory Douglas-fir can be released. Vigorous madrone ≥14" dbh and chinquapin ≥10" dbh should be retained with greater etention in existing root disease pockets and other openings. This variable density thinning should create and/or enhance patches and openings of low canopy fuels, improving the otherwise relatively continuous nature of the crown fuels. Non-commercial thinning should additionally create good vertical separation between surface and crown fuels. Collectively, they should improve wildfire management conditions in this strategic location, with more aggressive fuels reduction within 100-200 feet of the ridgeline and below the saddle. All activity fuels should be piled and burned, followed by a prescribed underburn within 2-5 years. Care should be taken to protect the large Cohort 1 ponderosa pine in the unit, including raking fuels and duff away from the base of theses trees at least 1 year (and preferably 2 years) prior to burning. Maintaining wildfire management effectiveness of this subunit is a high priority given its topographic location on the west side of, and including, the main ridgeline of Block 2. Prescribed underburning in the future on a 7-15 year cycle should continue to maintain more open stand conditions, while favoring more fire tolerant pines and Douglas-fir and continuing to discourage excessive development of white fir. Assess the need to plant these species in openings after completing the first prescribed underburn.

Applicable Project Criteria, Mitigation Measures, & Resource Coordination:

Slope Stability/Soil Resource Protection	Understory Vegetation- Thinning of stands, even lightly, should stimulate development of understory grasses, herbaceous vegetation, and other understory vegetation that can also provide protection form excess surface soil erosion.
Forest Health	Dwarf mistletoe in Douglas-fir is high in this subunit; infected Cohort 2 and 3 trees should be treated, primarily by falling and removal.

Wildlife	Efforts will be made to retain trees, vegetation and land formations with evidence of use by wildlife (e.g. bird or wood rat nests, burrows, cavities, and hollows, etc.). Large hardwoods have a disproportionate high amount of use by a number of wildlife species (including fishers elsewhere in their range), particularly given their somewhat uncommon occurrence in Block 2. Radial thinning and other silvicultural practices that encourage the long-term viability of large hardwoods in Block 2 will be encouraged. Unthinned patches in each subunit ("skips") will be used to provide additional cover and habitat diversity. Small existing canopy gaps add greater structural and species diversity, essential elements of wildlife habitat improvement, and will be particularly important for those species that utilize the early successional vegetation associated with these openings.
Snags and Coarse Woody Material	Snags >8" dbh will be retained unless they pose a threat to worker safety or pose a fire risk. Snags greater than 10 inches dbh that require felling for safety reasons will be left long and contour felled across the slope to serve as coarse woody debris. Landscape level management of snags and/or coarse woody material are discussed in "A Landscape Approach to Management of Multiple Values in AFR: Block 2").
Prescribed Underburning	The following criteria must be met before fire is prescribed and implemented as a maintenance or stand driver under this prescription: -Conditions, including stand vigor and composition, must favor low severity fire effects. -Burning can be accomplished at intensities that will retain duff layers in an amount and distribution that prevents unacceptable levels of surface soil erosion and sediment delivery off-site. Effective ground cover should be protected such that 70% is retained after one season and 85% after 2 seasons. -Stand and individual tree vigor are such that the application of prescribed underburning will not unduly stress preferred leave trees and contribute to untimely mortality. White fir and hardwoods will be particularly challenging to maintain undamaged during application of prescribed underburning. -Protection of desired structures (i.e. large overstory trees, desired advanced regeneration, Pacific madrone) may require pre-treatment prior to burning (immediately before or up to 2-3 years before) in order to them from unnecessary scorch, crown damage, cambial heating, soil heating or other fire-related injury. In these cases practices such as removing duff and ladder fuels and/or fuel accumulations away from the tree bole (ideally 1-2 years prior to burning); spring burning; burning during cool, moist and/or windy conditions to quickly dissipate heat delivery to the tree boles and root systems; slow and careful ignition patterns, and/or other practices can help minimize damage to these features.

	The assessment by a certified silviculturist of preparatory needs, mitigation measures, and sequence of treatments will ensure integration of the multiple treatment objectives and management goals. It is currently expected that favorable conditions across Subunit 31f may occur within 2-5 years following these initial silvicultural treatments.
Hydrology	The implementation of silvicultural activities in the Ashland watershed is strongly dependent on outcomes that protect the municipal water supply for the City of Ashland. Although the area in Subunit 31f does not drain into Reeder Reservoir, practices implemented (e.g. fuels management and wildfire reduction) will indirectly protect municipal water objectives, as the overall decrease in the likelihood and size of high severity fire decreases the risk associated with increased sediment delivery that accompanies large-scale, high-severity wildfire events; Commercial density management in Subunit 31f will likely utilize carefully applied and mitigated ground-based logging systems in the most northernmost portions of the subunit. Helicopter logging systems will likely be used in the large portion of the subunit where ground-based logging is impractical, and will minimize ground disturbance and subsequent potential negative effects on hydrologic function. Roads serve as extensions of the hydrologic network, increasing both the rapidity and size of hydrologic response during major storm events, thereby increasing the potential for significant erosion, sediment delivery and flooding. No new roads are proposed in Block 2. Maintenance of existing roads prior to, during and following use is prioritized
Botanical Resources	Before marking begins the Forest Botanist must be consulted to address any potential PETS species presence and mitigation measures necessary.
Native Grass Seeding	Seeding when appropriate to encourage native plant establishment in the herbaceous vegetation layer may follow burning activities. Seeding with native grasses may help impede non-native species invasion, discourage development of more fire-prone shrub species, and add diversity to the plant communities. Factors that will influence a choice to initiate native grass seeding are elevation, aspect, proximity to non-native plants already encroaching from the urban and valley areas, pre-treatment herbaceous plant cover and diversity, extent and intensity of disturbance associated with harvest or burning, and if a need is perceived for erosion control seeding. Native forb seed may be included in seed mixes in the future for similar reasons. At this time, the Forest Service has native grass seed grown from local wild ecotypes but no native forb seed meeting the same source criteria. The decision to apply native grass seed will be made collectively by the certified silviculturist and the Forest or District Botanist. Seed mixes tailored to the stand would be provided by the Forest or District Botanist.

Noxious Weeds	If noxious weed sites are discovered during implementation, these need to be mitigated. Project leaders, work crew leaders, and crew members have a choice at noxious weed sites; the infested sites must either be avoided entirely or their noxious weeds must be fully "treated" before silvicultural treatments occur there. Treatment for noxious weed removal normally means pull, cut, or grub out (depending on species) all the noxious weed plants present and pile the material for later burning. Clean pants cuffs, pockets, boot soles, clothing, tools, machinery, and vehicles of soil or plant parts before proceeding to new areas. Identifying these locations on a map, GPS, etc and sharing that information with appropriate AFR personnel will allow for future return to these sites to insure long-term success at eradication, such as during post-burn monitoring efforts. Noxious weed sites along roads traveling to and from work areas do not need to be treated or reported unless those roadsides are part of actual treatment units or are used as work staging areas. Klamath weed (St. John's wort) and bull thistle are common and widespread noxious weeds in SW Oregon. The Forest Service makes no attempt to prevent their spread or control their abundance during project activity. Hence AFR noxious weed mitigations will not be applied to these two species.
Cultural Resources	Any cultural resource, or potential cultural resource, discovered during the implementation of this project will be cause for immediate cessation of any site-altering activity, with immediate notification of appropriate project personnel. Upon review by a qualified cultural resource specialist, the area of significance may be delineated on the ground and removed from the treatment area.
Other Resource Coordination	Respective resource surveys have been completed and there are no other known issues within the stand to be treated. If there are any findings to the contrary at any time, actions to protect resources will be taken immediately and respective specialist(s) will be notified. Activities prescribed would then be reassessed. Cooperation and coordination between all partners, specialists, workers and other interested and involved parties is necessary to protect and promote the multiple values and resources that exist in the project area. This prescription is the vehicle to develop that coordination and integration of objectives, and it is this prescription that ultimately serves to document agreed course of actions and ultimately prescribes treatments and activities (even, and especially, as a need arises to adapt the initial course). Any and all changes needed in treatment activities, timing, and/or sequence of activities prescribed herein as a result of changing conditions on the ground, changes in our partnerships or other organizational capacity, change in scientific understanding, and/or change in management direction; need to be documented and integrated into this or a new prescription by a certified silviculturist prior to

	those changes being implemented.

Harvest Systems & Transportation:

Logging Systems	The type of logging system(s) and the feasibility of removals without compromising important ecological objectives will be determined prior to initiation of operations. Such consideration will have to meet soil protection measures and result in no greater than 5% detrimental soil conditions across the subunit's area (not including the permanent transportation system). In Block 2, helicopter logging will be the primary system used, although ground-based logging may be utilized in portions of Subunit 31f.
Landings	Only existing landings or hot logging on existing roads are currently approved for use. It is expected that only three existing landings will be utilized in Block 2. Any new proposed landings must be approved by the Contracting Office Representative (COR) and amended in this prescription by a certified silviculturist. Landing restoration after completion of use shall be overseen by a qualified soil scientist, botanist, and/or other pertinent resource specialist(s). Seeding of landings with native grasses immediately following cessation of use may minimize noxious, non-native plant establishment. Monitoring for noxious non-native plants invading the landings should be conducted for at least 3 years following cessation of use, and appropriate efforts of eradication undertaken when found. In addition, any opportunities for landing erosion/sediment to enter the aquatic network will be addressed both during use, and during restoration efforts immediately following cessation of landing use.
Hauling and Road Use	The 400 spur of Forest Service Road 2060 will be used to access treatment areas. There is a high level of recreational use of this road. Road signs must be posted on both sides of treatment areas warning forest users of activities during implementation. All vehicles will obey posted speed limits and be constantly aware of potential interaction with recreational users. Signs and/or temporary trail closures may also be needed during on-the-ground application of silvicultural activities in the vicinity of established trails. Road maintenance returning roads to a high standard of functionality following cessation of use will be required under any contract requiring hauling on established roads.

Monitoring:

For implementation monitoring please refer to "Prescription Objectives". This section is presented in both narrative form and in a table format that provides a summary of quantifiable variables to be measured during and after prescribed

reatments. Effective implementation monitoring should rely on both quantitative and qualitative monitoring, with analysis of both by knowledgeable personnel. Invariably, integration of the two forms of monitoring will provide the most comprehensive and accurate assessment of outcomes. If this process is done well, it should produce results that provide impetus for adaptive management and improvement of both planning and implementation of future work in AFR. With new information and understandings developing rapidly, additional adjustments to planned activities should also be encouraged in the ongoing spirit of adaptive management.

Treatment effectiveness can be guided by the sections "Land Management Goals and Objectives", "Desired Future Dynamics" and "Desired Future Conditions". Effectiveness will be measured and analyzed over varions spatial and temporal scales, including both stand level and landscape level assessments. A strong monitoring component has been integral to the development of AFR. The Ashland Forest Resiliency's Monitoring Plan will provide a comprehensive assessment of the project's overall effectiveness.

Silvicultural Prescription – AFR Block 02, Subunit 31g

Prescriber: Marty Main **Date: June 2011**

Field Checked by: COA crew, Prescriber **Date: June-July 2011**

Certified Silviculturist: _____ **Date:** 8-5-11

Associated Project: Ashland Forest Resiliency
Associated NEPA: Ashland Forest Resiliency FEIS, ROD
5th Field Watershed: Bear Creek

Stand Identity & Current Condition

Table 1.1 Current Stand Attributes

Location - Stand	Acres	Plant Assoc. *	Site Index (DF, 50yrs)	Elevation (feet)	Average % Slope (range)	Aspect (degrees)	Trees Per Acre (>4.5')	Basal Area (ft^2/ac.)	Estimated Tree Canopy Cover** (>0 dbh)	Quadratic Mean Diameter (>0" dbh)	RDI
129070-0295	20	ABCO-PSME/ROGY; ABCO-BENE2;	80-90	4650-4800	22 (12-35)	254-318	714	246	87	8.0	0.76

Plant Association from Atzet, et al. 1996.

*Canopy cover is the percent of a stand's ground area covered by the downward projection of all tree canopies within a stand. Individual point data (crown closure) was systematically collected with a densiometer and averaged to arrive at canopy cover estimates.

Subunit Description / Context

Subunit 31g was initially added as a subunit to Block 2 to bolster the wildfire management capabilities on the western flanks of the major ridgeline of Subunit 31d, at least up to the ½ mile home range of a spotted owl nest site. It is characterized by a diverse set of site conditions, including very productive valley-like conditions on both northerly and southerly aspects; a broad ridgeline separating the Wagner Creek drainage from the Ashland Creek watershed; associated easterly aspects dropping into the aforementioned valley-like setting; a rocky southerly aspect at the south end of the prominent ridgeline and a westerly aspect more closely associated with Subunit 31f to the east. These westerly aspects should be managed under a prescription written for Subunit 31f, which contains more similar site and stand conditions. The rest of this subunit is located on slopes that range mostly from 0-20%, although several pitches immediately south and east of the ridgeline range higher- up to 40%+. It appears that the stands in Subunit 31g were largely initiated during the early workings of the Skyline Mine from the period of 1920-1940, with the exception of large Cohort 1 conifers. Most of the subunit, especially on the major ridgeline, is dominated by a two cohort stand with these very large Cohort 1 conifers, primarily ponderosa pine and to a lesser extent Douglas-fir and white fir, above a dense to very dense stand of younger Cohort 2 and 3 mixed conifers and hardwoods up to 70 years of age. Dwarf mistletoe in Douglas-fir is relatively severe in this location and the associated white fir tends to be in poor to fair condition in this less productive site. Excessive stand densities in the Cohort 2 and 3 stands have highly stressed the large Cohort 1 conifers, and larger Cohort 1 snags are not uncommon. Portions of the subunit (particularly between the ridgeline and adjacent subunits 31c, 31d, and 31f) contain a second stand type dominated by largely even-aged Cohort 2 Douglas-fir and white fir primarily 70-90 years of age and 8-24" dbh, with a sparse understory and good separation between surface fuels and crown fuels- a favorable wildfire management condition. Dwarf mistletoe in Douglas-fir is generally very low in the second stand type where Douglas-fir is generally the most dominant and vigorous, although remnant white fir are also common (9tpa>

6"dbh). CWM in this subunit is in the moderate range for Block 2 as a whole, averaging 26.7 tons per acre. Snags are also low for Block 2 as a whole, but include a relatively high number of snags > 20" dbh (10/acre).

Land Management Goals & Parameters:

Table 2.1 Management Direction

Management Allocation:	Managed Watershed (RRNF LRMP)
Project NEPA:	Ashland Forest Resiliency FEIS, ROD
NEPA Purpose & Need:	The **Need** for action is urgent reduction of the potential for large-scale, high-severity wildland fire in the Upper Bear landscape. One hundred years of fire exclusion and fuel accumulations in this forest's wildland/urban interface now presents high potential for large-scale, high-severity wildland fire that could significantly interrupt the supply of clean water and late-successional and old-growth forest ecosystems in this Analysis Area. The **Purpose** of the action is to protect Values at Risk, reduce hazardous fuels, reduce crown fire potential, and create forest conditions that are more resilient to wildland fires.

AFR Strategic Category and Purpose:

Strategic Ridgelines: Treatments along Strategic Ridgelines are designed to: 1) reduce the extent of wildland fire severity by limiting the amount of area affected by wildland fire, 2) create areas where fire suppression efforts can be conducted more safely and effectively, 3) break up continuity of fuels over a large landscape, and 4) serve as anchor points for further area-wide treatments, such as prescribed fire and maintenance burning (AFR FEIS, 2008). All of Block 2 was designated as a Strategic Ridgeline in the ROD except for Subunits 29a and 79a.

Desired Future Dynamics

The goal for management of this subunit is to alter stand structures, densities and composition, and do so in spatial patterns that will encourage the restoration of functional processes more closely resembling the historical occurrence of more frequent but lower to moderate severity disturbance, primarily fire. This will allow opportunities to optimize landscape level wildfire management, while indirectly providing for the habitat needs of late successional dependent species and protection of municipal water supplies by reducing the spatial extent of high severity fire. Multi-cohort stand structures on a subunit-wide basis will be maintained, while reducing stand densities to increase tree and stand vigor and improve wildfire management possibilities by improving horizontal and vertical fuel discontinuities. In addition, silvicultural activities are designed to reduce, over time, mortality associated with various root and foliage diseases in white fir and Douglas-fir, as well as from various insects in all species Snags and large downed wood will remain low to moderate in the foreseeable future in this strategic location. Post-treatment stand structures, reduced fuel levels and spatial arrangements of fuels and vegetation will allow for frequent low to moderate severity fire to become the primary driver of stand dynamics and ecosystem function through wildland fire use and/or the application of prescribed fire. Until fire becomes the primary driver of stand dynamics, ecologically appropriate silvicultural activities will likely still continue to be applied, including additional variable density thinning in the future, in order to maintain structural heterogeneity. These silvicultural activities will be implemented to maintain/restore less fire prone structural characteristics of forests and help provide vegetational characteristics that can emulate those that allowed historic disturbance regimes. Increased post-treatment grass and herbaceous understory development following thinning, especially in openings, should help protect surface soils.

Prescription Objectives:

Table 3.1 Desired Stand Attributes

AFR Subunit	Location-Stand	Existing Forest Type*	Trees Per Acre* (>4.5')	Basal Area (ft^2/ac.)* (>0 dbh)	Quadratic Mean Diameter* (>0 dbh)	RDI* (>0 dbh)	Estimated Tree Canopy Cover** (>0 dbh)
31g	6129070-0295	PSME-ABCO-PIPO	119-183	113-153	12-13	0.30-0.40	55-70

* Target ranges are for the stand average, including gaps and retention areas outside of riparian areas or landslide hazard zones. Variations outside of listed range at any one location are expected and desirable.

**Canopy cover is the percent of a stands ground area covered by the downward projection of all tree canopies within a stand. All canopy covers are targeted to remain above a minimum average of 40% per subunit. "Estimated Tree Canopy Cover" is an estimate of expected post-treatment canopy cover based on desired residual densities. It is intended to be a rough guide only and not an actual target.

Desired Future Condition (DFC): *Conditions change over time and space; this DFC reflects the desired future condition over the majority of the stand one to three growing seasons after treatment:*

A reduction in stand density, primarily by thinning-from-below of white fir and dwarfmistletoe infected Douglas-fir improves stand vigor, while retaining existing structural and species heterogeneity, increasing mean QMD, improving species compositions, and building, over time, tree and stand resistance to effects of low severity disturbances from insects, disease and/or fire. Reduction in abundance of white fir and dwarf mistletoe infected Douglas-fir occurs. Stand density reduction, both commercial and non-commercial, followed by treatment of activity fuels, improves horizontal and vertical fuel discontinuities throughout the stand as a whole. Existing small gap scale openings are retained in portions of he subunit where they already exist, and accentuated around root disease pockets, infections of dwarfmistletoe, and through radial thinning around Cohort 1 conifers. Snag and CWM amounts remain moderate (with high numbers of large snags) while the diversity of understory species, including various grasses, herbaceous vegetation and others more shade intolerant species, is increased, particularly in canopy gaps.

Treatments to Achieve Management Objective (DFC):

Silvicultural treatments are applied in stands with three general classifications of tree structure in Block 2, referred to as cohorts. Cohort 1 trees are generally those that are 150-300+ years of age and 30 to 60" dbh (and occasionally as high as 80" dbh in the project area); Cohort 2 trees 60-140 years of age and 12-30" dbh (and occasionally as high as 35+" dbh); and Cohort 3 trees 1-50 years of age and 1-10" dbh (and occasionally as high as 18" dbh). For a more complete description of cohorts, the following specified treatments, and the landscape context in which they are applied, see "A Landscape Scale Approach to Management of Multiple Values in AFR: Block 2".

The following treatments are the primary silvicultural activities to be implemented in Subunit 31g.

Variable density thinning

1. Utilizes thinning-from-below, radial thinning, selection thinning and general stand density reduction.
2. Creates, retains or enhances gaps, skips and/or clumps of vegetation at various spatial scales.
3. Promote establishment and development of vigorous multi-age, multi-species cohorts, including hardwoods.
4. Creates horizontal and vertical discontinuity of ladder and canopy fuels.
5. Promotes spatial, structural, and species diversity favorable for wildlife.

Thinning-from-below

1. Focuses on release of legacy and/or the largest, healthiest trees of desired species, size classes, or growth forms primarily in Cohort 2.
2. Removes relatively smaller and less vigorous trees from primarily intermediate and suppressed crown classes.
3. Maintains canopy closure and full-site occupancy by retained trees sufficient to retard understory ladder fuel development; maintains/promotes high canopy base heights and good vertical discontinuity of fuels.
4. Improves stand vigor and minimizes long-term potential for insect and disease related mortality by re-distributing growth onto fewer larger trees, resulting in increased quadratic mean diameter (QMD) for the stand.
5. Speeds development of older tree structures and potential for development of mature stand conditions.

Radial thinning

1. Originally designed as a stand-alone treatment, radial thinning is combined with other treatment types to aggressively release preferred Cohort 1 trees by removing Cohort 2 and 3 trees to create a separation (up to 20') whenever possible between crowns. Additionally reduces stand densities out to a radius of twice the dripline, or 30-50 feet from legacy bole, while simultaneously considering species, site and stand conditions and other multiple objectives.
2. Promotes resilience and "hang-time" of Cohort 1 legacy trees; retains important seed sources for natural regeneration of more shade intolerant conifers; provides anchors for future variable density thinning.
3. Increases horizontal and vertical discontinuity of ladder and canopy fuels, and begins to build increasing structural heterogeneity is existing stands.

Individual tree and small group thinning of dwarf mistletoe infected Douglas-fir

1. Reduces abundance of dwarf mistletoe in Douglas-fir on a landscape scale by targeting treatment of infected trees, primarily of Cohorts 2 and 3 in order to promote development of large Douglas-fir trees and to limit dwarf mistletoe abundance and spread, on both a stand and landscape level (see Douglas-fir Dwarf Mistletoe Stand Severity Rating Map in "A Landscape Level Approach to Management of Multiple Values in AFR: Block 2")

Non-commercial surface and ladder fuel silvicultural thinnings

1. Retains most vigorous of trees of desired species and re-distributes growth and vigor onto these trees and helps grow those into larger size classes in shorter periods of time
2. Removes less vigorous and/or other trees with undesirable characteristics for meeting subunit level goals
3. Re-established more desirable species compositions and/or those currently underrepresented in species, size classes, and/or growth forms
4. Reduces ladder fuels and increases height-to-crown base, creating more favorable fire management conditions
5. Prepares the site for safe application of prescribed fire regime of low severity in the future
6. Can be used to maintain or enhance existing structural diversity in the overstory
7. Can be used to remove all trees of a given species within 50' of a dwarf mistletoe infected retained overstory tree of the same species.

Ladder and Activity Fuel Piling & Burning

1. Reduces activity generated available fuels within the subunit.
2. Maintains/improves stands ability to modify landscape fire behavior by limiting canopy fire
3. Places piles strategically to minimize damage to retained trees/vegetation and associated resource values
4. Prepares stands for application of low severity prescribed fire
5. Leaves 1-2 slash piles per acre as wildlife habitat

Prescribed fire

1. To be implemented on a maintenance schedule and to be a driver of stand dynamics only once conditions are ready and favorable to support desired goals and objectives described previously herein (also refer to resource coordination section; favorable conditions are not expected to be reached after this initial treatment)

2. Maintain low surface and ladder fuels
3. Maintain & improve the stands' ability to modify landscape fire behavior by limiting risk of active crown fire
4. Places special emphasis on protecting desired species from fire related mortality on a schedule that allows for the regeneration and development of multiple cohorts
5. Favors pine establishment and release by reducing competition and preparing favorable light conditions
6. An assessment of fuel conditions, desired tree regeneration, and competing vegetation should be made to determine the need to reduce fuels and the need to protect and/or maintain desired species compositions based on stated desired future dynamics prior to any prescribed fire
7. Assess conditions and consider the need for treatment 1 – 5 years after initial treatment, and then on a 7 – 15 year cycle

Treatment Narrative

Subunit 31g is a critical portion of a major fuel reduction zone in Block 2, adding to and complementing adjacent Subunits 31d and 31f. This subunit and ridgeline provide a critical topographical opportunity to stop an advancing wildfire from the Wagner Creek drainage into the Ashland watershed, and vice-versa. The large bulk of this subunit should be managed by reducing stand densities with both commercial and non-commercial thinning-from-below, retaining enough overstory density to continue to retard understory development in most places. Douglas-fir should be the primary Cohort 2 conifer retained in these stand situations, removing a high percentage of the associated white fir. On the ridgeline positions and on rockier less productive portions of the subunit, more aggressive non-commercial thinning will be needed to create more open stands and a more horizontally discontinuous stand condition. Coupled with radial thinning, these treatments should improve the vigor and long-term viability of the large Cohort 1 pines that are common in this area. Both white fir and dwarf mistletoe infected Douglas-fir should be removed from these less productive portions of the subunit. In these ridgeline locations, retained basal areas should range from 100 to 135 BA/A, while elsewhere in the more productive portions of the subunit, higher BA's can be retained. Averages for the subunit as a whole should be 113-153 BA/A (RDI 0.30-0.40). White fir is not a desirable leave tree, but some retention may be appropriate to meet current structural objectives, unless root disease is evident in the area. Apply Sporax to all white fir stumps ≥12" dbh. Hardwoods are uncommon and small in this subunit, but wherever they are of a more significant size (16"+ dbh) they should be retained. Most of this subunit can be harvested using ground-based logging systems if carefully laid out and implemented. Activity fuels should be piled and burned, followed by a prescribed underburn within several years as trees release and build vigor. The ridgelines, in particular, should be maintained over time with frequent fire applied on a 5-15 year cycle. Rake duff and fuels away from large pines 1-2 years before applying prescribed fire, which should be cool and conservative initially. Assess the need to plant pines (both ponderosa and rust-resistant sugar) and Douglas-fir in openings immediately following the first underburn.

Applicable Project Criteria, Mitigation Measures, & Resource Coordination:

Slope Stability/Soil Resource Protection	Understory Vegetation- Thinning of stands, even lightly, should stimulate development of understory grasses, herbaceous vegetation, and other understory vegetation that can also provide protection form excess surface soil erosion.
Forest Health	Dwarf mistletoe in Douglas-fir is moderate in this subunit; infected Cohort 2 and 3 trees should be treated, primarily by falling and removal. Fresh cut stumps of true fir will be protected from inoculation by Annosus root disease through the application of Sporax, or other approved product containing

	borax, on fresh cut stumps 12" dbh and larger within 24 hours following falling.
Wildlife	Efforts will be made to retain trees, vegetation and land formations with evidence of use by wildlife (e.g. bird or wood rat nests, burrows, cavities, and hollows, etc.). Large hardwoods have a disproportionate high amount of use by a number of wildlife species (including fishers elsewhere in their range), particularly given their somewhat uncommon occurrence in Block 2. Radial thinning and other silvicultural practices that encourage the long-term viability of large hardwoods in Block 2 will be encouraged. Unthinned patches in each subunit ("skips") will be used to provide additional cover and habitat diversity. Small existing canopy gaps add greater structural and species diversity, essential elements of wildlife habitat improvement, and will be particularly important for those species that utilize the early successional vegetation associated with these openings.
Snags and Coarse Woody Material	Snags >8" dbh will be retained unless they pose a threat to worker safety or pose a fire risk. Snags greater than 10 inches dbh that require felling for safety reasons will be left long and contour felled across the slope to serve as coarse woody debris. Landscape level management of snags and/or coarse woody material are discussed in "A Landscape Approach to Management of Multiple Values in AFR: Block 2").
Prescribed Underburning	The following criteria must be met before fire is prescribed and implemented as a maintenance or stand driver under this prescription: -Conditions, including stand vigor and composition, must favor low severity fire effects. -Burning can be accomplished at intensities that will retain duff layers in an amount and distribution that prevents unacceptable levels of surface soil erosion and sediment delivery off-site. Effective ground cover should be protected such that 70% is retained after one season and 85% after 2 seasons. -Stand and individual tree vigor are such that the application of prescribed underburning will not unduly stress preferred leave trees and contribute to untimely mortality. White fir and hardwoods will be particularly challenging to maintain undamaged during application of prescribed underburning. -Protection of desired structures (e.g.. large overstory trees) may require pre-treatment prior to burning (immediately before or up to 2-3 years before) in order to protect them from unnecessary scorch, crown damage, cambial heating, soil heating or other fire-related injury. In these cases practices such as removing duff and ladder fuels and/or fuel accumulations away from the tree bole (ideally 1-2 years prior to burning); spring burning; burning during cool, moist and/or windy conditions to quickly dissipate heat delivery to the tree boles and root systems; slow and careful ignition patterns, and/or other practices can help minimize damage to these features.

	The assessment by a certified silviculturist of preparatory needs, mitigation measures, and sequence of treatments will ensure integration of the multiple treatment objectives and management goals. It is currently expected that favorable conditions across Subunit 31g may occur within several years following these initial silvicultural treatments.
Hydrology	The implementation of silvicultural activities in the Ashland watershed is strongly dependent on outcomes that protect the municipal water supply for the City of Ashland. Although the area in Subunit 31g does not drain into Reeder Reservoir, practices implemented (e.g. fuels management and wildfire reduction) will indirectly protect municipal water objectives, as the overall decrease in the likelihood and size of high severity fire decreases the risk associated with increased sediment delivery that accompanies large-scale, high-severity wildfire events; Commercial density management in Subunit 31g will likely utilize carefully applied and mitigated ground-based logging systems in most of the subunit. Helicopter logging systems will likely be used in any portions of the subunit where ground-based logging is deemed impractical (e.g. >20% slopes), which will minimize ground disturbance and subsequent negative effects on hydrologic function. Roads serve as extensions of the hydrologic network, increasing both the rapidity and size of hydrologic response during major storm events, thereby increasing the potential for significant erosion, sediment delivery and flooding. No new roads are proposed in Block 2. Maintenance of existing roads prior to, during and following use is prioritized
Botanical Resources	Before marking begins the Forest Botanist must be consulted to address any potential PETS species presence and mitigation measures necessary.
Native Grass Seeding	Seeding when appropriate to encourage native plant establishment in the herbaceous vegetation layer may follow burning activities. Seeding with native grasses may help impede non-native species invasion, discourage development of more fire-prone shrub species, and add diversity to the plant communities. Factors that will influence a choice to initiate native grass seeding are elevation, aspect, proximity to non-native plants already encroaching from the urban and valley areas, pre-treatment herbaceous plant cover and diversity, extent and intensity of disturbance associated with harvest or burning, and if a need is perceived for erosion control seeding. Native forb seed may be included in seed mixes in the future for similar reasons. At this time, the Forest Service has native grass seed grown from local wild ecotypes but no native forb seed meeting the same source criteria. The decision to apply native grass seed will be made collectively by the certified silviculturist and the Forest or District Botanist. Seed mixes tailored to the stand

	would be provided by the Forest or District Botanist.
Noxious Weeds	If noxious weed sites are discovered during implementation, these need to be mitigated. Project leaders, work crew leaders, and crew members have a choice at noxious weed sites; the infested sites must either be avoided entirely or their noxious weeds must be fully "treated" before silvicultural treatments occur there. Treatment for noxious weed removal normally means pull, cut, or grub out (depending on species) all the noxious weed plants present and pile the material for later burning. Clean pants cuffs, pockets, boot soles, clothing, tools, machinery, and vehicles of soil or plant parts before proceeding to new areas. Identifying these locations on a map, GPS, etc and sharing that information with appropriate AFR personnel will allow for future return to these sites to insure long-term success at eradication, such as during post-burn monitoring efforts. Noxious weed sites along roads traveling to and from work areas do not need to be treated or reported unless those roadsides are part of actual treatment units or are used as work staging areas. Klamath weed (St. John's wort) and bull thistle are common and widespread noxious weeds in SW Oregon. The Forest Service makes no attempt to prevent their spread or control their abundance during project activity. Hence AFR noxious weed mitigations will not be applied to these two species.
Cultural Resources	Any cultural resource, or potential cultural resource, discovered during the implementation of this project will be cause for immediate cessation of any site-altering activity, with immediate notification of appropriate project personnel. Upon review by a qualified cultural resource specialist, the area of significance may be delineated on the ground and removed from the treatment area.
Other Resource Coordination	Respective resource surveys have been completed and there are no other known issues within the stand to be treated. If there are any findings to the contrary at any time, actions to protect resources will be taken immediately and respective specialist(s) will be notified. Activities prescribed would then be reassessed. Cooperation and coordination between all partners, specialists, workers and other interested and involved parties is necessary to protect and promote the multiple values and resources that exist in the project area. This prescription is the vehicle to develop that coordination and integration of objectives, and it is this prescription that ultimately serves to document agreed course of actions and ultimately prescribes treatments and activities (even, and especially, as a need arises to adapt the initial course). Any and all changes needed in treatment activities, timing, and/or sequence of activities prescribed herein as a result of changing conditions on the ground, changes in our partnerships or other organizational capacity, change in scientific understanding, and/or change in management direction; need to be documented

	and integrated into this or a new prescription by a certified silviculturist prior to those changes being implemented.

Harvest Systems & Transportation:

Logging Systems	The type of logging system(s) and the feasibility of removals without compromising important ecological objectives will be determined prior to initiation of operations. Such consideration will have to meet soil protection measures and result in no greater than 5% detrimental soil conditions across the subunit's area (not including the permanent transportation system). In Block 2, helicopter logging will be the primary system used, although ground-based logging will likely be utilized in most of Subunit 31g.
Landings	Only existing landings or hot logging on existing roads are currently approved for use. It is expected that only three existing landings will be utilized in Block 2. Any new proposed landings must be approved by the Contracting Office Representative (COR) and amended in this prescription by a certified silviculturist. Landing restoration after completion of use shall be overseen by a qualified soil scientist, botanist, and/or other pertinent resource specialist(s). Seeding of landings with native grasses immediately following cessation of use may minimize noxious, non-native plant establishment. Monitoring for noxious non-native plants invading the landings should be conducted for at least 3 years following cessation of use, and appropriate efforts of eradication undertaken when found. In addition, any opportunities for landing erosion/sediment to enter the aquatic network will be addressed both during use, and during restoration efforts immediately following cessation of landing use.
Hauling and Road Use	The 405 spur of Forest Service Road 2060 will be used to access treatment areas. There is a high level of recreational use of this road. Road signs must be posted on both sides of treatment areas warning forest users of activities during implementation. All vehicles will obey posted speed limits and be constantly aware of potential interaction with recreational users. Signs and/or temporary trail closures may also be needed during on-the-ground application of silvicultural activities in the vicinity of established trails. Road maintenance returning roads to a high standard of functionality following cessation of use will be required under any contract requiring hauling on established roads.

Monitoring:

'or implementation monitoring please refer to "Prescription Objectives". This section is presented in both narrative form and in a table format that provides a summary of quantifiable variables to be measured during and after prescribed treatments. Effective implementation monitoring should rely on both quantitative and qualitative monitoring, with analysis of both by knowledgeable personnel. Invariably, integration of the two forms of monitoring will provide the most comprehensive and accurate assessment of outcomes. If this process is done well, it should produce results that provide impetus for adaptive management and improvement of both planning and implementation of future work in AFR. With new information and understandings developing rapidly, additional adjustments to planned activities should also be encouraged in the ongoing spirit of adaptive management.

Treatment effectiveness can be guided by the sections "Land Management Goals and Objectives", "Desired Future Dynamics" and "Desired Future Conditions". Effectiveness will be measured and analyzed over various spatial and temporal scales, including both stand level and landscape level assessments. A strong monitoring component has been integral to the development of AFR. The Ashland Forest Resiliency's Monitoring Plan will provide a comprehensive assessment of the project's overall effectiveness.