Malheur National Forest
Emigrant Creek Ranger District

Memo

To: Carolyn Freeborn, District Ranger

From: Jeremy Sisneros, Fuels Specialist

CC: ANT IDT

Date: 22 February 2006

Re: Existing Condition Report for Fire/Fuels, ANT Analysis Area

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Before the 20th century, wildfires burned fairly regularly in many forest ecosystems of the west, ignited by both humans and lightning (e.g., Allen et al. 2002, Baisan 1997). Throughout the Pacific Northwest, certain land management practices have lead to an increase in hazardous forest fuel conditions, including fire suppression (Covington 1994), livestock grazing (Savage 1990), timber harvest, and farm abandonment (Arno et al. 1997). This dangerous fuel build-up is evident in the way many recent-day wildfires have burned. During the summers of 2000, 2002, and 2005, wildfires burned 8.4 million acres, 6.9 million acres, and 8.9 million acres respectively (USDI 2006). The ANT area has similar heavy fuel loadings and crowded forest stand conditions that can lead to fires of such a magnitude. The Sawtooth Fire of 1987 exhibited extreme, stand-replacement fire behavior. This fire was located just to the southeast of the planning area, and is a good example of fire behavior that can be expected in a wildfire situation.

Historic Condition

According to Malheur National Forest data of the Ant planning area, approximately 15,733 acres are within the low-severity fire regime, where fire occurs frequently (every 5-23 years) with low intensity (Maruoka 1994., Heyerdahl 1996., Agee, 1993.) (Table 1). The historical structure of the area was characterized by open pine stands with an understory of diverse herbaceous vegetation and shrub species. Fires in this area were most likely late-summer and early-fall burns (Thompson 2006). In this fuel type, average fire size was approximately 1,000 acres with only a small area (~5%) of high intensity (Heyerdahl and Agee 1996). These fires consumed ground fuels and understory vegetation, including seedlings that had become established since the last fire cycle. The resulting mortality reduced the “ladder fuels” that would be conducive to canopy damage. Frequent fires significantly reduced fuel loadings, and allowed fires to burn with low flame-lengths and low intensity. Smaller areas of fire regime 2 (116 acres) and fire regime 3 (337 acres) are represented within the planning area. Forest data has

classified an estimated 2,697 acres as “other” fire regime condition class. These areas represent non-forested areas such as large scab flats, clear-cuts, meadows, rock outcroppings and cliffs, or bodies of water.

Table 1. Fire Regime Definition (Hann, et al. 2003).

Fire Regime	Description	Fire Effect on Stand
I	• 0-35 year frequency • Low to mixed severity • Surface fires most common	• Less than 75% of dominant overstory replaced
II	• 0-35 year frequency • High severity • Stand replacing	• Stand replacing (over 75% of dominant overstory replaced)
III	• 35-100+ year frequency • Mixed severity	• Less than 75% of dominant overstory replaced
IV	• 35-100+ year frequency • High Severity	• Stand replacing (over 75% of dominant overstory replaced)
V	• 200+ year frequency • High severity	• Stand replacing (over 75% of dominant overstory replaced)

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Existing Condition

According to district GIS data, 64 fires have been recorded within the ANT boundary from 1949-2004. All of these fires were quickly suppressed, with none burning more than three-quarters of an acre. Since fires have not been allowed to burn over the past century, fuel loadings have increased at least five times higher than the historic level. Past fuel inventories in similar areas show an average fuel loading of 20-30 tons/acre, but may be as high as 40-50 tons/acre in some areas. Seedling trees have become well-established. Conditions are favorable for new seedling establishment and survival. In some areas, sapling-sized trees have become well-established in what can be described as “dog-hair” thickets. A lack of fire has also allowed trees such as white fir (*Abies concolor)* to become established in areas where their presence was formerly minimal (Laacke 1990). These trees (and others like them) have the ability to grow in shaded areas, and exhibit a growth form that makes them extremely susceptible to fire (Lanner 1983). These trees serve as fuel ladders which, in the event of wildfire, are a threat to the dominant overstory species.

In addition, shrub species such as bitterbrush (*Purshia tridentata)* and mahogany (*Cercocarpus ledifolius)* have become over-grown and decadent. These species also act as excellent ladder fuels. As more trees have become established, canopy closure has increased significantly. The resulting shade has caused a decline in understory grasses and forbs. The general condition of the understory consists of a heavy litter layer of needles with sparse grasses and forbs, as well as a substantial dead fuel component of varying sizes.

Condition class, by definition, is a determination of the amount of departure from natural conditions based on "comparison of a composite measure of fire regime attributes (vegetation characteristics; fuel composition; fire frequency, severity and pattern) to the central tendency of the natural historical fire regime (Table 2) (Hann, et al. 2003). Condition class is quantified by the actual amount of departure from the natural historical fire regime. According to district data, the majority of the planning area is described as Condition Class 3 (Table 3). There are several smaller areas of Condition Class 2 and Condition Class 1, but these areas are small by comparison. The continuity of areas in Condition Class 3 presents a situation for intense, stand-replacing wildfire.

Table 2. Fire Regime condition Class Definition (Hann, et al. 2003).

Fire Regime Condition Class	Description	Potential Risks
1	• Fire regimes near historical range • No more than 1 missed fire return • Low risk of losing key ecosystem components • Vegetation attributes intact	• Areas can be maintained by treatments such as fire • Low treatment costs
2	• Fire regimes have been moderately altered from historical range • Moderate risk of losing key ecosystem components • Missed more than 1 fire return interval • Vegetation attributes have been moderately altered from historic range	• Areas may need moderate levels of restoration treatments, such as fire use and mechanical treatments • Moderate treatment costs
3	• Fire regimes have been significantly altered from historic range • High risk of losing key ecosystem components • Missed multiple fire return intervals • Vegetation attributes have been significantly altered from historic ranges	• Areas need high levels of restoration treatments before fire can be introduced (e.g. thinning and piling) • Highest treatment costs

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Table 3. Malheur National Forest GIS Data

Fire Regime	Condition Class - Acres	
I	1	36 acres
	2	2,289 acres
	3	13,447 acres
II	1	25 acres
	2	64 acres
	3	27 acres
III	1	3 acres
Other	2,741 acres	

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Management Activities

Management activities in the planning area will achieve three of the four goals identified by the National Fire Plan 10 Year Cohesive Strategy, which are to:

1. **Improve Fire Prevention and Suppression**
2. **Reduce Hazardous Fuels**
3. **Restore Fire Adapted Ecosystems**
4. Promote Community Assistance

In areas already classified as Condition Class (CC) 1, only minor maintenance treatments may be required. Treatment options should work to move the Condition Class toward a Class 1, which would allow the safe introduction of fire back onto the landscape. These treatments will reduce hazardous fuels, and eventually move the area back to its' original fire-adapted condition. In addition, reduced fuel loads will help to improve fire prevention and suppression response.

Possible examples of treatments for this area may include, but are not limited to:

1. Thinning
2. Post thinning slash abatement
3. Prescribed fire
4. Stand manipulation through silvicultural treatments (e.g. management for species or size class preferences).

Air Quality

Visual and health impacts from prescribed burning should have minimal effects to the northeast. Heavier impacts are possible for the towns of Drewsey, Burns, Riley, Izee, Suplee, or other Harney Basin areas. There are also several areas of privately owned land in the vicinity of the planning area. However, prescribed burning is normally implemented in such a manner as to utilize the best possible meteorological conditions to minimize the effect to populated areas. Smoke created by prescribed burning will be less than in wildfire situations, due largely to higher fuel moistures and lack of available fuels.

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