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WHITETAIL HAZARDOUS FUELS REDUCTION PROJECT

Environmental Assessment

Custer National Forest

Ashland Ranger District

Powder River County, Montana



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Background

The Ashland Ranger District is proposing to reduce hazardous fuel conditions and lower the potential for high severity stand replacing wildland fire on National Forest System (NFS) lands in an area located northeast of Highway 212. This Environmental Assessment (EA) discusses the findings of analysis conducted for the Whitetail Hazardous Fuels Reduction Project. Additional documentation may be found in the Project File located at the Ashland Ranger District Office in Ashland, Montana and on the Custer National Forest Internet Website. As such, the purpose of this environmental assessment is to briefly provide sufficient evidence and analysis for determining whether to prepare an environmental impact statement or a finding of no significant impact (40 CFR 1508.9).

The Whitetail Hazardous Fuels Reduction Project is an authorized project under the Healthy Forest Restoration Act (HFRA) criteria. The northern portion of the Ashland Ranger District, which includes the project area, was identified in the Powder River County Wildfire Protection Plan (PRCWPP) as the highest priority for fuel reduction within the two million acre county.

Project Area Description

The project area consists of approximately 9,767 acres of National Forest System lands and is located approximately 17 miles north east of Ashland, Montana in Powder River County, Montana. The project is located in all or portions of Township 1 South, Range 46 East, Sections 26, 25, 36 and 34; Township 1 South, Range 47 East, Sections 31, and 32; Township 2 South, Range 46 East, Sections 2, 1, 11, 12, 14, 13, and 24; Township 2 South, Range 47 East, Sections 6, 5, 7, 8, 18, 17, 16, 19, 20, 30, 29, 28.

Public Involvement and Collaboration

The project has been listed on the Custer National Forest Schedule of Proposed Actions (SOPA) since March 2007.

In 2002 Powder River County personnel, Broadus Volunteer Fire Department and state and federal agencies began working together to identify wildland fire risks. This collaborative effort resulted in the 2004 Powder River County Wildfire Protection Plan (hereafter referred to as the PRCWPP). The plan is adaptive in nature and continues to be updated to reflect accomplishments and newly emerging needs, issues, and opportunities surrounding wildland fire management in Powder River County.

On August 8, 2007, a letter detailing the proposed action and inviting comments on the Whitetail Hazardous Fuels project was mailed to 47 individuals and groups, including federal and state agencies, environmental organizations and adjacent landowners. The potential for exceeding a 40 acre opening size was identified in the scoping notice dated September 4, 2007 and mailed to 47 individuals and groups, including federal and state agencies, environmental organizations and adjacent landowners.

The public was invited to review the proposed action at an open house at the Ashland District Office on August 28, 2007. The meeting was attended by seven people. Additional informational meetings were also conducted with Powder River County Commissioners, adjacent private land owners and grazing permittees.

A Legal Notice was published in the paper of record describing the project and starting the objecting period for Hazardous Fuels Reduction Projects on March 20, 2008. In response to objections of the project a meeting was held on May 15, 2008 to resolve objection issues. On May 23, 2008 a letter from the reviewing official was delivered to the objectors describing the reviewed findings and direction for the deciding official to follow.

Purpose and Need for Action

The purpose of this proposal is to reduce the risk of stand replacing wildfire on NFS lands. The PRCWPP (PRCWPP pg. 9 and map Appendix A) identified the project area as the highest priority area in Powder River County.

The need for the Whitetail Hazardous Fuels project is to reduce hazardous fuel conditions by strategically changing high fuel loads (described as vegetative condition classes 2 and 3 towards more natural, lower fuel loads (described as vegetative condition class 1). In addition, there is a need to reduce ladder fuels and decrease stand densities. Specifically, the following are designed to address this need:

- Reduce the likelihood of a stand replacing wild-land fire by removing down woody and ladder fuels
- Create a distribution of forest structural and development classes that is more resistant to high-severity stand replacing wild-land fires.
- Reduce hazardous fuel conditions over the project area as demonstrated by specific and measurable actions.

The intent and design of this project, is to create a spatial distribution of forest development classes and structure that is more resistant to large scale, high intensity wildfires. Subsequently, wildfire incidents that do occur would result in less intense fires that would be easier to manage and safer for firefighting personnel. This project is designed to reduce the risk to private property in proximity to Federal lands in which conditions are conducive to a large-scale wildland fire disturbance event and for which a significant threat to human life or property exists (PRCWPP, 2004).

The National Fire Plan and the Cohesive Strategy, developed after the severe wildland fire season of 2000, provides direction to the Forest Service to reduce the amount of fuel in fire prone forests to protect people and sustain resources. The wildland-urban interface, areas where flammable wildland fuels are near homes and communities, is one of the highest priorities for treatment.

Pursuant to the Healthy Forest Restoration Act (section 101(A)) Powder River County established the wildland urban interface in the PRCWPP. The PRCWPP notes on page 6 that "While some areas of Powder River County were identified as At-Risk Communities in the January 4, 2001 Federal Register notice, Wildland Urban Interface Communities Within the Vicinity of Federal Lands that are at High Risk from (sic) Wildfire, other areas were not identified at that time. These communities fit the Healthy Forest Restoration Act definition of an At-Risk Community as "a group of homes and other structures with basic infrastructure and services within or adjacent to Federal land *and* in which conditions are conducive to a large-scale wildland fire disturbance event *and* for which a significant threat to human life or property exists as a result of a wildland fire disturbance event."

“For the purposes of this fire planning project, all private land within or immediately adjacent to or within one and one half miles of the Ashland Ranger District, Custer National Forest are considered wildland urban interface or WUI for Powder River County....” Therefore the NFS lands within the project area meet the definition of a wildland-urban interface zone per the PRCWPP.

Existing Condition

The project area contains three types of ecosystems; ponderosa pine forests, hardwood draws, and plains grasslands with trees. Of the 9,767 acre project area, 3,059 acres or 31% of the area was classified as grasslands while the remaining 6,708 acres or 69% was classified as ponderosa pine forest intermixed with narrow hardwood draws (Fuels Report, pg.3). A Fire Regime Condition Class assessment was conducted on forested areas in order to assess the fuels condition in the project area. Condition Class is defined as a measure of departure from the natural or historical ecological reference conditions that typically result in alterations of native ecosystem components. This is a measure from 1 (Low departure) to 3 (High departure). The ponderosa pine (Black Hills) potential natural vegetation group was used to analyze the ponderosa pine forests using the Fire Regime Condition Class (FRCC) protocols (Hann et al, 2003.) (Fuels Specialist Report, pg.7-8).

Fire Regime Condition Class analysis of forested areas resulted in the project area being classified as a Condition Class 3, meaning there is a high departure from historic conditions. The departure of ponderosa pine forest stands can be attributed to having extensive ladder fuels, continuous crown cover and above historic amounts of surface fuel loadings combined with densely stocked forested stands to promote high intensity wildfire conditions (Fuels Specialist Report, pg.1-4). Figure 1 displays a representative forest condition in the project area and displays the attributes leading to why the project area is highly departed from the potential natural vegetation group and classified as a Condition Class 3. Figure 2 displays a landscape photograph of the continuous forested canopy which is found in several areas of the Whitetail Hazardous Fuels Reduction Project. Lack of historic fire disturbance has allowed many stands to develop into this closed canopy condition.

The project area has missed numerous fire return intervals, which historically experienced high frequency, low intensity fires. Across the project’s forested stands these mixed intensity and surface fires would have created a mosaic of forest structure resulting in more historic wildland fire effects. By missing frequent low intensity mixed severity fires the current forest condition is at an increasing risk of loosing components of the ecosystem from uncharacteristic fire.

Desired Condition

The desired condition for the project area is to create a distribution of forest structural and development classes that is more resistant to large scale fires. Wildfire incidents that do occur would result in less intense fires, and stand replacing wildfire events typical of historical disturbance regimes.

A desired trend toward the historic stand structure distribution would decrease the risk of large scale stand replacement fire and risk to adjacent private property. The desired condition would result in a reduction in canopy bulk density, an increase in canopy base height, and ladder/surface fuels more consistent with historic conditions across the project area (Fuels Specialist Report pg 2-14, Forest Vegetation Specialist Report pg 2-28).

Figure 3 is an example of an open canopy mid development open class forested stand (one of the structural classes in which the FRCC analysis determined was lacking in the project area). This type of stand was created by commercial thinning similar to the proposed action commercial thin prescription. Figure 3 also demonstrates a reduction in canopy bulk density, an increase in canopy base height, and ladder/surface fuels more typical with historic conditions (Fuels Specialist Report pg 2-14), (Forest Vegetation Specialist Report pg 2-28).



Figure 1. Figure 1 shows how additional trees in the understory are reducing the canopy base height (or the average height from the ground to the base of the tree canopies), increases canopy closure, and increases the overall horizontal and vertical fuel bed continuity (commonly referred to ladder fuels). This forested condition across the landscape has contributed in the classification of the project area being classified in the Fire Regime Condition Class 3.

Proposed Action

The Whitetail Hazardous Fuels project proposes to treat 8,262 acres (85%) of the 9,767 acre project area all within the Powder River County Wildfire Protection Plan priority one boundary (PRCWPP Appendix 7). The project activities are displayed on Map one. Within the project area, approximately 3,059 acres (31%) of forest and grassland would be treated with only prescribed burning. The remaining 5,199 acres (53%) involves different forms of mechanical treatments including slashing, hand or machine piling, pre-commercial thinning, commercial thinning, commercial harvest, and broadcast or jackpot burning. No treatment is proposed on

1,506 acres (15%). Table 1 showing the proposed action activities summarized by treatment type, acres of treatment, and units which treatment is being applied. Map one displays the proposed action vegetation activities. Map two displays the commercial harvest treatments only.



Figure 2. Figure 2 is a landscape photograph of the continuous forested canopy which is found in several areas of the Whitetail Hazardous Fuels Reduction Project area. Lack of historic fire disturbance has allowed many stands to develop into this closed canopy condition.

For more detailed information about the treatments, see the silvicultural prescriptions in the Forest Vegetation Report pages 5-12. Depending on current stand condition, one or more treatments may be required to achieve desired stand conditions and ultimately desired fuel condition. For example, the thinning of a dense stand of small diameter trees would be followed by a prescribed fire.

There were several factors that the interdisciplinary team analyzed in designing the treatments and locations of 40 acre or larger openings on the landscape. The objective was to create forested stand conditions on the landscape that would reduce the likelihood of a large stand replacement wildfire while increasing opportunities for wildfire management.



Figure 3. This figure demonstrates a lowered overall tree density. The canopy base height has been raised, ladder fuels reduced, and surface fuels are closer to historic conditions. Note the lack of overall fuel bed continuity both horizontally and vertically.

By using commercial and burning treatments, a diversity of stand development stages would be developed to meet the goal of trending the project area from a condition class 3 toward a condition class 2. Based on the existing condition assessment, large scale stand replacement events have a higher risk of occurring. After treatment, stand replacement events may still occur, however the acreage in which this may happen would be more typical of historic occurrences. In addition, the majority of forested stands identified for commercial treatments are located in areas along road ways and ridge tops creating fuels fire breaks.

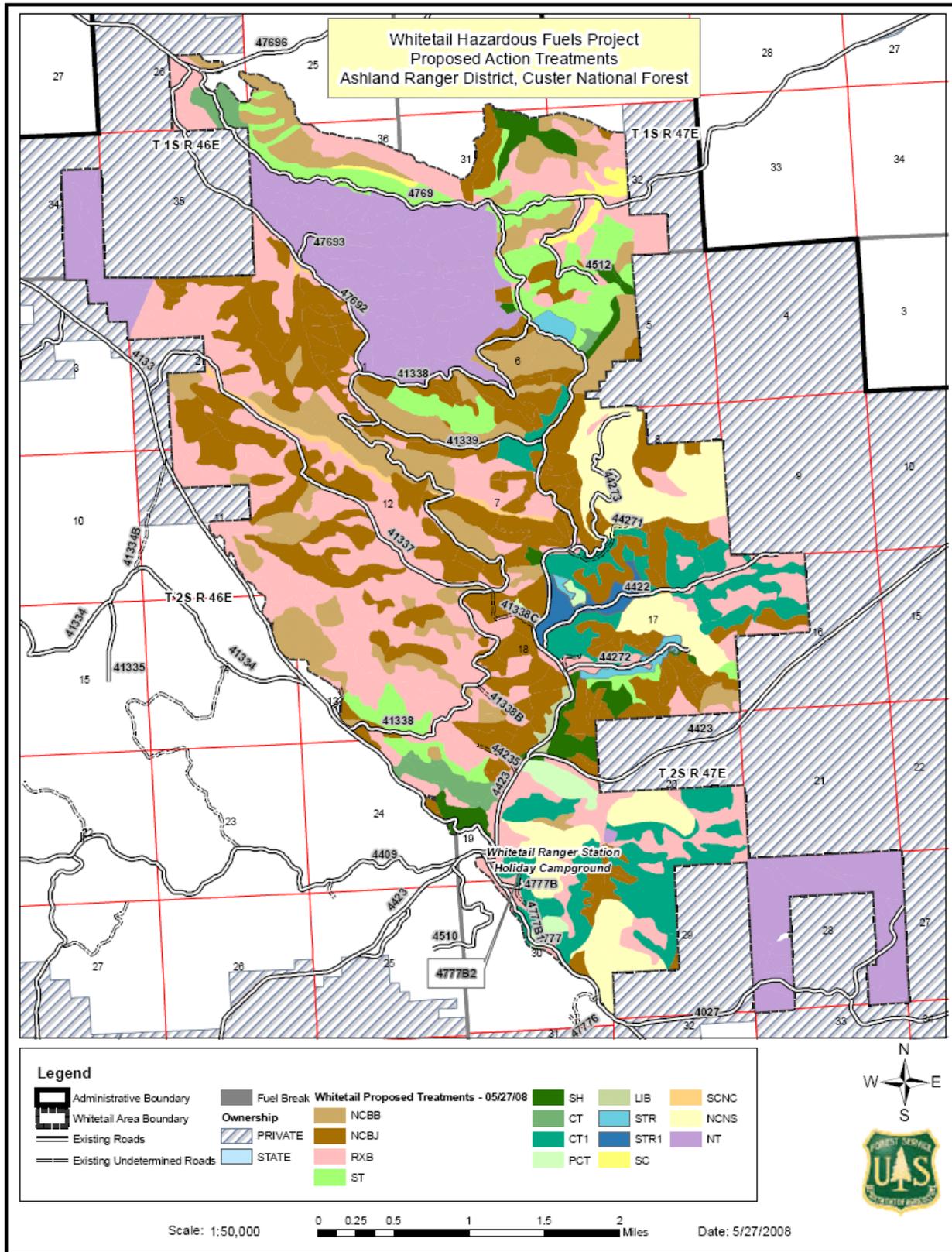
Fuel breaks would be constructed (about 150 ft. each side) along roads #4769 (Sartin – Stacey Cr.) #4427 (Beaver Crk./ Pumpkin Crk. Divide), #4777 (East Fork. Otter / Pumpkin Creek Divide), #4769, 4133 (Beaver Creek), and #4423 (Pumpkin Cr.). Design for fuel breaks include:

1. Canopy spacing of at least 10 feet between canopies of individual trees;
2. Ladder fuel canopy base height of greater than 10 feet (no branches between ground and canopy); and
3. Surface fuels less than 3 tons per acre on the average.

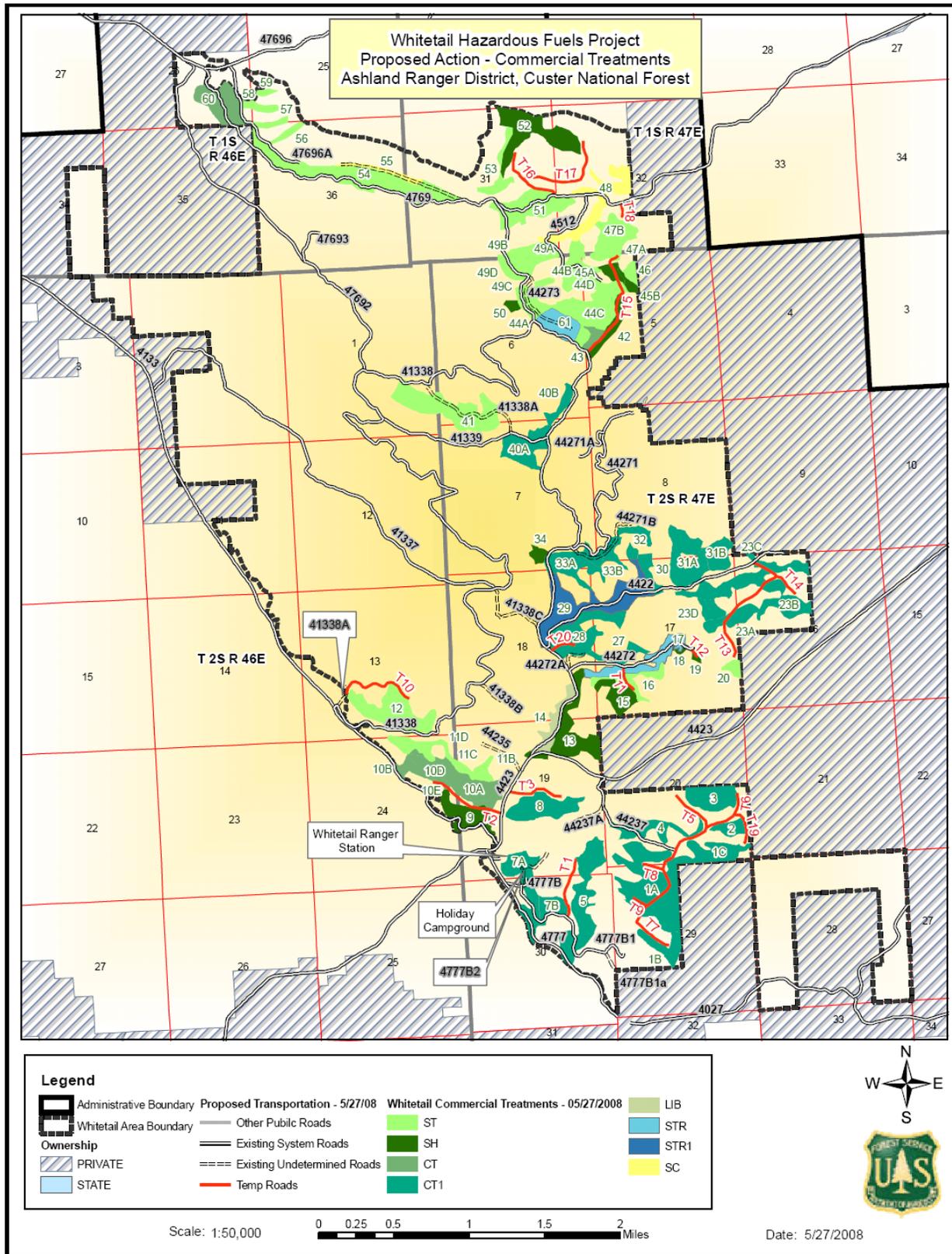
Table 1. Proposed action activities summary table displaying treatment type, acres of treatment, and units which treatment is being applied. (Forest Vegetation Specialist Report pg 5-12 discusses in detail the proposed treatment type)

Treatment Type	Acres	Units as Applicable
Non Commercial Activity, Broadcast Burn (NCBB)	1049	
Non Commercial Activity, Jackpot Burn (NCBJ)	2219	
Prescribed Fire (RxB)	2332	
Commercial Thin (CT)	116	10A-10D, 43, 60
Commercial Thin 1 (CT1)	792	1A-1C, 2-5, 7A-7B, 8, 23A-23D, 27, 28, 30, 31A-31B, 32, 33A-33B, 40A-40B
Shelterwood Cut (SH)	200	9, 13, 15, 18, 19, 34, 42, 44A-44E,45A, 45B, 50, 52
Seed Tree Cut (ST)	554	11B-11D, 12, 16, 20, 41, 44A-44D, 46, 47A-47B, 49A-49D, 51, 53, 54,56-59
Liberation Cut	22	14
Seed Tree Removal (STR)	59	17, 61
Seed Tree Removal with Treatment Combinations (STR 1)	76	29
Pre-commercial thin (PCT)	86	
Special Cuts, Aspen and Woody Draw Treatments (SC)	56	48, 55
Special Cuts Non Commercial (SCNC)	49	
Non Commercial Nest Stand (NCNS)	641	
No Treatment (NT)	1509	
Roads Fuel Break	11 miles	

Map 1. Proposed Action Vegetation Treatments



Map 2. Proposed action commercial harvest treatment units.



As proposed, there would be a combination of ground based tractor (1,684 acres), and skyline cable (123 acres) systems used for commercial logging operations. All commercial harvest would be whole tree yarded.

Approximately eight miles of temporary road segments would be necessary to access fuel treatment areas. Following treatment these roads would be obliterated by scarifying in a random pattern, restoring to contour if a cut-slope exists and scattering of debris (where available). Signing may or may not be required to keep vehicle traffic from using the route. Signing needs would be addressed as rehabilitation activities are completed.

A year long gate closure would be instituted on roads #4512, #4473, #44237, #4777B1. These roads would be open for administrative use only. The gate closures are for mitigating the effects of the project on big game wildlife security (Wildlife Specialist Report pg 37-51). The gate closure would remain until wildlife security needs are met.

To ensure BMP and safety compliance for commercial haul, construction of road 47696A (previously decommissioned) for 0.9 miles would include clearing, template establishment, construction of rolling dips and sign installation; reconstruction of 11.3 miles of existing National Forest System Roads would consist of small realignments, brushing, shaping, blading, ditch cleaning, culvert cleaning and repair, armored drainage crossing construction, spot surfacing, cattleguard/fence repair/replacement and sign repair/replacement; reconditioning of 5.6 miles would include brushing, blading and shaping the road, construction of rolling dips and sign installation.

Map three displays the proposed road activities by type. Tables two and three summarize road activities.

Table 2. Summary of Proposed Action Road Activities by miles		
Road Activities	Proposed Action (miles)	Road No.* *indicates segment of route see Map 3 for details
No work	16.9	4027, 40271, 41337, 41338*, 41339*, 4422*, 44235, 44271*, 44271A, 44271B, 4769*, 47692, 47692A, 4777*, 4777B1*, 4777B2*
Schedule A. Agreement with County	12.8	4423
Maintenance Only	4.8	4133*, 4427*, 4466, 4777*, 4777B
Obliteration	1.1	41338A*, 41338B, 41338C, 44272A, 4777B1a
Reconditioning	4.7	41338A*, 41339A, 44237A, 44271*, 44272, 44273, 47699, 4777B1*, 4777B2*
Reconstruction	11.3	41338*, 41339*, 4422*, 44237, 4427*, 4512, 4769*, 47696
Construction	0.9	47696A
Temporary Road Construction	7.9	T1-T20
Total	60.4	

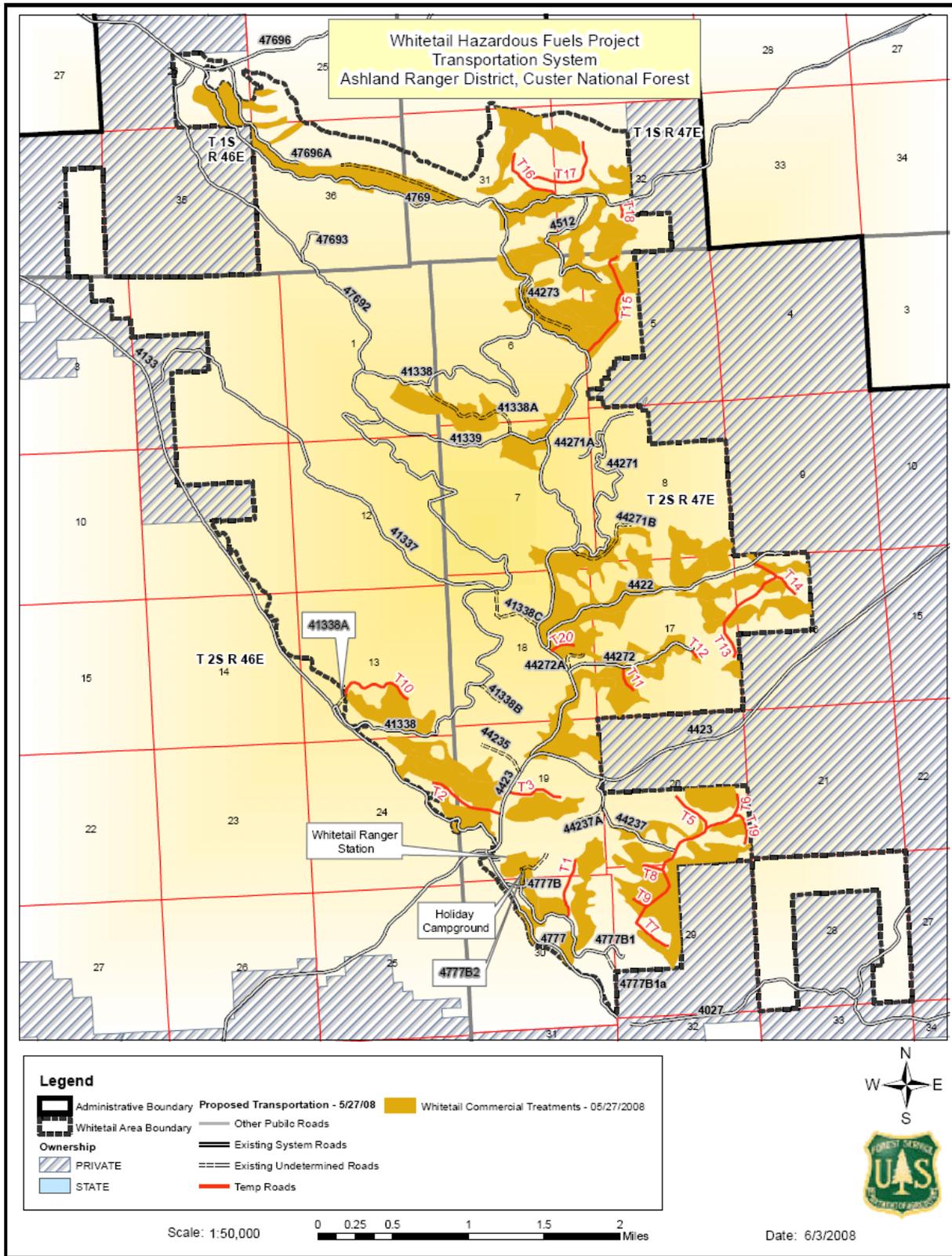
Table 3. Summary of proposed Road Management Objectives by miles				
Maintenance Level	Miles Within Project Boundary	Miles Outside Project Boundary	Miles Total	Road No.* *indicates segment of route see map for more details
Decommissioned	1.1	0.0	1.1	41338A*, 41338B, 41338C, 44272A, 4777B1a
1 (closed)	3.5	0.3	3.8	41338A*, 41339A, 44271A, 44273, 44696A, 4777B1
2 (high clearance vehicle)	27.7	0.3	28.0	4027, 40271, 41337, 41339, 4422, 44235, 44237, 44237A, 4427, 44271, 44271B, 44272, 4512, 47692, 47692A, 47696, 47699, 4777B2
3 (passenger car)	4.9	1.9	6.8	4133, 4466, 4769, 4777, 4777B
County	1.2	11.6	12.8	4423
Total	38.4	14.1	52.5	

All roads being used for commercial activities would require pre-, during, and post-haul maintenance. Collection of surface rock replacement would be required on all system routes used for commercial activities.

The Proposed Action complies with the Custer National Forest Land and Resource Management Plan, as amended. Specifically, the proposed action is designed to meet objectives based on Forest-wide standards and guidelines (Custer Forest Plan pages 12-39,), as well as management area standards and guidelines (Custer Forest Plan pages 53, 54, 56; 61-63; 80-85; 88)

The proposed project area does not contain any unique characteristics of the geographic area, such as, parklands, prime farms, wetlands, wild and scenic rivers or ecologically critical areas.

Map 3. Proposed action road activities.



Design Criteria

Table 4. Project design criteria and the units to which project design features apply		
Project Design Criteria Item	Description of Project Design Criteria	Units to which Project Design Criteria Apply
Fire and Fuels		
1	Slash piles will be allowed to cure prior to ignition and will be burned within 5 years. <u>Purpose:</u> To reduce smoke impacts on air quality when burning piles.	All proposed action activities
2	Prescribed fire (pile burning and underburning) would be strategically scheduled to accomplish the burn safely and monitor smoke conditions. <u>Purpose:</u> To reduce smoke impact on air quality when burning.	All proposed action activities
3	Where fuel reduction by piling is necessary, use low ground pressure equipment such as grapple/excavator. <u>Purpose:</u> To reduce the impacts on the soil resource	All proposed action activities
4	Close all firelines that have the potential to increase public off-road motor vehicle travel as necessary. <u>Purpose:</u> To prevent illegal off road travel	All proposed action activities
Heritage Resources		
5	The Forest Archaeologist will be notified (24 hours) prior to conducting the approved treatment on known heritage sites in order to monitor all approved treatment activities affecting known sites. <u>Purpose:</u> To protect known and unknown heritage sites from project activities that would cause adverse impacts.	All proposed action activities
Noxious Weeds		
6	Noxious weed surveys and any necessary treatment will be accomplished one year post-project on all open and closed system and temporary roads, landings, and burn pile sites affected by the project activities as funding is available. <u>Purpose:</u> To control, reduce, and minimize the spread of noxious weeds.	All proposed action activities
7	All off-road equipment used in conjunction with any fuel treatment, vegetation treatment and /or road building activities will be cleaned (washed) prior to coming onto the project area. The same equipment would be cleaned (washed) prior to moving from an infected unit to an un-infected unit within the project area. <u>Purpose:</u> To control the spread of noxious weeds and protect against new noxious weed species.	All proposed action activities.

Table 4. Project design criteria and the units to which project design features apply

Project Design Criteria Item	Description of Project Design Criteria	Units to which Project Design Criteria Apply
8	<p>As needed, temporary roads, landings, skid trails and similarly disturbed sites will be seeded with an approved native seed mix after activities occur.</p> <p><u>Purpose:</u> To control the spread of noxious weeds and protect against new noxious weed species.</p>	All proposed action activities.
9	<p>Any gravel or other aggregate being used for road surfacing and/or fill will come from an approved and inspected weed seed free source.</p> <p><u>Purpose:</u> To control the spread of noxious weeds and protect against new noxious weed species.</p>	All proposed action activities.
Road Management and Safety		
10	<p>Maintenance level one road entrances shall be obliterated for a minimum distance of 100 feet or as need to a length the road can not be seen from the open system road. Obliteration shall consist of scarifying in a random pattern (not just parallel to the roadbed), restoring to contour if a cut-slope exists and scattering of debris (where available).Signing may or may not be required to keep vehicle traffic from using the route. Signing needs will be addressed as rehabilitation activities are completed</p> <p><u>Purpose:</u> To ensure no motor vehicle use of maintenance level 1 roads</p>	Roads 41338A*, 41339A, 44271A, 44273, 44696A, 4777B1
11	<p>System roads used as haul routes will require road maintenance and/or reconstruction consisting of drainage structure (rolling dip or culvert) construction, grading to a min 14 foot travel way without a ditch (12 foot with ditch), turnouts to meet site distance requirements and maintaining vertical alignments not exceeding requirements of FSH 7709.56 R-1 Supplement and the Timber Sale Contract.</p> <p><u>Purpose:</u> Facilitate the removal of commercial timber harvest while reducing the impacts to soil, watershed and other resources.</p>	Roads 47696A, 4133, 4427, 4466, 4777, 4777B, 44237, 44271, 44272, 4512, 4777B1, 41338, 41339, 4422, 4427, 4769, 47696, 41338A, 41339A, 44237A, 44273, 47699, 4777B2, 4423
12	<p>Unless addressed through reconstruction of such things as road width and turnouts, all NFS roads used as haul routes will be closed during log hauling operation to address public safety. Warning signs and devices shall be used on all haul routes in accordance with the lasted MUTCD standards.</p> <p><u>Purpose:</u> To provide for public safety</p>	Roads 47696A, 4133, 4427, 4466, 4777, 4777B, 44237, 44271, 44271A, 44272, 4512, 4777B1, 41338, 41339, 4422, 4427, 4769, 47696, 41338A, 41339A, 44235, 44237A, 44271B, 44273, 47699, 4777B2, 4423

Table 4. Project design criteria and the units to which project design features apply

Project Design Criteria Item	Description of Project Design Criteria	Units to which Project Design Criteria Apply
Silviculture		
13	<p>Permanent Growth Plot Protection: During implementation of project activities protect control cluster with a 50 foot untreated buffer. Forest Silviculturist will be notified prior to implementation to locate plots.</p> <p><u>Purpose:</u> Maintain long term monitoring integrity on management effects.</p>	All proposed action activities
14	<p>Reforestation: Ensure every treatment unit receiving a regeneration harvest on suitable lands will meet or surpass stocking guidelines and certification standards within 5 years. Large openings created by prescribed burning on suitable lands will be monitored to ensure restocking.</p> <p><u>Purpose:</u> Meet National Forest Management Act and Forest Plan Monitoring requirements.</p>	All proposed action activities
15	<p>Seed Tree Protection: Pullback of fuel accumulation (woody debris and duff) will be required as needed from designated seed trees prior to prescribed burning.</p> <p><u>Purpose:</u> Limit seed tree mortality from prescribed fire.</p>	All proposed action activities
Soil Productivity and Watershed Protection		
16	<p>Obliteration will consist of scarifying in a random pattern (not just parallel to the roadbed), restoring to contour if a cut-slope exists and scattering of debris (where available). In addition, all temporary roads will be signed as no off road vehicle travel until such time there is no appearance of use.</p> <p><u>Purpose:</u> To minimize any motor vehicle use of a temporary road after timber sale activities, all temporary roads shall be obliterated.</p>	Roads T1-T20
17	<p>Vehicle traffic and equipment operation will be restricted on system and temporary roads during wet periods.</p> <p><u>Purpose:</u> To prevent rutting in excess of 4 inches.</p>	Roads 47696A, 4133, 4427, 4466, 4777, 4777B, 44237,44271,44272, 4512,4777B1, 41338,41339,4422, 4427,4769,47696, 41338A,41339A, 44237A,44273, 47699, 4777B2, 4423,T1-T20
18	<p>Leave approximately three to seven tons/acre of Coarse Woody Debris (CWD) in treatment areas where available except in fuel break.</p> <p><u>Purpose:</u> To ensure future soil productivity and reduce impacts to soils and water quality.</p>	All proposed action activities.

Table 4. Project design criteria and the units to which project design features apply		
Project Design Criteria Item	Description of Project Design Criteria	Units to which Project Design Criteria Apply
19	<p>Leave a range of one to three tons/acre of fine woody material (<3 inches, including needles and branches) in treatment areas except in fuel break.</p> <p>Purpose: To ensure future soil productivity and reduce impacts to soils and water quality.</p>	All proposed action activities.
20	<p>Use winter skidding when commercial harvesting in ephemeral draws. Forest Service would determine when frozen ground conditions are adequate for operations.</p> <p>Purpose: To reduce impacts to soils and water quality.</p>	All proposed action activities.
21	<p>Operate when soils are free of excess moisture (not wet), or frozen. Soils are wet when they form a cast; the surface glistens when shaken or squeezed (i.e., water film is visible)</p> <p>Purpose: To reduce impacts to soils and water quality.</p>	All proposed action activities.
22	<p>Skid trails on ridge tops should be scarified to a depth of two inches or less. Skid trails on more gentle slopes with deeper soils should be scarified to a depth of approximately four inches.</p> <p>Purpose: To ameliorate soil compaction, primary skid trails will be scarified and seeded.</p>	Vegetation management units 1-60
Wildlife Habitat and Species		
23	<p>Maintain habitat specific for Northern goshawk (e.g., crown cover, snags, interlocking tree crown patches, Reynolds et al., 1992, pg 21-30) over the long term; following the Northern Region Northern Region Overview (Tidwell, July 17, 2007: Brewer et al, May 2007, e.g., acres) and Custer Forest Plan goals and objectives (Forest Plan, p.18). If an active goshawk nest is discovered within a stand prior to or during treatment activities work should be halted and the wildlife biologist would be notified immediately to determine steps to resolve the situation and maintain habitat and minimize human disturbance.</p>	All proposed action activities.
24	<p>Management activities within ¼ mile (125 A.) of any known goshawk nest would be restricted from March 1 through August 31 to reduce potential human disturbance during the breeding – nesting period. An exception may be made if surveys confirm that goshawks are not nesting or within the area. A wildlife biologist may fit the acreage zone or polygon to the topography to best reduce potential human disturbance around the nest.</p> <p><u>Purpose: Goshawk is an old growth habitat indicator species in the Forest Plan. To retain goshawk use in the project area. Goshawks are highly sensitive to disturbance from the nesting through fledgling period.</u></p>	All proposed action activities.

Table 4. Project design criteria and the units to which project design features apply

Project Design Criteria Item	Description of Project Design Criteria	Units to which Project Design Criteria Apply
25	<p>If an active goshawk nest is discovered within a stand prior to or during treatment activities work would be halted and the wildlife biologist notified immediately to determine steps to resolve the situation.</p> <p><u>Purpose:</u> To retain the stand in suitable condition for goshawk use. Goshawks are highly sensitive to disturbance from nesting through the fledgling period.</p>	All proposed action activities.
26	<p>If an active raptor nest listed as a CNF MIS or R1 Sensitive species is found during unit layout, it would be protected and buffered from planned activities to protect and maintain raptor use in the project area.</p> <p><u>Purpose:</u> To protect and maintain raptor use</p>	All proposed action activities.
27	<p>If an active raptor nest (CNF MIS or R1 Sensitive species) is discovered within a treatment unit, the Contract Administrator would seek cooperation from the contractor to delay work activities in this area until the young have fledged.</p> <p><u>Purpose:</u> To protect and maintain raptor</p>	All proposed action activities.
28	<p>Maintain an average of at least 2 snags, where available, per A. that are greater than or equal to 12" diameter (Thomas et al. 1979, P. 69, flicker) across the landscape. Provide for snag replacement trees \geq 20 inches dbh (USFS Northern Region Goals and Objectives) where they exist or where trees have the potential to grow and become snags. Design units, silvicultural prescriptions, and burn plans to insure snags are retained on the landscape over time to maintain habitat for cavity / snag dependent species. Retain snags at locations greater than 75 feet from roads and/or private property, and where they are not a safety hazard during project implementation.</p> <p>Note - There are no identified MIS / goals / standards for snags in the Custer Forest Plan.</p> <p><u>Purpose:</u> Snags are for primary and secondary cavity/snag users.</p>	All proposed action activities.
29	<p>Treat existing aspen clones as identified on the proposed action map to remove all ponderosa pine trees to an average spacing of 60 feet within two mature tree heights (approximately 120 ft) out from the perimeter of aspens stands, where feasible, to maintain habitat diversity. A wildlife biologist would review and evaluate any aspen treatment within goshawk nest stands prior to implementation.</p> <p><u>Purpose:</u> To ensure maintenance of habitat specific for Northern goshawk consistent with the Forest Plan and information found in the Northern Region Overview (Tidwell, July 17, 2007; Brewer et al, May 2007).</p>	48, 55

Table 4. Project design criteria and the units to which project design features apply

Project Design Criteria Item	Description of Project Design Criteria	Units to which Project Design Criteria Apply
30	<p>Construct temporary roads at least 100-feet away from wet areas including seeps, springs, wet meadows, and riparian corridors (except at crossings when necessary) to maintain habitat diversity.</p> <p><u>Purpose:</u> To help maintain habitat security for wildlife</p>	Temp Roads T1-T18
31	<p>Restrict mechanized equipment within 50-feet of wet areas: seeps, springs, wet meadows, riparian corridor.</p> <p><u>Purpose:</u> To help maintain habitat security for wildlife</p>	All proposed action activities.
32	<p>Treat existing woody draws as identified on the proposed action map to maintain an average spacing of 60 feet between ponderosa pine trees within two mature tree length (approximately 120 ft) out from the outer edge of the woody draw. Inside the woody draw boundary maintain approximately 10% of the ponderosa pine tree component where available. These spacing requirements will be maintained with the use of prescribed fire. Consider selectively falling mature trees to block cattle trail within woody draws. A wildlife biologist would review and evaluate any woody draw treatment within goshawk nest stands prior to implementation. Prescriptions will meet leave tree requirements (for MT SMZstream side law).</p>	All SC and SCNC treatment units
33	<p>Avoid burning stands of big sagebrush greater than 1 acres within a grassland setting (inclusive of most Brewer's Sparrow territories, Rotenberry et al. 1999, P. 8). This is not meant to include scattered big sagebrush plants along the ponderosa pine forest edge or areas of silver sagebrush. Silver sagebrush is scattered throughout the project area and sprouts after burning; big sagebrush stands regenerates slowly from seed.</p> <p><u>Purpose:</u> To protect sagebrush habitat</p>	All proposed action activities.
34	<p>Design new roads to avoid active and inactive prairie dog towns. Prevent heavy equipment use or vehicle parking within prairie dog towns. Confine logging related vehicles to roadways where existing roads bisect prairie dog towns</p> <p><u>Purpose:</u> To protect prairie dog habitat</p>	All proposed action activities.
35	<p>Based on recommendations in the literature, manage for at least 30% elk security cover (vegetation and topography) as measured from 0.5 miles from roads open for public motor vehicle access year-long. Provide for elk security (and deer, bear, lion cover) by providing for nonlinear cover patches (trees or topography) which are more than 0.50 miles from a road open to motor vehicles at any time of the year. Maintain at least 30% of the forested and unforested landscapes dedicated to security (Based on Hillis et al., 1991 and adapted to fit the pine forest – grassland landscape).</p> <p><u>Purpose:</u> To mitigate project effects and maintain security areas for big game.</p>	All proposed action activities.

Table 4. Project design criteria and the units to which project design features apply

Project Design Criteria Item	Description of Project Design Criteria	Units to which Project Design Criteria Apply
36	<p>Lock four existing pipe gate and implement year-long public motor vehicle travel restrictions.</p> <p>#4512 – T1S, R47E, Sec. 31, SESE</p> <p>#4473 – T2S, R47E, Sec. 7, SESE</p> <p>#44237 – T2S, R47E, Sec. 19, SENE</p> <p>#4777B1 – T2S, R47E, Sec. 30, NENW</p> <p>See Wildlife Specialist Report, Fig. 3.5.3.1.2.M2</p> <p><u>Purpose:</u> To mitigate project effects and maintain security areas for big game.</p>	All proposed action activities.
37	<p>If deer fawns and/or elk calves are found in active treatment units from the third week of May through the first week of July), (Forest Service/contractor) would coordinate options with the project leader to work in other areas within the vicinity until the young are removed from the area.</p> <p><u>Purpose:</u> To protect fawns and calves and reduce impacts to deer and elk populations.</p>	All proposed action activities.
38	<p>Maintain the West Fork of Little Pumpkin Creek Cattle / Wildlife exclosure study area that was established in 1964 in T47E, T2S, Sec. 20, SW ¼. Maintain the study area integrity for future investigations by restricting logging, mechanical slashing, and road construction within 200 feet of the exterior of the fence / posts. The use of prescribed burning in and around the exclosure would be avoided unless action could be shown to be compatible with the study.</p> <p><u>Purpose:</u> To maintain exclosure study integrity.</p>	4

Changes from Scoped and Objection Proposed Action

Since the scoping and objection periods ended, there have been changes to the proposed action. The changes were caused by objection agreements, further evaluations on the ground, GIS mapping corrections, and analysis corrections to maintain certain wildlife habitat. Table 5 displays the treatment type, scoped proposed action acreage, objection proposed action acreage, and the difference between the old and new acreage.

Table 5. Displays the differences in acres from the scoped proposed action, the EA dated 3/20/2008 and the current proposed action

Treatment Type	Scoped Acreage	3/20/08 EA	Difference	Current Acreage after objection process	Difference
Non Commercial Activity, Broadcast Burn (NCBB)	1049	1049	No change	1049	No change
Non Commercial Activity, Jackpot Burn (NCBJ)	2203	2219	+16	2219	No change
Prescribed Fire (RxB)	2331	2332	+1	2332	No change
Commercial Thin (CT)	273	116	-157	116	No change
Commercial Thin 1 (CT1)	669	792	+123	724	-68
Shelterwood Cut (SH)	200	200	No Change	200	No Change
Seed Tree Cut (ST)	596	554	-42	554	No change
Liberation Cut	22	22	No Change	22	No Change
Seed Tree Removal (STR)	82	66	-16	66	No change
Seed Tree Removal with Treatment Combinations (STR 1)	76	76	No Change	76	No Change
Pre-commercial thin (PCT)	86	86	No Change	86	No Change
Special Cuts, Aspen and Woody Draw Treatments (SC)	56	56	No Change	56	No Change
Special Cuts Non Commercial (SCNC)	49	49	No Change	49	No Change
Non Commercial Nest Stand (NCNS)	569	641	+72	709	+68
No Treatment (NT)	1506	1509	+3	1509	No change
Roads Fuel Break	11 miles	11 miles	No Change	11 miles	No Change

No Action

No action provides a baseline for comparison of environmental consequences of the proposed action to the existing condition and is a management option that could be selected by the Responsible Official. The results of taking no action would be the current condition as it changes over time due to natural forces.

No action continues standard protection and maintenance activities such as fire suppression, access management, and road maintenance. Ecosystem processes such as insects and diseases in trees, and vegetation succession with fire exclusion would continue their current trends. No commercial timber harvest or road construction would occur. Some incidental tree removal would occur through firewood cutting. Current recreational activities and permitted grazing would also continue.

Alternative Development

Other alternatives were considered but eliminated from detailed analysis. One such alternative would have maximized the number of acres treated to reduce hazardous fuels conditions. Slopes for some forested stands are at 90-100 % gradient. These types of slope conditions would require skyline cable and helicopter harvest systems. The skyline cable and helicopter operations are more costly to implement and the use of these systems relative to the value of the timber harvested prevent skyline cable or helicopter operations from being considered further.

Some areas were also eliminated from using commercial harvest as a tool to meet the purpose and need because of: compounding factors of livestock water pipeline distribution systems, and modifications necessary for commercial harvest activities to the existing road system.

The Forest Service is required to have legal access to facilitate removal of commercially harvested material (FSM 2431.3, 5460.3, 5460.11, 36 CFR 212.4). In some portions of the project area there is no legal access. Therefore these areas were eliminated from detailed analysis.

Another alternative would have constructed long-term access routes for potential reoccurring timber management needs as opposed to construction of temporary routes. Generally, the same amount and area of treatment would occur as with the proposed action. Other than timber management, no other resource identified a need for long term access along these routes. Subsequently, a decision was made by the responsible official not to evaluate this alternative in further detail.

Environmental Consequences

This section describes the environmental impacts of the proposal in relation to whether there may be significant environmental effects as described at 40 CFR 1508.27. Further analysis and conclusions about the potential effects are available in resource specialist reports and other supporting documentation located in the project record. The following are discussions of resources that have relevance to determination of significance.

The Council on Environmental Quality (CEQ), provided guidance to federal agencies on the consideration of past actions in cumulative effects analysis (CEQ Memorandum to the Heads of Federal Agencies regarding Guidance on the Consideration of Past Actions in Cumulative Effects Analysis, June 24, 2005). CEQ stated "NEPA is forward looking, in that it focuses on the potential impacts of the proposed action" and "generally, agencies can conduct an adequate cumulative effects analysis by focusing on the current aggregate effects of past actions without delving into the historic details of individual past actions" (CEQ memo, pg 2). Cumulative impact is defined in CEQ NEPA regulations as the "impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions..." (40 CFR 1508.7). CEQ has interpreted this regulation as referring only to the cumulative impact of the direct and indirect effects of the proposed action and its alternatives when added to the aggregate effects of past and reasonable foreseeable future actions (CEQ memo pg 2).

Consistent with the CEQ guidance, the past, present and reasonable foreseeable actions were considered for analysis of cumulative effects were appropriate for each resource. Past actions considered in cumulative effects analysis include those that contributed to

establishing the current baseline conditions of the project. Table six provides a summary of the activities that were considered in the cumulative effects analyses and include those that occurred in the past, are still occurring, may occur, or may continue for an undetermined amount of time into the future. The activities are listed for those effects within the project area, ranger district, and on private property.

Table 6. Projects Considered in Cumulative Effects Assessment Within Individual Issue Areas for NEPA document.

Activity	On NFS lands (Yes/No)	Estimated Period of Activity (Calendar Year)	Past, Present, or Reasonably Foreseeable Future Actions (RF)	Within Project Area	Within Ranger District Boundary
Fly-Wilbur Timber Sale – Post-Sale Activities	Yes	2007-2010	Present, RF	No	Yes
Threemile Project	Yes	2003 - 2010	Past, Present, RF	No	Yes
East Fork of Otter Creek Road Reconstruction	Yes	2008 - 2010	Present, RF	Yes	Yes
East Fork of Otter Creek Fuels Project	Yes	2008 – 2015	Present	No	Yes
Green Creek Timber Sale	Yes	1970-1985	Past	Yes	Yes
Travel Plan Management	Yes		Present, RF	Yes	Yes
Livestock Grazing	Yes	Annually	Past, Present, RF	Yes	Yes
Fifteen Elk Fuels Reduction Project	Yes	Unknown	RF	No	Yes
Noxious weed treatment	Yes	Annually	Past, Present, RF	Yes	Yes
Dispersed Recreation (Camping, hiking, hunting, fishing, hiking, bird watching, OHV, etc.)	Yes	Annually	Past, Present, RF	Yes	Yes
Recreation in Developed sights (Red Shale, Cow Creek Holiday Springs campgrounds)	Yes	Annually	Past, Present, RF	Yes	Yes
Special Uses [Recreation (e.g. Outfitter and Guide) and Non-Recreation (e.g. Cultivation, communication sites livestock use	Yes	Annually	Past, Present, RF	Yes	Yes

Table 6. Projects Considered in Cumulative Effects Assessment Within Individual Issue Areas for NEPA document.					
Activity	On NFS lands (Yes/No)	Estimated Period of Activity (Calendar Year)	Past, Present, or Reasonably Foreseeable Future Actions (RF)	Within Project Area	Within Ranger District Boundary
Roundup Prescribed burning	Yes	2008 - 2012	RF	No	Yes
Tenmile Prescribed burning	Yes	2008- 2012	RF	No	Yes
Timber Creek Prescribed burning	Yes	2006 - 2010	Present, RF	No	Yes
Administrative activities (permit administration, resource inventories, contract administration, road maintenance, wildfire suppression, etc.)	Yes	Annually	Past, Present, RF	Yes	Yes
Pre-commercial Thinning	Yes	Annually	Past, Present, RF	No	Yes
Private land – Timber Harvest	No	1995	Past	No	No
Private land – Livestock Grazing	No	Annually	Past, Present, RF	No	No
Private land – Farming	No	Annually	Past, Present, RF	Yes	No

Fire and Fuels Management

No Action

Direct and Indirect Effects

Based on current and historic wildfire behavior, forest stand density in the project area would continue to increase. This would result in an increase in ladder fuels as well as a decrease in canopy spacing (Fuels Specialist Report pg. 1-12)

Cumulative Effects

The historic fire regime for the project area would result in less than 75% of the over story trees being killed by a potential wildfire. Since the current fire regime is not within the historic fire regime a wildfire has the potential to occur on an uncharacteristically larger percent of the project area. Representation of more “fire-resistant” hardwood bottoms would decrease. Colonization in open grasslands would continue to increase. All wildfires would continue to be suppressed upon detection on federal, state, and private land (Fuels Specialist Report pg 4-5).

The potential for high severity wildfire events would remain high in this alternative.

Therefore, the no action alternative would not meet the purpose and need of the project.

Proposed Action

Direct and Indirect Effects

Thinning from below, using commercial and non-commercial methods would reduce fuel loads, and promote healthy growing conditions. The expected effect of the proposed treatments would be to reduce the risk of a wildfire occurring in identified forest stands. At the landscape level, the proposed action would improve conditions by increasing the representation of mid and late open canopy stands (Fuels Specialist Report pg 5-14).

The design of the commercial thin one (CT1) treatment is to thin from below to an average canopy cover range of 40-60% for wildlife habitat and vegetative diversity. Not all of the stand attributes that contribute to high severity wildland fire (canopy spacing, ladder fuels, and surface fuel levels) would be treated. However, at a landscape level, this treatment would maintain late development closed canopy stands (Fuels Specialist Report pg 5-14).

The design of the shelterwood (SH) and seed tree (ST) harvest system is for stocking reduction to create pattern and structure diversity to alter landscape hazardous fuel conditions. The potential for high severity wildfire events would decrease in the immediate future with this treatment. As these forested stands develop, this potential increases until the time when the overstory trees are removed. In the absence of maintenance in the form of prescribed burning or mechanical thinning, the potential for greater than 75% overstory mortality from wildfires and subsequent effects would increase due to the continued development of the forest canopy. At a landscape level, this treatment would improve conditions by increasing the representation of post replacement structural class (Fuels Specialist Report pg 5-14).

The seed tree removal (STR) treatment would maintain both closed canopy and create additional open canopy conditions. In the residual closed canopy stands, the risk of high mortality (greater than 75 % overstory mortality) from wildfire would decrease slightly. In the residual open canopy stands, this risk would be reduced. At the landscape level, this treatment would improve conditions by increasing the representation in the post replacement, open and closed canopy mid development, and open canopy late development stands (Fuels Specialist Report pg 5-14).

The liberation cut (LB) treatment is designed to remove over story trees for structural diversity. The residual stand would have a slightly reduced potential for high mortality. At the landscape level, this treatment would improve conditions by increasing representation of the mid development closed canopy stands (Fuels Specialist Report pg 5-14).

Prescribed (RxB) burning would be used to maintain and/or improve non-forest ecosystems and open grown ponderosa pine areas. These treatment units are primarily grassland types. Typical treatment in this type would allow fire management personnel to establish reliable control lines beyond the timbered edges. The effects of this treatment are not expected to contribute signally, in combination, or cumulatively to project effects (Fuels Specialist Report pg 5-14).

The non-commercial broadcast burning (NCBB) treatment is designed to thin from below in the 0 to 7" diameter class to reduce ladder fuels, and restore open grown large diameter ponderosa pine stands. These stands occur on southern, and/or dry aspects that naturally do not support high crown densities. After treatment, the risk of high severity wildfire (greater than 75% over story mortality) would be reduced. At the landscape level, this treatment would improve conditions by increasing the representation of late development open canopy stands (Fuels Specialist Report pg 5-14).

The non-commercial jackpot burning (NCBJ) treatment is designed to thin from below to a canopy cover range of 55-70% to eliminate ladder fuels while maintaining wildlife habitat and vegetative diversity. While not all of the stand attributes that contribute to high severity wildland fire (canopy spacing, ladder fuels, and surface fuel levels) would be treated, reductions in ladder fuels and surface fuel levels would mimic historic levels. At a landscape level, a small increase would be seen in post replacement and late development closed canopy stands. However, the bulk of this treatment will maintain late development closed canopy stands (Fuels Specialist Report pg 5-14).

The pre-commercial thin (PCT) treatments are designed to thin the sapling size class (1-5" diameter) to a density of 125 to 260 trees per acre and pole size class (5-8" diameter) to a density of 125-200 trees per acre, leaving the fastest growing, most disease free and damage-free trees. Through treatment, a slight reduction in potential over story mortality would be seen and would result in surface fuels mimicking historic levels. At the landscape level, this treatment would have a small increase in mid development closed canopy stands (Fuels Specialist Report pg 5-14).

The design of the special cut (SCNC) treatment is to release the green ash (*Fraxinus pennsylvanica*) or aspen (*Populus tremuloides*) by removing the overtopping and competing ponderosa pine trees. By implementing this treatment the potential wildfire behavior in the draw bottoms would be reduced. At a landscape level, this treatment would improve conditions by increasing the representation of the woody draw bottoms. Because this vegetation type makes up such a small percentage of the overall landscape, this is not expected to contribute to the overall goals of improving the FRCC (Fuels Specialist Report pg 5-14).

The design of the non commercial nest stands treatment is to reduce the ladder fuels inside the identified Goshawk Nest Stands (Fuels Specialist Report pg 5-14). The proposed action would help maintain goshawk habitat over the long-term and reduce ladder and surface fuels, but not reduce the risk of habitat loss to stand-consuming wildfire.

No treatment areas include both open and closed canopy forested stands. Their characteristics would remain constant through the analysis and do not contribute to meeting the purpose and need.

Cumulative Effects

By implementing the proposed action, the fuels environment and potential wildfire effects in the Whitetail analysis area would improve. While no one treatment can effectively reduce the potential crown fire for all possible scenarios, the proposed treatments would reduce the potential in the project area. To lessen the potential for stand replacement wildfire the attributes we do have control over are surface fuel loading, ladder fuels, and canopy spacing. Specifically, treatments that reduce the canopy to less than 40%, maintain surface fuels at 2-7 tons per acre, and increasing the canopy base height to at least 16 feet will reduce stand replacement potential. Some treatments maintain a higher canopy cover than

is desirable to reduce the risk of crown fire potential. These treatments have been designed to maintain goshawk habitat over the long-term while recognizing the potential risk of habitat loss to stand-consuming wildfire (Fuels Specialist Report pg 11-14).

Forest Vegetation

No Action

Direct and Indirect Effects

All wildland fires would be actively and aggressively suppressed. No vegetation treatments would occur. Continued fire suppression, is expected to increase stand density, canopy cover, vertical fuel continuity (ladder fuels) and crown fire potential; and decrease tree vigor, shrub production, water availability, run off, and nutrient availability. Tree seedlings would continue to regenerate with resulting increases in crown densities. As these seedlings grow in size, ladder fuels would continue to increase. This would result in more competition between trees for increasingly limited nutrients and moisture, resulting in a further decline in forest health. These conditions predispose the forest to stand replacement fire or other large disturbance events. The long-term sustainability of the ponderosa pine forest ecosystem would be less likely under no action (Forest Vegetation Report pg 28-31).

Cumulative Effects

Overall, landscape ladder fuel conditions under a no action scenario are expected to remain the same. Crown cover across the landscape is expected to move towards a continuous high crown cover category. Overtime stand conditions would increasingly become denser, and function with a high risk for large disturbances (i.e. stand replacement wildland fire, epidemic insect, and disease). Currently, over 99 percent (6,651 acres) of the existing ponderosa pine coverage has multiple canopy layers resulting in a continual ladder of fuels to the crown. Seventy eight percent of the landscape has a canopy cover greater than 40 percent, which once the fire reaches the crown can sustain a crown fire. These conditions increase the risk of stand replacement wildfire (Forest Vegetation Report pg 28-31).

Proposed Action

Direct and Indirect Effects

Implementation of the proposed action would result in a landscape that would have a much lower risk of stand replacement wildland fire effects. This in large part is due to post treatment conditions of 87 percent of the ponderosa pine landscape having stand conditions with very limited ladder fuels that are less conducive to fire moving into the over story canopy and 59 percent of the landscape having low, very low or no crown cover thereby reducing the risk of a wild fire being sustained as a crown fire (Forest Vegetation Report pg 32-33).

Cumulative Effects

Past, present and reasonably future activities have contributed to an increased homogeneity of the landscape vegetation and fuels mosaic. These homogeneous conditions (dense stands, continuous ladder fuels and full canopied stands) put landscapes at a higher risk for large stand replacement disturbances and downward trends in forest health and sustainability (Forest Vegetation Report pg 36-37).

The biggest cumulative effect from the proposed treatments would be the potential to alter fire behavior during a wild fire event. Fire behavior is strongly influenced by stand and fuel structure (tree density, ladder fuels, surface fuels and crown canopy). Crown fires are dependent on the sequence of available fuels starting from the ground surface to the canopy. Limiting crown fire in the project area would be accomplished by the proposed individual treatments through treatment of surface, ladder and crown fuels across the landscape. The proposed action would help produce more diverse forest structure and fuel characteristics across the landscape. Subsequently, the likelihood wildfires will cause large, rapid changes in biophysical conditions would be reduced. The proposed treatments would modify fire behavior sufficiently so that wildfires can be suppressed more easily. Subsequently, sustained fuel treatments (ones that do not increase ladder fuels, crown canopies or surface fuels) to maintain favorable stand and fuel conditions on the landscape would be necessary. Cumulative effects are therefore focused on changes to canopy, ladder, and surface fuel conditions and whether there would be a cumulative increased or decreased ability to sustain the ponderosa pine systems in the Whitetail Project area landscape (Forest Vegetation Report pg 36-37).

Water Resource

No Action

Direct and Indirect Effects

No action would result in the potential for large scale stand replacement wildfire. Large scale forest stand replacement wildfire followed by high intensity rain event situations have occurred on the District in the past and have resulted in significant surface runoff, and subsequent scour and deposition in drainage bottoms within and below the Forest boundary and on private property (Water Resource Specialist Report pg 1-3).

Cumulative Effects

Existing roads and grazing would compound the cumulative effects of post-fire precipitation events. Roads would increase surface and subsurface drainage efficiency, routing upslope waters to natural channels at higher rates, thereby increasing floodwater levels. Roads that restrict floodwater access to floodplains would also result in higher flood stage. Concentrated livestock trampling and trailing along water courses would also increase drainage efficiency, and destabilize stream banks. The combination of these conditions would increase the risk of more flood damage to streams and adjacent private property following a wildfire. The effects are expected to be highest in those drainages or sub-drainages that burn with high intensity over a large area and where road and livestock densities are high (Water Resource Specialist Report pg 1-3).

Proposed Action

Direct and Indirect Effects

The percent of watershed acres affected by the proposed activities are less than one percent for the watersheds that headwater within the analysis area (as determined through equivalent clearcut area (ECA) calculations). Therefore, the influence of the proposed vegetation management activities on water yield and streamflow (timing, duration and magnitude) are not expected to be measurable.

Although on-site sediment production is anticipated from the proposed activities, there is minimal risk to perennial stream systems or water quality for the following reasons (Water

Resource Specialist Report pg 3-7):

- Proposed temporary road locations are generally along ridge tops or upper slopes which provide adequate filter distance between the road and water courses down-slope.
- The nearest water courses are, for the most part, ephemeral or intermittent which reduces the risk of sediment transport directly to perennial systems.
- Ensuring proposed temporary roads are not located in the very bottom of draws reduces the potential for runoff from high intensity events to concentrate on these roads.
- Effects of temporary road construction and skidding operations would be short-term as roads and skid trails stabilize and revegetate after closure.
- Minimal sediment generation is anticipated from the majority of the vegetation treatments because they do not utilize machinery (including prescribed fire), or utilize low ground pressure machinery.
- The stream systems in the analysis area have developed under high levels of natural sediment from pulse disturbance events (wildfire and high intensity ungulate grazing).
- Adhering to Streamside Management Zone (SMZ) regulations and Best Management Practices (BMPs) would further help minimize sediment production and reduce sediment transport.

System roads that currently provide limited vehicle access due to conifer encroachment onto the road prism would require varying levels of maintenance to facilitate hauling. Vegetative clearing, blading or other improvements would likely result in increased vehicle traffic after project completion. Increased traffic on portions of these routes would likely increase on-site erosion and sediment transport over pre-project conditions, especially where erosive soils and steep slopes exist. However, the majority of these roads do not cross or drain to perennial streams and therefore sediment that moves beyond the road prism would be routed to hill slopes, or intermittent or ephemeral drainages further down-slope (Water Resource Specialist Report pg 3-7).

Perennial stream courses are rare and of limited length within the project area. Most drainage bottoms are dry grassy swales or woody draws with extensive litter cover. Where they occur, perennial segments are generally found below spring sources and have low discharge, groundwater dominated flow regimes. Annual peakflow events are rare and does not play a major role in the morphology of these water courses. Therefore, active annual floodplains do not exist within the project perimeter and effects to floodplains are not anticipated. However, short, narrow riparian systems do exist and do support wetland plants and associated habitat. The risk of affecting riparian or wetland function is low because the activities are not expected to substantially influence hillslope or channel hydrology, or sediment production and transport (Water Resource Specialist Report pg 3-7).

Cumulative Effects

Livestock grazing on and below the Forest, along with crop production in the valley bottom on private lands are potentially the major cumulative influence on water resources. These activities have occurred for many decades in the past and are expected to continue well into the future.

Past and planned timber management activities have also occurred both within the project area and on private land below the forest boundary. Cumulative ECA calculations suggest

that activity levels in all watersheds are too low to cause measurable increases in water yield or streamflow. The Upper Beaver Creek, at 10 percent of the watershed affected, is well under the 50 percent that research suggests may be sufficient to detect changes in annual water yield for the Central Plains (Water Resource Specialist Report pg 3-8).

Soil Resource

No Action

Direct and Indirect Effects

No soil compaction, rutting, puddling, or soil displacement would occur with no action. Soils that are undisturbed would remain so. Soil productivity in areas where past timber management compacted soils would slowly improve as plant roots, soil organisms, and freeze-thaw events loosen the soil. Sites that are slightly compacted would recover in fewer years.

With no action, all standing dead trees would eventually fall over and contribute coarse woody debris. Needles and branches would remain on the site and fall to the ground. Soil organisms would decompose the organic materials thus adding humus to the soil. Nutrients associated with this material would slowly become available for plant growth. As the tree canopies close in and shade the soil surface, decomposition rates would slow, allowing organic matter and nutrients to accumulate on the soil surface. This process would continue until another major disturbance such as fire or a windstorm opens the tree canopy and speeds up the recycling process again.

An intense wildfire is a possibility at some time in the future. This event could reduce the amount of organic matter and associated nutrients on the site. This change would be temporary but dependent upon fire intensity. Historically, in the Ashland Ranger District vegetation generally recovers over time following wildfires. (Soils Specialist Report pg 9).

Cumulative Effects

No additional thinning, fuels reduction, prescribed burning, or road management activities would disrupt the ongoing soil processes. In the event of a wildfire, historically, in the Ashland Ranger District vegetation generally recovers over time following wildfires.

Proposed Action

Direct and Indirect Effects

Existing R1 Soil Quality Standards are currently being met. Field reviews indicate that, on average, approximately 6% of the area has soil conditions that do not meet the R1 Soil Quality Standards. The Soil Quality Standards (2500-99-1) state that areas with 15% or more of detrimental disturbance do not meet soil quality standards. Past logging, grazing, and recreation contribute to the current soil conditions (Soils Specialist Report pg 3-10).

There are two units (17 and 61) proposed for Seed Tree Removal, that have had previous commercial activity and as a result these units have disturbance consistent with previous timber harvest activities. The proposed treatments in these three units would use existing roads, skid trails, and landings and have limited new disturbance. As a result of using previous disturbed areas (existing roads, skid trails, and landings) and with implementation

of the project design features, there should be no areas where detrimental soil conditions exceed the R1 Soil Quality Standards (Soils Specialist Report pg 3-11).

Many of the proposed treatment units would not have mechanical treatment but will rely on hand thinning and burning. These areas should not have additional impacts associated with compaction, displacement, erosion, or productivity. As proposed, treatments would have abundant residual litter, grass, forbs, and shrubs to protect the soil from erosion and provide for soil productivity.

Cumulative Effects

Cumulative effects occur when past present or foreseeable activities overlap in both time and space with the proposed activities. Thus, cumulative effects are limited to the activity area where the proposed activities would occur. In other words, cumulative effects would occur only where proposed activities would occur where previous management has affected soil conditions. Activities outside of the locations of proposed management are not subject to cumulative effects because they do not overlap spatially with the lands being proposed for management in the Whitetail Hazardous Fuels Reduction Project. Soil effects do not extend off of the area where they occur (Soils Specialist Report pg 11-12).

Few of the proposed harvest units had evidence of past harvest activities. Firewood cutting along roads has had minimal effects on soil productivity because it is carried out by hand and the fine branches and needles are left in the woods. The continuation of livestock grazing activities would overlap with the proposed action in both time and space. This could potentially contribute to effects; however, because of the existing condition it is not anticipated to be detrimental.

Cultural Resources

No Action

Direct and Indirect Effects

For cultural resources no action would result in an increased potential for multiple damaging effects to cultural resource sites. Cultural resource sites, especially those containing combustible materials, may be consumed by fire and destroyed. Even sites of a non combustible nature may be damaged by long-term high-intensity fire that causes crazing or spalling of stone surfaces (Heritage Specialist Report pg 12-13).

Cumulative Effects

The direct and indirect effects represent damage or loss of important archaeological information as a result of stand replacing wildfire. The opportunity to treat cultural resource sites, with the goal to make them more "fire resistant" would not be realized (Heritage Specialist Report pg 13).

Proposed Action

Direct and Indirect Effects

Mechanical activity and road use pose the greatest potential for ground disturbance and/or the greatest potential to damage cultural resource sites. All site treatments would be monitored during and/or following implementation. No mechanical activity would be allowed

to operate within the cultural resource site boundary unless specifically allowed by the prescribed site treatment (Heritage Specialist Report pg 10-13).

Prescribed burning across open grassy areas is usually characterized by fast moving, low-intensity fires. This type of fire does not concentrate heat on a site and does not result in damage to lithic artifacts. In fact, most often the effect to lithic artifacts is simply surface discoloration or smudging (Heritage Specialist Report pg 10-13).

Heritage sites in areas proposed for prescribed burning, either following commercial timber harvest activity or strictly for prescribed burn treatment would be monitored by an archaeologist. Post-burn inventories would be conducted in order to document the effects of fire to known sites that are burned over and to determine if sites are present in areas that were previously inventoried but that may have exhibited poor ground surface visibility. A final report will be produced that includes the treatment results and fire descriptions (Heritage Specialist Report pg 10-13).

Cultural resources discovered during project implementation would be immediately be brought to the attention of the Forest Archaeologist and plans designed to avoid, reduce further disturbance or mitigate existing disturbance would be formulated (Heritage Specialist Report pg 10-13).

Cumulative Effects

The cumulative effect of the proposed action is the restoration of the project area to a more desired condition and the protection and preservation of cultural resource sites (Heritage Specialist Report pg13).

Range Resources

No Action

Conifer encroachment would continue to crowd openings within the project area over time.

Proposed Action

Vegetative encroachment would be reduced and a change in vegetative structure would result from implementing the proposed action. No potentially significant effects were identified.

Wildlife Resources

No Action

Direct and Indirect Effects

No direct or indirect effects would occur with no action. The density of forest stand structure in the project area would continue to gradually increase past the current 69% and grassland would gradually decrease from conifer encroachment above the current 31%. Wildfires would continue to be suppressed to the extent possible. The amount of mature forest for goshawk and cover for big game species would remain the same. However, the risk of stand replacing fire events would continue (Wildlife Specialist Report pg 3-4).

Cumulative Effects

The vegetative mosaic of grassland (31%) and forested (69%) areas and associated wildlife could, in the absence of large wildfires, continue at approximately current levels. The existing risk of large stand replacing wildfire within forested stands and the potential for habitat loss of mature forest and forest cover for big game security would continue. With the absence of wildfire grasslands are expected to slowly decrease over time as conifer encroachment continues (Wildlife Specialist Report pg 3-4).

Proposed Action

Direct and Indirect Effects

The proposed project would have no effect on the federally endangered black-footed ferret because the species is absent from project area (Wildlife Specialist Report pg 6-15). The proposed action would have no impact on the bald eagle, plains spadefoot toad, and Baar's milkvetch. The proposed action could impact individuals or habitat, but would not likely contribute to a trend towards federal listing, or cause a loss of viability to the population or species for the Townsend's big-eared bat, pallid bat, spotted bat, fringed myotis, long-eared myotis, long-legged myotis, black-tailed prairie dog, burrowing owl, loggerhead shrike, great plains toad, northern leopard frog, greater short-horned lizard, milksnake, western hog-nosed snake, or heavy sedge (Wildlife Specialist Report pg 6-15).

Cumulative Effects

The project area contains parts of 3-4 goshawk nest territories of the 14 identified on the Ashland RD. Project design, project design criteria and Timber Sale Contract "C" clauses would minimize disturbance to breeding / nesting goshawks at known or detected nests. The proposed action would help maintain goshawk habitat over the long-term and reduce, but not eliminate the risk of habitat loss to forest stand-consuming wildfire (Wildlife Specialist Report pg15-36). The proposed action would meet habitat levels identified in regional goshawk information (Tidwell, July 17, 2007; Brewer, et al., May 2006). Over 240 A. of nest stands and over 420 A. of PFA habitat would be maintained per active nest territory within the cumulative effect analysis area outside of areas thinned mechanically with commercial harvest. (Wildlife Specialist Report pg18-41).

The proposed treatments would reduce the risk and size of stand replacing wildfires on the landscape and resulting change in big game cover over the existing situation. Fuel breaks along major roads would result in long-term cover reduction within 200 feet of the main roads and reduce screening cover to forest stands down slope. Some harvest activities would result in a reduction of hiding cover within in the proposed action compared to the existing condition. Prescribed burning would have a minor reduction in cover, but improve forage and browse quality and quantity over the existing condition (Wildlife Specialist Report pg 45-61).

The Whitetail Project proposed action would maintain big game security. The project was designed to increase the opportunities of big game to remain on public lands. The proposed action would accomplish this because it is designed to minimize new system road construction, reconditioning and reconstruction, and limit the spatial and temporal impact of temporary roads to those needed for project activities. Temporary roads would be restored to contour and therefore not contribute to a long-term increase in public motor vehicle access. Also, the road segments behind four existing road gates would be closed year-long through a public motor vehicle travel restriction. The current big game security is measured

at approximately 3% and though the closing of four gates the security would increase to approximately 10% (Wildlife Specialist Report pg 45-61). These gates would remain closed until big game security needs are met.

The wildlife fence enclosure structure/vegetation monitoring site would remain intact through project design. (Wildlife Specialist Report page 68).

Appendix A. Powder River County Wildfire Protection Plan Priority Fuel Reduction Areas Map.

