

Rim Lakes Forest Health
Treatment Prescription and Marking Guide
MSO Restricted Habitat

Rx Prepared by: Gayle Richardson

DATE: 5/29/12

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DATE: 5/29/12

Project Name Willow				Cutting Unit No.	Acres -	GPS
Data Base	Compart. No.	Stand No.	Township	Range	Section	
0102	4048	2, 7, 11				

STAND (MARKING UNIT) DESCRIPTION:

These stands are **uneven-aged MSO mixed conifer restricted habitat**. The forest types vary within these stands. Drainages and north facing slopes are wet mixed conifer (infrequent fire types). Ridge tops and south facing slopes are dry mixed conifer (frequent fire types).

- Wet mixed conifer types: Dominated by all aged white fir with Douglas-fir and southwestern white pine sub dominant. Some aspen groups and patches included within this type.
- Dry mixed conifer: Dominated by ponderosa pine, Douglas-fir, and white pine in the overstory with younger white fir in the understory. All species are regenerating but pine species are only successful in openings.

Pockets of dwarf mistletoe exist throughout all stands. Site index is relatively high (above 65). Stand density ranges from 45 to 63 SDI or 120-200 basal area. These stands fall within the Rim Lakes Recreation Area near Bear Canyon Lake.

Each type will be treated with different prescriptions

DRY MIXED CONIFER PRESCRIPTION

Table 1: Current Condition and Forest Structure Management Guidelines

The area represented by these structural classes is estimated only for manageable trees and groups of trees, those possessing desirable or acceptable physical characteristics and canopy positions.

Current Manageable Tree Groups-desired species (Dominants and Co-dominants)	Surplus	Adequately Represented	Deficit
VSS 1 & 2 groups (0 – 4.9" DBH)			X
VSS 3 groups (5 – 11.9" DBH)	X		
VSS 4 groups (12 – 17.9" DBH)	X		
VSS 5 groups (18 – 23.9" DBH)		X	
VSS 6 groups (24"+ DBH)			X

TABLE 2: SUMMARY OF TREATMENT

Management Treatment	Treatment Target	Designation Method								
Group Selection FACTS code 4152	The primary objective of this treatment is to adjust stocking and spatial arrangement of leave trees to create and/or move towards a balanced uneven-aged, clumpy stand structure. The treatment will move stand structure closer to the desired conditions for MSO restricted habitat as specified in the 1996 Forest plan amendment and move younger trees into the larger size classes that are deficit. Group selection will be used to regenerate WP, PP, & DF over 10-20% of the area. Interspace between trees groups will range from 10 to 20% of the area. Leave desired and acceptable quality trees at target stocking levels in grouped arrangements per acre (range from 60-100 sq. ft/acre basal area residual). Criteria for desired and acceptable quality trees are described in Table 4. Desired spatial arrangement of leave trees is illustrated in Figure 1.	Leave Tree Mark / Orange Paint 5"-23.9" dbh Tally VSS groups								
	FOREST PLAN: The unit falls within Forest Plan Management Area 4: Ponderosa Pine/Mixed Species Suitable Timberlands on Black Mesa Ranger District.									
pct	X	plant	N/A	pile slash	X	lop slash	N/A	stage falling	N/A	designated skid trails ¹ dso: <u> X </u> dsr: <u> </u> dsc: <u> X </u>

SPECIES COMPOSITION / PREFERENCE:

In order of priority: Southwestern White Pine (WP) > Ponderosa pine (PP) > Douglas-fir (DF) > White fir (WF).
 Preference for regeneration is WP, PP, and DF.
 Leave all hardwoods: aspen, oak, maples.

Desired species composition is at least PP=50%. Favor 10% of the area with aspen, oak, and maples. The remaining 40% favor WP and DF. WF will be present but subdominant.

¹ dso = designated skid, off-trail permitted dsr = designated skid, off-trail restricted
 dsc = designated stream crossings for mechanized systems
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EPHEMERAL DRAINAGES AND STREAM COURSES

Ephemeral drainages are recognized in the following ways. They form the lowest spot of the surrounding ground. They form obvious channel continuity along its length and joins with more obvious channels downstream. They show evidence of having run water on previous occasions, i.e., litter and vegetation has moved, or there is a lack of litter in the channel.

Retain all trees where the root system is important in maintaining the integrity of the bank along ephemeral drainages and stream course buffers. These may or may not be identified on the map.

TREE DESIGNATION

- **Regeneration Openings**

- a. *Retain all trees 24" dbh and larger.*
- b. VSS1 and VSS2 class are deficit. Create new regeneration groups across 10-20% of the unit area, such that the existing *manageable* VSS 1& 2 and the new regeneration groups approximate 20% of the total unit area. Consider the number, condition, and spatial arrangement of seedbearing trees, percentage of capable growing space (rock), and the presence/absence of advance regeneration.
- c. Regeneration groups may range from 1/10 to a maximum of 1 acre in size. Regeneration groups may be ¼ to 1 acre in size (but typically from 1/4 to 3/4 acres). Regeneration openings greater than 1 acre require 5 to 6 seed trees left per acre. Do not space between created regeneration group openings and other leave tree groups. Where New Mexican locust is abundant, openings should be 1/10 acre in size to maintain shade and prevent locust from becoming the dominant species.
- d. Regeneration groups should be selected such that adequate trees of desired species and seed bearing condition are adjacent to the openings. Desired species are mistletoe free PP, WP, and DF.
- e. First priority for regeneration openings are mistletoe infected groups or pockets of trees. Do not establish or favor regeneration groups adjacent to mature leave groups with dwarf mistletoe infection. Utilize existing openings as practicable; they should have at least 90% capable growing area and not meadow inclusions where there is no historical evidence of trees. Historical evidence would be stumps 12" in diameter and greater.

Regeneration openings should be placed in areas according to the following priority:

- i. Poletimber groups 5 to 12" dbh class infected with mistletoe or dwarf mistletoe infected centers.
 - ii. Poletimber white fir groups 5" to 12" dbh
 - iii. Sawtimber groups 12 to 18" infected with DM and with good seed trees adjacent or within the regen. group.
- f. Do not tally natural meadows (no stumps present) as regeneration but use as gaps between groups.

- **Surrounding Matrix Outside of Regeneration Openings- Intermediate/Free Thinning**

- a. ***Retain all trees 24" dbh and larger.*** Select tree groups based upon the current VSS distribution to move the stand towards the desired VSS distribution. Attempt to balance VSS distribution.
- b. Trees 12" inches dbh and larger (VSS 4, 5): Focus on leaving groups of trees 12" and greater with interlocking canopy. Leave the largest, healthiest trees, least mistletoe infected, dominant and co-dominant trees. Thin groups to spacing targets found in table 3. Do not count hardwoods in density or groups.
- c. Trees <12" inches dbh (VSS3) :
Leave the largest, healthiest trees, dominant and co-dominant trees. Thin groups from below to spacing targets found in table 3. Do not count hardwoods in density or groups.
- d. Identify and develop tree groups of desirable and acceptable physical tree quality and canopy position (crown class) -Figure 2.
- e. Always retain groups of trees from absent, incidental, or deficient diameter classes if the trees are of desirable or acceptable physical quality. Single trees may or may not be retained.
- f. Consider operability for tree extraction from tree groups. Mechanized logging systems may be used. Generally, cutting heads need a minimum of 2-3 feet of clearance between tree trunks. Where removal of one tree is likely to cause considerable damage to another tree, leave or cut both trees.
- g. Create and/or maintain rooting zones between tree groups and clumps, especially surrounding VSS 4, 5, and 6 tree groups. The rooting zones should be irregular-shaped, with feathered edges. The distance between leave group canopy zones (dripline to dripline) should vary, the majority of the time ranging 33 and 66 feet, occasionally as low as 20 or as high as 80 feet. Rooting zones widths are flexible and should vary to facilitate retention of deficit VSS classes where necessary. Where VSS classes are deficit, it is acceptable to create/maintain narrow rooting zones when this can result in retention of desirable groups of trees representing deficit VSS classes. Within rooting zones, all trees regardless of size should generally be designated for removal. Where rooting zones are at the wider end of the range, scattered desirable individual trees may be retained.
- h. Remove all snags and hazard trees along roads, trails, parking lots and high use sites.

TABLE 3: DESIRED CONDITION DENSITY LOOKUP CHART

		Typical Number of Trees Per Group for Different Group Sizes¹					Typical Intra-Group (within-group) Densities¹ (All Group Acreage Sizes)	
VSS	DBH Range	1/10 acre group (37')	1/4 acre group (59')	½ acre group (83')	¾ acre group (102')	1 acre group (118')	Relative Spacing Range (feet)	Basal Area² (ft²/acre)
1 & 2	0 - 4.9"	39	69	198	297	396	8 – 14	N/A
3	5 - 11.9	14	34	68	102	136	N/A	50
4	12 - 17.9"	5	12	23	35	46	N/A	60
5	18 - 23.9"	3	8	15	23	30	N/A	70
6	24"+	2	5	11	16	21	N/A	80

¹these are typical values for the desired condition; variation can occur and is desired. However, ranges should center on these values

²rounded to nearest 10 square feet/acre

• **Suggested Thought Process**

- a. Determine whether or not regeneration openings are an option and determine which VSS classes will be targeted.
- b. Visualize and define existing tree groups. A tree group represents a single age cohort of trees; usually defined by a single VSS or blend of similar VSS classes (VSS 4 or VSS 4 and 5), occupying a defined area within the stand and bounded by open rooting zone or another VSS group. Some tree clumps within a group may have interlocking crowns, but generally tree groups do not consist of interlocking crowns throughout the area defined by the VSS class. Groups defined by differing age cohorts (uneven-aged stands) are generally well-defined, while some closed canopy even-aged forest stands may not present visually distinct groups. Where groups are not distinct, wide latitude exists to develop/manage tree groups of variable shape and size.
- c. Where trees are already in grouped arrangements, decide what to do with each group:
- d. Where trees are not in grouped arrangements, try to develop groups by carving out rooting zones. Remember, tree group size can range from 2 to 3 trees up to 2 acres.

WET MIXED CONIFER PRESCRIPTION

Species Preference: White pine (WP) > ponderosa pine (PP) > Douglas-fir (DF) > white fir (WF)

REGENERATE 10-20% OF THE UNIT. Regeneration groups should be ¼ acre to a max of 1 acre in size. Openings should be placed within severely infected mistletoe pockets and existing openings and saplings included as the percentage. Utilize existing openings, but retain quality seed trees adjacent to edge where possible.

PRIORITY FOR REGENERATION OPENINGS:

- 1) Poletimber groups 5 to 12" infected with mistletoe and with good seed trees adjacent or within the regen. group.

2) Sawtimber groups 12 to 18" dbh class infected with mistletoe.

Matrix, thin from below

- Retain 80- 100 sqft of BA of dominants and co-dominants with the least dwarf mistletoe, best form and largest crowns regardless of spacing. Leave a higher BA if trees are DM free. The following DM ratings are acceptable to leave for BA along with WF and WP.
 - o Leave trees 12-18" dbh with 0-3 DMR.
 - o Leave trees 9-12" dbh with 0-2 DMR.
 - o Leave trees 5-9" dbh with 0 DMR.

Do not leave DM infected trees above established regeneration (VSS1 and VSS 2) of the same species. Forks and minor sweep and crook acceptable if DM free.

ASPEN AND OAK INCLUSIONS IN DRY AND WET MIXED CONIFER- treatment range 5-10% of the area not exceed 10%.

- Priority for removal of conifers around oak and aspen is to be placed on mistletoe infected trees and VSS 3 groups. Tally separate from conifer regeneration.
- Aspen inclusions: Where aspen occupies 75% or more of the overstory or trees are 10" dbh, remove all conifers < 24" dbh within the aspen clone and 66 feet between driplines of trees at the edge of aspen clones and the surrounding conifer stand.
- Oak groups: Favor large (10" drc) and medium (5" drc) oak within the area. Remove all conifers 24" dbh within the oak group and 33 to 66 feet from drip line of oak canopy.

MARKING DESIGNATION FOR VISUALS:

Breast blazes should be faced away from high use areas such as horizontally numbered roads. Butt blazes may face all roadways.

**TABLE 4: PHYSICAL CHARACTERISTICS TO CONSIDER
WHEN CHOOSING LEAVE TREES**

EVALUATION CRITERIA	DESIRABLE (usually leave) (Keene's A)	ACCEPTABLE (maybe leave, maybe cut) (Keene's B & C)	NON- DESIRABLE (usually cut) (Keene's D)
LIVE CROWN RATIO	>40% for PP >50% other species	25% - 40% for PP 35% - 50% for other species	Less than 25% for PP Less than 35% for other spp.
CROWN CLASS	dominants	co-dominates better intermediates (SWWP and DF)	intermediates and suppressed/over-topped, poor form**
Diameter	All trees 24"+, regardless of condition	NA	NA
HAWKSWORTH DWARF MISTLETOE RATING--DMR**	All trees 24"+ with any DM Trees < 24" dbh with 0 DM	Trees >12-24" dbh with DMR 1-3 Trees 9-12" dbh with DMR 1-2	Trees >12-24" dbh with DMR 4+ Trees 9-12" dbh with DMR 3+ Trees < 9" dbh (any DMR)
INSECTS, ANIMAL, FIRE, MISC. DISEASE (see next row for mistletoe)	NONE –trees < 24"	Minor insect or animal defoliation (< 25 % live crown ratio). Barking of PP, WP, or DF < 50 % of bole circumference. Fire kill of cambium < 50 % of bole circumference or the scorch is on the lower 2/3 of the crown.	Any bark beetle attacks. Defoliation >25% of live crown. Barking of PP, WP, or DF > 50 % of bole circumference. Any significant barking of other species. Any significant top killing. Fire kill of cambium >50 % of bole circumference, or the scorch reaches into the upper 1/3 of the crown. Any conks on stem which indicate rot.
FORM DEFECTS**	NONE – trees < 24"	MINOR (no significant weakening of the tree anticipated. Minor crooks, sweeps, and tight forks which are < 30% of total tree height are acceptable if the tree is dominant or co-dominant and otherwise has good vigor).	MAJOR (weakening of tree or multiple tops)
SOUNDNESS DEFECTS**	NONE – trees < 24"	NONE	ANY

**Individual trees possessing undesirable characteristics may be left sporadically if they have value as a wildlife roost/nest tree or potential snags.

**FIGURE 1: ILLUSTRATION OF DESIRED SPATIAL ARRANGEMENT OF LEAVE GROUPS
(40-60% canopy closure at the group level)**

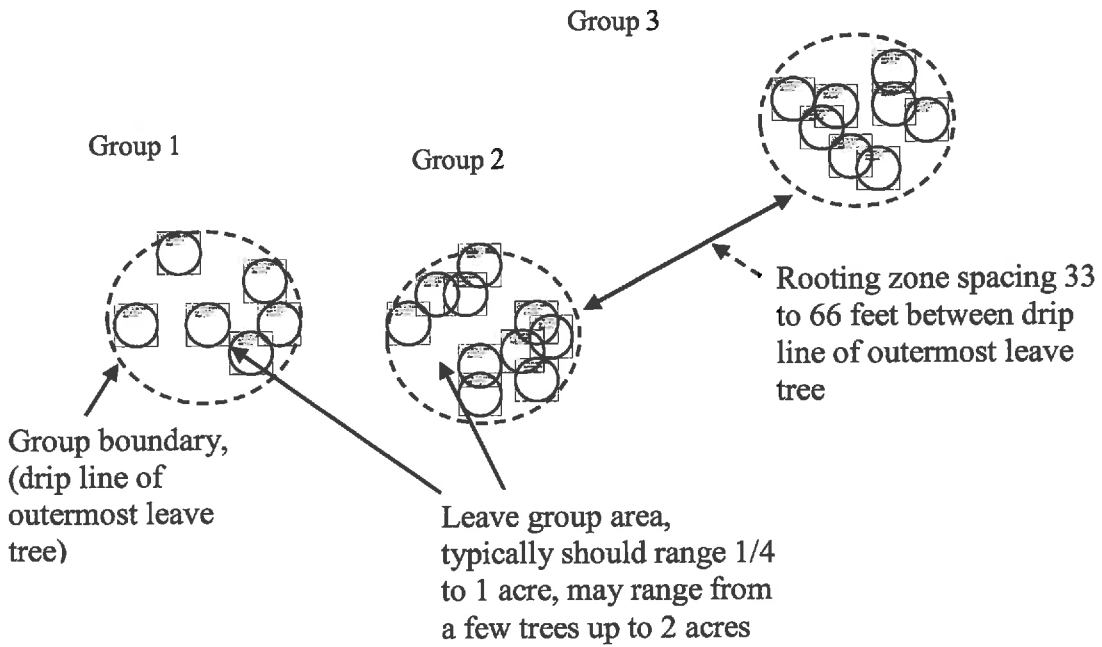


FIGURE 2: KEEN'S CLASSIFICATION OF TREES BASED ON AGE AND VIGOR

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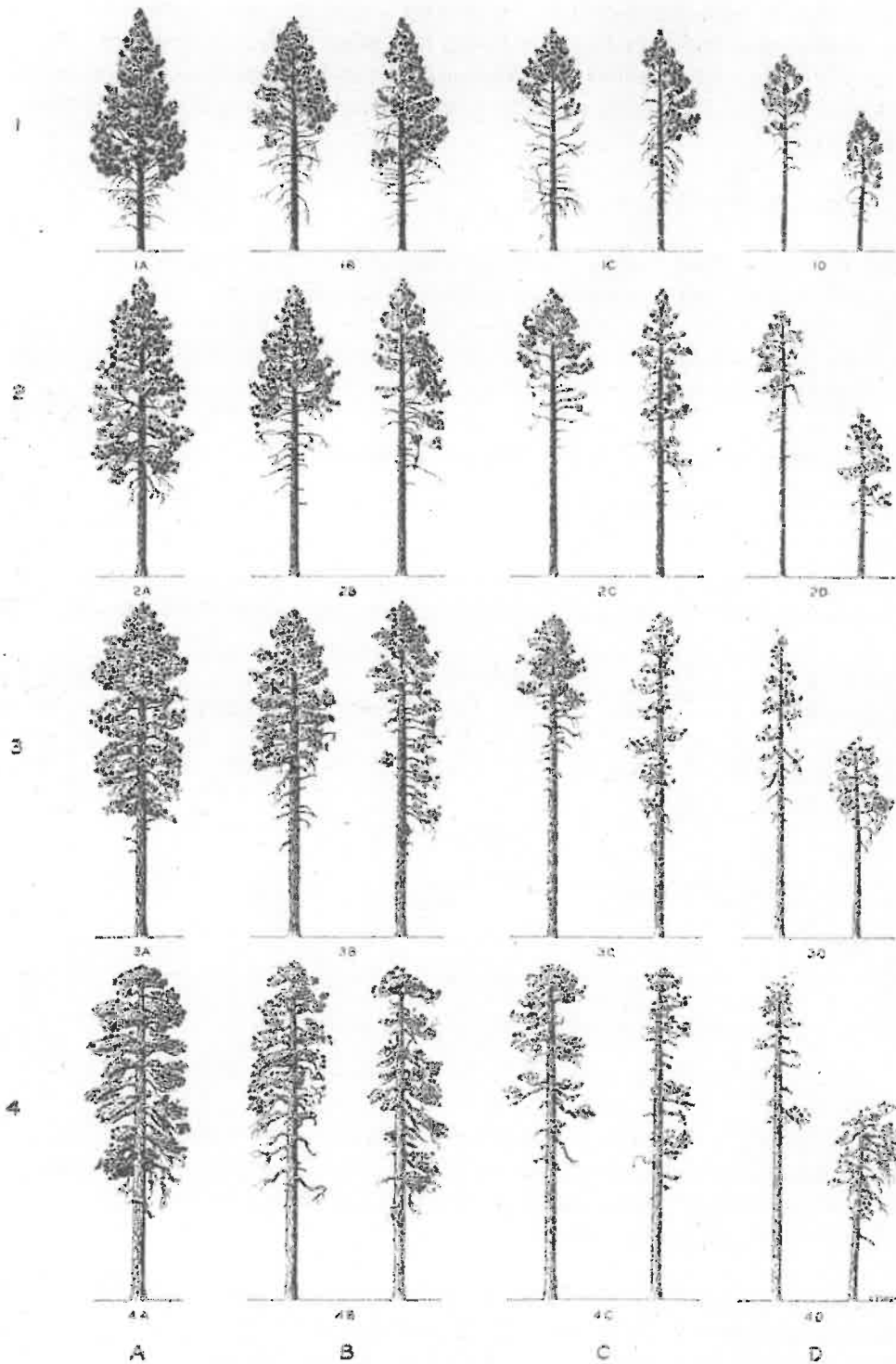


Fig. 1.--A ponderosa pine tree classification, based on age and vigor.

WILDLIFE HABITAT:

SNAGS/DOWN LOGS: Manage for an average of 2 snags/acre (> 18" DBH). Manage for an average of 3 downed logs per acre (>12" diameter). Select live trees with broken tops, defects, etc., and/or fading green trees preferably mistletoe free for potential snag recruitment where existing snags are repeatedly less than 2-3/acre. Existing snags will be designated by description in the contract, not with paint. Safety of operations always should take precedence. Any leave tree may be felled for safety purposes, at the discretion of the contract administrator. Mark all potential snags as leave trees and tally in appropriate VSS group as individual trees. Tally all existing and potential snags.

MERRIAM'S TURKEY: Preserve known turkey roosts

RED SQUIRREL: Manage for 1 cache every 2 acres. Retain all trees within a 26-foot radius from the cache to maintain nest tree groupings (1/20th acre). Do not place regeneration groups near cache.

Report known raptor nests to the forest service. The forest service will identify needed buffers from mechanical treatments according to forest plan or other established guidelines.

Maintain forested escape cover around at least half the perimeter of stock tanks, springs, and wetlands.

SOILS AND WATERSHED:

Best Management Practices (BMPs) will be used when implementing treatments. Terrestrial ecosystem map units that occupy portions or all of the stand(s) requiring specific mitigation *beyond general BMPs* are listed below:

TEU	TIMBER HARVEST		REGENERATION		OTHER	
	Issues	Mitigation	Issues	Potential	Issues	Mitigation
201	Slight erosion hazard	Dry or frozen soil condition only	None	High	None	None
203	Severe erosion hazard	Dry or frozen soil condition only	None	Moderate	None	Stream Buffers

See BMPs and map for locations of stream buffers and mechanical entry limitations.

INSECTS/DISEASE:

Bark beetle (*Ips spp.*) activity is limited to scattered individual trees, within endemic levels. See "Timing of Operations" for recommended operational practices to reduce risk of bark beetle outbreaks. If bark beetle activity increases, refer to bark beetle management recommendations letter provided by Region 3 Forest Health group, dated January 25, 2010, for additional mitigation measures.

Dwarf mistletoe may be throughout most of these stands, in relatively low proportions (less than 10% of trees infected) in the Douglas-fir and higher in ponderosa pine. Occasional groups of trees with higher frequency and intensity of mistletoe infections may be observed. Refer to Table 4 for tree designation instructions related to mistletoe.

ESTIMATED VOLUME REMOVED

Sawlog (> 9" DBH): _____ CCF/acre

Roundwood (> 5" DBH): _____ CCF/acre

Based on the timber cruise.

TIMING OF OPERATIONS:Campground Season of Operations:

The following mitigation will be incorporated into the proposed action in order to provide for the safety of the forest visitors :

- Restrict hauling within the Rim Lakes Recreation Area during times of highest recreation use. The highest recreation use and associated traffic is on weekends between Memorial Day and Labor Day. On the weekends of Memorial Day, July 4th and Labor Day, recreation use and associated traffic is high during the weekend and the Friday or Monday that is the Federal observed holiday. When July 4 falls on Tuesday, Wednesday, or Thursday the recreation use and associated traffic is high the whole week.
 - No hauling between 1200 Fridays and 0600 Mondays for weekends between and Memorial Day and Labor Day.
 - No hauling on the Federal observed holiday for Memorial Day, July 4th, or Labor Day.
 - No hauling the week of the Federal observed July 4 holiday if the Federal observed July 4 holiday falls on Tuesday, Wednesday or Thursday.

- Restrict treatment activities in units adjacent to the Rim Lakes Recreation Area and the Forest system roads listed in Table 4 during times of highest recreation use. The highest recreation use and associated traffic is on weekends between Memorial Day and Labor Day.
 - No treatments before 0800 every day between Memorial Day and Labor Day.
 - No treatments between 1200 Fridays and 0800 Mondays.
 - No treatments on Federal observed holidays.
 - No treatments the week of the Federal observed July 4th holiday if the Federal observe July 4 holiday falls on Tuesday, Wednesday or Thursday.

Table 5. Forest System roads with treatment activity restrictions for public safety.

9514L	9512E	149	148	181
9500A	300X	195	9354	208
89	260C2	171	84	89A
105	300A	9350	300B	105A through
		105N	260	300 from 300B east to State Route

- Implement road closures, one-way traffic, and area closure restrictions as deemed necessary by forest officials for health and safety concerns during any operation.

- Evaluate and adjust haul routes and restrictions within the Rim Lakes Recreation Area and to the north to reflect any increase or decrease in traffic volume of forest visitors in the foreseeable future.

- Separate designated snowmobiles trails and project implementation traffic/haul routes.

The following mitigation will be incorporated into the proposed action in order to maintain winter snowplay opportunities by:

- Provide winter snowplay and snowmobile recreation opportunities in the Rim Lakes/SR 260 area that are clearly identified to the public and constructed and signed to standard. Winter opportunities may be in temporary locations during project implementation to avoid conflicts between winter recreation and project implementation during the winter.

Project-generated slash mitigation:

- Landings, temporary roads, skid trails, and opened maintenance level 1 roads used for project implementation are scarified, reseeded, and covered with slash to make them less visible and to deter undesired motorized recreation use after implementation is completed.

BRUSH DISPOSAL (BD) NEEDS:

The merchantability specification for these units is 5" DBH and 8' long piece. Other material is considered slash. Ensure that Best Management Practices (BMPs) are followed for site stabilization on landings, skid trails, etc., using slash as needed.

Machine pile or remove slash not needed to meet down log and woody debris requirement. For whole tree operations, maintain as much green needle slash on-site for nutrient cycling as practicable.

Target total woody debris (all sizes) to retain on-site is 10-15 tons/acre.

KNUDSEN-VANDENBURG (KV) ACT FUNDING NEEDS:

Treatment is planned to be implemented via a Stewardship Agreement. Therefore, there is no KV component to consider at this time. If the opportunity and need arises, the silviculturist will develop a sale area improvement (SAI) plan.

HERITAGE CONSIDERATIONS:

Refer to clearance report # _____ for location and protection of heritage sites. Sites are designated by white flagging. Contact District Archeologist if unrecorded sites are discovered.

OTHER SILVICULTURAL TREATMENTS DURING THIS CUTTING CYCLE:

- 1) Precommercial Thinning - Precommercial thinning will occur in tree groups of VSS1 and VSS2 structural classes.
- 2) Site Preparation - Logging scarification and broadcast burning
- 3) Planting - Walk-through stand exam five years post treatment to evaluate regeneration success and future regeneration treatment needs (if any).

Burning -Broadcast burn 1-5 years post timber treatment (or after adequate curing of activity fuels) to stimulate nutrient cycling, and to maintain fuels at desired levels. Perform maintenance burns in out-years as needed to meet density management and other to-be-determined resource management objectives. Silviculture report specifying desirable/acceptable/unacceptable thresholds for parameters such as tree mortality, percent crown scorch, etc., will be required as part of any burn plan.

MONITORING:

Monitoring should be designed and implemented to determine whether structural objectives are being met. Monitoring results will facilitate future adaptive management. The silviculturist and presale forester will inspect areas that have been marked. Two types of monitoring will be conducted:

- 1) Implementation monitoring – in this context, implementation monitoring will be an inspection of whether or not the marking crew is following the instructions in the marking guide. Feedback will be given as needed to correct mistakes. Isolated mistakes are not a concern; however, patterns of incorrect marking need to be addressed. The presale forester or acting is expected to perform this monitoring on a daily basis, correct crew members as needed, and report findings to the silviculturist. The silviculturist will inspect marked areas periodically. Factors to look for during implementation monitoring to ensure marking guide specifications are followed:
 - a. Leave trees meet desirable or acceptable physical characteristic criteria
 - b. Regeneration group size, placement, and percent of area
 - c. Leave tree within-group density
 - d. Tree group area range
 - e. Rooting zone canopy distance
 - f. Mistletoe designation
 - g. Wildlife special reserve tree designation
 - h. Leave tree blaze and butt mark follow standard operating procedures

- 2) Effectiveness monitoring – in this context, effectiveness monitoring will be an inspection to determine if the marking guide is meeting the objectives stated in the silvicultural prescription and the Rim Lakes Forest Health Project EA. Adjustments will be made to the marking guide as needed. The silviculturist will conduct this monitoring.

PRESALE CUTTING UNIT SUMMARY
(Ref: FSM 2431.23)

(Stand Condition, Damaging Agents, Windthrow Risk, Ground Vegetation, etc.) MSO restricted habitat - Mixed conifer stand logged in the 1980's with an overstory removal. Species present include PP, WP, DF, WF and maple, oak, and remnant aspen. Mistletoe is found in patches in PP and DF. Very few large trees left in overstory.		Project Name Bear (Rim Lakes)		Cutting Unit No./Acres 1 10	
(Treatment objective, Silv. RX Summary, Logging Plans, etc.) Silviculture Group Selection/Intermediate Thinning - 80-100 BA Silviculturist <u>Christi Bjorklund</u> Date <u>7/2/11</u> Logging Dry and frozen only. Landings no larger than 1 acre in size.		Data Base 0102		Range 13E 13E	
Treatment Plan BD Needs Machine pile and burn activity slash. Broadcast burn within 10 years.		Compartment No./Stand No. 4101 9, 11, 12 4103 13, 15		Section 19, 20, 32 5, 6	
KV Needs PCT - use broadcast burning to reduce seedling component if possible. Evaluate for PCT after burn.		Township 12N 11N		Habitat Type/Phase ABCO/MUVI	
Estimated Net Volume _____ MBF/AC _____ CCF/AC Type Cut Activity Harvest Date _____		Soil Map Unit 201, 203		Aspect NW-NE	
Indicate method to mark boundaries and/or trees. Indicate type of cruise, sample intensity, grading. Orange boundary- Leave tree mark-orange paint		Slope 10-30%		Elevation 7600	
Layout completed by _____ Date _____ Cruise designed by _____ Date _____ Cruise completed by _____ Date _____		SITE 201, 203		SITE 201, 203	

