APPENDIX B
DESIGN CRITERIA
MITIGATION MEASURES
AND
MONITORING

APPENDIX B – DESIGN CRITERIA, MITIGATION MEASURES, AND MONITORING

Specific design criteria, mitigation measures, and monitoring procedures described herein have been developed to be used as part of the action alternatives. It may be determined that certain Federal, State, local, or other permits, cooperative agreements, MOUs, etc., are necessary or required as part of implementing the Mountain Pine Beetle Response Project actions. The appropriate documentation will be obtained prior to initiation of applicable actions.

Forest Service Manual and Handbook direction, Regional Watershed Conservation Practices (WCPs, Forest Service Handbook 2509.25), Forest Plan standards and guidelines, South Dakota Best Management Practices and other management requirements apply to the proposed activities. Management requirements such as applicable Forest Plan standards are repeated here only if clarification is required.

Heritage

A. Cultural Resources:

1) Programmatic Agreement

The Forest is negotiating a Programmatic Agreement (PA) with the Wyoming and South Dakota State Historic Preservation Officers and interested American Indian Tribes in order to fulfill the Forest's legal obligations for this project under Section 106 of the National Historic Preservation Act (NHPA). The PA will include a full complement of stipulations that will govern how the Forest implements the undertaking in accordance with Section 106 mandates. In addition to terms specified in the PA to protect historic properties, the following general stipulations will be applicable throughout the implementation process.

2) Protection of Historic Properties:

- Historic properties will be identified as per 36 CFR §800.4(b) of the NHPA implementing regulations. It is anticipated that in the vast majority of cases, the Forest will be able to demonstrate that no historic properties will be affected by implementation activities. Where *potential* adverse effects are identified, it will frequently be possible to prescribe protection measures to eliminate those threats prior to conducting implementation activities (as per 36 CFR §800.5(b)). In the rare case that an adverse effect to a historic property is anticipated and protection measures cannot be reasonably identified and prescribed, the Forest will follow the process outlined in 36 CFR §800.6 to mitigate the adverse effect.
- All project leaders associated with implementation of this undertaking will consult with the Forest's Heritage Resources staff prior to initiating any on-the-ground implementation activities. The objective of the communication will be to determine which locations have received adequate field survey and which locations contain sensitive historic properties and/or sacred sites where protection measures may need to be prescribed. Where Heritage Resources staff deems it necessary to do so, protection measures will be identified to protect historic properties.
- Sacred sites will be identified and managed according to mandates in Executive Order 13007. All project leaders associated with implementation of this EIS will consult with the Forest's Heritage Resources staff on this topic prior to initiating any on-the-ground implementation activities.
- In the event that previously unidentified cultural resources or human remains are found during the implementation phase of the project, all activity must stop and a member of the Forest's Heritage Resources staff must be notified immediately to determine an appropriate course of action. Consultation with the appropriate State Historic Preservation Officer(s), Tribal Historic Preservation Officer(s), and other applicable parties will be conducted as directed by 36 CFR

§800.13 or mandates in the Native American Graves Protection and Repatriation Act, as appropriate.

Recreation

B. Recreation/ Safety/Improvements:

3) All Forest Service-authorized improvements, such as fences and water developments, would be shown as protected improvements on timber sale area maps and protected during management activities.

4) Protect all documented NFS land boundary corners, posts, and bearing trees.

5) Avoid or protect utility infrastructure in the project area during project implementation. Measures will be taken to protect utility lines and any other improvements within the burn unit during prescribed burns

6) Avoid or protect improvements under special use permit.

7) Protect all mining corner posts and active mining claim developments.

8) Motorized, Non-motorized, and snowmobile trails would be shown as protected improvements on timber sale maps. Project administrators would ensure protection of trails during project implementation.

9) Appropriate safety signing or other cautionary measures would be implemented in conjunction with all management activities to ensure public safety. Implementation of these measures would be the responsibility of the person initiating the action (e.g., logging contractor, prescribed fire manager).

10) Where feasible, provide temporary reroutes of all affected, motorized, non-motorized system, and snowmobile trails and main connector OHV routes during high use seasons, May through September. Provide temporary trail reroutes of all affected National Recreation Trails year-round.

11) Unless critical to harvest timing and project implementation, protect snowmobile trails by precluding them from harvest activities during the winter closure dates from 12/01 to 3/31 annually.

12) Restrict spraying pesticides during campground operations, including pre-opening and post-closing procedures, from May 1 to September 15 annually.

13) Protect developed campground improvements by restricting vegetation management activities, during its full operational period from May 15th to September 15th annually. Protect campground facilities and improvements during all periods of vegetation management occurring in the campground.

14) Protect developed campsites, picnic sites, and trail corridors by prohibiting slash or landing piles within 300 feet. Chipping or removal is the preferred method to treat residual slash from harvest or treatment activities within the immediate area where campground improvements are located.

15) Consult with district recreation and lands specialists to minimize impacts to developed and dispersed recreation, motorized and non-motorized system trails, and recreation and non-recreation special use permittees as site specific commercial and non-commercial activities are planned in specific treatment areas.

Noxious Weeds

C. Noxious Weeds:

16) **<u>Washing of Equipment:</u>**

- Contracts and permits issued as part of this project would include measures to limit spread of noxious weeds. Where proposed activities would occur in areas infested with noxious weeds and considered to be at high risk for spread, off-road equipment associated with the activity will be washed before leaving the site to prevent spread of weeds to adjacent NFS and private

lands. Known areas meeting these criteria will be identified by District staff before commencement of any timber sale contract associated with this project. Known weed infestations will be displayed on the timber sale map.

17) Pre-Treatment/Treatment of Weeds:

- Where ground-disturbing activities occur in areas infested with weeds, weeds would be treated prior to project implementation, where feasible, to reduce future spread and establishment of noxious weeds.
- Review of the area for noxious weed infestations will continue during management activities. If new noxious weed infestations that could be spread by management activities are found during implementation, actions to minimize spread would be taken.
- District staff responsible for the noxious weed program would, in coordination with the project engineer, inspect gravel pits for noxious weed infestation before transport and use of gravel and other material. Infestations would be treated to prevent spread.
- District staff responsible for the noxious weed program would inspect stockpiled gravel annually for weed infestation in coordination with the project engineer.
- Noxious weeds when first encountered by the contractors and/or sale administrators should inform the appropriate entity so treatment is possible before weeds are spread**.**
- Spot spray and follow label direction to protect non-target species such as sensitive plants or treat areas in another manner. Biological control measures may be used as an alternative to or in addition to chemicals in sensitive areas such as, sensitive plants, aspen, riparian, or FEN's
- Use existing landing locations when in desirable locations (i.e. not in meadows, some slopes) and roads when possible.
- Minimize landing size and design for proper drainage.
- Where possible winter logging with snow cover could limit the spread
- New road construction along with decommissioned roads will be monitored for noxious weeds and treated as necessary within budget constraints to prevent the spread of noxious weeds.
- Rehabilitation of pile sites would include site preparation and seeding to return the sites to productivity and control the spread of noxious weeds.
- Use of a brush chipper where possible reduces ground disturbance and reduces the spread of noxious weeds.

Range

D. Range:

18) Protection of Allotment Improvements:

- Managers of vegetation treatment projects would consult with District range managers to ensure alteration of natural barriers does not allow livestock to circumvent fences and lose the integrity of the pasture or allotment.
- All pasture gates would be identified on Timber Sale Area maps and kept closed during the grazing season (June through October). Maintained fences would be protected during logging operations.
- If log hauling or movement of heavy equipment related to the proposed timber harvest causes damage to cattleguards, the timber purchaser would be responsible for repair.
- Timber purchasers would be responsible for repairing any damaged improvements resulting from their actions.
- If an improvement is found that is not on the map, protection needs will be assessed and negotiated with the purchaser.
- All pasture gates would be identified on Timber Sale Area maps and kept closed during the grazing season (June through October) while livestock are present on either side of the fence. These improvements would be protected during logging operations.

- If log hauling or movement of heavy equipment related to the proposed timber harvest causes damage to cattleguards, the timber purchaser would be responsible for repair.
- Fence openings created to facilitate removal of logs should be closed each day in active grazing areas. Temporary fence closures may be made with log skids or re-stringing of fencing.
- When locked gates on the Timber sale are used the Timber Sale Administrator will coordinate with the Range Specialist so keys as needed can be issued to permittees.
- Any new road construction would be coordinated with the Rangeland Management Specialist so developments can be protected or altered so their function is not compromised.
- When feasible extend sale unit boundaries to the top of ridgelines rather than mid-slope. Such design avoids mid-slope fence construction that obstructs future sale activities and contributes to cut and damaged fences.

19) When appropriate whole tree skidding is used to bring trees to the landings. This removes substantial slash residues and allows wildlife and livestock to move more freely across the treated areas. In some locations lop/scattered or processed in the woods has caused the loss of secondary range and big game use because of the obstacles/slash tonnage.

Botany

E. Botany/Region 2 Sensitive Plant Species:

20) <u>Protection of Plant Habitat:</u>

- Refer to the botany design criteria shapefile for identified plant habitat and to the Biological Evaluation/Specialist Report for a verbal description of plant habitat.
- Any suitable habitat for sensitive plant species outside/or inside of treatment units would be avoided unless approved by a qualified botanist for entry.
- Any R2 Sensitive plant or animal species or plant or animal Species of Local Concern located after contract or permit issuance will be appropriately managed by active coordination between permittee, contractor or purchaser, Forest Service line officer, project administrator, and biologist and/or botanist. – **Standard 3115**
- Occurrences of Region 2 Sensitive Plants and Plant Species of Local Concern would be avoided during all proposed timber harvest activities. Known areas are identified in the design criteria shapefile.
- Suitable plant habitat would be excluded from mechanical treatment areas. Known plant habitat is identified in the design criteria shapefile.
- Any skid trails, temporary roads, landings, or other disturbances associated with logging activities in plant habitat would be designated in consultation with a qualified botanist. These areas are included in the design criteria shapefile.
- For areas outside of designated treatment areas, any ground disturbing activities including, but not limited to skid trail designation, landing creation, pile construction, road construction or reconstruction/conversion, would be visited and evaluated for risk to rare plants and their habitat by a qualified botanist prior to implementation.
- A botanist will work with the road engineer to determine the best placement of the proposed new road construction that will potentially cross plant habitat. These areas are included in the design criteria shapefile.
- Surface disturbing activities, such as skid trails, landings, road construction, etc., would be avoided in meadows, wetlands, and riparian areas (potential rare plant habitat, Standard 1306). If, during implementation, activities such as these cannot be located outside of meadows, a qualified botanist would be contacted prior to implementation to determine if special requirements are warranted to protect site integrity.
- Treatment within fens would be limited to hand felling of trees and would require assessment by a qualified botanist prior to implementation. All woody material (chips, piles, cut and

chunk, logs, etc.) would be removed from the fen area with as little impact to the fen as possible (i.e. hand carrying out via a single trail/disturbance).

- No road construction or reconstruction/conversion would be allowed if proposed site is located over 40% slope and up- or downslope of a known rare plant population in order to avoid the effects of mass movement.
- Neither magnesium chloride nor calcium chloride would be used for dust abatement within 500 feet of fens or known rare plant sites.
- Insecticide spraying treatments would not occur within 200 feet of fens.
- Cable logging in areas known to contain rare plants would only occur when there is a foot of snow on the ground to avoid soil disturbance and impacts to rare plants.

Transportation

Transportation improvements are expected to begin during the 2013 construction season. The following recommendations should be considered during project implementation. Route verification would be held by engineering, prior to road contract preparation, to show Forest and District Specialists the location and design of planned relocation, realignment and new construction to ensure the road would not have additional adverse effects on resources.

F. Road Closures/Road Construction/Road Maintenance/Revegetation, Rehabilitation of Roads:

21) **Road closure** devices, including gates, barriers, slash or other devices needed to prohibit or eliminate use, would be located on the ground to provide the most effective means of accomplishing the desired travel management strategy.

- Physical closures, such as slash, stumps, rocks and revegetation are to be used to eliminate use. Earthen barriers may be used when there is not adequate material available for slash, stumps or rock closures. This may be done after activities, to allow use of a road by the purchaser, or as funds become available. Closure gates may be utilized where administrative access is needed.
- All temporary roads and newly constructed system roads used to access harvest units would be closed after management activity is completed.
- All roads used during project implementation that are not on the Forest Motorized Travel Plan would be closed following project completion.
- All newly constructed roads that are to be closed following use will be closed with appropriate methods, which may include: locked gates, dirt berms, boulders, downed trees, fences, or re-contouring.
- Where sod has effectively stabilized existing roadbeds, efforts would be made to minimize disturbance to the sod layer during maintenance and reconstruction activities.
- Unauthorized roads used for temporary access would be decommissioned or converted to NFSRs.
- Coordination between the Hydrologist, Silviculturist, Botanist and Engineering is required for any road reconstruction or realignment along protected stream courses and/or sensitive plant areas.
- Operations around recreational areas and associated recreational sites would require coordination between the Recreational Staff, Silviculturist, and Engineering.

22) **Revegetation and Rehabilitation:**

- Disturbed soil would be revegetated in a manner that optimizes plant establishment for that specific site.
- Revegetation may include topsoil replacement, planting, seeding, fertilization, liming, and placement of weed-free mulch as necessary. Revegetation would be initiated as soon as possible, generally not to exceed 6 months, after termination of ground-disturbing activities.

All disturbed soils would be revegetated with native species when available, using seed mixtures free of noxious weeds. On areas needing the immediate establishment of vegetation, non-native, non-aggressive annuals, non-aggressive perennials, or sterile perennials may be used until native perennials become established. These species can be used to prevent the spread of noxious weeds and prevent erosion. Only weed-free mulch would be used. – **Standard 1110**

- New roads that are not to be retained for Travel Management would be seeded after construction but before timber harvest if any part of the gap between construction and harvest would occur between April and October. This may be accomplished under the road contract. If necessary, seeding would again occur after use of the road is complete. Seeding may be delayed until after completion of harvest if the gap between construction and harvest would be of short duration and hydrology, soils, engineering, and noxious weed specialists determine after field review that a delay would be acceptable.
- Temp roads would also be reseeded after completion of harvest activities.

23) <u>Road Construction/Maintenance:</u>

- New road construction is to be designed to limit cut and fill slopes where possible, particularly when located above steep slopes.
- New road construction would not occur within 100 feet of fens.
- Minimize fill in floodplains to facilitate crossings to allow flood flows to pass with minimal interruption.
- Whenever possible, roads shall be relocated or constructed out of draw bottoms to improve drainage and protect soil and water resources. Abandoned roadbeds shall be revegetated and returned to as natural a state as possible. Avoid system road building within wetlands and adjacent WIZ buffers.
- Creation of large water collection points, such as road ditches or excessively large water bars, would be avoided, particularly up-gradient of existing rotational site features, such as slumps and landslides. A greater frequency of water bars than that identified as the maximum spacing recommended in FSH 2509.25 for the Rocky Mountain Region is to be used. FSH 2509.25 direction disclosed that the listed spacings were maximum spacings and should be reduced if warranted by onsite factors, such as amount of road use, downslope stability, erosion, etc. Foresty Best Management Practices for South Dakota (2003) identifies suggested drainage feature spacings (page 12) that have narrower spacings between drainage features as compared to FSH 2509.25. The 2009 Field Audit Report - Implementation Monitoring of SD Forestry Best Management Practices further support the greater need for more frequent spacing of water bars. The audit identified some areas with insufficient numbers of water bars on native surface roads. Temporary road cuts exceeding two feet would be avoided. If this is infeasible because of steep slopes, temporary roads would be re-contoured.
- Where feasible, existing haul roads would be reconstructed with rolling grades instead of ditches and culverts.
- Water bars and sediment barriers would be placed at a minimum of 10 to 20 feet below water bar outlets and culvert outlets on skid trails steeper than 15 percent.
- Engineering staff would consult with a forest hydrologist and fisheries biologist on design of stream crossings. Fill slopes would be protected with riprap, gabions, prompt seeding, or other measures approved by the hydrologist, fisheries biologist, or soil scientist.
- Placement of structures would comply with federal and state laws regarding construction in and near waterways, including placement of fill and measures to control sedimentation.
- Dust control, if necessary, may be done with water, magnesium chloride, calcium chloride, or equivalent but, would not be applied within 500 feet of any fens/streams/meadows.
- Consult hydrologist on all temporary road crossings on perennial and intermittent streams. Where there is a need for a temporary road crossings on perennial or intermittent streams it will

require a structure to span the stream; such as temporary bridge, temporary arch, cattleguard, skidder bridge, or similar structure. The reason is to avoid damage to the stream and stream bank and maintain streambank stability.

Scenery

G. Scenery:

24) Special Areas:

- Within 300 feet of US and State Highways, Scenic Byways, roads into recreation facilities, the Mickelson and Centennial Trails, the following design criteria would be utilized:
- Operations restricted to dry or frozen ground conditions to minimize soil disturbance. Where soil is displaced, re-contour to adjacent slope and seed with native grasses.
- Where possible along these routes, remaining vegetation should be in a variety of sizes and spacing to maintain a more natural appearance. This technique has been very effective in maintaining a natural appearance.
- Locate log landings outside the immediate foreground (200') of the highways and trails when possible. Limit equipment use within this distance zone as possible.
- Remove un-merchantable material piles ('cull decks' and piles of tops/limbs) in the immediate foreground - 300' of the highways and 200' of the trails when possible.
- Rehabilitate log decks within 300 feet of travel corridors by returning to original contours, scarifying to eliminate compaction (as necessary), and planting with native grass seed.
- Slash should be cleaned up to natural levels within 300 feet of these highways, in accordance with Forest Plan Guideline 4112b (i.e. - This can be accomplished by piling and burning, or chipping and/or removing chips), and Forest Plan Guideline 5606.
- Activity slash will be reduced to natural levels within 300 feet of these routes, unless not visible due to changes in topography. Slash will be treated within 1 year of harvest completion.
- Follow the most current Black Hills NF "Visual Marking Guides and Map" - at the time of project layout and marking implementation.
- When thinning, highlight large diameter ponderosa pine when possible, by removing small trees around them that block their view (or act as ladder fuels in a fire).
- Minimize "Cut and Chunk" treatment method in immediate Foreground areas. If treatment must be used, consider placing chunked material near the road so it can easily be picked up by firewood gathers and removed from the area after the beetle emerge.
- All 'Non-system' roads, skid trails, forwarder trails, and log decks - Obliterate (eliminate the cut / fill slope to match the adjacent contours) to return to a Natural Appearing condition along US / State Highways, Scenic Byways, non-motorized trails, and recreation facilities. Place natural levels of down debris across the routes, and re-seed. This is particularly important within the Byway corridor, around developed recreation areas (campgrounds and day use areas), and other non-motorized recreation areas, where long viewing durations can be expected.

The following Design Criteria should be followed across the planning area:

- Skid trails should only be created / utilized during dry, or frozen, conditions to minimize soil disturbance, then seeded with native grasses after use. These techniques have been effectively used to reduce soil displacement and speed up the re-vegetation process along these skid trails – thus reducing highly visual evidence of skid trails.
- Machine piles and log decks along main roads, trails, and in recreation areas – once burned, mix ash with unburned soil, reshape to natural contours, place natural levels of down debris across the sites, and re-seed.
- Hand-pile, chip or mulch activity fuels in the immediate foreground of County Roads, Recreation Facilities, Recreation Trails, to limit additional disturbance to the area and clean up

slash to natural levels (Guideline 5606).

- Avoid creating strong lines between private and Forest Service boundaries. Remaining vegetation should be in a variety of sizes and spacing to maintain a more natural appearance. The transition zone width is dependent upon management and use of private lands, slope, and variety of vegetation.
- Avoid creating geometric shapes when implementing proposed activities. Consider boundaries that follow vegetation types or sizes.
- Minimize "Cut and Chunk" treatment method in immediate Foreground areas of county roads. If treatment must be used, consider placing chunked material near the road so it can easily be picked up by firewood gathers and removed from the area. Consider designating these areas for Firewood gathering.
- Routes with high levels of public concern for the scenery, they also serve as key public 'evacuation routes' during natural disasters, specifically wildfires, within the Forest. Reducing /removing fuel loading (tops, limbs, chunked tree boles, etc.) along these routes will maintain or improve the scenic landscape attributes appreciated by the public while also reducing the potential of a severe fire condition compromising these evacuation routes.
- Avoid and protect non-motorized system trails to preserve the scenic beauty along these trails. In locations impacted by logging equipment, return to original condition and seed 50 feet each side of the trail.

25) **<u>Marking Guidelines for Scenic Areas:</u>**

- Layout and marking of timber sale units would comply with Forest-wide marking guides in effect at the time of implementation. The most current Black Hills NF "Visual Marking Guides" would be followed for tree marking within distance of arterial collector roads and private land with dwelling.
- To reduce effects of continuously even tree spacing on wildlife and scenery, commercial thin treatments would emphasize tree health and crown size over spacing.
- Where existing conditions allow, treatments in forested areas adjacent to other ownership would blend into adjacent tree density conditions rather than creating strong vegetation edges. A horizontal transition zone of 1.5 times the height of the overstory trees is suggested to achieve this transition in tree density.
- A transition zone of 2.5 times the height of overstory trees is recommended along unit boundaries with an overstory removal prescription to blend the overstory removal unit into surrounding units of different prescriptions.

26) Where possible, treatments would be designed to reduce the chance of wind damage to residual trees. This may include retaining higher density of mature trees on exposed ridges, lee slopes, and other areas prone to high winds and heavy snow accumulation.

27) Skyline logging corridors would be as narrow as possible to minimize visual effects of any soil displacement.

Wildlife

Prior to vegetation treatment activities, a wildlife biologist would be consulted to determine if Forest Plan standards or guidelines or design criteria apply to proposed activity.

H. Snags and Down Logs:

28) **<u>Conifer snags Retention Guidelines:</u>**

- Conifer Snags over 20 inches dbh and those with cavities would be cut only for safety reasons. **– Standard 2301a**
- Conifer snags under 20 inches dbh would be cut only for safety reasons or when necessary for construction of roads, skid trails, firelines, and log landings.

- Retain all hardwood snags except for those that are considered a safety hazard - **Standard 2301b**

29) <u>Down Log Retention Guidelines:</u>

- Retain at least 50 linear feet per acre of coarse woody debris with a minimum diameter of 10 inches in ponderosa pine stands and 100 linear feet per acre in white spruce stands to help retain moisture, trap soil movement, provide microsites for establishment of forbs, grasses, shrubs, and trees, and to provide habitat for wildlife.**—Standard 2308a**
- In vegetation treatment units, 1 pile of woody material per 2 acres would be left to create near-ground structure for small mammal species, except within 300 feet of buildings**. Standard 3117**
- Any snag cut for safety reasons will be retained on site as coarse woody debris.

30) <u>Discovery of new Wildlife Sites</u>:

- Any newly discovered raptor nests, snail colonies, red-bellied snake hibernacula or bat roosts (i.e., snags/rock formations observed being used by bats, or newly discovered mines and caves) would be evaluated by a district wildlife biologist prior to implementation to determine if special requirements are warranted to protect site integrity. These resources would be protected in accordance with Forest Plan Standards – **Standard 3115**.
- **Discovery of a Bald Eagle**. In the event that a bald eagle is documented in a stand, the wildlife biologist will be notified and harvest operations will be suspended until the eagle has vacated the stand.-**Standard 3101d**.

31) Timing Restrictions:

- To minimize disturbance to nesting **<u>goshawks</u>** a timing restriction will apply from **April 1 through August 15** within **½ mile** of active nests by minimizing human-caused noise and disruption beyond that occurring at the time of nest initiation.
- The following **activities would not occur during the timing restriction**: fuel reduction activities, cutting, skidding, yarding, decking, hauling, road construction and other activities that may disturb nesting birds. Exceptions might be: hauling within ½ mile of active nest sites during the nesting season if it is reasonable to assume that goshawks in the area are habituated to this type of disturbance or surveys indicate that goshawks are not nesting in the area (consult with a district wildlife biologist to determine an appropriate course of action). Specific site locations and GIS shapefile are documented in the project file. – **Standard 3111**
- If treatments are proposed within ½ mile of a **goshawk** nest and no nest area has been identified, a biologist would designate the appropriate nest area according to the Forest Plan – **Standard 3108**.
- **Tree marking** will not occur from April 1 through August 15 within 1/8 mile of active goshawk nests to assure that **goshawks** do not abandon nests. From April 1 through August 15, if crews are being aggressively watched or attacked by goshawks during marking activities they will immediately abandon all marking efforts within ½ mile of the active goshawk nest. – **Standard 3111**
- **Sanitation activities** that remove MPB infested trees (cut/chunk, cut/chip, cut/handpile/burn, equipment pile/burn, commercial sanitation) would be allowed within **goshawk** nest stands outside timing restrictions. Sanitation activities would be coordinated with a district wildlife biologist. **– Standard 3108, 3111**
- **Bald Eagle Timing Restrictions:** Treatments within ½ mile of a bald eagle nest during the nesting season (February 1 – September 1) would be coordinated with a wildlife biologist. Treatments would be designed to avoid new disturbances that may detrimentally influence nest success. – **Standard 3101b**
- Treatments within one mile of a **bald eagle** communal winter roost site during winter (November 1 – April 1) would be coordinated with a wildlife biologist. Treatments would be designed to avoid new disturbances to roosting eagles. – **Standard 3101c**

32) Goshawk Nest Areas

- **Uneven-aged management** (e.g., group selection, group retention, free selection) that creates a mosaic of vegetation structural stages in small patches would be allowed in goshawk nest areas at least 600 ft. away from nests. In these areas, treatments would be designed with non-uniform spacing to restore the natural "groupiness" of the forest and maintain the nest area's value to goshawks. Treatments would be designed in coordination with the District wildlife biologist. Timing restriction would apply from April 1 through August 15 if the nests are active **– Standard 3108, 3111**
- Pheromone traps or baits would not be placed within ¼ mile of goshawk nest areas - **Standard 3108**

33) Raptor Nests

- Pheromone traps or baits would not be placed within ¼ mile of known raptor nests – **Standard 3204**

34) Avoid creating barriers (e.g., new open roads) between red-bellied snake **hibernacula** and riparian areas or wetlands. There are currently no known hibernacula in the planning area. This design criterion will apply to any newly discovered hibernacula.**—Standard 3116**

35) Protection of Adits/Caves:

- No treatments will be conducted within approximately 500 feet of an adit portal or shaft openings of mines or caves to maintain microclimate of bat hibernacula or nurseries, unless it is determined through bat surveys that the site is not bat roost habitat. Bat surveyors and bat survey protocols must be pre-approved by the district wildlife biologist and surveys must be conducted prior to implementation. The 500 foot no treatment zone may be reduced dependent upon survey results and topography and will be determined by a district Wildlife Biologist. Known mine and cave locations are documented in the project file.**—Standard 3207**
- **Sanitation activities** that remove MPB infested trees (cut/chunk, cut/chip, cut/handpile/burn, tree spraying, equipment pile/burn, commercial sanitation) would be allowed within approximately 500 of adit portal or shaft openings of mines or caves after coordination with and approval by a wildlife biologist. **–Standard 3207**
- Commercial treatments of non-infested trees (e.g., commercial thinning, selection) and would be allowed within 500 feet of adit portal or shaft openings of mines or caves, if it is determined through bat surveys that the site is not bat roost habitat. If surveys determine that a mine or cave is bat roost or hibernation habitat, treatments within 500 feet may be allowed, depending upon survey results and topography and would be determined by a district Wildlife Biologist. Bat surveyors and bat survey protocols must be pre-approved by the district wildlife biologist and surveys must be conducted prior to implementation.**—Standard 3207**
- Pheromone traps or baits would not be placed within ¼ mile of mines or caves that serve as bat hibernacula or roosts – Standard 3201.

36) Protection of Snail Colonies:

- Known snail sites with R2 Sensitive Species or Species of Local Concern will be avoided with ground disturbing activities (i.e., no vegetation treatments, no heavy equipment use, and no skid trails, landings, temporary roads or any other activity that may compact soils or alter ground cover, moisture regimes or litter composition) except in Spearfish Canyon MA 4.2A (Alternative C).**--Standard 3103**
- Disturbance of newly discovered colonies of land snails would be avoided until it is evaluated by a district wildlife biologist in order to determine if R2 Sensitive Species or Species of Local Concern are present. The district wildlife biologist would determine appropriate buffer areas (no treatment zones) around newly discovered colonies based on site-specific conditions. Avoidance zones or mitigation measures would be determined on a case-by-case basis.
- Pheromone traps or baits would not be placed within ¼ mile of known snail colonies, except in Spearfish Canyon MA 4.2A (Alternative C) – **Standard 3103**.

- Maintenance of existing roads in areas that pass through known snail colonies will be limited to the clearing limits (i.e., roads may be maintained to standard). If needed improvements or realignment of those areas go beyond the existing clearing limits, review and input by the district wildlife biologist would be required to ensure that snail colonies would not be impacted.**—Standard 3103**
- Avoid constructing new roads through snail colonies, except in Spearfish Canyon MA 4.2A (Alternative C). Where data suggests an overlap between new roads and known snail colonies, a wildlife biologist and the engineer will together determine if there are any feasible alternate road locations.**—Standard 3103**
- The presence of snails in any area not previously identified will be brought to the attention of the district wildlife biologist before maintenance or construction continues.
- **Sanitation treatments** that remove MPB infested trees without heavy equipment (cut/chunk, cut/chip, cut/handpile/burn, helicopter yarding) would be allowed in snail colonies. **Standard 3103**

37) <u>Pine Martin Habitat</u>:

- Prior to implementing treatment activities, a wildlife biologist would be consulted to determine of the treatment lies within a marten connectivity corridor. **– Standard 3215**
- Pheromone traps or baits would not be placed within ¼ mile of marten connective corridors – **Standard 3215**.
- **Sanitation treatments** that remove MPB infested trees (cut/chunk, cut/chip, cut/handpile/burn, equipment pile/burn, commercial sanitation) would be allowed in marten connectivity corridors. Sanitation activities would be coordinated with a wildlife biologist. **– Standard 3215**
- Non-sanitation silvicultural treatments (e.g., commercial thinning, selection) that maintain at least 50% canopy cover would be allowed within marten connective corridors. Treatment design would be coordinated with a wildlife biologist **– Standard 3215**

38) <u>Prescribed/Pile/Slash Burning Design Criteria include:</u>

- In cut/hand pile/burn treatment units, 1 pile of woody material per 2 acres would be left to create near-ground structure for small mammal species, except within 300 feet of buildings**.— Standard 3117**
- Burning of slash piles and hand piles would be allowed within goshawk nest areas. Burning piles in nest areas or within ½ mile of historic goshawk nests would be coordinated with district wildlife biologist. Timing restriction would apply from April 1 through August 15 if the nests are active. **– Standards 3108, 3111**
- Burning of small hand piles or lop-and-scatter slash on snail colonies with R2 Sensitive Species or Species of Local Concern that are in prescribed burn units would be done when snails are hibernating (i.e., when average daytime temperatures are <50 degree Fahrenheit) or else these piles or slash would not be burned.—**Standard 3103**
- Burning of hand piles and slash in areas with caves or mines would be coordinated with a district wildlife biologist. Impacts to bat hibernacula would be avoided with the use of timing restrictions and/or establishing buffer zones. Specific mitigations will be determined by a district Wildlife Biologist and Fuels Specialist during burn plan development. This design criterion will also apply to any newly discovered hibernacula**.—Standard 3102**
- In cut-hand pile-burn treatment units, 1 pile of woody material per 2 acres would be left to create near-ground structure for small mammal species, except within 300 feet of buildings**.— Standard 3117**

Hydrology

I. Soil and Water/Meadows:

39) Design Criteria to Minimize Erosion:

- Some proposed activities would take place on soils identified as having a potential for severe erosion.
- The following provisions, intended to minimize the amount of exposed bare soil, off-site transport, and soil displacement, are to be implemented: (1) on slopes over 30 percent, harvesting and skidding methods that minimize the amount of soil displaced into piles or windrows would be used in order to leave soil intact and in place; (2) prescribed burns on slopes over 30 percent would be conducted when soil, duff, and large fuels are sufficiently moist to retain duff as ground cover for prevention of erosion.
- Provide adequate road and trail cross drainage to reduce erosion (Guideline 9202e) by installing waterbars/rolling dips within the WIZ (See Table xx and xx).

40) Design Criteria to Minimize Compaction:

- Some proposed activities would take place on soils that are more susceptible to compaction.
- The following provisions, intended to reduce the risk of detrimental compaction would be implemented. 1) Heavy equipment would avoid streams and swales (low-lying or depressed and often wet stretches of land) except to cross at designated points, build crossings, or conduct restoration, unless protected by at least one foot of packed snow or two inches of frozen soil.

41) Use of Existing disturbed areas:

- When logging in previously disturbed stands, use existing skid trails and landings whenever possible.

42) Design Criteria Specific to Streams/Wetlands/Meadows:

- No mechanized equipment zone for 50-feet around wetlands
- Line pulling could occur within approximately 0-50 feet of the stream.
- No wheeled or tracked equipment will be allowed within 50 feet of perennial or intermittent streams, perennial seeps, or wetlands.
- Designate skid trails that are within 50 to 100 feet of perennial or intermittent streams, springs, perennial seeps, or wetlands.
- 100-foot WIZ around wetlands.
- No road building (temporary or system) within and adjacent Water Influence Zone (WIZ). Generally, do not locate any new system roads within approximately 100 feet of streams (perennial, or intermittent), springs, perennial seeps, or wetlands. If a stream crossing is required, ensure that it is constructed to prevent headcutting, gullying, erosion, and sediment transport to stream channels by implementing Region 2 Watershed Conservation Practices.
- Surface disturbing activities (e.g., creation of skid trails, location of landings, construction of temporary roads, etc.) will be avoided as much as possible in meadows. If during implementation activities such as these cannot be located outside of meadows, a district specialist such as the district hydrologist, botanist, range or weed specialist or wildlife biologist will be contacted prior to implementation to determine if special requirements are warranted to protect site integrity.

Table B-1. Spacing for Water Bars

Road or Trail Grade (%)	Spacing between Water Bars (feet)[1]
2	250
5	135
10	80
15	60
20	45

[1]From the South Dakota Forestry Best Management Practices (SDSU, 2003).

Table B-2. Spacing for Water Bars

Road or Landing Grade (%)	Spacing between Water Bars (feet)[1] Granitic or Sandy Soils	Spacing between Water Bars (feet)[1] Clay or Loam Soils	Spacing between Water Bars (feet)[1] Shale or Gravel Soils
2-5%	400	500	600
6-12%	200	250	300
Road or Landing Grade (%)	**Spacing between Water Bars (feet)[1] Granitic or Sandy Soils**	**Spacing between Water Bars (feet)[1] Clay or Loam Soils**	**Spacing between Water Bars (feet)[1] Shale or Gravel Soils**
5-10%	250	300	400
11-12%	150	200	300
Over 25%	75	100	150

[1]From the Wyoming Forestry Best Management Practices (WYDEQ, 2006).

Silviculture

J. Silviculture:

43) Sanitation or removal of conifer trees identified as insect infested, is included for all NFS lands within the project area.

44) In Overstory removal treatments retain an average of one 1 large green non-infested tree per acre.

45) Existing pine regeneration would generally be protected in stands proposed for overstory removal harvest. Provisions related to felling, bucking, and whole tree yarding would be included in the timber sale contract. Log length yarding is the preferred method of timber removal. Skid trails within these stands would be approved by the sale administrator before commencement of logging. Landing locations would, where feasible, take advantage of existing openings or areas with no regeneration.

46) To increase the likelihood of successful conifer regeneration, stands proposed for seed cuts would be logged in the summer or early fall where feasible to maximize the site scarification provided by the skidding operation, provided there are no concerns related to riparian areas, noxious weeds, or sensitive plants. Cutting would be done in such a way that areas would be restocked with trees within five years after harvest.

47) Where stand variation dictates an alternative treatment to the majority treatment, this variation shall be accommodated. For example, a quarter acre pocket of aspen within a commercial thin stand of ponderosa pine shall be cleared of conifers within and up to one tree length (approximately 75 feet) from the edge of the pocket in an effort to maintain vegetative diversity within stands.

48) Prior to implementation treatment the field reconnaissance form and the District Ranger concurrence form will be completed and approved.

49) Commercial and non-commercial treatments of ponderosa pine in spruce dominated stands will not occur except within 200 feet of buildings or where spruce is encroaching into hardwoods so long as other identified design criteria does not apply in these areas.

Fisheries

K. Fisheries:

50) Keep heavy equipment out of streams during fish spawning, incubation, and emergence periods (FSH 2509.25).

- Mountain sucker: the inwater exclusion period is June 1 through July 15. Affected streams are: Annie Creek, Battle Creek, Bear Butte Creek, Beaver Creek (WY), Boxelder Creek, Castle Creek, Elk Creek, Lytle Creek (WY), Meadow Creek, North Fork Rapid Creek, Rapid Creek, Swede Gulch and Whitewood Creek.

- Trout: BKF – South Dakota, the inwater exclusion period is October 15 through April 1 in coldwater streams, if water is present. Coldwater streams are those with a coldwater permanent or marginal fish propagation beneficial use. Consult with FS hydrologist or fisheries biologist or http://legis.state.sd.us/rules/DisplayRule.aspx?Rule=74:51:03&Type=Rule for stream designation.
- Trout: BKF – Wyoming, the inwater exclusion period is Sept. 15 through Nov. 30.

Fire/Fuels

L. Activity Fuels

51) All prescribed burn treatments, which includes burning of piled material, will meet with the provisions of the Clean Air Act. District personnel would monitor burn conditions, and the SASEM (Smoke Model) or equivalent program would be used to assure provisions are met. The impacts of burning on metropolitan areas such as Rapid City would be assessed at the time of burning and would be minimized utilizing the following design criteria and are incorporated into the burn plan as appropriate:
- Limit treatment area size
- Specify wind directions and speed
- Specify minimum mixing heights to ensure dispersal of emissions
- Stagger ignitions

52) Revegetation of prescribed burned areas will be promoted by:
- If piled and burned fuel creates ash piles deeper than three inches, scatter the ash, scarify and mix it with mineral soil, or bury it. **Guideline 4106**

53) Prescribed burn plans (which includes the Forest Level III Programmatic Burn Plan for Pile Burning) will identify acceptable levels of tree mortality for seedlings/saplings, poles and sawtimber; burning prescriptions will be estimated to meet these levels. **Guideline 4108**

54) **Activity fuel** should be removed, lopped, scattered or piled for later burning. Slash piles, other than those left for wildlife habitat, should be burned as soon as possible.

55) Slash piles that are scheduled for burning will be located outside of meadows that contribute to Waters of the United States. Use a buffer distance designed to keep sediment, ash and debris out of channels. **Guideline 4111**

56) Activity fuels will be treated along forest collector roads and forest development trails to meet the adopted Scenic Integrity Objectives (SIO). Along arterial roads, remove 70-90 percent of activity fuels up to 300 feet from roads edge. Debris piles will be burned as soon as practical after remaining on-site for at least 2 years. Where mechanical treatment and prescribed burning of piled material is proposed within the same site, mechanical treatments will be completed prior to burning.

57) Reduce or otherwise treat all fuels adjacent to non-forest lands so the potential fireline intensity does not exceed 200 BTUs/second/foot on 90 percent of the days when fires occur, or break up continuous fuel concentrations exceeding the above intensity into units 30 to 40 acres maximum size, surrounded by fuel breaks. Deadfall treatments are included in all treated sites adjacent to all non-National Forest lands.

58) Where Variable Density Thinning (VDT) or Free Selection (FS) is proposed adjacent to private lands, the target basal area with 300 feet of the private land boundary will be 50 ft^2 / acre.

Soils

M. Soils:

59) Retain on site any previously MPB killed trees (those that the wood is considered to no longer be of a merchantable condition) for future coarse woody debris contributions.

60) Include and implement USFS Region 2 Watershed Conservation Practices (WCPs), http://fsweb.r2.fs.fed.us/directives/fsh/2509.25/2509.25_10.doc), Forest Plan soil standards and guidelines, and industry standard methods for protecting soil resources. Implement practices outlined in "Best Management Practices for the control of Non-Point Pollution from Silvicultural and Related Road Activities".

61) Manage land treatments to limit the sum of severely burned and detrimentally compacted, eroded, and displaced land to no more than 15% of any land unit. Forest Plan Standard 1103.

- Forest Plan Guideline 1104. Minimize soil compaction by reducing off-road vehicle passes, by skidding on snow, frozen or dry soil conditions, or by off-ground logging systems.

The design criteria apply to the following soil survey map units (listed by soil survey map unit symbols). The map units in each of the counties have a least one of the dominant map unit components with a severe hazard rating for compaction.

Lawrence County: Q0100C, Q0102E, Q0104G, Q0106E, Q0108E, Q0108G, Q0114D, Q0114E, Q0206B, Q0209D, Q0216B, Q0217C, Q0225D, Q0226E, Q0227E, Q0239D, Q0400B, Q0401B, Q0403B, Q0407C, Q0409E, Q0411C, Q0413C, Q0415D, Q0416C, Q0418E, Q0420G, Q0501B, Q0502C, Q0506D, Q0508C, Q0509C, Q0510E, Q0512C, Q0514C, Q0518B, Q0518C, Q0520C, Q0538A, Q0540C, Q0540F, Q0552D, Q0568B, Q0568E, Q0570F, Q0572D, Q0584E, Q0584F, Q0586E, Q0901B, Q0928C

Custer County: BrB, GrD, GrF, PgC, Q0304D, Q0310D, Q0312E, Q0315E, Q0322D, Q0413C, Q0415D, Q0416C, Q0418E, Q0420G, Q0422C, Q0502C, Q0514C, Q0520C, Q0552D, Q0584E, Q0587E, Q0608B, Q0609C, Q0620C, Q0675E, Q0676E, Q0680D, RpC, RrE

Pennington County: Q0200C, Q0206B,Q 0209D, Q0211E, Q0216B, Q0226E, Q0239D, Q0307B, Q0310D, Q0312E, Q0315E, Q0322D, Q0400B, Q0401B, Q0405D, Q0408E, Q0409E, Q0411C, Q0413C, Q0415D, Q0416C, Q0418E, Q0420G, Q0422C, Q0501B, Q0502C, Q0512C, Q0514C, Q0520C, Q0552D, Q0576C, Q0584E, Q0584F, Q0586E, Q0587E, Q0608B, Q0609C, Q0611C, Q0619C, Q0620C, Q0632E, Q0675E, Q0676E

Meade County: Q0106E, Q0108E, Q0108G, Q0114D, Q0501B, Q0502C, Q0506D, Q0509C, Q0510E, Q0514C, Q0518B, Q0518C, Q0520C, Q0535C, Q0553E, Q0568B, Q0568E, Q0570F, Q0572D, Q0584E, Q0584F, Q0586E, Q0611C,Q0675E, Q0676E, Q0901B

Crook County: 125, 13, 156, 157, 164, 166, 170, 172, 179, 187, 198, 37, 38, 66, 67, 86, 93, 95, 96, 98, Q0100C, Q0102E, Q0106E, Q0114D, Q0114F, Q0400B, Q0407C, Q0408E, Q0409E, Q0411C, Q0411E, Q0418E, Q0509C, Q0510E, Q0512C, Q0512E, Q0516C, Q0518B, Q0518C, Q0519B, Q0540C, Q0540F, Q0556C, Q0556F, Q0584E, Q0584F, Q0801B, Q0803E, Q0808A, Q0811C, Q0815C, Q0815E, Q0817A, Q0826C, Q0826F, Q0827C, Q0827E, Q0828C, Q0828F, Q0834B, Q0834C, Q0836B, Q0838C, Q0840C, Q0841B, Q0842C, Q0848B, Q0852C, Q0852E, Q0854B, Q0854C, Q0854E, Q0922C

Weston County: 15, 56, 57, 84, Q0400B, Q0401B, Q0405D, Q0408E, Q0409E, Q0411C, Q0416C, Q0418E, Q0420G, Q0512C, Q0512E, Q0584E, Q0584F, Q0586E

Fall River: BoB, BpB, BvD, CnD, MmE, MpE, NoB, NoC, Q0608B, Q0620C, Q0640B, Q0657D, ReD, RgF, TaC, TgC

- Forest Plan Standard 1105. Limit roads and other disturbed sites to the minimum feasible number, width and total length consistent with the purpose of specific operations, local topography and climate. There are potential treatment areas that coincide with soils identified that have characteristics that generally contribute to a higher susceptibility to compaction when soils are moist or wet (same list as above for Forest Plan Guideline 1104).

- Use of heavy equipment for harvest activities, for other project activities or for post-sale activities is to be limited to occur during dry or frozen conditions (same list as above for Forest Plan Guideline 1104). Avoid soil disturbing actions during periods of heavy rain or wet soil conditions to prevent rutting and compaction.
- If soils on selected treatment areas have an erosion hazard of severe to very severe on slopes between 20-40%, restrict ground based machinery operations to dry or frozen conditions, snow or operate machinery over the top of retained slash. The following soil survey map units in each of the counties were identified to have a least one of the dominant map unit components with a severe or very severe hazard rating for erosion:

Lawrence County: Q0104G, Q0108G, Q0110E, Q0110G, Q0231G, Q0232G, Q0420G, Q0530G, Q0554F, Q0566F, Q0570F, Q0584F, Q0585G, Q0589G
Custer County: BwE, CdF, GrF, HtG, NcE, NfE, Q0005G, Q0317G, Q0319G, Q0420G, Q0530G, Q0589G,Q0591G, Q0613F, Q0634G, Q0655G, Q0678G, RsF
Pennington County: Q0005G, Q0231G, Q0232G, Q0317G, Q0319G, Q0420G, Q0584F, Q0585G, Q0589G, Q0591G, Q0634G, Q0655G, Q0678G
Meade County: Q0110E, Q0110G, Q0112G, Q0530G, Q0554F, Q0566F, Q0570F, Q0584F, Q0585G, Q0589G, Q0591G, Q0678G
Crook County: 155, Q0114F, Q0556F, Q0563G, Q0584F, Q0585G, Q0826F, Q0926G
Weston County: 92, Q0420G, Q0584F, Q0585G, Q0589G
Fall River County: MnF, Q0660F, Q0668F, Q0678G, RoF, RrF, SpF

62) There are potential treatment areas that coincide with soils identified as having limited topsoil, limited organic matter or shallow rooting depth. If the activities other than cut and chunk, cut and chip, insecticide spray, helicopter timber harvest, cable harvest are identified to occur on those soils, then Forest Plan Standard 1102; (WCPH 1102), that species amounts of slash to be retained, is to be implemented. This design criteria applies to the following soil survey map units:

Lawrence County: Q0106E, Q0108E, Q0108G, Q0110E, Q0110G, Q0112G, Q0114D, Q0114E, Q0202E, Q0203D, Q0221F, Q0231G, Q0407C, Q0409E, Q0411C, Q0416C, Q0418E, Q0420G, Q0551C, Q0552D, Q0553E, Q0554F, Q0571E, Q0588D, Q0906D, Q0918C
Custer County: Q0001E, Q0003C, Q0004E, Q0005G, Q0302E, Q0304D, Q0317G, Q0319G, Q0414E, Q0416C, Q0418E, Q0420G, Q0552D, Q0571E, Q0588D, Q0590E, Q0622F, Q0653D, Q0658D, Q0659E, Q0664E, Q0665E, Q0672C, Q0677D, RfE, RhD
Pennington County: Q0001E, Q0003C, Q0005G, Q0202E, Q0203D, Q0231G, Q0302E, Q0304D, Q0317G, Q0408E, Q0409E, Q0411C, Q0416C, Q0418E, Q0420G
Meade County: NaD, Q0106E, Q0108E, Q0108G, Q0110E, Q0110G, Q0112G, Q0114D, Q0514C, Q0551C, Q0552D, Q0553E, Q0554F, Q0571E, Q0588D, Q0658D, Q0659E, Q0664E, Q0665E
Crook County: 156, 157, 164, 166, 170, Q0106E, Q0108E, Q0114D, Q0114F, Q0202E, Q0407C, Q0408E, Q0409E, Q0411C, Q0411E, Q0412D, Q0418E, Q0516C, Q0556C, Q0556F, Q0852C, Q0852E, Q0918C
Weston County: 57, Q0412D, Q0521E, Q0621E, Q0664E
Fall River County: Q0657D, Q0659E, Q0660F, Q0665E, Q0668F, SpF

63) There are potential treatment areas that coincide with soil map units that include soils with a higher potential for mass movement. Soils that had been identified for the Forest Plan Revision Decision (1996) for Standard 1108 were Lakoa, Larkson, Citadel, Rockoa, and Mathias on slopes over 30%, and then all other locations with slopes over 55 %. Based on the recent (2011) update to MLRA 62, there are additional soils identified with similar characteristics to those identified in the 1996 Forest Plan, as amended, and are included in map units:

MLRA 62 Soil Survey Map Units - Q0001E, Q0006E, Q104G, Q0106E, Q0108E, Q0108G, Q0110E, Q0110G, Q0112G, Q0114E, Q0114F, Q0202E, Q0211E, Q0213G, Q0214E, Q0221F, Q0226E, Q0227E, Q0231G, Q0232G, Q0239D,Q0302E, Q0315E, Q0317G, Q0319G, Q0408E, Q0409E, Q0510E, Q0512E, Q0530G, Q0536F, Q0540F, Q553E, Q0565E, Q0566F, Q0568E, Q0570F,

Q0571E, Q0572D, Q0584E, Q0584F, Q0585G, Q0586E, Q0587E, Q0589G, Q0590E, Q0634G, Q0655G, Q0659E, Q0664E, Q0665E, Q0675E, Q0676E, Q0678G, Q0826F, Q0827E, Q0828F, Q0910E, Q0926G.

MLRA 61 Soil Survey Map Units – 57, 93, 96 and 98.

All other potential treatment areas and potential roads located on slopes over 55% in any other soil survey map unit. Design criteria to comply with Forest Plan Standard 1108 include selection of one of the following depending on decision for treatment or road creation:

- Identify the slopes above 30% in the identified map units listed above and drop from further consideration for treatment or road creation.
- If treatment is pursued, select activities expected to result in the least disturbance to sites such as cut and chunk, cut and chip, cut-hand pile-burn, insecticide spray. If helicopter logging is selected over the preceding list of the other treatments, retain a minimum of 60 BA of ponderosa pine on the site.
- If cable logging (associated roads and landings) is selected, investigate slopes over 30% in the identified map units listed above, as well as any other slopes over 55%. Retain a minimum a 60 BA of conifer species. At those sites, limit the cable logging activities to when at least a foot of snow is present.
- Limit any intensive ground disturbing activities on any unstable slopes that may have been previously known or mapped, or are identified during the on-site slope stability exams.
- Avoid the use of the higher ground disturbance activities: Cut-Equipment Pile-Burn, Ground Based Timber Harvest, temporary or new road construction or associated landings.

64) Skid Trail Rehabilitation. The following is to comply with Standard 1109, 1110, 1111.

- Rip or scarify skid trail compacted areas. Implement one or a combination of erosion prevention based on site characteristics: place available slash on skid trail, place available wood chips or wood chunks on skid trail, and/or establish multiple water bars on skid trails. Implement erosion prevention on the skid trails immediately the use of the skid trail is completed.

65) Temporary Road Rehabilitation

Temporary road rehabilitation for soil productivity does not apply to permanently designated roads, or those to be retained on the Forest transportation system. The following design criteria are to comply with Standards 1109, 1110, 1111.

- Rehabilitate and close temporary roads as soon as possible after harvest material is removed. Establish or place physical barriers of slash or rock to block access. Scarify temporary roads to break up compaction and replace topsoil in areas where topsoil had been removed. Place slash on the road or establish water bars (or a combination of the two). Utilize wood chunks or chip material to cover road surface, if available.

66) Landing Rehabilitation

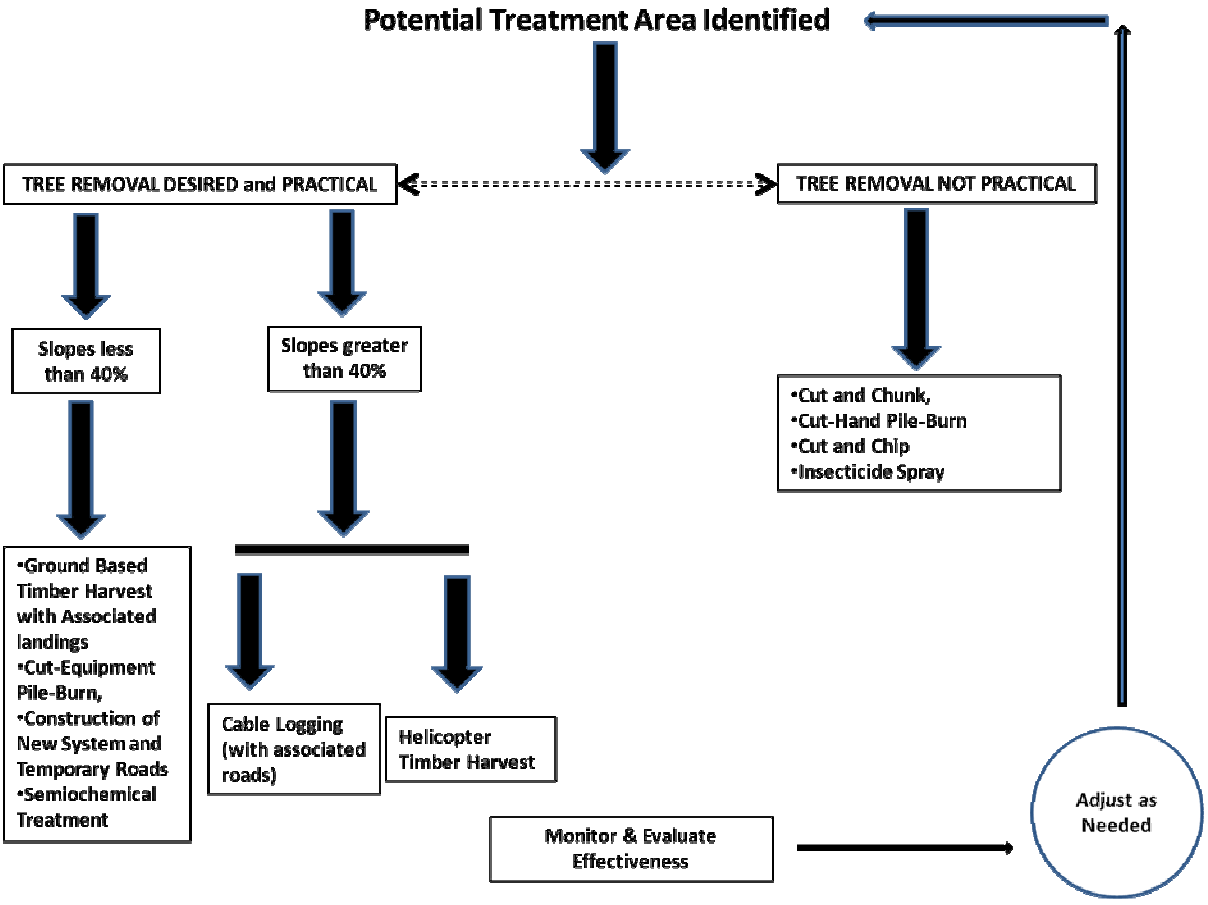
The following design criteria comply with Standards 1109, 1110, 1111.

- Scarify landings and any associated created *"jump up areas"*. Retain a portion of slash during pile burning and spread on landing following pile burning or use wood chunks or chips for rehabilitation of landings if activities are to occur at the same location.

Project Detection and Size-Up

Black Hills National Forest resource specialists have been working with researchers to use the best available science to combat the on-going MPB epidemic. The Project is based on known methods to reduce MPB infested stands using an adaptive approach because it is not possible to determine when or the precise level of MPB activity, but reasonable estimates can be made based on the current extent of the epidemic, the expanding MPB brood populations available to infest new trees, and the large volume and wide distribution of high risk stands in the project area.

The guide in figure B-1 will help determine, which, if any, integrated pest management techique and design criterias would be utilized in the MPBR Project potential treatment areas.

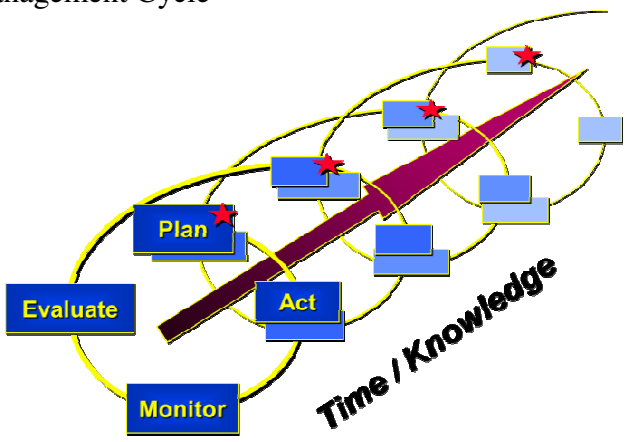


Utilizing local wood products industries would be the most economical and normally the best choice in meeting the purpose and need by removing the infested tree(s) from the forest to reduce MPB risk and fire hazard.

Monitoring

The MPB Response Project is an adaptive management project. As such, monitoring plays an important role in providing feedback on which design features were implemented, which were effective, and whether adaptations are needed to treatment design to make them more effective (Figure B-1).

Figure B-2. Adaptive Management Cycle



Monitoring MPB Response Project activities would consist of two types of monitoring – implementation monitoring and effectiveness monitoring. Implementation monitoring would measure whether applicable design criteria, BMPs and Forest Plan standard and guidelines are correctly implemented. This allows managers to adjust management if certain items are being missed during the implementation process. Effectiveness monitoring measures whether the treatments implemented with the design criteria, BMPs and Forest Plan standard and guidelines are achieving the desired out comes. Effectiveness monitoring would measure how implemented treatments are effective at protecting resources as well as reducing MPB risk. If monitoring finds resource protection objectives are not being achieved, then:

- Reduce or modify vegetation treatment operations and/or
- Increase resource protection measure
- Increase monitoring to determine the source of impact and apply appropriate mitigation

A sample of the each type of treatments in the MPB Response Project would be selected each year for monitoring and evaluation. Monitoring would occur through pre-field review and field visits. The pre-field review would include reviewing implementation notes and applicable standards, guidelines, design criteria and BMPs. Field visits would be accomplished in an interdisciplinary fashion to facilitate cross-sharing of effectiveness and identification of needed changes to project activities. The monitoring information collected would be evaluated and documented along with any recommended changes in an annual report. The annual report would be completed and provided to the Forest Supervisor within two months of the end of the fiscal year (January 31 of each year).