# 2 Chapter - Alternatives

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# *Introduction*

Chapter 2 describes the alternatives, including No Action, considered for the project and summarizes how the alternatives meet the Purpose and Need and address the issues presented in Chapter 1. This chapter identifies project design features common to all alternatives and lists the management requirements and mitigation measures under each action alternative.

The alternatives express a range of possible actions to meet the project purpose and need. The key issues and Purpose and Need, as described in Chapter 1, determined the range of alternatives. Other guiding factors in determining the alternatives were the Forest Plan management direction, the Wildhorse Roads Analysis Process (USDA Forest Service 2009), and Federal and State laws. Using this direction and guidance, the Interdisciplinary Team (IDT) developed a range of reasonable alternatives, including alternatives considered in detail and alternatives considered but eliminated from further analysis.

Acres and miles used in this analysis are approximations based on computer calculations. Actual figures may vary slightly from these planning numbers. Actual treatment acres and unit boundaries would also vary to a small extent from what is displayed in this document because layout would be based on terrain features and vegetative conditions that would only be discovered as the detailed field work progressed.

# *Alternatives Considered in Detail*

The action alternatives were developed to move the project area toward the desired condition as stated in the Forest Plan and to address the purpose and need developed for this management area.

## Alternative A- No Action

This alternative provides a baseline with which to compare the effects of the action alternatives. It represents the existing condition of the area based on past and current natural and human related disturbances and processes.

Under this alternative, mechanical thinning and prescribed burning resulting in white-headed woodpecker and NIDGS habitat improvement and watershed condition improvements described and analyzed in this document would not occur.

## Alternative B – Proposed Action

Alternative B was developed to move the project area toward the desired condition as stated in the Forest Plan. This alternative responds to the need to promote large diameter ponderosa pine forest structure while reducing the risk of uncharacteristic or undesirable wildland fires, improving white-headed woodpecker and NIDGS habitat, and improving watershed condition.

### *Vegetation Treatments*

The proposed action would use mechanical thinning and prescribed burning to move forested areas, grasslands, and shrublands toward desired conditions. The number of acres of each treatment type are as follows:

- 1,694 acres of mechanical thinning operations followed by underburning
- 1,315 acres of prescribed burning in forest types with no other treatment
- 233 acres of prescribed burning in plantations
- 471 acres of prescribed burning in riparian conservation area
- 1,782 acres of prescribed burning in non-forested grassland and shrubland
- 5,496 total acres of restoration treatments

Refer to Unit Data Table in Appendix F for detail on individual treatment units.

### *Mechanical Thinning*

Approximately 9 million board feet (mmbf) of sawtimber would be harvested. Mechanical thinning would remove both sawlog and biomass size (smaller) trees. Forest stands often have a high degree of variability in densities, tree vigor, and species composition. The forested areas in this project display a

variety of conditions, ranging from homogenous areas of vigorous ponderosa pine and Douglas-fir to stands with a wide range of tree vigor and density. Restoration prescriptions would be based on these varied conditions and would result in a mosaic forest structure. Mechanical thinning would be used as described below to accomplish the restoration objectives.

- Density reduction: Thinning would be used to reduce the density of trees primarily to improve growth. Trees would be removed to control stand spacing and favor desired trees without regard to the crown position of the individual trees. Density reduction areas would retain a range of 50-100 trees per acre, and canopy cover would average 45–55%. This treatment would be applied in the more homogenous and vigorous areas and would result in relatively evenly spaced trees.
- Tree improvement: Less desirable trees would be removed primarily to improve species composition and tree quality. Groups of thin barked/fire intolerant grand fir and low vigor ponderosa pine and Douglas-fir would be removed. Areas treated this way would retain a range of 40-80 trees per acre, and the canopy cover would average 30–50%. This treatment would create a mosaic pattern of small openings less than an acre in size.
- Created openings: Portions of some stands where large patches or grand fir or low vigor ponderosa pine and Douglas-fir are removed would be opened up after harvest. Canopy closures would be reduced to 30 -35% and approximately 20 to 40 trees per acres would be retained. These patches would create a mosaic pattern with openings of 1 to 2 acres. The additional sunlight and the seedbed exposed by the thinning treatment would result in natural regeneration of these areas over time.

The restoration prescriptions would combine these different thinning objectives depending on the characteristics of the individual forest stand. For example, density reduction would be used in areas that are more homogeneous (low variability in stand density, tree quality, or insect and disease occurrence). In other areas, stand density or tree quality may be more variable or insect and disease occurrence may be high. In this instance a combination of thinning objectives would be used. Using this sort of flexible prescription, the natural variability in the stand would determine how different parts of the stand were treated. These treatments would move forested areas toward a historic range in forest structure dominated by open stands of large trees mixed with patches of younger trees in various age classes.

Restoration treatments would favor retention of larger diameter, healthy, dominant ponderosa pine and Douglas-fir and would accelerate the development of large tree structural conditions dominated by fire-tolerant species. Snags and low vigor or damaged large trees would be retained for wildlife and groups of 4-8 trees would be left around these wildlife trees to improve habitat. Sapling size trees would be removed to reduce fuel ladders. These treatments would improve stand vigor, increase diameter growth and reduce fuels. Stands that are currently in the medium tree size class would be moved into the large tree size class at an accelerated rate. Stands that are currently in the large tree size class would be treated similarly to maintain the large tree structure and reduce the risk of stand-replacing fire.

Stands that fall within Potential Vegetation Group (PVG) 6 - Cool Moist Grand Fir (see Chapter 3- Forest Vegetation Resource discussion) would be treated to provide multiple options for management in the future. Restoration treatments would include all of the objectives described above but canopy closure would be maintained at a minimum of 40% (see 20% minimum exception in NIDGS Habitat Vegetation Management section below). PVG 6 provides potential habitat for many different types of wildlife species. Some of these species prefer denser large tree stands, and others prefer more open large tree stands. By maintaining this moderate level of canopy closure, more options are available for future treatment of these stands. Managers will be able to create more open or more dense stands, depending on the habitat needs found at that time.

All trees designated for removal would be brought to the landing areas with tops and limbs attached to reduce the amount of fuels left within the stands. Any material piled at the landings not used for firewood or biomass products would be burned at a later time. Approximately 4,500 tons of slash would be available for chipping and delivery to a biomass utilization facility.

Approximately 22 acres of mechanical thinning would occur in RCAs adjacent to Moonshine Creek and Dick Ross Creek in order to move the vegetation toward Forest Plan desired conditions. Harvest equipment would be required to stay on existing roads to minimize disturbance to riparian vegetation, and soil. Riparian-dependent vegetation would not be disturbed. No mechanical thinning would occur within

120 feet of Moonshine Creek, a perennial channel and no mechanical thinning would occur within 30 feet of Dick Ross Creek, an intermittent channel.

The types of harvest methods that would be used include:

- 89 acres of skyline systems
- 1,605 acres of ground based systems

## *Prescribed Fire*

Prescribed fire would be applied to approximately 5,496 acres of the project area. Approximately 3,802 acres would be treated exclusively with prescribed fire. The objectives for prescribed fire would set limits on acceptable effects. Site specific burn plans would insure objectives and desired outcomes were met across the range of units with varying stand size structure, species composition, and density. The objectives of prescribed burning in each treatment type follows:

## *Forest Stands Underburned After Mechanical Thinning*

Approximately 1,694 acres of prescribed burning would follow mechanical thinning. Without prior mechanical treatment, the amount of forest floor fuels and fuel ladders in these forested areas would be too great to underburn without unacceptable levels of tree mortality. Forest floor fuel levels, ladder fuels and understory tree densities are greater than desired (Figure 2-1). The objectives for this treatment would be:

- Canopy closure, at the stand level, would be maintained at or above 40% in PVG 6, and at or above 30% in all other PVGs (see exception in NIDGS Habitat, Vegetation Management section).
- Mortality of overstory coniferous trees less than 20% on a stems per acre basis
- Meet Forest Plan CWD and snag standards (see mitigation Table 2-5)

## *Forest Stands Underburned Without Mechanical Thinning*

There would be approximately 1,315 acres of forest stands treated with prescribed fire only. The forest floor fuel and fuel ladder levels in these forested areas are low enough to underburn without unacceptable levels of tree mortality (Figure 2-2). Forest floor fuel levels, ladder fuels and understory tree densities would be reduced and maintained at desired levels. The objectives for this treatment would be:

- Canopy closure, at the stand level, would be maintained at or above 40% in PVG 6, and at or above 30% in all other PVGs (see exception in NIDGS Habitat, Vegetation Management section).
- Mortality of overstory coniferous trees less than 30% on a stems per acre basis
- Meet Forest Plan CWD and snag standards (see mitigation Table 2-5)

**Figure 2-1** Example of stand where mechanical thinning would be followed by prescribed fire.

**Figure 2-2** Example of stands where forest underburn would occur without mechanical thinning.

## *Prescribed fire in Grassland and Shrubland*

Grassland and shrubland prescribed burning would be applied to approximately 1,782 acres. The guidelines for this treatment would be:

- Achieve greater than 20% mortality of coniferous trees less than 8 inches DBH on a per acre basis.
- Meet Forest Plan standards for snag retention (see mitigation Table 2-5).
- Retain 70% or more of trees over 12 inches DBH.

## *Plantations Managed with Fire*

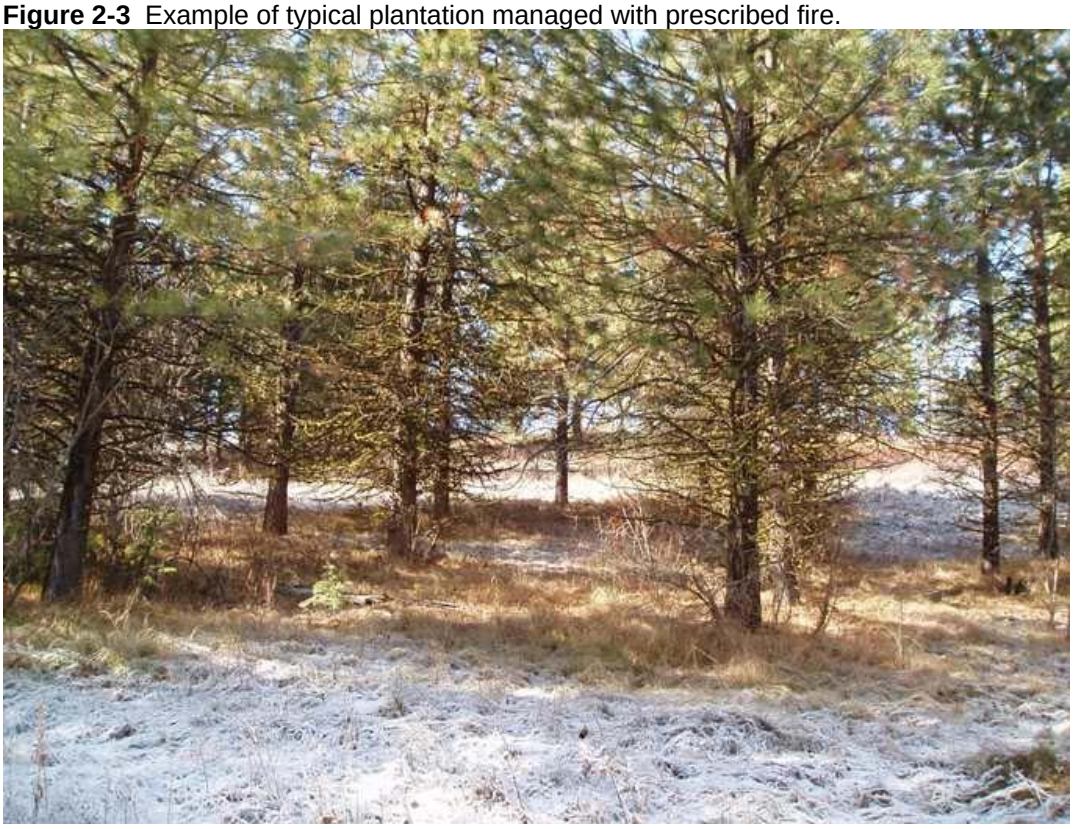
Within the project area there are approximately 260 acres of conifer plantations. These plantations are composed of trees ranging from 4-15 inches DBH, 25 to 50 feet in height (Figure 2-3).

After the burning takes place the plantations would be re-evaluated to judge whether enough trees were thinned by the fire. If it is found that more thinning is needed, thinning with chainsaws may be required to reach the desired stand densities of 150-200 trees per acre. The objectives for this treatment would be:

- Based on stems per acre, no more that 20% mortality in conifers
- Tree scorch would not reduce average crown ratio below 50%.
- Meet Forest Plan CWD and snag standards (see mitigation Table 2-5).
- Post fire stocking levels should be approximately 150-200 trees per acre.

In addition, approximately 27 acres of one plantation is included in an improvement cut area. This stand has a moderate amount of scattered overstory trees. This stand would be mechanically thinned and then underburned with the objective of thinning the smaller diameter trees with fire the same as with the plantations noted above.

**Figure 2-3** Example of typical plantation managed with prescribed fire.



## *Riparian Conservation Areas (RCAs) Treated with Prescribed Fire*

There are 471 acres of riparian conservation areas within the project area that would be treated with prescribed fire. These forested RCAs are in the same condition as the other forested areas in the project area. Fuel levels, ladder fuels and understory tree densities are greater than desired. Prescribed fire

would be ignited within the 120-foot RCA of intermittent channels. Fire would be ignited within the outer 120 feet of the 240-foot buffer of perennial channels and allowed to back into the inner 120 feet of the RCA. Fire would be ignited within the inner 120 feet of perennial channel RCAs when the mortality or consumption of shade providing vegetation could be avoided. The objectives for this treatment would be:

- Canopy closure, at the stand level, would be maintained at or above 40% in PVG 6, and at or above 30% in all other PVGs.
- Mortality of overstory coniferous trees less than 20% on a stems per acre basis
- Avoid active ignition of riparian dependent vegetation (i.e., stream shade providing, riparian hardwoods and shrubs such as alder, willow, hawthorn, and gooseberry).
- Minimize fire intensity and severity in RCAs.
- Maintain a mosaic of burned and unburned areas within the RCAs.
- Meet Forest Plan CWD and snag standards (see mitigation Table 2-5).

### *Wildland Urban Interface*

Portions of units that are within 1/4 mile of homes, outbuildings, and the Lafferty Campground (Figure 2-5) will be treated toward the low end of the prescription for stocking levels. The Fire and Fuels Resource section (Chapter 3.2) provides acres of WUI and non-WUI treated.

### *Maintenance Burning*

Maintenance burning would be implemented every 3 to 15 years following the initial prescribed burn in all units that are prescribed burned. Approximately 5,515 acres could be considered for maintenance burning in subsequent years. Any maintenance burning under this decision would require approval of the district Silviculturalist, Wildlife Biologist, and Fisheries Biologist to ensure that laws, regulations, and/or conditions have not changed to the point where a new analysis would need to be completed.

The objectives of maintenance burning are:

- Maintain fire as an ecological process in the area.
- Manage natural regeneration.
- Maintain fuel loads at a level where the large trees will be resilient to wildfire.

### *Northern Goshawk Habitat Vegetation Management*

Special provisions would be made for those treatment areas that fall within the two designated Goshawk Post-Fledging Areas (PFAs) and associated nest stands. In these areas adjustments would be made to the prescribed treatments to promote suitable goshawk habitat while applying the vegetation treatments to reach the desired stand conditions (Youtz et al. 2007).

Approximately 2,073 acres of the total vegetation treatment area falls within the 2 PFAs:

- 392 acres of thinning
- 751 acres of prescribed burning in forested areas
- 99 acres of prescribed burning in plantations
- 590 acres of prescribed burning in grassland and shrubland
- 243 acres of prescribed burning in RCAs

For the units that fall into these PFAs the treatment prescriptions would be modified as follows:

- Maintain 20% of the area in dense groups of trees at least 2 acres in size. These groups would be left untreated to maintain the tighter canopy closure that the birds prefer. The remaining acres in the stand would be treated as described for other units.
- Untreated groups would be maintained around all identified goshawk nest trees.
- The untreated groups would be placed in areas that would be least impacted by harvest, and prescribed burning activities. Care would be taken during treatment activities to protect these groups.
- Small openings would be created where poor vigor trees exist. These openings would be irregular in shape, not greater than 2 acres in size, and would not exceed 150-200 feet in width.

- Where openings are created, 3-6 trees per acre would be left in clumps within the openings. The trees in these clumps would be of large size and have interlocking crowns, where possible.
- Human activity would be limited in nest stands from March 1 – September 30, or until the birds have left their nest sites, as determined by wildlife surveys. Project field work, recreational activities, and prescribed burning in adjacent stands would not be limited.

### *Northern Idaho Ground Squirrel Habitat Vegetation Management*

In harvest and/or burn units that are adjacent to the Cottonwood Corrals, Halfway, and Rocky Comfort Flat NIDGS colonies, adjustments would be made in the prescribed treatments to promote suitable NIDGS habitat, while applying vegetation treatments to reach the desired conditions.

Based on stand conditions and NIDGS management guidelines, the canopy coverage in harvested stands would be reduced to 20-30%, rather than the minimum of 30% canopy closure that is applied for the remainder of the project area. Refer to the Unit Data Table in Appendix F specific details on individual treatment units.

Approximately 222 acres of harvest treatment and 383 acres of prescribed burning would occur adjacent to these three NIDGS colonies:

Cottonwood Corrals

- 75 acres of harvest treatment
- 57 acres of prescribed burning

Halfway

- 136 acres of harvest treatment
- 132 acres of prescribed burning

Rocky Comfort Flat

- 10.7 acres of harvest treatment
- 194 acres of prescribed burning

### *Road Management and Watershed Improvements*

- Upgrade three culverts, (Crooked River, Coyote Gulch, and Moonshine Creek) that are undersized and restrict passage of fish and other aquatic organisms (Figure 2-7).
- Spot graveling would occur on roads used for timber haul to reduce erosion and improve trafficability. Gravel would be supplied from a Forest gravel pit in the project area. Other improvements, such as installation of cattle guards, may occur where necessary.
- Construct 0.9 miles of new road to relocate road out of RCAs and provide administrative access only (Figure 2-7; Table 2-4).
- Convert 1.6 miles of currently closed non-system road that is used for mechanical thinning to system road (Figure 2-7; Table 2-4). The road surface will be prepared to drain runoff without routine maintenance by ripping, seeding, and pulling culverts when necessary. The roads will remain closed to use until access is deemed appropriate (e.g., future vegetation treatments).
- Decommission non-system roadbeds that are not needed for future management or public access. 9.6 miles of roadbed have been identified for decommissioning (including removing soil compaction and restoring original slope contour) to reduce levels of total soil resource commitment, and reduce drainage and erosion problems. This includes 4.5 miles of road within RCAs. Additional decommissioning would occur on approximately 5.5 miles of closed non-system roads if used for mechanical thinning operations. The actual road length used and decommissioned could vary by up to 1 mile (Figure 2-7; Table 2-4 ).
- Construction of up to 1 mile of temporary road where needed to access harvest units and landings. Temporary roads would be decommissioned after use.

## Alternative C

Alternative C was developed to address Key Issues regarding effects from permanent road construction, mechanical thinning in RCAs, and road decommissioning, while still meeting project Objectives. Alternative C would use mechanical thinning and prescribed burning in restoration treatments to move forested areas, grasslands and shrublands, toward desired conditions, improve habitat for white-headed

woodpeckers, and NIDGS, and improve watershed condition. Alternative C would not involve new permanent road construction, and would include 11.1 miles of road decommissioning, including 5.7 miles within RCAs (Figure 2-8;Table 2-1). Approximately 1,483 acres of mechanical thinning and 5,159 acres of prescribed burning is proposed. No mechanical thinning or prescribed fire would occur in the Gopher Gulch area due to lack of roaded access. In Alternative C, there would be no mechanical thinning within RCAs.

### *Vegetation Treatments and Prescribed Fire Operations*

Alternative C would produce about 7.9 mmbf of sawtimber and about 3,950 tons of slash that would be available for chipping and delivery to a biomass utilization facility. The approximate number or acres that would be treated with each type of prescription would be:

- 1,482 acres of thinning operations followed by underburning
- 1,257 acres of prescribed burning in forest types with no other treatment
- 233 acres of prescribed burning in plantations
- 449 acres of prescribed burning in riparian conservation area
- 1,737 acres of prescribed burning in non-forested grassland and shrubland
- 5,178 total acres of restoration treatments

See Unit Data Table in Appendix F for detail on individual treatment units

The types of harvest methods that would be used are as follows:

- 1,394 acres of ground-based systems
- 89 acres of skyline systems

### *Road Management and Watershed Improvements*

- Upgrade three culverts, (Crooked River, Coyote Gulch and Moonshine Creek) that are undersized and restrict passage of fish and other aquatic organisms.
- Spot graveling would occur on roads used for timber haul, to reduce erosion and improve trafficability. Gravel would be supplied from a Forest gravel pit in the project area. Other improvements, such as installation of cattle guards may occur where necessary.
- Convert 1 mile of currently closed non-system road that is used for mechanical thinning to system road (Figure 2-8; Table 2-4). The road surface will be prepared to drain runoff without routine maintenance by ripping, seeding, and pulling culverts when necessary. The roads will remain closed to use until access is deemed appropriate (e.g., future vegetation treatments).
- Decommission 11.1 miles of non-system roads, including 5.7 miles of road within RCAs. Additional decommissioning would occur on approximately 5.1 miles of closed non-system roads if used for mechanical thinning operations (Figure 2-8; Table 2-4). The actual road length used and decommissioned could vary by up to 1 mile.
- Construction of up to 1 mile of temporary roads where needed to access harvest units and landings. Temporary roads would be decommissioned after use.

## *Alternatives Considered but Eliminated From Further Analysis*

### Prescribed Fire with no Mechanical Thinning

Based on comments received regarding environmental effects from mechanical thinning, the IDT considered an alternative that consisted of prescribed fire only. This alternative is eliminated from further analysis because existing structure and species compositions in a number of stands are not conducive to treatment without mechanical thinning. Many of the stands in need of treatment have the following characteristics:

- Overstocked with small trees
- Fire excluded for 80 to 150 years
- Short needled conifers are encroaching due to fire suppression.
- Low canopy base heights
- Accumulations of duff, litter and lichen around the large trees identified for retention

These existing conditions would make meeting objectives (i.e., moving toward the Forest Plan desired conditions) very difficult if not impossible to achieve in a number of stands without using mechanical treatments. This would significantly reduce the number of acres considered for treatment and increase the amount of risk when using prescribed fire. This increased risk would be caused by having to burn adjacent to stands that could more easily support torching and crown fire, and the increased fireline needed to be held to exclude fire from stands that are not conducive to fire only treatments.

In order to meet this projects stated objectives, a number of stands needing treatment would be deferred from treatment.

## Helicopter, Cable, or Over Snow Mechanical Thinning Only

Based on comments received regarding effects to soil from ground based mechanical thinning systems, the IDT considered an alternative that consisted of requiring the exclusive use of helicopter, cable from exiting roads, or over snow harvest methods. The current depressed state of the lumber market make this alternative not economically viable; therefore the mechanical treatments would be too expensive to be feasible.

## Temporary Road Instead of Permanent Road

Based on comments received regarding effects from permanent road construction the IDT considered an alternative that consisted of constructing a temporary road instead of 0.9 miles of new permanent road. The topography where the road would be located is complex, which would increase the cost of a temporary road construction and decommissioning to the point where it would not be economically viable for temporary access only.

## No Road Decommissioning

Based on comments received expressing concerns about excessive road decommissioning, the IDT considered an alternative that consisted of no road decommissioning. This alternative would use non-system roads for project access, then prepare the road surface to properly drain without routine maintenance (rip, seed, waterbar, and pull culverts). This alternative would not meet the Forest Plan objective to restore soil, riparian, and hydrologic function (i.e. Objective 0230). If new permanent road construction occurs this alternative would not meet the Forest Plan standard for no net increase in road density for the Management Area (i.e. Management Area 2 Road Standard 0217).

## Comparison of Alternatives

**Table 2-1** Comparison of Alternatives by Activity.

| | Alt. A | Alt. B | Alt. C |
|---|---|---|---|
| Harvest Methods (Acres) | | | |
| Ground Based | 0 | 1,605 | 1,393 |
| Skyline | 0 | 89 | 89 |
| Total Harvest Treatment | 0 | 1,694 | 1,482 |
| Volume of Harvest | | | |
| Estimated Volume Harvested (MMBF) | 0 | 9 | 7.9 |
| Prescribed Fire (Acres) | | | |
| Mechanical thin/forest underburn (not including RCA) | 0 | 1,672 | 1,482 |
| Forest underburn | 0 | 1,315 | 1,257 |
| Non-forested grass and shrubland burn | 0 | 1,782 | 1,737 |
| WUI area treated | 0 | 934 | 703 |
| RCA mechanical thin/ forested underburn | 0 | 22 | 0 |
| RCA underburn | 0 | 471 | 449 |
| Plantation underburn | 0 | 233 | 233 |
| Total prescribed fire and subsequent maintenance burning | 0 | 5,496 | 5,158 |
| Road Activities | | | |
| New system road construction (miles) | 0 | 0.9 | 0 |
| Existing non-system road added to system and put into Level I maintenance (i.e., drainage improvements and closed to use). | 0 | 1.6 | 1 |
| Planned closed non-system road decommissioning (miles) | 0 | 9.6 | 11.1 |
| Potential closed non-system roads use for mechanical thinning and decommissioned after use (miles) | 0 | 5.5 | 5.1 |

**Table 2-2** Comparison of Alternatives by Objective

**Vegetation Resource:Objective** *Move vegetation toward the desired future conditions defined in the Forest Plan, with an emphasis on promoting the development of large tree forest structures, reintroducing fire into the ecosystem, and improving forest health.*

| **Measurements** | Alt. A | Alt. B | Alt. C |
|---|---|---|---|
| Tree size class distributions: accelerated shift of medium size tree class stands towards the large tree size class | 0 acres | 1,466 acres | 1,193 acres |
| Canopy closure in large tree size class stands: shift in the desired direction, from high to moderate canopy closure. | 0 acres | 228 acres | 223 acres |
| Species composition: shift toward the desired condition of more seral species composition over time. | 0 acres | 3,713 acres | 3,440 acres |
| Snag numbers: accelerated increase in the number of snags per acre. | 0 acres | 3,713 acres | 3,440 acres |

**Fire and Fuels Resource Objectives** *Move vegetation toward the desired future conditions defined in the Forest Plan, with an emphasis on promoting the development of large tree forest structures and reintroducing fire into the ecosystem and improving forest health.*

*Reduce the risk of uncharacteristic and undesirable wildland fire, with an emphasis on wildland urban interface protection.*

| **Measurements** | Alt. A | Alt. B | Alt. C |
|---|---|---|---|
| Fire Return Interval Departure (values closer to 0 are desired) | | | |
| PVG 2 (Warm, Dry Douglas-fir / Moist Ponderosa Pine) | >4.4 | 0.2 | 0.2 |
| PVG 5 (Dry Grand Fir) | >2.5 | 0.1 | 0.3 |
| PVG 6 (Cool, Moist Grand Fir) | >0.8 | 0.3 | 0.3 |
| Grassland and Shrubland | >3.4 | 0.1 | 0.2 |

| Predicted Fire Behavior | Alt. A | Alt. B | Alt. C |
|---|---|---|---|
| WUI treated stands | Passive crown fire (flame length 4.3 feet) | Surface fire (flame length 3.8 feet) | Surface fire (flame length 3.8 feet) |
| Non-WUI treated stands., | Passive crown fire | Surface fire | Surface fire |

**Wildlife Resource Objective**: *Improve habitat for the Northern Idaho ground squirrel (NIDGS) and white-headed woodpecker (WHWO).*

| **Measurements** | Alt. A | Alt. B | Alt. C |
|---|---|---|---|
| Acres of NIDGS habitat improved with mechanical harvest. | 0 | 222 | 383 |
| Acres of NIDGS habitat improved with prescribed fire. | 0 | 222 | 383 |
| Acres of WHWO habitat improved with mechanical harvest. | 0 | 1,694 | 1,482 |
| Acres of WHWO habitat improved with prescribed fire. | 0 | 5,496 | 5,158 |

**Watershed and Fisheries Resource Objective**: *Improve watershed condition*

| **Measurements** | Alt. A | Alt. B | Alt. C |
|---|---|---|---|
| Miles of road decommissioned within riparian conservation areas (RCAs). | 0 | 4.5 | 5.7 |
| Percent over natural (%ON) sediment over the long term as modeled by BOISED. | 26.3 | 24.2 | 24.1 |

**Table 2-3** Comparison of Alternatives by Key Issues

**Wildlife Resource Key Issue**: *Effects on wildlife resources of mechanical thinning, prescribed fire, and other associated project activities.*

**Indicator:** Temporary, short, and long term effects to Northern Idaho ground squirrel, flammulated owl, great gray owl, Northern goshawk, pileated woodpecker, and white-headed woodpecker.

| **Wildlife Species Analyzed** | **Alternative A** | | | **Alternative B** | | | **Alternative C** | | |
|---|---|---|---|---|---|---|---|---|---|
| | Temp | Short | Long | Temp | Short | Long | Temp | Short | Long |
| Northern Idaho ground squirrel | 0 | 0 | - | + | + | + | + | + | + |
| Flammulated owl | 0 | 0 | - | - | + | + | - | + | + |
| Great gray owl | 0 | 0 | - | - | + | + | - | + | + |
| Northern goshawk | 0 | 0 | - | - | + | + | - | + | + |
| Pileated woodpecker | 0 | 0 | - | - | - | + | - | - | + |
| White-headed woodpecker | 0 | - | - | + | + | + | + | + | + |

Time Scales: Temp = Temporary (<3 years); Short (3-5 years), Long (>5 years).
Magnitude of Effects: (0) No effect; (+) Positive effect; (-) Negative effect

**Watershed and Fisheries Resource Key Issue**: *Effects of thinning, prescribed fire, road management and other project activities on RCAs, water quality and fisheries.*

| **Indicators** | | Alt. A | Alt. B | Alt. C |
|---|---|---|---|---|
| Trend in RCA condition. | Acres of vegetation moved toward Forest Plan desired condition | 0 | 471 | 443 |
| | Acres of rehabilitation from road decommissioning | 0 | 17.5 | 22.1 |
| Percent over natural (%ON) sediment during project implementation (2010) as modeled by BOISED. | | 26.3 | 44.2 | 43.0 |
| Percent over natural (%ON) sediment over the long term, as modeled by BOISED. | | 26.3 | 24.2 | 24.1 |

| **Soil Resource Key Issue**: *Effects of proposed actions on soil conditions and long-term site productivity.* | | | |
|---|---|---|---|
| **Indicators** | Alt. A | Alt. B | Alt. C |
| Levels of Detrimental Soil Disturbance (DD) | The Forest Plan standard would be attained over time. | Compliant with Forest Plan Standard (with project design features, mitigation measures and BMPs) | Compliant with Forest Plan Standard (with project design features, mitigation measures and BMPs) |
| Levels of Total Soil Resource Commitment (TSRC) across the Project area | Remain at 5.4% | 5% | 4.9% |
| Levels of coarse woody debris (CWD) | Initially unchanged and trend toward desired condition more slowly than Alternatives A and B. | Trend toward Forest Plan desired condition of 4-10 tons per acre more quickly than Alternative A, and similar to Alternative C. | Trend toward Forest Plan desired condition of 4-10 tons per acre more quickly than Alternative A, and similar to Alternative B. |

**Figure 2-4** Alternative A - No action existing condition..

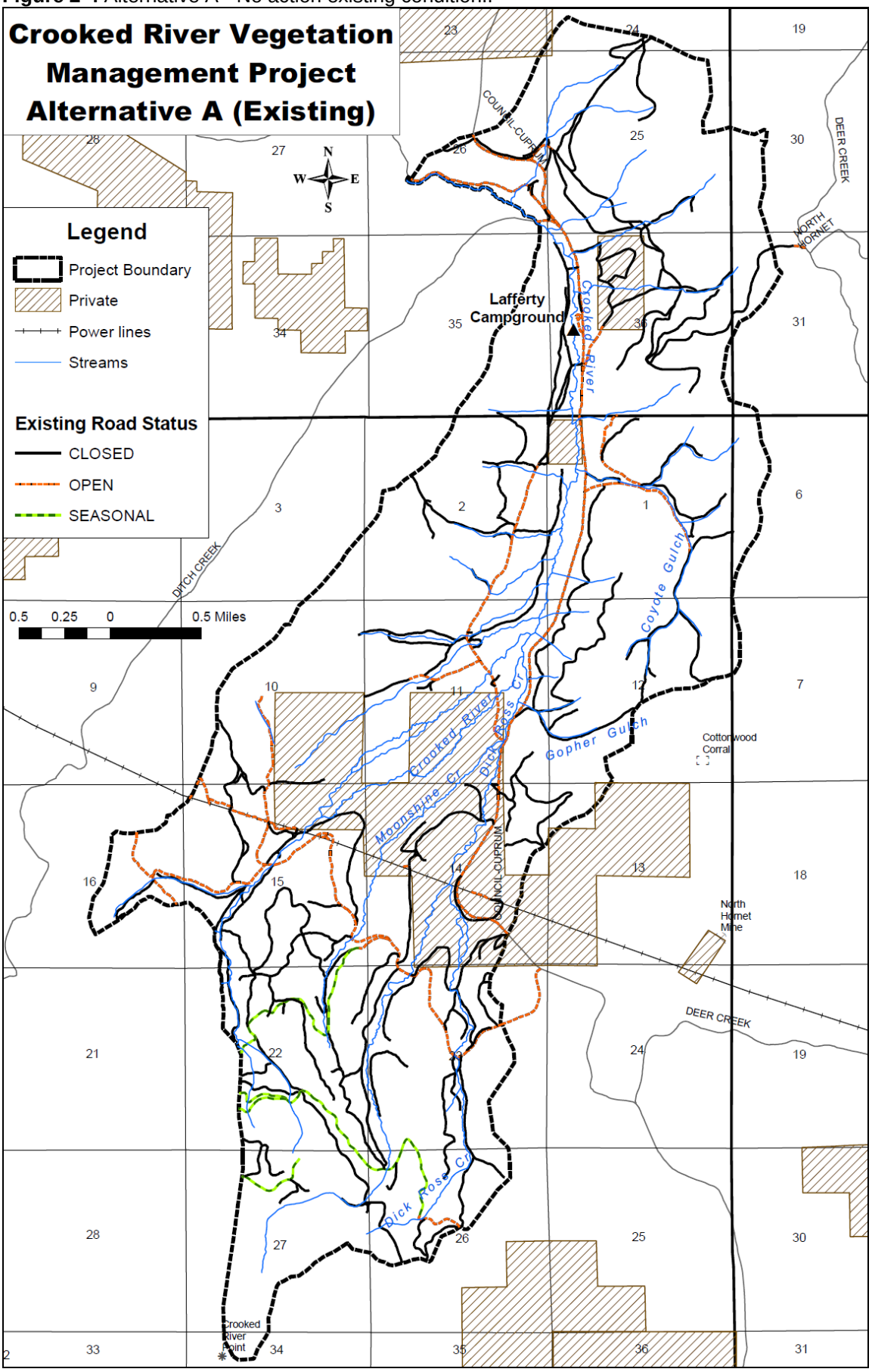


**Figure 2-5** Alternative B - Proposed vegetation treatments.

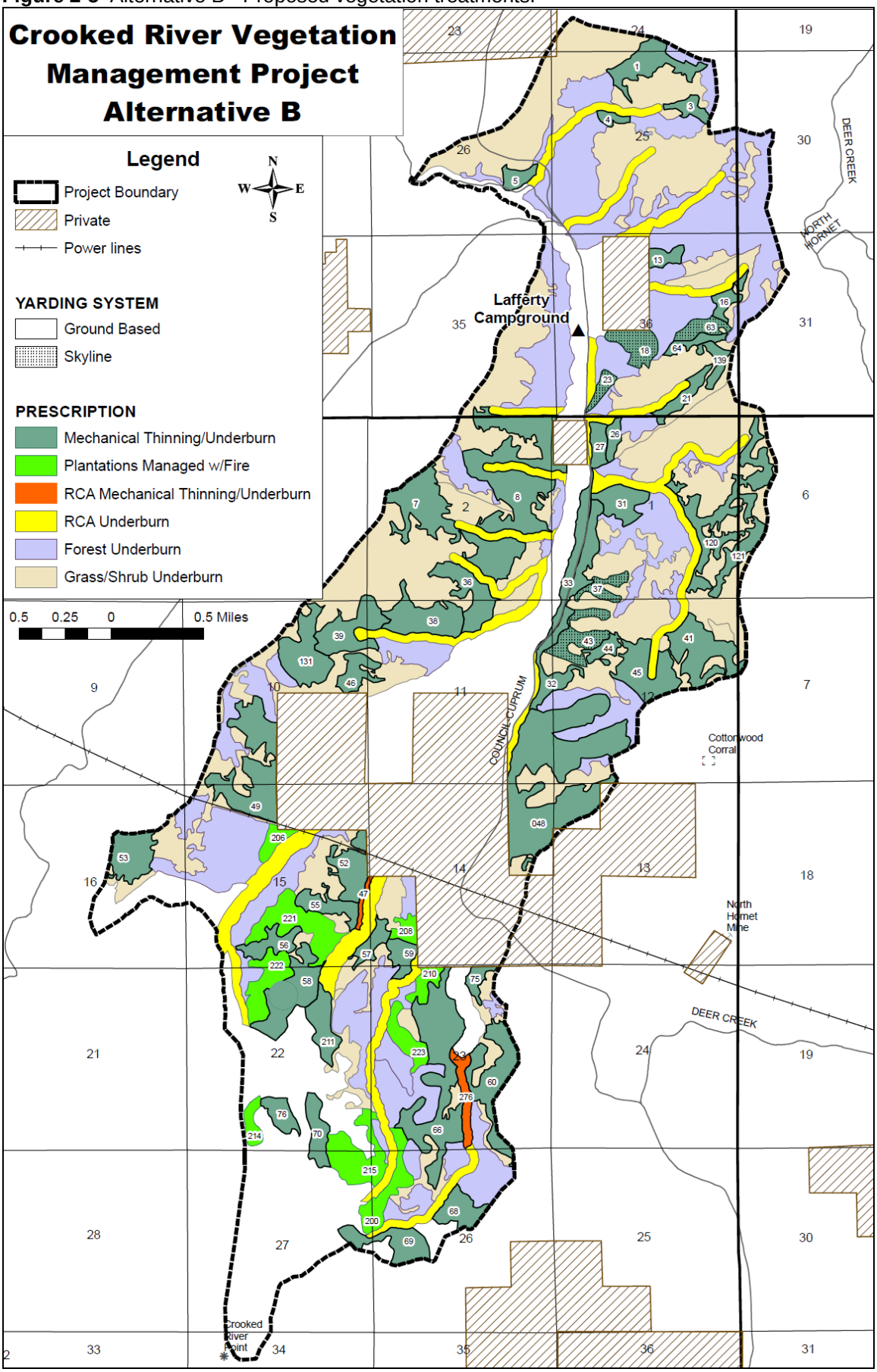


**Figure 2-6** Alternative C - Proposed vegetation treatments.

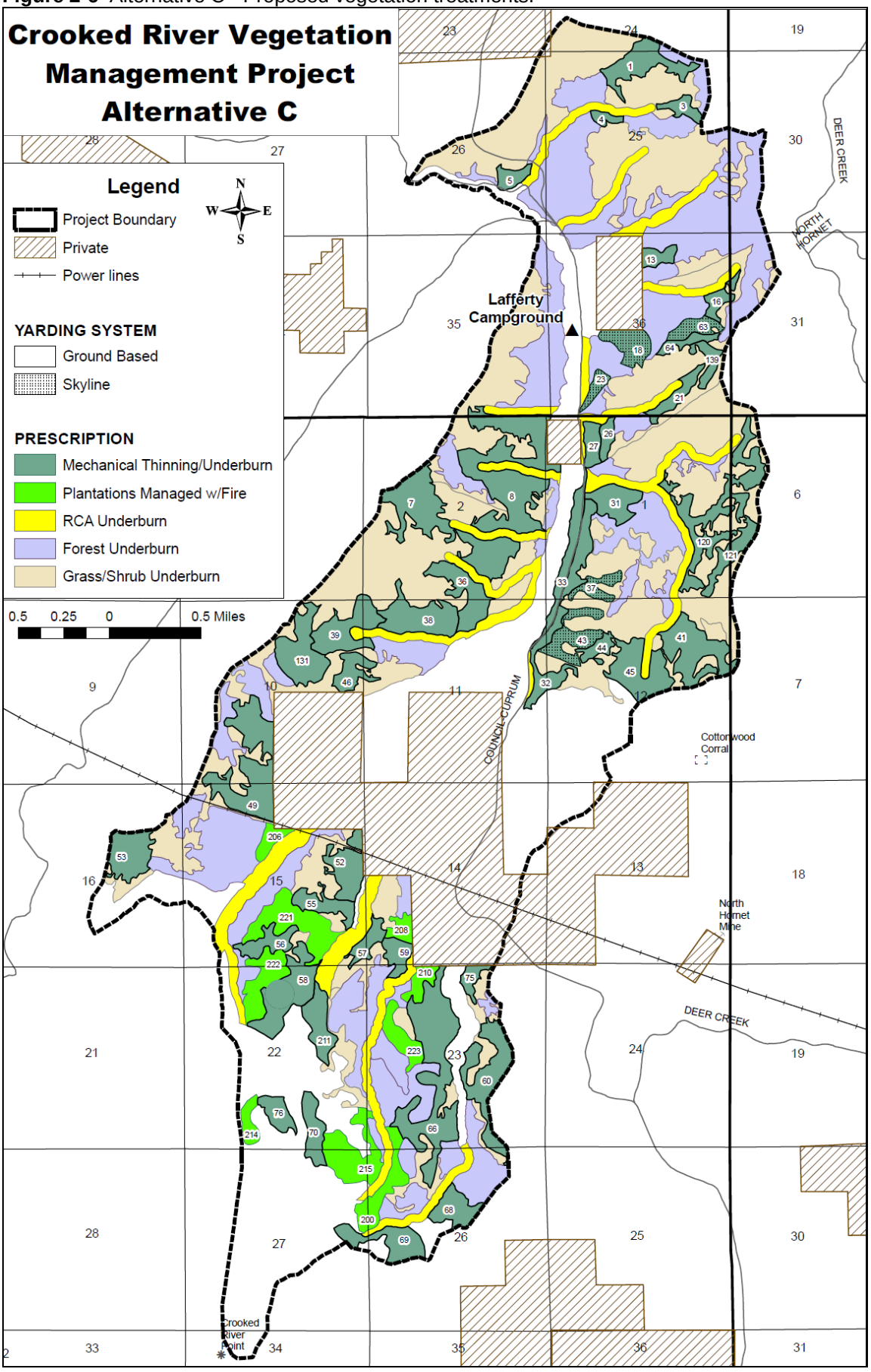


**Figure 2-7** Alternative B - Road management.

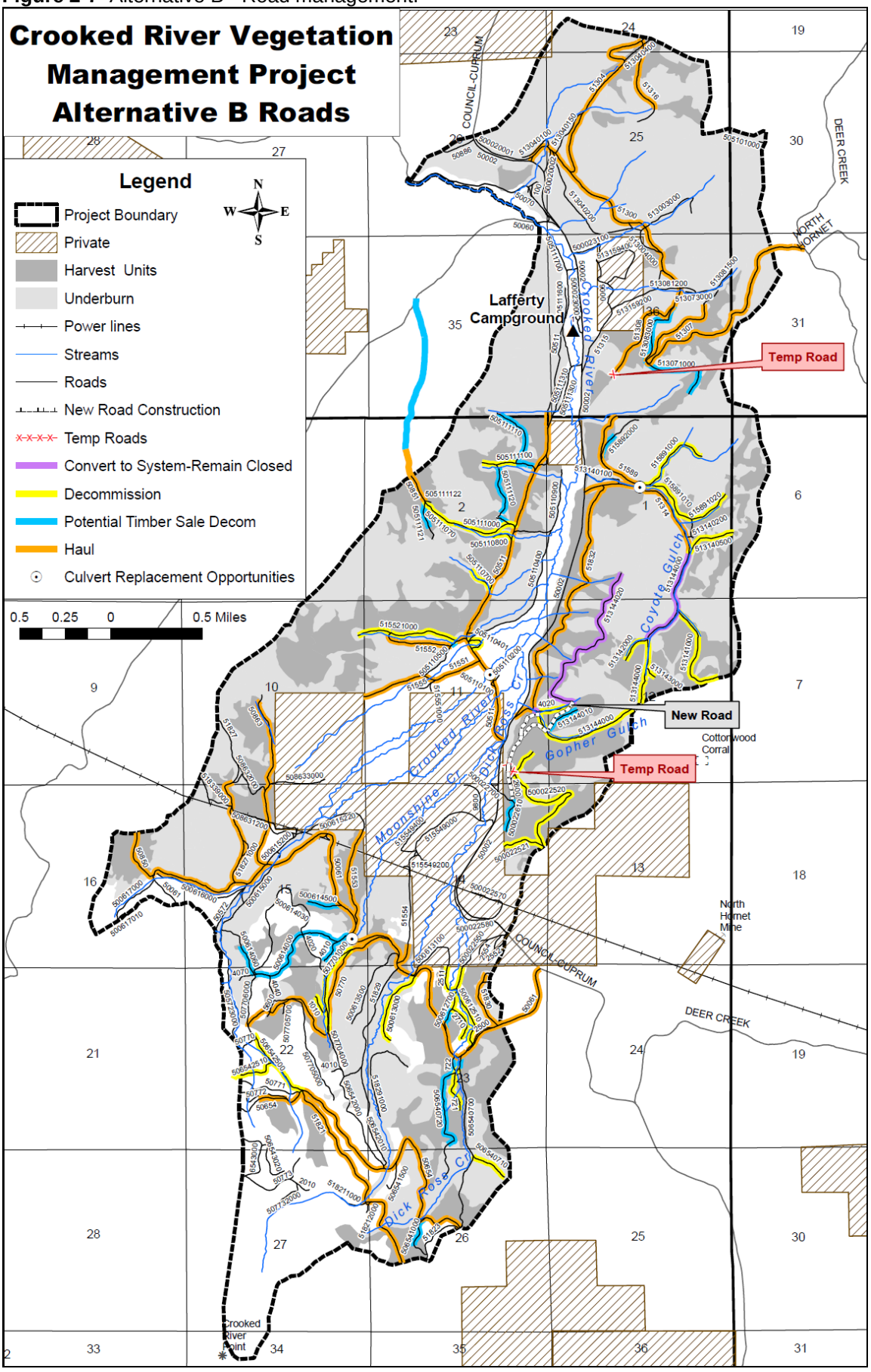


**Figure 2-8** Alternative C - Road management.

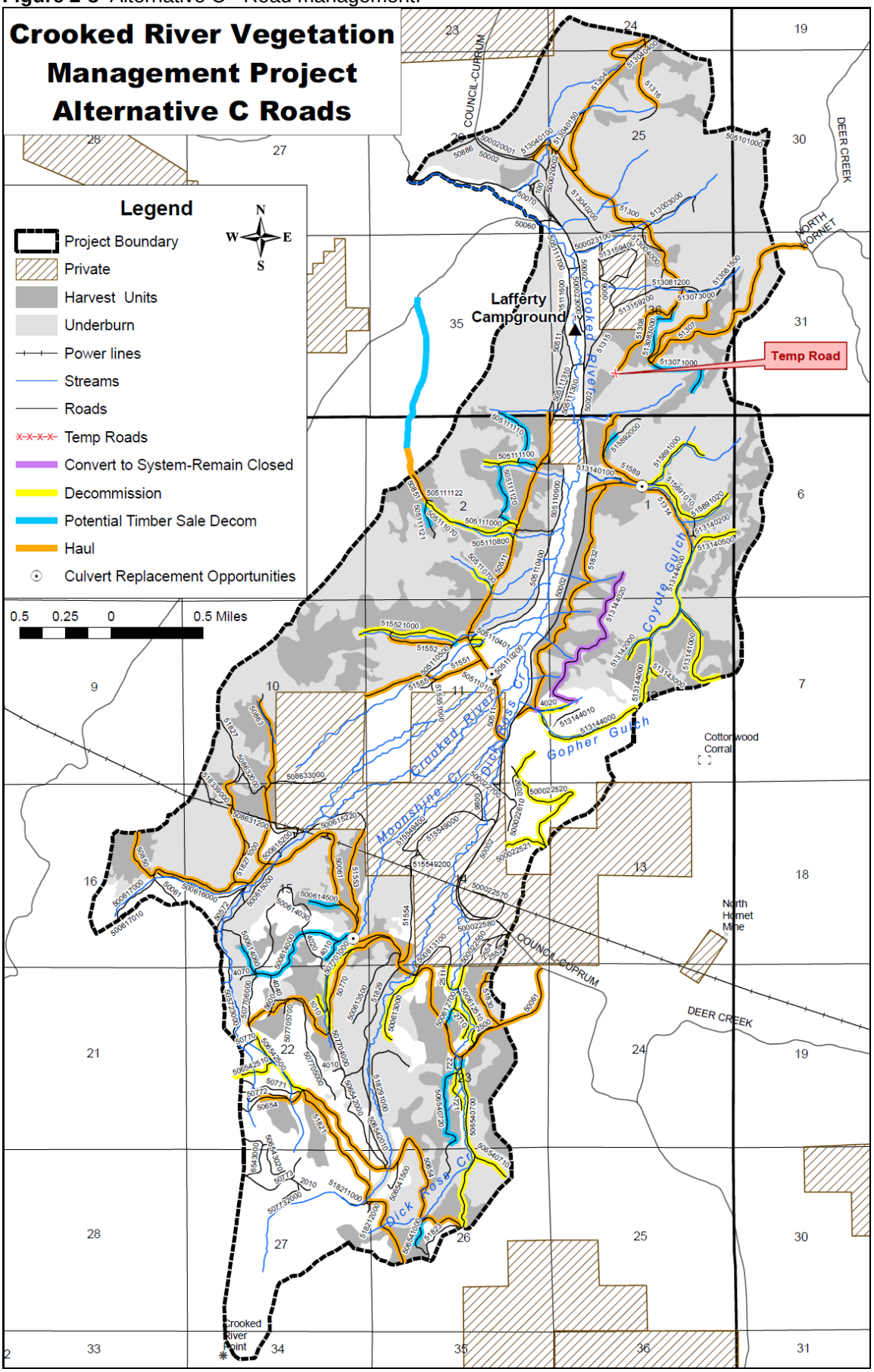


**Table 2-4** Summary of road management.

| Planned action | Alternative A | Alternative B | Alternative C |
|---|---|---|---|
| Priority closed non-system road decommissioning (by road number) | No decommissioning | Same as Alternative C, minus roads 513144000, and 506540700 | 500022520 500022521<br>500612510 500612511<br>500612700 500612710<br>500613000 505110401<br>505110700 505110800<br>505111000 505111070<br>505111100 506540710<br>506540720 506540721<br>506542500 506542510<br>507701000 507701010<br>513140500 513141000<br>513142000 513143000<br>513144000 513144020<br>515521000 515891000<br>515891010 515891020<br>506540700 |
| **Total Miles** | **0.0** | **9.6** | **11.1** |
| Potential closed non-system road decommissioned if used for mechanical thinning (by road number) | No decommissioning | 500022600 500022610<br>500612700 500614000<br>500614010 500614060<br>500614500 505110500<br>505111050 505111100<br>505111110 505111120<br>505111121 506540700<br>506540720 506540722<br>506541000 508510000<br>513071000 513083000<br>513144010 515892000 | Same as Alternative B, minus the following roads: 513144010, 500022600, 500022610 |
| **Total Miles** | **0.0** | **5.5 ± 1** | **5.1 ± 1** |
| Non-system road added to system and put into Level I maintenance (i.e. drainage improvements and remained closed) (by road number) | No change | 513144000<br>513144020 | 513144020 |
| **Total Miles** | **0.0** | **1.6** | **1.0** |
| Miles of temporary road | 0 | ≤ 1 | ≤ 1 |
| Miles of new system road construction for administrative access | None | 0.9 | 0 |

## *Mitigation Measures/Project Design Features*

Mitigation measures or project design features are designed to avoid, reduce, eliminate, rectify, or compensate for undesirable effects from proposed activities. Unless noted otherwise in the decision document, the mitigation measures are mandatory if the Responsible Official selects an action alternative for implementation.

The mitigation measures/project design features listed in Table 2-5 practices the IDT developed during this project analysis to address site-specific environmental concerns and to meet Forest Plan Standards and Guidelines. Each measure includes a description, the objective, applicable Forest Plan Standard/Guideline, the enforcement mechanism and person(s) responsible for enforcement, and an effectiveness rating with the basis for that rating.

The National Environmental Policy Act regulations (40 CFR 1508.20 Mitigation) state the following:

“Mitigation” includes:

- Avoiding the impact altogether by not taking a certain action or parts of an action.
- Minimizing impacts by limiting the degree or magnitude of the action and its implementation.
- Rectifying the impact by repairing, rehabilitating, or restoring the affected environment.
- Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action.
- Compensating for the impact by replacing or providing substitute resources or environments.

Mitigation effectiveness is rated as follows for this project:

**High**
The mitigation is highly effective (estimated at greater than 90 percent) at meeting the objective, and one or more of the following types of documentation is available:
- Research or literature
- Administrative studies
- Experience: professional judgment of an expert
- Fact: evident by logic or reason

**Moderate**
The mitigation is moderately effective (estimated at 60 to 90 percent), and its effectiveness is supported either by evidence or logic. Implementation of this mitigation needs to be monitored, and the mitigation may be modified if needed to achieve its objective.

**Low**
The mitigation is somewhat effective (estimated at less than 60%), but its effectiveness is not supported by substantial evidence; or professional judgment indicates limited success in implementation or meeting objectives. Implementation of this mitigation needs to be monitored, and the mitigation may be modified if necessary to achieve its objective.

**Table 2-5** Mitigation measures

| Mitigation Measure/Project Design Feature | Objective | Effectiveness and Basis | Applicable Forest Plan Standard/Guideline | Enforcement |
|---|---|---|---|---|
| **Wildlife** | | | | |
| Mechanical thinning operations, skidding, decking, slash piling, and prescribed burning in the project area is prohibited in occupied NIDGS sites from April 1 to August 15, or during the NIDGS denning period from August 15 to March 31 without approval by the Wildlife Biologist.<br>Prior to any ground-disturbing activity, including, but not limited to, the construction of log landings, vehicle turnouts or parking areas, skid trails, or road construction and maintenance, and prescribed burning, the Wildlife Biologist or designated Wildlife Staff must conduct onsite surveys at least 3 times during a 7-day period to identify the presence of northern Idaho ground squirrels (NIDGS). If at any time NIDGS, or NIDGS sign, is documented, no ground-disturbing activity will be allowed at that site without approval from the Wildlife Biologist. If no NIDGS, or NIDGS sign, is documented from surveys, the activity may begin or continue following approval by the Wildlife Biologist.<br>If necessary, project activities may be shifted to a time period outside the NIDGS above-ground activity period (April 1 to August 15). If project activities are shifted to the fall season, the Wildlife Staff will identify NIDGS dens with pin flags and coordinate all activities in these known sites. Fall activities in NIDGS sites will be allowed only if soil moisture levels are dry enough to prevent soil damage from machinery, as determined by the Sale Administrator in coordination with the Wildlife Biologist and Timber Management Assistant (TMA). If wet soil conditions prevent project activities at a NIDGS site in fall, the activities may be shifted to winter. Project activities during winter will require at least 18 inches of firm snow and/or 4 inches of frozen soil at a NIDGS site, prior to activity approval by the Sale Administrator, in coordination with the Wildlife Biologist and TMA. If project activities at any NIDGS site cannot be appropriately mitigated, that project unit and the associated project activities may be dropped from the timber sale. | Provide protection to federally-listed NIDGS, feeding sites, seasonal burrows, late summer estivation dens, and winter hibernacula. | HIGH: Research, literature, Forest Plan, agency direction, logic. | TEST01, TEST02, TEST03, TEST06, TEST12, TEST13, TEGU01, TEGU02, TEGU06, WIGU01. | Timber Sale Contract, Wildlife Biologist, Timber Management Assistant, Sale Administrator, Burn Plan, Fire Management Officer. |

| Mitigation Measure/Project Design Feature | Objective | Effectiveness and Basis | Applicable Forest Plan Standard/Guideline | Enforcement |
|---|---|---|---|---|
| A speed limit of 15 mph will be signed and enforced, where determined necessary by the Wildlife Biologist, on project roads and Forest Service system roads. Roads associated with the project will be monitored by Wildlife Staff to determine hazards to NIDGS by agency, contractor, and private vehicles. If speed limits, or other protections, are needed on County or State roads, the Forest Service will work with the appropriate agencies to resolve the issue. | Provide protection to federally-listed NIDGS from vehicle-caused mortality. | MODERATE: Research, literature, Forest Plan, agency direction, logic. | TEST01, TEST02, TEST03, TEST06, TEST12, TEGU01, TEGU02, TEGU06, WIGU01, WIGU04. | Timber Sale Contract, Wildlife Biologist, Timber Management Assistant, Sale Administrator, Burn Plan, Fire Management Officer. |
| In harvest units adjacent to known NIDGS sites (see Project Record for specific units), slash piles created from harvest activities must be removed from landings not later than October 31 of the harvest year in each of these units. Slash piles may be used for biomass, if removed no later than October 31, as noted. | Provide protection to federally-listed NIDGS from direct mortality at slash piles from vehicles or slash burns. | MODERATE: Research, literature, Forest Plan, agency direction, logic. | TEST01, TEST02, TEST03, TEST06, TEST12, TEGU01, TEGU02, TEGU06, WIGU01, WIGU04. | Timber Sale Contract, Wildlife Biologist, Timber Management Assistant, Sale Administrator, Burn Plan, Fire Management Officer. |

| Mitigation Measure/Project Design Feature | Objective | Effectiveness and Basis | Applicable Forest Plan Standard/Guideline | Enforcement |
|---|---|---|---|---|
| Known northern goshawk (NOGO) nests will be protected within a 30-acre forested nest stand as determined by the Wildlife Biologist in coordination with the Sale Administrator and the Timber Management Assistant (TMA). All activities within these nest stands will be restricted to those approved by the Wildlife Biologist and coordinated with the Sale Administrator and the TMA.<br>During operations, if a new NOGO nest is located, onsite activities will be halted until a survey by Wildlife Staff can determine if the nest is active. A 30-acre forested nest stand will be identified, as above. If the nest is active, harvest activities in that 30 acres will be halted until the end of the nesting season (March 1 to Sept. 30). Harvest activities may resume earlier than Sept. 30 if the Wildlife Biologist determines that the birds are no longer present. All identified NOGO nest stands will have a Post-Fledging Area (PFA) of at least 600 acres and a Foraging Area (FA) of at least 6,000 acres identified by the Wildlife Biologist. Within each PFA, 5 other nest stands will be identified by the Wildlife Biologist. These nest stands will have the same restrictions on human activities as noted above. The PFAs and FAs may have other activity restrictions applied from March 1 to Sept. 30, depending on site-specific information. Refer to the Project Record for nest site locations and associated units. | Provide protection to NOGO, nests, PFAs, and FAs. | HIGH: Research, literature, Forest Plan, agency direction, logic. | WIST02, WIST03, WIST04, WIST05, WIGU01, WIGU05, WIGU06, WIGU07, Forest Service General Technical Report Nos. RM-217 and PNW-GTR-733, as required by the Forest Plan. | Timber Sale Contract, Wildlife Biologist, Timber Management Assistant, Sale Administrator, Burn Plan, Fire Management Officer. |
| In areas closed to public motorized access, prohibit contractors and their employees from access with motorized vehicles for purposes other than implementing the timber sale contract. | Minimize negative effects on wildlife; ensure contractors and employees do not have unfair advantage during hunting seasons. | HIGH: Research, literature, Forest Plan, agency direction, logic. | TEST01, WIST02, WIST03, WIGU01, WIGU02, WIGU05, WIGU06, WIGU08, WIGU13. | Timber Sale Contract, Wildlife Biologist, Sale Administrator, Burn Plan, Fire Management Officer. |
| Prior to any ground-disturbing activity, including, but not limited to, the construction of log landings, vehicle turnouts or parking areas, skid trails, road construction or maintenance, and prescribed fire, the Wildlife Biologist, or designated Wildlife Staff, must conduct onsite surveys to identify TEPC, MIS, or Sensitive species. present. Project activities may be altered to protect the wildlife species, as practicable, using | Minimize negative effects on wildlife, especially during reproductive periods. | MODERATE: Agency and Forest Plan direction, logic. | TEST06, TEST12, TEST13, WIST03. | Timber Sale Contract, Wildlife Biologist, Sale Administrator, Burn Plan, Fire Management Officer. |

| Mitigation Measure/Project Design Feature | Objective | Effectiveness and Basis | Applicable Forest Plan Standard/Guideline | Enforcement |
|---|---|---|---|---|
| measures approved by the Wildlife Biologist, following coordination with the Timber Management Assistant, Fire Management Officer, and Sale Administrator. | | | | |
| Provide a radius of 2 elk sight distances (400 ft) of vegetation (where available and practicable) to protect mineral licks and elk wallows. No harvest or prescribed burning will be allowed in these sites, without approval by the Wildlife Biologist. Exact boundaries of each protected site will be identified by the Wildlife Biologist, following coordination with the Timber Management Assistant, Fire Management Officer, and Sale Administrator. | Minimize negative effects on wildlife, address big game vulnerability to mortality and habitat security. | HIGH: Research, literature, Forest Plan, agency direction, logic. | WIGU13 | Timber Sale Contract, Wildlife Biologist, Sale Administrator, Burn Plan, Fire Management Officer. |
| **Fisheries & Water Resources** | | | | |
| No harvest or equipment operations (unless on existing road) within 120' of intermittent stream channels, and 240' of perennial stream channels. Buffers would also be applied to any previously unmapped RCA discovered during implementation. | Maintain riparian function | High: experience, logic, Belt et al. 1992, McDade et al. 1990, Gregory et al. 1990 | SWST01, SWST04 | Sale administrator, Timber sale contract provision, fisheries biologist or hydrologist |
| No mechanized equipment, new skid trails or landings within RCAs unless evaluated and approved by a fisheries biologist or hydrologist. Hydrologist or fisheries biologist will provide required mitigations to maintain watershed condition indicators. | Maintain riparian function, minimize sediment delivery | High: logic | SWST01, SWST04, Management Area 2 (Snake River) Road Standard 0127 | Sale administrator, Timber sale contract provision, fisheries biologist or hydrologist |
| No storage of fuel or refueling within RCAs unless approved by a fisheries biologist or hydrologist. | Minimize potential for fuel spill in stream | High: logic | SWST01, SWST04 | Sale administrator, Harvest Inspector, Timber sale contract provision, fisheries biologist or hydrologist |
| No active ignition of prescribed fire within 120 feet of perennial stream channels unless the consumption or mortality of shade-providing vegetation can avoided. | Minimize loss of shade to perennial stream channels | High: experience | SWST01, SWST04, SWST07 | Fuels specialist, burn boss, fisheries biologist, or hydrologist |

| Mitigation Measure/Project Design Feature | Objective | Effectiveness and Basis | Applicable Forest Plan Standard/Guideline | Enforcement |
|---|---|---|---|---|
| When reconstructing roads within RCAs or installing culverts on intermittent or ephemeral channels use sediment fences, wood straw, jute matting, or other erosion control measures as deemed necessary by a fisheries biologist or hydrologist. Install culvert or other crossing structure at low flows. If mechanical thinning occurs over snow use a snow bridge as an alternative to road construction and culvert placement. | Minimize sediment delivery to channel. | High: experience, logic, Burroughs and King 1989, Foltz 2007 | SWST01, SWST04 | Timber sale contract, Sale Administrator, Harvest Inspector fisheries biologist, hydrologist |
| Roads that are utilized with the timber sale and proposed for decommissioning and temporary roads that are decommissioned would be ripped (16" or depth of compaction), grubbed, recontoured, seeded with native seeds, and provided with 35 to 50 percent ground cover (slash or mulch) to an extent deemed necessary by a fisheries biologist or hydrologist. In addition to the above treatment, stream crossings would receive planted vegetation plugs to an extent deemed necessary by a fisheries biologist or hydrologist, to reduce erosion, stabilize streambanks. | Minimize sediment delivery to channel and rehabilitate riparian area. Reduce levels of total soil resource commitment. | High: experience, logic, Burroughs and King 1989, Foltz 2007; experience, local monitoring, | SWST01, SWST04, SWST03(b) | **Temporary Roads**: Sale administrator, Harvest Inspector Timber sale contract provisions. **Other Roads**: fisheries biologist, hydrologist |
| Closed roads that are opened for harvest and not decommissioned would be prepared for Level I maintenance by scarifying the driving surface, seeding, installing water bars as needed, and pulling culverts. | Reduce long term sediment production. | HIGH: logic, experience, local monitoring, Foltz 2003 | SWST01, SWST04, SWST08 | Fisheries Biologist, Soil Scientist, Hydrologist |
| Fisheries biologist inspection and approval would be required for all culvert replacements to insure that fish passage is provided where applicable. | Provide fish passage. | HIGH: logic | | Fisheries Biologist, Contract administrator. |
| Harvest equipment would be required to stay on existing roads to minimize disturbance to riparian vegetation, and soil. Riparian dependent vegetation would not be disturbed. No mechanical thinning within 120 feet of Moonshine Creek, a perennial channel. No mechanical thinning would occur within 30 feet of Dick Ross Creek, an intermittent channel. | Minimize soil disturbance, and protect stream shade, bank stability, and LWD recruitment, | High: logic, Belt et al. 1992, McDade et al. 1990, Gregory et al. 1990 | SWST01, SWST04, SWST08 | Timber sale contract provision, Sale administrator |
| To offset new road construction an equivalent or greater amount of existing road must be decommissioned in the project area. | Forest Plan standard | High: logic | Management Area 2 (Snake River) Road Standard 0127 | Project design. |
| **Soil** | | | | |

| Mitigation Measure/Project Design Feature | Objective | Effectiveness and Basis | Applicable Forest Plan Standard/Guideline | Enforcement |
|---|---|---|---|---|
| Utilize all applicable Best Management Practices (BMPs) and Soil Water Conservation Practices (SWCPs) for harvest and road activities. | Reduce/limit levels of soil disturbance, erosion and potential sedimentation, Meet requirements of State of Idaho Non-point source Pollution Management Plan, Maintain water quality and associated beneficial uses. | High: FSH 2509.22, Local Monitoring | SWST01, SWST02, SWST03, SWST04, SWGU08 | Timber sale design and layout, sale administrator |
| Decommission non-system roads used for harvest to reduce levels of total soil resource commitment. | Reduce levels of total soil resource commitment (TSRC), reduce sediment, improve soil and hydrologic processes, and fish habitat. | High: logic, experience, local monitoring, Switalski et. al. 2004 | SWST01, SWST03(b), SWST04, | Timber sale administrator, Timber Sale contract Hydrologist/Soil Specialist |
| On slopes up to 45%, limit ground based mechanical thinning, skidding, and harvest equipment operations to designated skidtrails, roads, and landings when the ground is not frozen/snow covered. On tractor units, all skid trails would be designated and pre-approved by the Timber Sale Administrator and logs would be winched to the designated skidtrails. Skidtrails would be spaced at a maximum distance (preferred is 300 feet or greater) with consideration given to terrain, and to RCA location (literature shows that a 100-foot skidtrail spacing has affects to soil on approximately 11% of an area).<br>Random use of heavy equipment off of designated skidtrails would be allowed only under the following conditions:<br>• snow covered or frozen soil conditions<br>• for feller bunchers when soil moisture levels are below 20%. | Eliminate potential for detrimental soil disturbance from heavy machinery. | High: logic, experience, local monitoring, Froehlich 1981, Garland 1983. | SWST02 | Timber Sale Administrator, Timber Sale contract |
| On slopes over 45% utilize cable, skyline, or helicopter harvest systems and limit equipment operations to roads (temporary or permanent) and landings. | Reduce soil impacts and levels of DD by utilizing lower impact harvest system. | High: Seyedbagheri, 1996, Megahan 1987, Fact, Experience | SWST02 | Timber sale design and layout, Sale administrator |
| Reclaim disturbed skyline/cable corridors by pulling soil berms back to original configuration and scattering slash (as available) on all areas of soil disturbance to provide for 35-50% effective cover. | Reduce potential for erosion/rutting/DD in corridors and facilitate revegetation. | High – logic, experience, local monitoring | SWST01, SWST04, SWGU05 | Timber Sale Administrator, Timber Sale contract |

| Mitigation Measure/Project Design Feature | Objective | Effectiveness and Basis | Applicable Forest Plan Standard/Guideline | Enforcement |
|---|---|---|---|---|
| Reclaim all detrimentally disturbed and totally committed skid trails and landing areas immediately following harvest activities. Take advantage of all opportunities within activity areas to reclaim soil disturbances (compaction, displacement, etc.) from past management activities – a net reduction in detrimental soil disturbance is required in harvest units 1, 3, 4, 5, 7, 8, 13, 21, 26, 27, 31, 32, 33, 36, 38, 39, 41, 44, 45, 46, 48, 49, 53, 52, 58, 60, 64, 120, 121, 131, 139, 211. Reclamation would include sub-soiling to a depth of 16" to ameliorate compaction, re-contouring to the natural slope profile (if needed and as possible), scattering of organic matter (as available) to provide a minimum of 35-50% effective ground cover and seeding with native seed and mulching to facilitate vegetation recovery where slash is not available. | Restore newly created or existing areas of TSRC and detrimental disturbance (DD). | High: logic, experience, local monitoring | SWST01, SWST03, SWGU05 | Timber Sale Administrator, Timber Sale contract |
| Re-use existing well located skid trails and landings (as determined by a Soil Scientist or Hydrologist) and reclaim (as described above) following the completion of harvest activities. | Limit creation of new areas of DD or TSRC and restore existing areas of DD and TSRC. | High: logic, experience, local monitoring | SWST02, SWST03 | Timber sale design and layout, sale administrator, Timber sale contract |
| Improve road drainage (installing water bars/dips, cleaning relief culverts etc.) as needed on all roads used for harvest activities. | Reduce road related sediment inputs, Improve road surface conditions. | High: logic, experience, Burroughs and King 1989 | SWST01, SWST04, SWGU08 | Project Engineer, timber sale road package/ contract provision |
| Winterize temporary roads that will be retained until reforestation and biomass activities are completed. Install drainage features to control runoff and reduce erosion. | Reduce road related soil erosion and sediment inputs during the winter. | High: logic, experience, Burroughs and King 1989. | SWST01, SWST04, SWGU08 | Project Engineer, timber sale road package/ contract provision |

| Mitigation Measure/Project Design Feature | Objective | Effectiveness and Basis | Applicable Forest Plan Standard/Guideline | Enforcement |
|---|---|---|---|---|
| Retain total amounts of CWD as evenly distributed as possible in the tonnages and diameters described below and in 6 foot or greater lengths (if tonnages and/or sizes are unavailable, then assure that trends toward desired conditions are achieved). Total tonnage is measured following the completion of all activities and must retain the percentages of the large sized CWD (greater than 15 inch diameter) identified in the Forest Plan (Forest Plan, Appendix A, page !-9, Table A-9)<br>For PVG's 2 and 5: Retain CWD in amounts desired in Forest Plan, Appendix A – 4 to 14 tons per acre with at least 75 percent of the tonnage provided from CWD that is greater than 15 inches in diameter.<br>For PVG 6: Retain CWD in amounts desired in Forest Plan, Appendix A – 4 to 14 tons per acre with at least 65 percent of the tonnage provided from CWD that is greater than 15 inches in diameter. | Maintain CWD for long-term site productivity and for wildlife species. | High: Graham et. al. 1991, 1994. | SWST04 | Timber Sale Contract, Administrator. |
| Reclaim all fireline following all burn activities. Reclamation activities would include, but are not limited to, placing waterbars as necessary, pulling material removed (including mineral soil as available) for fireline construction back onto fireline, and pulling slash as available onto the surface. Goal is to achieve 50 percent ground cover of the disturbed soil. | Restore and stabilize detrimentally disturbed soils and reduce the risk of accelerated soil erosion and resulting sedimentation. | High: Experience | SWST02 | Fuels Specialist, Soil Scientist, Hydrologist. |
| Ensure, through burn prescriptions, that CWD (in desired amounts and sizes) is retained at the desired condition or is maintained at existing levels if presently below the desired condition (see descriptions by PVG above). | Maintain CWD for long-term site productivity and for wildlife species. | High: Graham et. al. 1991, 1994. | SWST04 | Prescriptions for Prescribed Burn, Fuels Specialist. |
| **Rangeland** | | | | |
| Protect range improvements such as fence, and water troughs from prescribed fire. | Protect improvements | High: logic | N/A | Fuels Specialist, Burn plan. |
| Per "The Payette National Forest Noxious Weed and Poisonous Plant Control Program EA and DN", treat populations of noxious weeds found in the planning area. Control measures may include spraying, biological controls, or other methods as needed. | Control noxious weeds. | High: fact, experience | NPST10, NPGU01, NPGU05 | Range Specialist |

| Mitigation Measure/Project Design Feature | Objective | Effectiveness and Basis | Applicable Forest Plan Standard/Guideline | Enforcement |
|---|---|---|---|---|
| In order to prevent the potential spread of noxious weeds into the project or treatment areas, Forest Service contractors associated with project activities would clean all off-road equipment prior to entry onto the treatment area. This cleaning would remove plants, dirt, and material that may carry noxious weed seeds. | Limit the risk of new infestations of noxious weeds into the area. | High: fact, experience | NPST03, NPST04, NPGU03 | Timber sale contract, Administrator |
| Any materials such as mulches, straw, etc., used for rehabilitation, reclamation, etc., would be free of noxious weed seeds and comply with the 1995 weed free forage special order against the use of non-certified hay, straw, or mulch. Materials not covered in the special order, which have the potential to contain noxious weed seed, would be inspected and determined to be weed seed free before purchase and use. Certification that these materials are free of noxious weed seed would be done by qualified individuals, such as the Idaho Seed Lab, County Weed Supervisor, or Forest Service noxious weed management specialist. | Limit the risk of new infestations of noxious weeds into the area. | High: fact, experience | NPST01, NPST02, NPST03, NPST06 | Soil Scientist, Range Specialist. |
| Source sites for gravel and borrow materials would be inspected before materials are used or transported. If noxious weeds are present, they would be treated to prevent seed production before use or transport. The source would not be used if noxious weed species were present that are not currently found at the site unless effective treatment or other mitigation measures identified by the District Ranger are implemented. Written documentation of the inspection by county weed agents, Forest Service noxious weed management specialists, or other individuals who the Forest Service stipulates are qualified would be required before materials are used. | Limit the spread of noxious weeds in the Project Area. | High: fact, experience | NPST07, NPST08, NPGU02 | Range Specialist, Botanist, Engineer, Administrator. |
| **Sensitive Species** | | | | |
| Ground-disturbing activities would be stopped in any areas where previously unknown listed or sensitive fish, wildlife, or botanical species are discovered until a Fisheries Biologist, Wildlife Biologist, or Botanist, respectively, reviews the affected area and prescribes appropriate mitigation to ensure protection of the species. | Provide protection to threatened, endangered, and sensitive species | MODERATE: logic | TEST01, TEST02, TEST03, TEST06, TEST12, TEST13, TEGU01, TEGU02, TEGU06, WIST02, WIST03, WIST06, WIGU01, WIGU05, WIGU06, WIGU07. | Fish Biologist, Wildlife Biologist, Botanist, Sale Administrator, Burn Plan, Fire Management Officer. |

| Mitigation Measure/Project Design Feature | Objective | Effectiveness and Basis | Applicable Forest Plan Standard/Guideline | Enforcement |
|---|---|---|---|---|
| **Forest Vegetation and Timber** | | | | |
| Use the Ips beetle C-provision in residual stands composed primarily of ponderosa pine, if proposed unit is adjacent to ponderosa pine plantation. | Minimize Ips beetle population buildup. | HIGH: experience, logic | TRGO01 | Timber Sale Contract, Sale Administrator |
| Include a requirement in the prescribed burn plans that tree mortality parameters would be adjusted to ensure that a minimum of 30% canopy closure is maintained in all harvest units, and all forested stands where underburning occurs without mechanical thinning. Do not reduce canopy closure below 40% in PVG 6. | Maintain forest structure in all harvest units | High: logic | N/A | Fuels Specialist |
| Include timber sale contract provisions that require firewood and other biomass produced as a byproduct of harvest operations to be made accessible to the public and for potential biomass use. Require purchaser to place slash piles and firewood in locations where removal will be practical. | Provide firewood gathering opportunities for the public and utilize biomass for alternative energy. | HIGH: logic | TRGO04 | Timber Sale Contract, Sale Administrator |
| **Air Quality** | | | | |
| Identify sensitive areas for smoke impacts and coordinate all burning with Montana/Idaho State Airshed Group. | Avoid smoke immersion into non-attainment or sensitive areas. | HIGH: logic, experience | ASGU01, ASGU02 | Burn plan, FMO |
| **Cultural Resources** | | | | |
| All existing cultural properties within the activity area would be flagged for protection by a Cultural Resource Specialist prior to project implementation. | Avoid risk to cultural sites | HIGH: logic | N/A | Forest Archaeologist |
| **Recreation and Visual Quality** | | | | |
| Treat slash (lop and scatter/pile and burn or underburn) along Council-Cuprum Road and other visually sensitive areas to maintain visually pleasing perspectives and vistas. | Meet visual quality objective | HIGH: logic | SCGU04 | Fire Management Officer, Burn Plans |
| Stumps that are in view of the visually sensitive Council Cuprum Road should be cut no higher than 6 inches from the ground. | Meet visual quality objective | HIGH: logic | SCGU03 | Administrator, Contract |
| Timber harvest along Council-Cuprum road should be textural, with some small, simulated natural openings where openings already occur, or a limited number of small natural-appearing openings that are developed normally over time or more harvest entries. | Meet visual quality objective | MODERATE : logic | SCGU05 | Layout Forester (Marking Guide) |
| Ridgeline silhouettes should not have unnatural-appearing breaks along them. | Meet visual quality objective | MODERATE : logic | SCGU06 | Layout Forester (Marking Guide) |
| Where necessary, restrict log hauling during periods of high recreation use, such as the opening day of big game hunting season. | Provide for public safety | MODERATE : logic | N/A | Administrator, Contract |

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## Monitoring and Evaluation

Monitoring and evaluation is used to determine whether the Forest Plan is being implemented correctly and to determine the effectiveness of Forest Plan standards and guidelines, management requirements, and mitigation measures. Implementation monitoring is used to decide whether the project was implemented as planned. Effectiveness monitoring determines whether the project design and mitigation measures were effective in meeting resource protection objectives. Items that would be monitored, if an action alternative is selected, are identified in Best Management Practices and Monitoring Plans on file in the Project Record.

**Table 2-6.** Monitoring plan summary.

| Resource | Monitoring Item | Timing | Personnel |
|---|---|---|---|
| Fisheries and Watershed | Implementation and Effectiveness monitoring of RCA treatments and culvert replacements. | Implementation monitoring will coincide with activities within RCAs. Effectiveness monitoring will occur during activities, annually for three years and once after five years. | Journey level fisheries biologist, and biological and hydrology technicians. |
| Soil and Water | Effectiveness of road obliteration treatments. | Implementation monitoring will occur during year of decommissioning activities. Effectiveness monitoring will occur at a minimum the first year after implementation and then at year three and five unless findings indicate sites have stabilized and revegetated to their natural potential. | Hydrology technicians, and GS-11 hydrologist |
| Soil and Water | Implementation and Effectiveness monitoring of Timber BMPs and SWCPs. | The majority of the monitoring will take place during harvest operations. Where re-vegetation or reclamation is planned, monitoring will be conducted a minimum of twice: the first year for implementation and the second year for effectiveness, allowing one snowmelt and spring runoff to occur. | Hydrology technicians, and GS-11 hydrologist |
| Range | Noxious weed monitoring | Immediately after harvest and road work activities, and for the following five years. | Range technicians |
| Fuels | CWD Monitoring | Prior to and post burn | Fuels Specialist and two forestry technicians |
| Vegetation | Fire Effects to Plantations | Pre and Post burn | Fuels Specialist and two forestry technicians |
| Vegetation | Harvest unit boundaries and timber marking | During sale preparation activities | Sale preparation forester and planning silviculturist |