

Chapter 2: Alternatives Considered

Introduction

This chapter describes and compares the alternatives considered for the Cooney McKay Project. The alternatives for the Cooney McKay Project were developed from the issues identified by the ID Team, the public, and other agencies. The ID Team grouped the alternatives into one of two categories depending upon how they met the Purpose and Need for the project and their feasibility. These categories are “alternatives considered in detail” and “alternatives not considered in detail.” Rationale is given for those alternatives not studied in detail.

This chapter also includes a description and map(s) of the alternatives considered, activities common to all alternatives, and a comparison of these alternatives focusing on the significant issues. This comparison of alternatives provides a basis for choice among the options for the decision maker and the public (40 CFR 1502.14).

Public Involvement and the Scoping Process

The Council on Environmental Quality (CEQ) defines scoping as:

“... an early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to a proposed action” (40 CFR 1501.7)

Among other things, the scoping process is used to invite public participation, to help identify public issues, and to obtain public comment during the EIS process. Scoping should begin early and continue until a decision is made. To date, the public has been invited to participate in the following ways.

Public Mailing

On January 16, 2007, an information flyer, along with a cover letter, explaining the Cooney McKay Project was mailed out (Project File Exhibit B - 3). This information sheet, along with a proposed action map, went to approximately 125 individuals, other agencies, and groups.

Public Notice

In addition, a Notice of Intent to prepare an EIS was published in the December 22, 2006 (Volume 71, Number 246) edition of the Federal Register, and a Request for Comments was published in The Daily Inter Lake, the newspaper of record, on February 13, 2007. The Cooney McKay Project also appeared in the October 1, 2006; January 1, 2007; April 1, 2007; July 1, 2007; and October 1, 2007; editions of the USDA Forest Service’s Schedule of Proposed Actions (SOPA).

The Swan Lake Ranger District received 6 comment letters or electronic responses from the public. Additionally the Swan Lake Ranger District conducted a public field tour of the project area on June

19, 2007. Public input during this field tour and additional field reconnaissance subsequent to the field tours resulted in 5 units, originally proposed for Seed Tree treatments, being dropped from all alternatives based on their existing old-growth characteristics. These stands are not dominated by dry site larch or ponderosa pine, and contain a high proportion of moist site species, such as grand-fir and Douglas-fir, with sufficient size, and in sufficient numbers, to be considered old growth. For these reasons, these units were dropped from consideration under the action alternatives.

Issues

The ID Team reviewed and compiled a list of potential issues based upon comments from the public, organizations, and government agencies. These issues were then evaluated against the following criteria to determine the appropriate methodology for resolution:

- Is the issue relevant to, and within the scope of the purpose and need, the decisions being made, and does it pertain directly to the Proposed Action?
- Is the issue already decided by law, regulation, or existing plans, or not supported by scientific or factual evidence?
- Could the issue be resolved through design and location of activities in the Proposed Action or mitigated by - avoiding the impact by not taking action, minimizing the impact by limiting the action, rectifying the impact by rehabilitation, reducing the impact by maintenance, or compensating for the impact by replacement?

Issues representing an unresolved conflict with the Proposed Action have been brought forward as “Major Issues” and were used to help formulate the alternatives to the Proposed Action. Project File Exhibit D-2 provides a detailed description of the issues identified during the scoping process and describes how those issues were accounted for during the analysis process.

Key Issues Used For Alternative Development

During the issues content analysis and disposition process, the ID Team and District Ranger identified the following two “key” issues, for which action alternatives were developed.

A. Activities in Old Growth

There was a concern that the proposed actions would be harmful to old growth forest habitats. Examples of concerns about the proposed action’s impact on old growth forest and associated wildlife follow:

- For viability to be insured, the FS must maintain enough old growth habitat for decades to come on the Flathead National Forest. We have no reason to believe anything other than logging the proposed areas will reduce soil productivity, reduce their natural qualities, reduce their habitat for wildlife, and reduce their resiliency to subsequent disturbance, such as fire (Commentor #5).
- Old growth forests are pretty scarce in this area due to the checkerboard ownership. How much old growth is there in the Project Area? How connected is it? What old growth dependent wildlife are using it? Why are mature forests the focus of treatments? (Commentor #6)

- A range of alternatives needs to be developed. This should include an alternative that does not log in old growth forest habitat (Commentor #6).

Issue Indicator: Acres of treatment within old growth forest habitat.

B. White-tailed Deer Winter Range

There was a concern that the proposed actions could reduce the amount of winter range cover available to big game. An example of concerns expressed about the proposed action's impact on big game winter range (MA 9) follows:

- I would strongly oppose any plan that will reduce protection for wildlife habitat (Comment #2).
- I would like to see adequate connectivity retained as a lot of the ponderosa pine stands are in winter range. Any thinning should leave scattered, thick patches for wildlife cover and connectivity (Commentor #3).
- Thinning could break up hiding cover, travel corridors for sensitive wildlife (Commentor #5).
- How much whitetail deer thermal cover is in the Project Area? The Meadow Smith Project reduced thermal cover to below Forest Plan thresholds. Thermal cover must be retained or increased (Commentor #6).

Issue Indicator: Reduction in the amount of winter range cover available to big game.

Other Concerns Evaluated

The team evaluated other concerns that helped frame the scope of the analysis during the scoping process. These concerns were not considered major issues because they were resolved through project design and, therefore, were not used to develop alternatives analyzed in detail. These concerns are addressed within the effects analysis by resource in Chapter 3 of this document.

Land Ownership: Some commentors expressed concern over the effects of changes in land ownership in the Swan Valley in conjunction with the proposed action. In recent years there have been land sales in the Swan Valley which have changed the ownership pattern within and near the Project Area (Commentor # 6).

Noxious Weeds: Treatment of noxious weeds was expressed as a concern during the Proposed Action Scoping (Commentors #1, #3, #5, and #6). Design Criteria are included in this project to treat noxious weeds, including herbicide treatment of roads within the sale areas, and a requirement that all off-road logging and construction equipment to be washed before being transported to the Project Area. All treatment units and roads used for the project would be monitored for presence of noxious weeds after completion of timber sales. The Noxious and Invasive Weed Control Environmental Assessment (March 2001) authorizes herbicide treatment.

Threatened, Endangered, and Sensitive (TES) Wildlife, Fish and Plant Species: Commentors expressed concern over how the proposed action would affect TES species including the grizzly bear, Canada lynx, westslope cutthroat and bull trout, and water howellia (Commentors #2, #4, #5, and #6).

Range of Alternatives

Section 102(2)(3) of the National Environmental Policy Act (NEPA) states that all Federal agencies shall “study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflict concerning alternative uses of available resources.”

A DEIS must also “rigorously explore and objectively evaluate all reasonable alternatives.” The courts have established that this direction does not mean that every conceivable alternative must be considered, but all selection and discussion of alternatives must permit a reasoned choice and foster informed decision making and informed public participation.

The range of alternatives may extend beyond the limits set by Forest Plan goals and objectives under NEPA; however, the National Forest Management Act (NFMA) requires that the Selected Alternative fully comply with the Forest Plan unless the plan is amended in accordance with 36 CFR 219.10(f).

The range of alternatives presented in this chapter was determined by evaluating public and internal comments and the Purpose and Need for this project. This project is intended to maintain or create resource conditions that are within the range of natural (historical) variability (HRV) – conditions which might be expected to occur under natural disturbance and succession regimes. By moving toward this condition, we can be more assured that the forest and ecosystem remain in a healthy and sustainable condition over time. The vulnerability of the forest to possible severe and undesirable effects of fire, insects, disease, or other unforeseen events would be reduced, creating a forest that is more resilient in the face of inevitable change and future uncertainties, providing for flexibility, and a wide variety of possible future resource and management needs.

Other influences included Forest Plan goals, objectives, existing and desired conditions, standards and guidelines; Federal laws, regulations, and policies; and economic viability. Within these parameters, the alternatives developed by the ID Team display a reasonable range of outputs, treatments, costs, management requirements, design criteria, and effects on resources.

In addition to the alternatives considered in detail, the ID Team examined other alternatives during the analysis process. Although these alternatives contributed to a reasonable range, they were eliminated from further consideration for the reasons listed below.

Alternatives Not Considered in Detail

This section discusses four alternatives that were considered, but not given detailed study. These alternatives were initially proposed to address issues identified during the public scoping and ID Team process, but were not considered further for the reasons explained in the following narrative.

Treatment of Douglas-fir Root Rot Stands on Mid Slopes: One alternative not considered in detail would have included treatment of approximately 750 acres of Douglas-fir on mid slopes with the project area. This alternative was dropped from consideration due to the inability to treat these stands and maintain the visual characteristics of the upper slopes. These stands, located on the mid and upper slopes of the Swan Face, have moderate to high levels of root rot in the Douglas-fir, the dominant species on the hillside. The only feasible treatment to minimize future impacts from the root rot would be regeneration harvesting and species conversion to Ponderosa pine and western larch, species that are less susceptible to this disease. Regeneration harvesting would not meet visual objectives, and would create large, man-made openings that would be highly visible from the valley

and highway. In addition, significant portions of the mid to upper-elevation slopes on the east side of the project area are in forest plan management areas that are not within the suitable timber base and are within an inventoried roadless area.

An alternative, which considered timber harvest, was considered in these areas, but since it was not compatible with visual, forest plan management, and roadless considerations, the alternative was not fully developed.

Treatment of Wetter Site Old Growth: Approximately 943 acres of Douglas-fir stands were considered for treatment, but were not carried forward due to the existing old growth characteristics common to wetter sites. These stands have existing root rot, contributing towards snags and large down woody material, and multiple canopy layers more common in these habitat types. In addition, five units originally considered for regeneration harvest within the proposed action were subsequently removed from all action alternatives. This decision was based on public input during a field tour of the project and based on subsequent stand exams which indicated that the stands contained attributes of wet site old growth.

Regeneration Harvest in Winter Range: Approximately 750 acres were originally identified for regeneration harvest to increase the presence of western larch and ponderosa pine within the analysis area. These treatments were not considered in detail due to the amount of thermal cover reduction that would occur.

Management Actions only in the Community Protection Zone: One organization suggested that we only treat fuels in forest stands within several hundred yards of homes, an approach advocated in a recent paper on the subject of community protection from wildland fire (Nowicki 2002). The suggestion to limit the project to treatments within a few tens of meters to less than 400 meters from homes was not considered in detail for the following reasons:

- Treating only near individual home sites on a limited basis does not fully meet the intent of breaking up fuel continuity generally within the project area to allow firefighters to more safely, tactically, and strategically address a fire in the interface area. Such an alternative would limit the ability of fire fighting efforts to more effectively and safely fight a fire in the area as a whole.
- Such an approach would leave significant areas of fuel buildup and dense canopies with ladder fuels within the Wildland Urban Interface area. As described above, leaving such stand conditions untreated would limit options that firefighters would have for safely stopping a moving fire within the interface area, and would leave many areas where crown fire potential could have been reduced within the urban interface untreated. Bypassing the opportunity to treat such areas would not be consistent with the purpose of the project.
- Research has determined that treatments intended to reduce fuels around communities at risk, rather than individual structures, need to go beyond the home ignition zone (Graham, 2004). While individual home-by-home treatments can help reduce the risk of loss of individual homes, relying solely on such treatments would forego strategic opportunities for controlling fires within this Wildland Urban Interface area (WUI).
- Limiting treatments to a smaller area immediately adjacent to homes or structures would only allow for a small subset of the interface area to be treated in the project area. In addition, it

would not meet the broader purpose of the proposal in treating fuels in the Wildland Urban Interface area.

- The proposed fuel reduction treatments are consistent with management actions recommended in the Seeley-Swan Fire Plan (2004) for defensible space around individual homes, reduction of fuels at the neighborhood or subdivision level, and the thinning and biomass removal in the landscape adjacent to WUI to help limit wildfire intensity and rate of spread (Project File Exhibit Q-9).
- An alternative limited to treatment solely within close proximity to homes also would not meet the purpose and need to improve and/or maintain the general forest, resiliency and sustainability of stands within the project area. Such an alternative would focus solely on fuel reduction in the immediate vicinity of homes. The purpose and need of this project is not limited solely to fuel reduction. This alternative would not address broader forest health and stand conditions, which are an intrinsic part of the purpose and need of this project.

Alternatives Considered in Detail _____

Alternative 1 – No Action

This alternative represents the existing condition in the Cooney McKay Project Area. Under this alternative, none of the activities proposed for the Cooney McKay Project would occur. No vegetative treatments, fuel reduction activities, temporary road and access management, planting and site restoration activities to aid in vegetation recovery, or other activities associated with the proposed action would occur at this time. Ongoing activities such as recreation, public firewood gathering, fire suppression, and normal road maintenance would continue. Activities identified in Chapter 3 as current and foreseeable actions would occur.

Activities Common to the Action Alternatives _____

A. Vegetation Management

Commercial Thinning: The existing mature tree canopy closure in the project area ranges from 0 to 100 percent with an average closure of 70 to 90+ percent. Within areas to be Commercially Thinned, the resulting stands would have an average of 50 percent or greater canopy closure within the ground-based and cable units. The target leave basal area would range between 70 and 100 square feet per acre, depending on the site. This equates to about 50 to 100 trees per acre, depending on the species and site. Generally, all dominant and most co-dominant crown classes would be retained, while some co-dominant and most intermediate and suppressed crown classes would be removed. The purpose of this treatment is to enlarge the growing space condition of desirable trees by reducing excessive tree competition for limited site resources, thereby modifying site conditions for improved tree crown and cone development, sustained vigor and growth, and overall forest health. This treatment simulates a low to moderate-severity, mixed-lethal burn. Understory or jackpot burning may be implemented as a secondary fuels treatment to recycle nutrients and restore fire as an ecological process. This treatment is proposed for **561 acres** in Alternatives 2 and 3 and **550 acres** in Alternative 4.

Thin From Below (Commercial): The existing mature tree canopy closure in the project area ranges from 0 to 100 percent with an average closure of 70 to 90+ percent. Within areas to be thinned from below, the resulting canopy closure would be reduced by no more than 10 percent, as the majority of trees to be removed are under the existing overstory canopy. The target leave basal area would range between 70 and 120 square feet per acre, depending on the site. This equates to about 50 to 100 trees per acre, depending on the species and site. Generally, all dominant and co-dominant crown classes would be retained, removing primarily trees in the intermediate and suppressed crown classes. The majority of trees removed would be smaller diameter lodgepole pine, with occasional Douglas-fir where they exist immediately under the dominant overstory canopy. The purpose of this treatment is to enlarge the growing space condition of desirable trees by reducing excessive tree competition for limited site resources, thereby modifying site conditions for improved tree crown and cone development, sustained vigor and growth, and overall forest health. This treatment simulates a low to moderate-severity, mixed-lethal burn. Understory or jackpot burning may be implemented as a secondary fuels treatment to recycle nutrients and restore fire as an ecological process. This treatment is proposed for **93 acres** in all action alternatives.

Seed Tree Harvest: The existing western larch and ponderosa pine would be retained to provide for seed sources and long-term structure. The majority of the Douglas-fir and all of the lodgepole would be removed to facilitate regeneration of western larch and ponderosa pine. The majority of trees removed would be in the co-dominant or intermediate canopy. This treatment is similar to a stand replacement fire regime. Mechanical treatments and prescribed fire would be used to reduce fuels, recycle nutrients, and restore fire as an ecological process. Seed Tree Harvest would be used to treat **14 to 79 acres**.

Salvage Harvest: The existing mature tree canopy would be reduced from the existing average of 70 to 80 percent canopy closure to approximately 50 to 60 percent canopy closure, removing trees primarily in the intermediate and co-dominant canopy. Lodgepole pine would be the primary species removed, as they are either dead, dying or at high risk of mortality due to age and mountain pine beetle susceptibility. Some Douglas-fir would be removed to reduce stand density and fuel loadings, if they are immediately adjacent to large overstory ponderosa pine or western larch. Mechanical treatments to reduce fuels would be implemented on **69 acres** in all alternatives.

Old Growth Maintenance: This treatment would be focused on drier-site stands containing mature ponderosa pine and western larch, which have evolved to withstand frequent low intensity fires. These stands, due to lack of fire in the understory, have a significant build-up of understory trees. In these stands, fuel conditions pose a considerable threat to the ability of the old growth ponderosa and larch to survive fires. With lower fuel loading conditions, fire would pose little threat. In these situations, the existing overstory would be retained, removing primarily trees in the intermediate and suppressed canopy layers to reduce fuels and fuel ladders. Lodgepole pine and Douglas-fir would be the primary species removed to sustain the health and vigor of the western larch/ponderosa pine component, and to reduce the potential loss from fire. Mechanical treatments and prescribed fire would be used to reduce fuels, recycle nutrients, and restore fire as an ecological process. Old Growth Maintenance treatments are common to Alternatives 2 and 4 with **119 acres** proposed for treatment in both alternatives.

Thin From Below (Non-Commercial): The existing mature tree canopy closure in the project area ranges from 0 to 100 percent with an average closure of 70 to 90+ percent. Within areas to be thinned from below, the resulting canopy closure would be reduced by no more than 20 to 30 percent, as the majority of trees to be removed are under the existing overstory canopy. The target leave

basal area would range between 90 and 110 square feet per acre, depending on the site. Generally, all dominant and co-dominant crown classes would be retained, removing primarily trees in the intermediate and suppressed crown classes, primarily between 2 and 6 inches diameter. Only lodgepole pine under 7 inches in diameter would be treated, by cutting with chainsaws and removal by hand to the road. The purpose of this treatment is to enlarge the growing space condition of desirable trees by reducing excessive tree competition for limited site resources, thereby modifying site conditions for improved tree crown and cone development, sustained vigor and growth, and overall forest health. This treatment simulates a low- to moderate-severity, mixed-lethal burn. This treatment is proposed for **50 acres** in all action alternatives.

Pre-Commercial Thinning: These are 40 to 50-year old past regeneration harvest and hand planted units, which are beginning to stagnate due to excessive tree densities. The existing immature tree canopy closure would be reduced from 80 to 100+ percent, to a 50 to 70 percent canopy closure (average 60 percent) within the units. About 200 to 225 trees per acre would be retained of desirable species (in priority ponderosa pine, western larch, Douglas-fir and lodgepole pine) on **105 acres** in each alternative.

Restoration Planting: This would occur on units where previous management activities (past harvest, gravel extraction) have left the sites understocked with conifer trees. These sites would be planted to native species from local seed sources (primarily western larch and ponderosa pine). Site preparation would require hand scalping to remove grass and other vegetation from approximately 2 feet around each planting spot. In the gravel pit location, the soil would need to be treated by ripping or tilling to loosen soil so that tree roots would be free to grow. This would occur on **48 acres** in all alternatives.

Hand Planting: Species diversity planting would occur in Seed Tree harvest units to promote desirable species, including ponderosa pine and western larch. This treatment would occur after site preparation treatments ranging from **14 to 79 acres**.

B. Fuels Management

Ecosystem Maintenance Burns are proposed in the upper reaches of Condon Creek (**419 acres**), Smith Creek (**458 acres**), Cooney Creek (**706 acres**), and Cat Creek (**250 acres**). These burns have both habitat improvement objectives and fuel reduction objectives. Introducing fire onto the lower elevation portions of the prescribed burns would improve the conditions of important shrub fields and understory vegetation for many species of wildlife. The higher elevation portions of the proposed prescribed fire areas provide important whitebark pine habitat. Re-introducing fire into these stands may improve the capability of the area in providing important whitebark pine habitat for the grizzly bear.

Within areas with high concentrations of smaller trees and brush, chainsaw slashing of a portion of this material would be conducted before burning. This hand slashing would reduce ladder fuels and minimize the potential of excessive overstory tree mortality. Where needed, fuel breaks, consisting of a 20-foot space cleared of brush and dead fuels, may be constructed by hand around the perimeter of the burns. Both hand and aerial methods would be used for fire ignition.

Prescribed burning would be conducted in the spring or fall, when surrounding fuel conditions are moist (e.g., low fire danger). All non-consumed material would remain on site. No product removal would occur in the prescribed burn areas.

Two general stand types are included in this prescription, areas where shrubs/grasslands dominate, and areas where forested stands dominate. These two stand types are intermixed within the burn areas.

Shrub/Grassland Maintenance:

This treatment method would use a cool, low to moderate intensity burn covering 70 to 90 percent of the area. The range of desirable conditions is:

- 50 to 80 percent mortality of overstory trees in grassland/shrubland areas;
- Less than 20 percent mortality in heavily forested areas;
- 50 to 80 percent consumption of understory trees and plants;
- 20 to 30 percent consumption of down woody fuels.

The objectives are to:

- Rejuvenate at least 40 percent of the on-site shrubs; promote the growth of native grasses and forbs, increase the availability of snags for small animals and birds, and improve elk habitat by restoring the natural openings;
- Slow the invasion of conifers into dry parks and shrub fields, and reduce the understory stocking of conifer seedlings and saplings; and
- Improve the health and vigor of rejuvenated understory vegetation and residual trees.

Stand Maintenance:

Stand maintenance would use a cool, low to moderate intensity underburn covering 70 to 90 percent of the area. The range of desirable conditions is:

- Less than 20 percent mortality in overstory trees;
- Less than 20 percent consumption of understory trees and plants;
- Less than 20 percent consumption of woody fuels;
- Less than 10 percent duff reduction.

The objectives are to:

- Improve the health and overall vigor of rejuvenated understory vegetation and residual trees; and
- Reduce fire hazards by reducing natural fuels less than 3 inches in diameter by 50 to 90 percent.

C. Road Management

Road management activities common to the action alternatives include temporary road construction and road maintenance. No new permanent roads would be constructed with any of the action alternatives.

Temporary Road Construction: Temporary roads would be constructed to the minimum standards necessary for log hauling from Forest Development Roads (FDR) #9544, #9594, #10512, and # 560. Temporary road surface width would be limited to truck bunk width plus 4 feet. All temporary roads would be reclaimed following their use using drain dips, outsloping, scarifying, seeding, and recontouring. Temporary road construction ranges from **1.0 miles to 1.25 miles** in the action alternatives.

Road Maintenance: This is the ongoing upkeep of a road necessary to meet the approved Road Management Objectives (RMOs). The present focus of RMOs is to meet the current BMPs for each road. BMPs required under Timber Sale Contracts must be completed before timber is hauled.

Road maintenance objectives are to reduce the concentration of sub-surface and surface water runoff, minimize road surface erosion, filter ditch water before entering streams, and decrease the risk of culvert failures during peak runoff events. Road maintenance work could include culvert installation, replacement of existing culverts with larger culverts, installation of drainage dips and surface water deflectors, placement of rip-rap to armor drainage structures, aggregate surface replacement, aggregate placement to reinforce wet surface areas, ditch construction and cleaning where needed, and surface grading to restore the drainage efficiency of the road surface. These actions would bring the roads up to current BMP standards, better accommodate traffic and reduce deferred maintenance needs. Road Maintenance would take place on **17.9 to 20.9 miles** in the action alternatives.

Resource Enhancement Projects

Resource enhancement projects identified during project design are shown in the table below. These projects were identified to improve other resource values within the project area. Please refer to Map 2-1 at the end of this chapter for a display of the project locations.

**TABLE 2-1.
 RESOURCE ENHANCEMENT PROJECTS**

Ground Location	Enhancement Project
FDR 899 at Pony Creek	Replace culvert prevent a potential wash-out.
FDR 124 at Condon Creek	Replace culvert to provide fish passage and avoid beaver problems
FDR 901 at Condon Creek	Replace culvert with bridge to provide fish passage
FDR 9762 at Smith Creek	Replace culvert with bridge to provide fish passage
FDR 560 at North Fork Rumble Creek	Replace culvert with larger culvert to provide fish passage
Noxious Weed Spraying	Weed Spraying on Roads not included on Haul Routes
Unit 25-7 (Stand 213-1-007) - T21N, R17W, Sec. 25 and Unit 30-11 (Stand 213-1-011) - T21N, R16W, Sec. 30	Signing of snags in old growth treatment units that are located along open roads, in order to retain a greater number of large snags that might otherwise be cut for firewood.

Several sources of funding exist for resource enhancement projects. Many items have the potential to be funded with Knutson-Vandenberg (KV) funds, while other items would be funded with congressionally approved funds or Stewardship dollars. Implementation would be based on annual budgets and program direction. These projects are not necessary to mitigate impacts of the Proposed Action, but are specific resource enhancements within the project area that would be beneficial to a variety of resources. If funding were not available, the improvements from these projects would not be accomplished.

Design Criteria

Table 2-14 located at the end of this chapter describes the Design Criteria applied to this project to protect resources.

Monitoring

Monitoring and evaluation compares the end results being achieved to those projected in the Forest Plan. Monitoring is conducted on a sample basis to evaluate the overall progress in implementing the Forest Plan, the assumptions on which the Forest Plan is based, and to provide a feedback loop for determining effectiveness of project and mitigation implementation (USDA Forest Service, 1987a). For this project, monitoring and evaluation would be conducted as described in Appendix A. Those monitoring components not specifically discussed in this appendix tier to the monitoring described in the Forest Plan.

Activities Specific to the Action Alternatives

Features unique to each alternative are described below. Maps displaying each alternative are found at the end of this chapter (Maps 2-2A through 2-4B).

Alternative 2 – Proposed Action (Maps 2-2A and 2-2B)

Intent: Alternative 2 was developed to respond to the purpose and need for the Cooney McKay Project.

The Proposed Action focuses on improving forest health and reducing hazardous fuel buildup in the Cooney McKay Project Area by using various vegetative treatments, both commercial and non-commercial. Features associated with this alternative include the following:

- Treatments that would remove commercial products, including sawlogs, post and poles, pulp, and chips on a total of about **921 acres**.
- Intermediate harvest treatment emphasis in stands possessing old growth attributes; removing primarily lodgepole pine and Douglas-fir to sustain the health and vigor of western larch and ponderosa pine totaling **119 acres** in Units 18-97, Unit 18-95, 25-07, 25-72, and 30-11.
- Treatments on **672 acres** in the Wildland Urban Interface (WUI).

- Road maintenance to meet BMP standards on approximately **20.9 miles** of haul roads as required for Timber Sale Contract.
- An estimated **1.25 miles** of temporary road construction to access harvest units as shown below in Table 2-2.

**TABLE 2-2.
 TEMPORARY ROADS NEEDED FOR ALTERNATIVE 2**

Unit	Access Needs	Miles
#26-85 #26-91	Access via new NFS temporary road beginning from FDR 9544	0.25
#26-105	Access via new NFS temporary road beginning from FDR 9594	0.25
#18-94 #18-95	Access via new NFS temporary road beginning from FDR 10512	0.25
#4-182 #4-185	Access via new NFS temporary road beginning from FDR 560	0.5
TOTAL		1.25

Alternative 2 timber harvest and associated activities are summarized in the table below.

**TABLE 2-3.
 SUMMARY OF PROPOSED TREATMENT ACTIVITIES FOR ALTERNATIVE 2**

Commercial Harvest Treatments	
Commercial Thin	561 acres
Old Growth Maintenance (5 Units)	119 acres
Seed Tree	79 acres
Salvage	69 acres
Thin From Below	93 acres
Total Harvest Acres/Volume (MBF)	921/4100
Non-Commercial Treatments	
Thin From Below	50 acres
Pre-Commercial Thinning	105 acres
Hand Planting (Occurring with Seed Tree Units)	79 acres
Restoration Planting	48 acres
Total Acres Treated Non-Commercial (includes planting in Seed Tree Units)	282 acres
Total Acres of All Treatments	1203 acres
Logging System	
Cable	4 acres
Tractor	756 acres
Forwarder	110 acres
Cable/Tractor	51 acres

**TABLE 2-3.
SUMMARY OF PROPOSED TREATMENT ACTIVITIES FOR ALTERNATIVE 2**

Hand	50 acres
Fuels Treatment	
Ecosystem Maintenance Burning	1833 acres
Grapple Pile/Burn/Chip	887 acres
Hand Lop and Scatter	155 acres
Underburn	34 acres
Fuels Treatment within Wildland Urban Interface	672 acres
Fuels Treatment outside Wildland Urban Interface	2285 acres
Road Management	
Road Maintenance BMPs to meet Timber Sale Requirements	20.9 miles
Temporary Road Construction	1.25 miles

**TABLE 2-4.
ALTERNATIVE 2 VEGETATIVE TREATMENTS**

Unit Number	Unit Acres	Alternative 2 Treatment	Logging System	Hazard (Fuels) Reduction	Full Planting	Forest Plan Direction (Management Areas)
18 - 12	9	Pre-Commercial Thin	Hand	Hand Pile/Lop and Scatter		MA 9
18 - 13	12	Pre-Commercial Thin	Hand	Hand Pile/Lop and Scatter		MA 9
18 - 16	9	Pre-Commercial Thin	Hand	Hand Pile/Lop and Scatter		MA 9
18 - 18	9	Pre-Commercial Thin	Hand	Hand Pile/Lop and Scatter		MA 9
18 - 19	7	Pre-Commercial Thin	Hand	Hand Pile/Lop and Scatter		MA 9
18 - 20	4	Pre-Commercial Thin	Hand	Hand Pile/Lop and Scatter		MA 9
18 - 90	29	Commercial Thin	Tractor	Grapple Pile/Burn/Chip		MA 9
18 - 91	11	Commercial Thin	Tractor	Grapple Pile/Burn/Chip		MA 9
18 - 92	37	Commercial Thin	Tractor	Grapple Pile/Burn/Chip		MA 9
18 - 93	8	Commercial Thin	Tractor	Grapple Pile/Burn/Chip		MA 9
18 - 94	44	Salvage	Tractor	Grapple Pile/Burn/Chip		MA 9
18 - 95	17	Old Growth Maintenance	Tractor	Grapple Pile/Burn/Chip		MA 9
18 - 97	20	Old Growth Maintenance	Tractor	Grapple Pile/Burn/Chip		MA 9
20 - 161	32	Thin From Below Commercial	Tractor	Grapple Pile/Burn/Chip		MA 9
20 - 181	41	Thin From Below Commercial	Tractor	Grapple Pile/Burn/Chip		MA 9
20 - 34	4	Commercial Thin	Cable	Grapple Pile/Burn/Chip		MA 13
25 - 7	37	Old Growth	Tractor	Grapple		MA 9

**TABLE 2-4.
 ALTERNATIVE 2 VEGETATIVE TREATMENTS**

Unit Number	Unit Acres	Alternative 2 Treatment	Logging System	Hazard (Fuels) Reduction	Full Planting	Forest Plan Direction (Management Areas)
		Maintenance		Pile/Burn/Chip		
25 - 72	12	Old Growth Maintenance	Tractor	Grapple Pile/Burn/Chip		MA 9
26 - 105	21	Commercial Thin	Tractor	Grapple Pile/Burn/Chip		MA 9
26 - 20	6	Seed Tree	Tractor	Underburn	PP/WP diversity plant	MA 9
26-20a	11	Commercial Thin	Tractor	Grapple Pile/Burn/Chip		MA-9
26 - 72	100	Commercial Thin	Tractor	Grapple Pile/Burn/Chip		MA 9
26 - 75	23	Commercial Thin	Tractor	Grapple Pile/Burn/Chip		MA 9
26 - 85	12	Seed Tree	Tractor	Grapple Pile/Burn/Chip	PP/WL diversity plant	MA 9
26 - 89	38	Commercial Thin	Tractor	Grapple Pile/Burn/Chip		MA 9
26 - 91	28	Seed Tree	Tractor	Underburn	PP/WL diversity plant	MA 9
28 - 172	14	Salvage	Tractor	Grapple Pile/Burn/Chip		MA 13
28 - 178	40	Commercial Thin	Cable/Tractor	Grapple Pile/Burn/Chip		MA 13
3 - 33	46	Restoration Planting	N/A	N/A	PP/WL diversity plant	MA 9
3 - 36	2	Restoration Planting	N/A	N/A	PP/WL diversity plant	MA 9
30 - 103	11	Salvage	Tractor	Grapple Pile/Burn/Chip		MA 9
30 - 11	33	Old Growth Maintenance	Tractor	Grapple Pile/Burn/Chip		MA 9
30 - 2	12	Pre-Commercial Thin	Hand	Hand Pile/Lop and Scatter		MA 9
30 - 5	6	Pre-Commercial Thin	Hand	Hand Pile/Lop and Scatter		MA 9
30 - 56	8	Seed Tree	Tractor	Grapple Pile/Burn/Chip	PP/WL diversity plant	MA 9
30 - 78	8	Thin From Below Commercial	Tractor	Grapple Pile/Burn/Chip		MA 9
32 - 172	62	Commercial Thin	Tractor	Grapple Pile/Burn/Chip		MA 9
32 - 4	7	Pre-Commercial Thin	Hand	Hand Pile/Lop and Scatter		MA 9
32 - 5	13	Pre-Commercial Thin	Hand	Hand Pile/Lop and Scatter		MA 9
32 - 6	5	Pre-Commercial Thin	Hand	Hand Pile/Lop and Scatter		MA 9
32 - 7	12	Pre-Commercial Thin	Hand	Hand Pile/Lop and Scatter		MA 9
34 - 178	16	Thin From Below	Hand	Hand Pile/Lop		MA 13

**TABLE 2-4.
ALTERNATIVE 2 VEGETATIVE TREATMENTS**

Unit Number	Unit Acres	Alternative 2 Treatment	Logging System	Hazard (Fuels) Reduction	Full Planting	Forest Plan Direction (Management Areas)
		Non-Commercial		and Scatter		
34 - 180	39	Commercial Thin	Forwarder	Grapple Pile/Burn/Chip		MA 13
36 - 1	43	Commercial Thin	Tractor	Grapple Pile/Burn/Chip		MA 9
36 - 2	24	Commercial Thin	Tractor	Grapple Pile/Burn/Chip		MA 9
4 - 182	29	Commercial Thin	Forwarder	Grapple Pile/Burn/Chip		MA 13
4 - 185	42	Commercial Thin	Forwarder	Grapple Pile/Burn/Chip		MA 13
4 - 186	12	Thin From Below Commercial	Tractor	Grapple Pile/Burn/Chip		MA 13
4 - 86	34	Thin From Below Non-Commercial	Hand	Hand Pile/Lop and Scatter		MA 13
8 - 7	14	Seed Tree	Tractor	Grapple Pile/Burn/Chip	PP/WL diversity plant	MA 13
8 - 8	11	Seed Tree	Cable/Tractor	Grapple Pile/Burn/Chip	PP/WL diversity plant	MA 9
Cat Creek #33	250	Prescribed Burn	N/A	Ecosystem Maintenance Burn		MA 2
Condon Creek #10	419	Prescribed Burn	N/A	Ecosystem Maintenance Burn		MA 2
Cooney Creek #1.	326	Prescribed Burn	N/A	Ecosystem Maintenance Burn		MA 2
Cooney Creek #2	380	Prescribed Burn	N/A	Ecosystem Maintenance Burn		MA 2
Smith Creek #15	458	Prescribed Burn	N/A	Ecosystem Maintenance Burn		MA 2

Alternative 3 (Maps 2-3A and 2-3B)

Intent: Alternative 3 was developed to address Issue #1, Old Growth.

Under Alternative 3, no treatments would be proposed in old growth forest habitat. This alternative was developed based upon concerns from the public that treatments within old growth stands could destroy old growth attributes and adversely impact wildlife species associated with old growth communities. Features associated with this alternative include the following:

- **No treatments** in stands possessing old growth attributes. Units 18-97, 18-95, 25-7, 25-72, and 30-11, totaling 119 acres would be dropped.

- Treatments which would remove commercial products including sawlogs, post and poles, pulp, and chips on a total of about **802 acres**.
- Treatments on **589 acres** in the WUI.
- Road maintenance to meet BMP standards on approximately **20.1 miles** of haul roads as required for Timber Sale Contract.
- An estimated **1.25 miles** of temporary road construction to access harvest units as shown below in Table 2-5.

**TABLE 2-5.
 TEMPORARY ROADS NEEDED FOR ALTERNATIVE 3**

Unit	Access Needs	Miles
#26-85 #26-91	Access via new NFS temporary road beginning from NFSR 9544	0.25
#26-105	Access via new NFS temporary road beginning from NFSR 9594	0.25
#18-94	Access via new NFS temporary road beginning from NFSR 10512	0.25
#4-182 #4-185	Access via new NFS temporary road beginning from NFSR 560	0.5
TOTAL		1.25

Alternative 3 timber harvest and associated activities are summarized in the table below.

**TABLE 2-6.
 SUMMARY OF PROPOSED TREATMENT ACTIVITIES FOR ALTERNATIVE 3**

Commercial Harvest Treatments	
Commercial Thin	561 acres
Old Growth Maintenance	0 acres
Seed Tree	79 acres
Salvage	69 acres
Thin From Below	93 acres
Total Harvest Acres/Volume (MBF)	802 acres/3,385
Non-Commercial Harvest Treatments	
Thin From Below	50 acres
Pre-Commercial Thin	105 acres
Hand Planting (Occurring with Seed Tree Units)	79 acres
Restoration Planting	48 acres
Total Acres Treated Non-commercial (includes planting in Seed Tree Units)	282 acres
Total Acres of All Treatments	1,084 acres

**TABLE 2-6.
 SUMMARY OF PROPOSED TREATMENT ACTIVITIES FOR ALTERNATIVE 3**

Logging System	
Cable	4 acres
Tractor	637 acres
Forwarder	110 acres
Cable/Tractor	51 acres
Hand	50 acres
Fuels Management	
Ecosystem Maintenance Burning	1,833 acres
Grapple Pile/Burn/Chip	768 acres
Hand Pile/Lop and Scatter	155 acres
Underburn	34 acres
Fuels Treatment within Wildland Urban Interface (WUI)	589 acres
Fuels Treatment outside Wildland Urban Interface	2,249 acres
Road Management	
Road Maintenance BMPs to meet Timber Sale Requirements	20.1 miles
Temporary Road Construction	1.25 miles

**TABLE 2-7.
 ALTERNATIVE3 VEGETATIVE TREATMENTS**

Unit Number	Unit acres	Alternative 3 Treatment	Logging System	Hazard (Fuels) Reduction	Full Planting	Forest Plan Direction (Management Areas)
18 - 12	9	Pre-Commercial Thin	Hand	Hand Pile/Lop and Scatter		MA 9
18 - 13	12	Pre-Commercial Thin	Hand	Hand Pile/Lop and Scatter		MA 9
18 - 16	9	Pre-Commercial Thin	Hand	Hand Pile/Lop and Scatter		MA 9
18 - 18	9	Pre-Commercial Thin	Hand	Hand Pile/Lop and Scatter		MA 9
18 - 19	7	Pre-Commercial Thin	Hand	Hand Pile/Lop and Scatter		MA 9
18 - 20	4	Pre-Commercial Thin	Hand	Hand Pile/Lop and Scatter		MA 9
18 - 90	29	Commercial Thin	Tractor	Grapple Pile/Burn/Chip		MA 9
18 - 91	11	Commercial Thin	Tractor	Grapple Pile/Burn/Chip		MA 9
18 - 92	37	Commercial Thin	Tractor	Grapple Pile/Burn/Chip		MA 9
18 - 93	8	Commercial Thin	Tractor	Grapple Pile/Burn/Chip		MA 9
18 - 94	44	Salvage	Tractor	Grapple Pile/Burn/Chip		MA 9
20 - 161	32	Thin From Below Commercial	Tractor	Grapple Pile/Burn/Chip		MA 9

**TABLE 2-7.
 ALTERNATIVE3 VEGETATIVE TREATMENTS**

Unit Number	Unit acres	Alternative 3 Treatment	Logging System	Hazard (Fuels) Reduction	Full Planting	Forest Plan Direction (Management Areas)
20 - 181	41	Thin From Below Commercial	Tractor	Grapple Pile/Burn/Chip		MA 9
20 - 34	4	Commercial Thin	Cable	Grapple Pile/Burn/Chip		MA 13
26 - 105	21	Commercial Thin	Tractor	Grapple Pile/Burn/Chip		MA 9
26 - 20	6	Seed Tree	Tractor	Underburn	PP/WP diversity plant	MA 9
26 - 20a	11	Commercial Thin	Tractor	Grapple Pile/Burn/Chip		MA-9
26 - 72	100	Commercial Thin	Tractor	Grapple Pile/Burn/Chip		MA 9
26 - 75	23	Commercial Thin	Tractor	Grapple Pile/Burn/Chip		MA 9
26 - 85	12	Seed Tree	Tractor	Grapple Pile/Burn/Chip	PP/WL diversity plant	MA 9
26 - 89	38	Commercial Thin	Tractor	Grapple Pile/Burn/Chip		MA 9
26 - 91	28	Seed Tree	Tractor	Underburn	PP/WL diversity plant	MA 9
28 - 172	14	Salvage	Tractor	Grapple Pile/Burn/Chip		MA 13
28 - 178	40	Commercial Thin	Cable/Tractor	Grapple Pile/Burn/Chip		MA 13
3 - 33	46	Restoration Planting	N/A	N/A	PP/WL diversity plant	MA 9
3 - 36	2	Restoration Planting	N/A	N/A	PP/WL diversity plant	MA 9
30 - 103	11	Salvage	Tractor	Grapple Pile/Burn/Chip		MA 9
30 - 2	12	Pre-Commercial Thin	Hand	Hand Pile/Lop and Scatter		MA 9
30 - 5	6	Pre-Commercial Thin	Hand	Hand Pile/Lop and Scatter		MA 9
30 - 56	8	Seed Tree	Tractor	Grapple Pile/Burn/Chip	PP/WL diversity plant	MA 9
30 - 78	8	Thin From Below Commercial	Tractor	Grapple Pile/Burn/Chip		MA 9
32 - 172	62	Commercial Thin	Tractor	Grapple Pile/Burn/Chip		MA 9
32 - 4	7	Pre-Commercial Thin	Hand	Hand Pile/Lop and Scatter		MA 9
32 - 5	13	Pre-Commercial Thin	Hand	Hand Pile/Lop and Scatter		MA 9
32 - 6	5	Pre-Commercial Thin	Hand	Hand Pile/Lop and Scatter		MA 9
32 - 7	12	Pre-Commercial Thin	Hand	Hand Pile/Lop and Scatter		MA 9
34 - 178	16	Thin From Below Non-Commercial	Hand	Hand Pile/Lop and Scatter		MA 13

**TABLE 2-7.
ALTERNATIVE 3 VEGETATIVE TREATMENTS**

Unit Number	Unit acres	Alternative 3 Treatment	Logging System	Hazard (Fuels) Reduction	Full Planting	Forest Plan Direction (Management Areas)
34 - 180	39	Commercial Thin	Forwarder	Grapple Pile/Burn/Chip		MA 13
36 - 1	43	Commercial Thin	Tractor	Grapple Pile/Burn/Chip		MA 9
36 - 2	24	Commercial Thin	Tractor	Grapple Pile/Burn/Chip		MA 9
4 - 182	29	Commercial Thin	Forwarder	Grapple Pile/Burn/Chip		MA 13
4 - 185	42	Commercial Thin	Forwarder	Grapple Pile/Burn/Chip		MA 13
4 - 186	12	Thin From Below Commercial	Tractor	Grapple Pile/Burn/Chip		MA 13
4 - 86	34	Thin From Below Non-Commercial	Hand	Hand Pile/Lop and Scatter		MA 13
8 - 7	14	Seed Tree	Tractor	Grapple Pile/Burn/Chip	PP/WL diversity plant	MA 13
8 - 8	11	Seed Tree	Cable/Tractor	Grapple Pile/Burn/Chip	PP/WL diversity plant	MA 9
Cat Creek #33	250	Prescribed Burn	N/A	Ecosystem Maintenance Burn		MA 2
Condon Creek #10	419	Prescribed Burn	N/A	Ecosystem Maintenance Burn		MA 2
Cooney Creek #1.	326	Prescribed Burn	N/A	Ecosystem Maintenance Burn		MA 2
Cooney Creek #2	380	Prescribed Burn	N/A	Ecosystem Maintenance Burn		MA 2
Smith Creek #15	458	Prescribed Burn	N/A	Ecosystem Maintenance Burn		MA 2

Alternative 4 (Maps 2-4A and 2-4B)

Intent: Alternative 4 was developed to address the Issue #2, White-tailed Winter Range.

Alternative 4 was developed in detail to address concerns that vegetative treatments in MA 9 could result in loss of existing white-tailed deer winter habitat. Features associated with this alternative include the following:

- Dropping Seed Tree Units within NFS lands designated as MA 9 in the Forest Plan (Units 26-20, 26-20a, 26-85, 26-91, 30-56, and 8-8).
- Treatments that would remove commercial products including sawlogs, post and poles, pulp, and chips on a total of about **845 acres**.
- Intermediate harvest treatment emphasis in stands possessing old growth attributes removing lodgepole pine and Douglas-fir to sustain the health and vigor of western larch and ponderosa pine totaling **119 acres** in Units 18-95, 18-97, 25 07, 25-72, and 30-11.

- Treatments on **609 acres** in the Wildland Urban Interface.
- Road maintenance to meet BMP standards on approximately **17.9 miles** of haul roads as required for Timber Sale Contract.
- An estimated **1.0 miles** of temporary road construction to access harvest units as shown below in Table 2-8.

**TABLE 2-8.
 TEMPORARY ROADS NEEDED FOR ALTERNATIVE 4**

Unit	Access Needs	Miles
#26-105	Access via new NFS temporary road beginning from FDR 9594	0.25
#18-95 #18-94	Access via new NFS temporary road beginning from FDR 10512	0.25
#4-182 #4-185	Access via new NFS temporary road beginning from FDR 560	0.5
TOTAL		1.0

Alternative 4 timber harvest and associated activities are summarized in the table below.

**TABLE 2-9.
 SUMMARY OF PROPOSED TREATMENT ACTIVITIES FOR ALTERNATIVE 4**

Commercial Harvest Treatments	
Commercial Thin	550 acres
Old Growth Maintenance (5 Units)	119 acres
Seed Tree	14 acres
Salvage	69 acres
Thin From Below	93 acres
Total Harvest Acres/Volume (MBF)	845 acres/3,770 MBF
Non-Commercial Harvest Treatments	
Thin From Below	50 acres
Pre-Commercial Thin	105 acres
Hand Planting (Occurring with Seed Tree Units)	14 acres
Restoration Planting	48 acres
Total Acres Treated Non-commercial (includes planting in Seed Tree Units)	217 acres
Total Acres of All Treatments	1,062 acres

**TABLE 2-9.
 SUMMARY OF PROPOSED TREATMENT ACTIVITIES FOR ALTERNATIVE 4**

Logging Systems	
Cable	4 acres
Tractor	691 acres
Forwarder	110 acres
Cable/Tractor	40 acres
Hand	50 acres
Fuels Management	
Ecosystem Maintenance Burning	1,833 acres
Grapple Pile/Burn/Chip	845 acres
Hand Pile/Lop and Scatter	155 acres
Underburn	0 acres
Fuels Treatment within Wildland Urban Interface (WUI)	609 acres
Fuels Treatment outside Wildland Urban Interface	2,272 acres
Road Management	
Road Maintenance BMPs to meet Timber Sale Requirements	17.9 miles
Temporary Road Construction	1.0 miles

**TABLE 2-10.
 ALTERNATIVE 4 VEGETATIVE TREATMENTS**

Unit Number	Unit acres	Alternative 4 Treatment	Logging System	Hazard (Fuels) Reduction	Full Planting	Forest Plan Direction (Management Areas)
18 - 12	9	Pre-Commercial Thin	Hand	Hand Pile/Lop and Scatter		MA 9
18 - 13	12	Pre-Commercial Thin	Hand	Hand Pile/Lop and Scatter		MA 9
18 - 16	9	Pre-Commercial Thin	Hand	Hand Pile/Lop and Scatter		MA 9
18 - 18	9	Pre-Commercial Thin	Hand	Hand Pile/Lop and Scatter		MA 9
18 - 19	7	Pre-Commercial Thin	Hand	Hand Pile/Lop and Scatter		MA 9
18 - 20	4	Pre-Commercial Thin	Hand	Hand Pile/Lop and Scatter		MA 9
18 - 90	29	Commercial Thin	Tractor	Grapple Pile/Burn/Chip		MA 9
18 - 91	11	Commercial Thin	Tractor	Grapple Pile/Burn/Chip		MA 9
18 - 92	37	Commercial Thin	Tractor	Grapple Pile/Burn/Chip		MA 9
18 - 93	8	Commercial Thin	Tractor	Grapple Pile/Burn/Chip		MA 9
18 - 94	44	Salvage	Tractor	Grapple Pile/Burn/Chip		MA 9
18 - 95	17	Old Growth Maintenance	Tractor	Grapple Pile/Burn/Chip		MA 9

**TABLE 2-10.
 ALTERNATIVE 4 VEGETATIVE TREATMENTS**

Unit Number	Unit acres	Alternative 4 Treatment	Logging System	Hazard (Fuels) Reduction	Full Planting	Forest Plan Direction (Management Areas)
18 - 97	20	Old Growth Maintenance	Tractor	Grapple Pile/Burn/Chip		MA 9
20 - 161	32	Thin From Below Commercial	Tractor	Grapple Pile/Burn/Chip		MA 9
20 - 181	41	Thin From Below Commercial	Tractor	Grapple Pile/Burn/Chip		MA 9
20 - 34	4	Commercial Thin	Cable	Grapple Pile/Burn/Chip		MA 13
25 - 7	37	Old Growth Maintenance	Tractor	Grapple Pile/Burn/Chip		MA 9
25 - 72	12	Old Growth Maintenance	Tractor	Grapple Pile/Burn/Chip		MA 9
26 - 105	21	Commercial Thin	Tractor	Grapple Pile/Burn/Chip		MA 9
26 - 72	100	Commercial Thin	Tractor	Grapple Pile/Burn/Chip		MA 9
26 - 75	23	Commercial Thin	Tractor	Grapple Pile/Burn/Chip		MA 9
26 - 89	38	Commercial Thin	Tractor	Grapple Pile/Burn/Chip		MA 9
28 - 172	14	Salvage	Tractor	Grapple Pile/Burn/Chip		MA 13
28 - 178	40	Commercial Thin	Cable/Tractor	Grapple Pile/Burn/Chip		MA 13
3 - 33	46	Restoration Planting	N/A	N/A	PP/WL diversity plant	MA 9
3 - 36	2	Restoration Planting	N/A	N/A	PP/WL diversity plant	MA 9
30 - 103	11	Salvage	Tractor	Grapple Pile/Burn/Chip		MA 9
30 - 11	33	Old Growth Maintenance	Tractor	Grapple Pile/Burn/Chip		MA 9
30 - 2	12	Pre-Commercial Thin	Hand	Hand Pile/Lop and Scatter		MA 9
30 - 5	6	Pre-Commercial Thin	Hand	Hand Pile/Lop and Scatter		MA 9
30 - 78	8	Thin From Below Commercial	Tractor	Grapple Pile/Burn/Chip		MA 9
32 - 172	62	Commercial Thin	Tractor	Grapple Pile/Burn/Chip		MA 9
32 - 4	7	Pre-Commercial Thin	Hand	Hand Pile/Lop and Scatter		MA 9
32 - 5	13	Pre-Commercial Thin	Hand	Hand Pile/Lop and Scatter		MA 9
32 - 6	5	Pre-Commercial Thin	Hand	Hand Pile/Lop and Scatter		MA 9
32 - 7	12	Pre-Commercial Thin	Hand	Hand Pile/Lop and Scatter		MA 9
34 - 178	16	Thin From Below Non-Commercial	Hand	Hand Pile/Lop and Scatter		MA 13
34 - 180	39	Commercial Thin	Forwarder	Grapple Pile/Burn/Chip		MA 13
36 - 1	43	Commercial Thin	Tractor	Grapple Pile/Burn/Chip		MA 9

**TABLE 2-10.
ALTERNATIVE 4 VEGETATIVE TREATMENTS**

Unit Number	Unit acres	Alternative 4 Treatment	Logging System	Hazard (Fuels) Reduction	Full Planting	Forest Plan Direction (Management Areas)
36 - 2	24	Commercial Thin	Tractor	Grapple Pile/Burn/Chip		MA 9
4 - 182	29	Commercial Thin	Forwarder	Grapple Pile/Burn/Chip		MA 13
4 - 185	42	Commercial Thin	Forwarder	Grapple Pile/Burn/Chip		MA 13
4 - 186	12	Thin From Below Commercial	Tractor	Grapple Pile/Burn/Chip		MA 13
4 - 86	34	Thin From Below Non-Commercial	Hand	Hand Pile/Lop and Scatter		MA 13
8 - 7	14	Seed Tree	Tractor	Grapple Pile/Burn/Chip	PP/WL diversity plant	MA 13
Cat Creek #33	250	Prescribed Burn	N/A	Ecosystem Maintenance Burn		MA 2
Condon Creek #10	419	Prescribed Burn	N/A	Ecosystem Maintenance Burn		MA 2
Cooney Creek #1.	326	Prescribed Burn	N/A	Ecosystem Maintenance Burn		MA 2
Cooney Creek #2	380	Prescribed Burn	N/A	Ecosystem Maintenance Burn		MA 2
Smith Creek #15	458	Prescribed Burn	N/A	Ecosystem Maintenance Burn		MA 2

Comparison of Alternatives

This section provides a comparison of the alternatives in terms of:

- How the alternatives meet the Purpose and Need for the proposal;
- How the alternatives respond to the key issues;
- The potential environmental consequences associated with the implementation of the alternatives.

(Some activities are listed more than once because they meet more than one Purpose and Need).

**TABLE 2-11.
 COMPARISON OF ALTERNATIVES – HOW THEY RESPOND TO THE PURPOSE AND NEED**

Purpose and Need Statement	Alt. 1	Alt. 2	Alt. 3	Alt. 4
Forest Health				
Improve and/or maintain the general health, resiliency, and sustainability of forest vegetative communities and reduce the risk of insect epidemics and disease infestations within the Project Area. (Indicator: Acres treated – Commercial Thinning, Old Growth Maintenance, Seed Tree, Salvage, Thinning From Below (commercial and noncommercial), Pre-Commercial Thinning & Ecosystem Burning, exclusive of planting).	0	2,909	2,790	2,883
Improve and/or maintain the general health, resiliency, and sustainability of forest vegetative communities and reduce the risk of insect epidemics and disease infestations within the Project Area. (Indicator: Hand and Restoration Planting)	0	127	127	62
Hazardous Fuels Reduction				
Reduce forest fuels buildup adjacent to public and private lands (Indicator - Acres within WUI).	0	672	589	609
Reduce forest fuels buildup adjacent to public and private lands (Indicator: Acres outside of WUI, exclusive of planting)	0	2,237	2,201	2,224
Provide a safer environment for the public and firefighters should a wildfire occur within the proposed treatment areas.	No	Yes	Yes	Yes
Increase the probability of stopping wildfires on NFS lands before they burn onto private lands.	No	Yes	Yes	Yes
Provide Commercial and Personal Use Wood Products for the Local Communities				
Timber Harvest Acres	0	921	802	845
Timber Harvest Volume (MBF)	0	4,100	3,385	3,770

**TABLE 2-12.
 COMPARISON OF ALTERNATIVES AND HOW THEY RESPOND TO THE KEY ISSUES**

Indicator	Alt. 1	Alt. 2	Alt. 3	Alt. 4
Acres of treatments in old growth forest habitats (Indicator: Acres)	0	119	0	119
Reduction in the amount of winter range cover available to big game. (Indicator: Percent Reduction)	0%	1%	1%	0%

Comparison of Environmental Effects

TABLE 2-13.
COMPARISON OF ENVIRONMENTAL EFFECTS BY ALTERNATIVE

Environmental Consequence	Alt. 1	Alt. 2	Alt. 3	Alt. 4
Soils – Meets Soil & Water Standards				
Detrimental soil disturbance resulting from alternative implementation (Indicator: Units exceeding 15% detrimental oil disturbance)	0	0	0	0
Meets Forest Service Regional Soil Quality (Indicator: Does or does not meet standard)	Yes	Yes	Yes	Yes
Hydrology				
Road Maintenance to meet BMPs (Indicator: miles of existing roads brought to bmp standards)	0	20.9	20.1	17.9
Fisheries – T&E and Sensitive Species				
Bull Trout (Indicator: BA Determination)	--	May affect, likely to adversely affect.		
Cutthroat Trout (Indicator: BE Determination)	No Impact	May Impact Individuals or habitat, but will not likely result in a trend towards federal listing of reduced viability for the population or species.		
Protect and improve fisheries habitat (Indicator: Does the alternative improve fisheries habitat?)	No	Yes	Yes	Yes
Wildlife – T&E Species				
Grizzly Bear (Indicator: BA Determination)	No Effect	May affect – not likely to adversely affect		
Grizzly Bear – Improves grizzly bear security habitat and increases grizzly bear core security habitat within the Meadow Smith BMU Subunit (Indicator: Does the alternative improve grizzly bear security?)	No change	No change	No change	No change
Gray Wolf (Indicator: BA Determination)	No Effect	May affect – not likely to adversely affect		
Canada Lynx (Indicator: BA Determination)	No Effect	May affect – not likely to adversely affect		
Wildlife – Sensitive Species				
Black - Backed Woodpecker, Fisher, Flammulated Owl, Northern Goshawk, Western Big-Eared Bat, Western Toad, Wolverine (Indicator: BA Determination)	No Impact	May impact individuals or habitat, but will not likely contribute to a trend towards Federal listing or loss of viability of the population or species.		
Bald Eagle	--	No Impact		
Harlequin duck northern bog lemming, northern leopard frog, peregrine falcon	--	Unlikely habitat; not affected by this project.		

**TABLE 2-13.
 COMPARISON OF ENVIRONMENTAL EFFECTS BY ALTERNATIVE**

Environmental Consequence	Alt. 1	Alt. 2	Alt. 3	Alt. 4
Old Growth Associated Wildlife/Snag Dependent Wildlife Species				
Acres of old growth forest treated	0	119	0	119
Meets Forest Plan standards for snag and large woody debris retention (Indicator: Does or does not meet)	Meets	Meets	Meets	Meets
Wildlife – Commonly Hunted Big Game				
Meets Forest Plan direction for winter range habitat	Yes	Yes	Yes	Yes
Acres of white-tailed deer winter range where vegetative treatment is proposed	0	832	713	756
Acres of wildlife habitat improved through Ecosystem Maintenance Burning	0	1,833	1,833	1,833
Forest Vegetation				
Stand composition changed towards greater percentage of ponderosa pine and western larch	No	Yes	Yes	Yes
Forest structure changed from multi-storied mixed species stands to two-storied, more open grown stands.	No	Yes	Yes	Yes
Reduce forest fuels buildup adjacent to public and private lands (Indicator - Acres of treatment within WUI).	0	672	589	609
Reduce forest fuels buildup adjacent to public and private lands (Indicator: Acres of treatment outside of WUI)	0	2,285	2,249	2,272
Level of Risk of Noxious Weed Establishment and Spread	No additional risk above current level	Some risk – highest number of acres treated	Some risk due of acres treated	Some risk due to acres treated
Recreation				
Visual Resource – meets Forest Plan VQOs	Yes	Yes	Yes	Yes
Restricts existing recreation opportunities	No	No	No	No
Heritage Resource				
Number of sites affected	0	0	0	0
Social and Economic				
Direct Employment	0	33	27	30
Total Jobs (Direct and Indirect)	0	77	64	71
Products				
Sawlogs (MBF)	0	4,100	3,385	3,770

Management Requirements and Design Criteria

The measures identified in the following table serve to further reduce impacts to the specific resources identified. Most are considered design criteria and are included in all action alternatives.

Several abbreviations are used in the responsibility section of Table 2-14. The following explains those abbreviations:

DR	District Ranger	BT	Botanist
SA	Sale Administrator	TMC	Timber Marking Crew
SP	Sale Prep	NWM	Noxious Weed Manager
WB	Wildlife Biologist	LEO	Law Enforcement Officer
FMO	Fire Management Officer	IDT	Interdisciplinary Team Members
ENG	Engineer	ARCH	Archaeologist
SILV	Silviculturist	HYD	Hydrologist
DRC	District Road Coordinator	TP	Timber Sale Purchaser
RF	Resource Forester	RA	Range Administrator
FAFMO	Fuels Assistant Fire Management Officer	SS	Soils Scientist
FISH	Fisheries Biologist		

**TABLE 2-14.
MANAGEMENT REQUIREMENTS AND DESIGN CRITERIA**

OBJECTIVE	TASK	RESPONSIBILITY	DUE DATE
Grizzly Bear Security and SVGBCA Compliance	Comply with Swan Valley Grizzly Bear Conservation Agreement (SVGBCA). Implementation (sale layout and preparation) of the project is expected to begin in 2009. Harvest operations are expected to begin in 2010 and are expected to be completed within a 3 - year time frame. If contract extensions result in sale activities extending beyond 3 years, into the time period when the grizzly bear subunit is "Inactive", then standards and guidelines for an "Inactive" grizzly bear subunit will be followed (as per SVGBCA).	WB, SA, SP	Pre - & Post - Sale
Grizzly Bear Security	Comply with SVGBCA rotation schedule. The Meadow Smith Subunit (where the Cooney McKay Project is located) is "Inactive" from 2006 through 2008, and becomes "Active" again from 2009 through 2011. Commercial Use, defined as major forest management activities (including road construction and timber harvest), is not permitted in an "Inactive" subunit except during the denning (Nov. 16 th – March 31 st) period or during a short "window" in the summer.	WB, SA, SP	Pre & Post - Sale

**TABLE 2-14.
MANAGEMENT REQUIREMENTS AND DESIGN CRITERIA**

OBJECTIVE	TASK	RESPONSIBILITY	DUE DATE
Grizzly Bear Security	In order to avoid the potential disturbance of important grizzly bear spring habitat, management activities planned in spring habitat, which is defined as areas within designated Linkage Zones, below 5,200 feet, will not occur within the spring period (April 1 thru June 15). This timing restriction would apply to the following treatment units: 3-36, 8-7, 8-8, 18-12, 18-13, 18-16, 18-18, 18-19, 18-20, 18-90, 18-91, 18-92, 18-93, 18-94, 18-95, 18-97, 20-34, 20-161, 20-181, 25-7, 25-72, 26-20, 26-20a, 26-72, 26-105, 28-172, 28 -178, 30-2, 30-11, 30-56, 30-78, and 30-103.	SP, SA, TMC, WB	Pre & Post - Sale
Grizzly Bear Security	Lay out Seed Tree Units so that no point in the unit is more than 600 feet from cover; in other words, a bear in the unit would be able to find cover, anywhere in the unit, within 600 feet or less.	SP, WB	Pre & Post - Sale
Grizzly Bear Security	To maintain the integrity of grizzly bear security core, treatment in Units 28-178 and 34-180 will occur during the denning season (November 16-March 31).	SA, WB	During Harvest Activities
Wildlife Security	Leave visual screening adjacent to open roads in proposed cutting units.	SP, SA, TMC, WB	Pre - & Post - Sale
Wildlife Habitat	To maintain appropriate snag densities in old growth units, at a minimum retain an average of 6 snags per acre 12 to 18 inches DBH. If existing snag densities are below these densities, substitute live trees where possible. All snags greater than 18 inches DBH will be left, where available. All standing dead cull western larch, ponderosa pine, and Douglas - fir trees 16 inches DBH or greater may be retained and all hardwood trees will be designated to be left. Generally, the snags to be left will be further than 150 feet from open roads and private land boundaries, and well distributed. Snags that pose a safety hazard to the Contractor's operation will be removed.	WB, SILV, TMC, SP, SA	Pre & Post - Sale
Wildlife Habitat	To maintain appropriate coarse woody material amounts in old growth treatment units, the minimum retention for down woody material would be, where available, an average of 15 pieces per acre 9 to 18 inches diameter, where available, and all pieces greater than 19 inches in diameter.	WB, SILV, TMC, SP, SA	Pre & Post - Sale
Wildlife – TES Species	Include provisions in the contract to cease activity or otherwise protect populations and individuals of threatened, endangered, or sensitive species. This allows for modification of the project should an unforeseen issue(s) be identified during operations. Standard contractual requirements used in all contracts provide for modification or termination of the contract to avoid impacts and protect TES species.	WB, SA, SILV	Contract Prep & During Harvest Activities
Wildlife – T&E Species	Public access would be restricted on temporary roads and roads normally closed to use.	WB, SA, DRC	Pre - & Post - Sale & During Harvest Activities
Wildlife – T&E Species	Contractors working under contract would be prohibited from carrying firearms within the Project Area on National Forest lands, Plum Creek Timber Company lands, or State lands (SVGBCA).	SA, LEO, WB	Pre & Post Sale, During Harvest
Wildlife – T&E Species	All temporary roads constructed on NFS lands will be reclaimed after use.	SA, DRC, WB	Post Sale

**TABLE 2-14.
MANAGEMENT REQUIREMENTS AND DESIGN CRITERIA**

OBJECTIVE	TASK	RESPONSIBILITY	DUE DATE
Wildlife - Security	With the exception of Seed Tree Units, vegetation treatments will be designed to meet Forest Plan standards for MA 9 (winter habitat for white - tailed deer). The MA 9 standards include "achieving at least 50 percent of the area in winter thermal cover."	WB, SILV	Pre - Sale
Wildlife - Security	Vegetation and/or rock barriers will be retained around berms and gates, where needed, to maintain closure effectiveness.	DRC, SA, WB	Pre & Post - Sale, During Harvest Activities
Wildlife - Security	If berms are removed for access to treatment units, temporary gates will be installed. Berms will be reinstalled when sale activities are complete.	SB, SA, DRC	Pre & Post - Sale, During Harvest
Public Safety	Contracts will require the contractor to clearly post signs warning the public of nearby activities and truck hauling traffic associated with the treatments.	SA, DRM	Pre & Post - Sale, During Harvest Activities
Public Safety	The District Assistant Fire Management Officer (Fuels) or designated liaison will notify nearby landowners prior to fuel reduction activities commencing on NFS lands that are adjacent to their properties.	FAFMO	Pre - Sale, During Harvest Activities
Special Use Permits	All permitted improvements, including power and phone service lines and water transmission lines (authorized by special use permits) will be clearly marked and protected during project implementation.	SA, TMC, IF, FMO, SP, RF	Pre & Post - Sale
Soil Productivity	Log all mechanized units using designated skid trails. Equipment may occasionally leave the trails to access trees or accomplish other activities.	SA, SP, SS	Pre & Post - Sale, During Harvest Activities
Soil Productivity	Logging may occur in either winter or summer (subject to applicable timing restrictions required for other resources, such as grizzly bear). In all seasons, skid trails must be spaced on average 75 to 100 feet apart. The goal is to reduce adverse soil impact and to limit such impact to less than 15 percent of the harvest area, which includes detrimental soil disturbance from skid trails, temporary roads and landings associated with either past activities or proposed activities.	SA, SP, SS	Pre & Post - Sale, During Harvest Activities
Soil Productivity	Reuse all existing roads and skid trails to the extent feasible unless doing so would adversely affect soil, water or other resources. Reusing existing roads and trails will reduce the amount of additional soil disturbance (cumulative effects). If roads or trails cannot be reused, their extent must be considered when laying out additional skid trails.	SA, SP, SS	Pre & Post - Sale, During Harvest Activities
Soil Productivity	Summer logging will occur, to the extent possible, when the soils are drier than field capacity as determined by the hand feel method. This method is described in the project file (Exhibit J-4).	SA, SS,	During Harvest Activities
Soil Productivity	Winter logging must occur when there is enough settled snow and/or frozen ground to protect the soil from detrimental disturbance. If equipment does not mix soil into the snow or cause muddy water to bleed into the snow then conditions are right for winter logging.	SA, TP, SS,	During Harvest Activities
Soil Productivity	All mechanical fuel reduction will be accomplished with excavators and/or low ground pressure chipping machinery. Excavators will, to the extent feasible, remain on skid trails. If chipping is implemented, excavators with mounted chipping heads would be used exclusively.	SA, TP, SS	During Harvest Activities

**TABLE 2-14.
MANAGEMENT REQUIREMENTS AND DESIGN CRITERIA**

OBJECTIVE	TASK	RESPONSIBILITY	DUE DATE
Soil Productivity	Logging may occur in any season (subject to applicable timing restrictions required for other resources). Skid trails must be spaced on average of 120 feet apart in Units 18-94, 26-105, 30-56, 36-1, 36-2, and 8-7. The goal is to reduce adverse soil impact and to limit such impact to less than 15 percent of the harvest area, which includes detrimental soil disturbance from skid trails, temporary roads, and landings associated with either past activities or proposed activities.	SA, SP, SS	Pre & post - sale, during harvest activities
Soil Productivity	Monitor soil moisture conditions prior to allowing equipment to begin operations in summer and monitor snow and temperature conditions prior to winter logging. This monitoring must be documented in the Timber Sale Daily Report.	SA	Pre - Sale & During Harvest Activities
Soil Productivity	Fuel reduction/slash disposal will occur after the material to be piled has sat for one wet season in Units 26-85, 30-56, 8 - 7 and 8 - 8.	SA, FMO, SS	Post - Harvest
Soil Productivity	Cut to length systems are required in Units 34-180, 4-182 and 4-185 which would leave heavy slash on the skid trails to reduce the detrimental effects on soils.	SA, TP, SS	During Harvest Activities
Soil Productivity	All Ecosystem Maintenance Burn Units will be ignited when burning conditions will maintain soil erosion and nutrient levels within the range of historic burns.	FMO, FAFMO, SS	During Harvest Activities, Post - Sale
Soil Productivity	<p>If monitoring results indicate that detrimental soil disturbances for a given treatment unit exceed or equal 15 percent, then all or a portion of the following actions will be used to begin the restoration of soil quality. Restoration would occur on sites with a high amount of detrimentally disturbed ground such as designated skid trails and landings:</p> <ul style="list-style-type: none"> ▪ Scarify heavily used skid trails and landings with the teeth on an excavator bucket to a depth of 2 to 4 inches. ▪ Plant Montana - Certified Weed Free native grasses on the scarified soils as recommended by the Forest Botanist. This process will add organic matter to the soil and mulch to the surface. ▪ Plant native shrubs where needed to augment natural vegetation and scarification. <p>The site conditions will be used to determine which of the above mitigations will be used. These mitigations do not result in instant restoration of detrimentally disturbed soils; rather they begin the restoration process.</p> <ul style="list-style-type: none"> ▪ All temporary roads constructed for this project that utilize existing road templates will be reclaimed by removing any installed culverts or temporary bridges, by placing large woody material on the template (where that material is available), and by seeding exposed soils with the native plant mix as specified by the Forest Botanist. In addition, all newly constructed temporary roads will be reclaimed after use, as soon as logistically practicable. The reclaiming of new temporary roads will include re - contouring the entire road template to natural ground contour, and to the extent feasible, placing the top soil back on the soil surface. 	SA, SS	During Harvest Activities, Post - Sale
Water Quality	All drainage features will be put in place and functioning before, during, and after activities.	HYD, SA, SP, DRM	Pre - & Post - Harvest, During Harvest Activities

**TABLE 2-14.
MANAGEMENT REQUIREMENTS AND DESIGN CRITERIA**

OBJECTIVE	TASK	RESPONSIBILITY	DUE DATE
Water Quality	If activities carry over into another operating season or are delayed because of incumbent weather, all 'jump ups' or other temporary transportation features will to be cleared from roadside ditches to prevent damage to the roads.	HYD, SA, SP, DRM	Pre - & Post - Harvest, During Harvest Activities
Water Quality	All activities will meet Montana Best Management Practices and the State Streamside Management Zone Law, therefore will comply with State Water Quality Laws and Federal Soil and Water Quality Handbook.	HYD, SA, SP	Pre - & Post - Harvest, During Harvest Activities
Protect Fisheries Resource	No "jump ups" or other temporary roads will enter or cross any riparian habitat conservation areas.	SA, SP, FMO, FAFMO, FISH	Pre- & Post Harvest, During Harvest Activities
Protect Fisheries Resource	No timber activities, jackpot burning or log decking will be conducted within Riparian Habitat Conservation Areas (RHCA's) as established by INFS. This action would help prevent sedimentation, maintain water quality, and provide sufficient large woody debris recruitment to aquatic species habitat.	SA, SP, FMO, FAFMO, FISH	Pre - & Post - Harvest, During Harvest Activities
Protect Fisheries Resource	The following Treatment Units require NO RHCA buffer: Units 26-75, 26-89, 3-36, 8-8, 18-13, 18-19, 18-91, 18-93, 18-95, 20-34, 30-11, 30-56, 30-5, 25-7, 36-1, 36-2, 28-178, 32-7, 34-178, 34-180, 4-182, 4-186, and 4-86.	SA, SP, FMO, FAFMO, FISH	Pre - & Post - Harvest, During Harvest Activities

**TABLE 2-14.
MANAGEMENT REQUIREMENTS AND DESIGN CRITERIA**

OBJECTIVE	TASK	RESPONSIBILITY	DUE DATE		
Protect Fisheries Resource	Designate the following RHCA buffers for Treatment Units:	SA, SP, FMO, FAFMO, FISH	Pre - & Post - Harvest, During Harvest Activities		
	<table border="0"> <tr> <td data-bbox="420 414 630 438"><u>Unit</u></td> <td data-bbox="630 414 1455 438"><u>Buffer</u></td> </tr> </table>			<u>Unit</u>	<u>Buffer</u>
	<u>Unit</u>			<u>Buffer</u>	
	Unit 26-72			200' from Alder Creek	
	Unit 26-20			200' from Alder Creek	
	Unit 26-91			200' from Alder Creek, small wetland potholes would need 50'	
	Unit 26-85			200' from Alder Creek, Temp road needs to cross stream at old crossing, install minimum 36" culvert	
	Unit 26-105			300' from Meadow Creek, may also be a small tributary in unit. If scour in channel, needs 50'.	
	Unit 8-7			50' from small tributary on south end of unit	
	Unit 18-12			150' tributary on north end of unit	
	Unit 18-16			50' from small tributary in west end of unit, 300' from Howellia ponds in northwest corner and southern portion of unit, 150' from wetland in southwest corner	
	Unit 18-18			300' from Condon Creek	
	Unit 18-20			300' from Condon Creek	
	Unit 18-90			300' from Condon Creek	
	Unit 18-92			150' from stream	
	Unit 18-94			300' from Condon Creek	
	Unit 18-97			300' from Condon Creek	
	Unit 20-161			300' from Falls Creek, small wetlands in unit, if high water mark is found, needs 50' buffer	
	Unit 20-181			300' from Falls Creek and 50' from small tributary in southern portion of unit, small wetlands in unit, if high water mark is found, needs 50' buffer	
	Unit 30-78			300' from Smith Creek	
Unit 30-103	300' from Smith Creek				
Unit 25-72	300' from Smith Flats and 50' from small stream in center of unit				
Unit 32-4	150' from wetland in southern portion of unit				
Unit 32-5	150' from wetland in southwest portion of unit				
Unit 32-6	150' from wetland in east portion of unit				
Unit 32-172	50' from stream in western portion of unit, 150' from wetlands in northwest corner, southern portion and near Unit 32-6.				
Unit 4-185	50' from stream, wetlands with high water mark need 150'				

**TABLE 2-14.
MANAGEMENT REQUIREMENTS AND DESIGN CRITERIA**

OBJECTIVE	TASK	RESPONSIBILITY	DUE DATE
Protect Fisheries Resource	Designate the following RHCA buffers in Ecosystem Burn Units : Cat Burn Unit #33 No ignition within 50' of Upper Cat Creek Condon Burn Unit #10 No ignition within 300' of Condon Creek, side draws okay to burn Smith Burn Unit #15 No ignition within 150' of Upper Smith Creek, side draws okay to burn Cooney Burn Units #1 and 2 No ignition within 150' of Upper Cooney Creek, side draws okay to burn	SA, SP, FMO, FAFMO, FISH	Pre - & Post - Harvest, During Harvest Activities
RHCA Protection	Locate and flag all RHCA buffers and other "moist sites" before snow accumulation. Any necessary permitting with the MDFW&P would be acquired before the project begins.	FISH, SA, SP	Pre - & Post - Harvest, During Harvest Activities
Protect Fisheries Resource	All culvert removals/replacements scheduled for removal or replacement will be done during low flow (defined as July 15 to November 15).	SA, FISH, DRC	Pre - & Post - Harvest, During Harvest Activities
Protect Fisheries Resource	All culvert replacements and the Alder Creek temporary road culvert removal will have mitigation to prevent erosion. The area will be seeded and mulched with straw or erosion matting. Stream banks at the Alder Creek site will be armored with rock and shrubs planted. Road approaches will be sloped to a 2:1 slope.	SA, FISH, DRC	Pre - & Post Harvest
Preserve TES Plant Populations and Their Habitats	Sensitive plant surveys were partially completed during the 2006 field season. If new occurrences of sensitive or threatened plant species are discovered during activities or surveys conducted prior to ground disturbance, contractual requirements provide for modification of the contract to avoid impacts and protect their habitat. Special treatment zones will be created or unit boundaries will be relocated to avoid negative impacts. Avoid disturbance of sensitive plant populations observed during sale activities through cooperation between Sale Administrators and loggers. Any sensitive plant species observed during sale activity will be given protective measures as afforded by standard contract clause CT6251.	BT, SA, SP, FMO	Prior to Implementation
Preserve TES Plant Populations and Their Habitats	Comply with Forest Plan Amendment 20 (Conservation Measures for the Threatened Plant, Water Howellia) and the Conservation Strategy for Howellia aquatilis. If wet areas are identified as "occupied howellia habitat" within treatment units, establish a 300 - foot buffer around occupied howellia ponds where no ground disturbance will occur, regardless of activity. The 300 - foot buffer begins where facultative wet plants persist.	SA, BT	Prior to Implementation, During Harvest Activities
Preserve TES Plant Populations and Their Habitats	Establish a 150-foot buffer zone for <u>potentially</u> unoccupied howellia ponds, where no ground disturbance will occur. If sensitive or threatened plant species are discovered during activities, steps will be taken to minimize impact and protect their habitat.	SA, BT	Prior to Implementation, During Harvest Activities
Preserve TES Plant Populations and Their Habitats	Avoid wetlands with all ground - disturbing activities, including lakes, ponds, marshes, fens, and streams. Establish buffers around wetlands - 150 feet for areas greater than 1 acre and 50 feet for areas less than 1 acre. Buffers should begin where facultative wetland plants (facultative wet) end.	SP, SA, BT,	Prior to Implementation, During Harvest Activities
Preserve TES Plant Populations and Their Habitats	Protect Occupied Pond O - 18 located near the junction of Forest Development Roads (FDR) #899 and #124 (haul roads). If ground disturbing BMP related activities occur within 300 feet to the north and south of FDR #899 junction with FDR #124, establish buffers (buffer begins where facultative wet plants persist). See Project File Exhibit H-3 for specific locations of pond.	SP, SA, BT	Prior to Implementation, During Harvest Activities

**TABLE 2-14.
MANAGEMENT REQUIREMENTS AND DESIGN CRITERIA**

OBJECTIVE	TASK	RESPONSIBILITY	DUE DATE
Preserve TES Plant Populations and Their Habitats	Protect Unoccupied Ponds U - 046, U - 051, and U - 085 located near FDR #124A (haul route). If ground disturbing BMP activities occur in the vicinity of these ponds, natural filtration zones, sediment retention structures, or straw bales will be applied to ensure limited sediment deposition into these ponds.	SP, SA, BT	Prior to Implementation, During Harvest Activities
Control Spread of Noxious Weeds	Landings, temporary roads, and roadsides with soil disturbance will be seeded with a Montana - Certified grass ground cover (seed mix of native plants and non - native annual will be specified by the Forest Botanist), as soon as practicable after implementation.	SA, BT, DRC	Post - Sale
Control Spread of Noxious Weeds	Power scrub or steam clean all off - road logging and construction equipment associated with sale activities and temporary road construction on the undercarriage and chassis before transport to the Project Area. This cleaning shall remove all soil, plant parts, seeds, vegetative matter, or other debris that could contain or hold seeds. All subsequent move - ins of equipment to the Project Area shall be treated in the same manner as the initial move in. "Off - road equipment" includes all logging and construction machinery, except for log trucks, chip vans, service vehicles, water trucks, pickup trucks, cars, and similar vehicles.	SA, TP	Pre-Harvest
Control Spread of Noxious Weeds	Seed landings, temporary roads, and roadsides with soil disturbance with a Montana - Certified grass ground cover (seed mix of native plants and non - native annual will be specified by the Forest Botanist), as soon as practicable after disturbance to provide for site protection until native species are established. During construction of temporary roads, the topsoil (A Horizon) will be left to the side and replaced on the temporary road when use of the temporary road is no longer needed for the project. Seeding of temporary roads will occur after topsoil is replaced.	SA, TP	Pre - & Post Sale & During Harvest Activities
Control Spread of Noxious Weeds	Spray weeds along designated Forest Roads (prism) and disturbed areas. Existing roads within the project boundary will be identified for noxious weed treatment. Road prism is the road and associated toe of the fill to the top of the cut slope, including the running surface and turnouts. However, when a contiguous patch of weeds extends beyond the road prism, it shall be treated (via force account or other means). Spraying of appropriate herbicides will occur pre and post haul, during the periods from June 1 to July 15 or September 1 to September 30.	SA, NWM	Pre - & Post - Sale
Control Spread of Noxious Weeds	Treatment of invasive plants will be consistent with the strategy outlined in the Noxious and Invasive Weed Control Environmental Assessment (March 2001). Specific roads and mileage will be prepared in consultation with the Forest Weeds Coordinator.	SA, NWM	Pre - & Post - Sale

**TABLE 2-14.
MANAGEMENT REQUIREMENTS AND DESIGN CRITERIA**

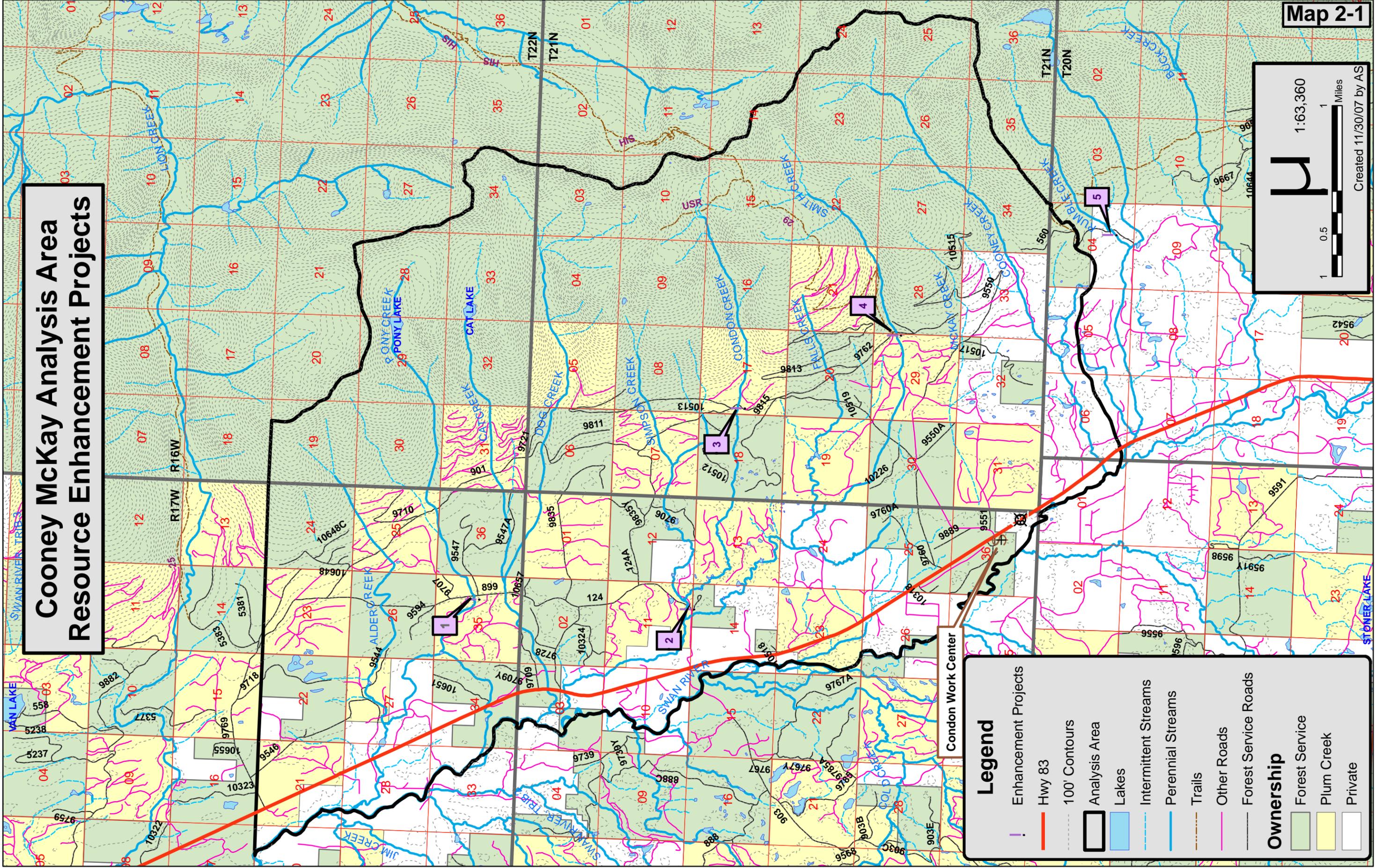
OBJECTIVE	TASK	RESPONSIBILITY	DUE DATE
Forest Vegetation	Consult with the Project Silviculturist where treatment deviations are required during contract execution, as a result of changed conditions that materially affect the intended treatment as described in the site - specific silvicultural prescription. As needed, the silvicultural prescription will be modified and re - approved by a Certified Silviculturist.	SILV, SA, SP, FMO	Pre & Post Sale, During Harvest Activities
Forest Vegetation (Leave Tree Protection)	Contractor will take all reasonable care to avoid damage to the root, bole and crown of trees reserved from cutting. No more than 5 percent of the trees designated to be left and protected should be damaged beyond recovery by the Contractor's operations. Any tree damaged beyond recovery, (will die within one year because of damage), will be removed or otherwise treated by the Contractor as instructed by the Forest Service.	TP, SA, SILV	Pre & Post - Sale, During Harvest Activities
Forest Vegetation (Leave Tree Protection)	All hardwood trees will be designated to be left and protected.	SILV, SA, TP, SP	Pre & Post - Sale, During Harvest Activities
Forest Vegetation (Down Woody)	In the Seed Tree, Commercial Thin, and Salvage Units the minimum retention for down woody material would be, where available, 15 pieces average per acre 9 to 20 inches diameter and 10 pieces average per acre greater than 20 inches diameter. This amount of down woody material equates to 5 to 10 tons per acre. Generally, down woody material to be left would be further than 150 feet from private land boundaries.	SILV, SA, TP, SP	Pre & Post - Sale, During Harvest Activities
Forest Vegetation Snag Protection	At a minimum, in the Seed Tree, Commercial Thin, and Salvage Units, 6 snags average per acre that are 12 to 20 inches DBH would be left. If existing snag densities are below these densities, substitute live trees would be left. All snags greater than 20 inches DBH would be left, where available. All standing dead cull western larch, ponderosa pine, and Douglas-fir trees 16 inches DBH or greater may be retained and all hardwood trees would be designated to be left. Generally, the snags to be left would be further than 150 feet from open roads and private land boundaries, and well distributed. Snags that pose a safety hazard to the Contractor's operation would be removed.	SILV, SA, SP, TP	Pre & Post - Sale, During Harvest Activities
Protect Heritage Resources	Modify contractual requirements to provide for protection of heritage resources and modify the contract to avoid impacts to heritage resource if cultural resources are discovered during ground disturbing activities.	SA, ARCH, SP	Pre & Post Sale, During Harvest Activities
Preserve Recreation & Scenic Values	Rehabilitate all landings to a near - natural appearing landscape. Rehabilitation would include slash and debris disposal, re - contouring (where necessary), and re - vegetation.	RF, SA, FAFMA, FMO, SA	Pre & Post Sale, During Harvest Activities

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Cooney McKay Analysis Area Resource Enhancement Projects

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Created 11/30/07 by AS



Legend

- Enhancement Projects
- Hwy 83
- 100' Contours
- Analysis Area
- Lakes
- Intermittent Streams
- Perennial Streams
- Trails
- Other Roads
- Forest Service Roads

Ownership

- Forest Service
- Plum Creek
- Private

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Cooney McKay - Alternative 2 North Half of Proposed Action

LEGEND

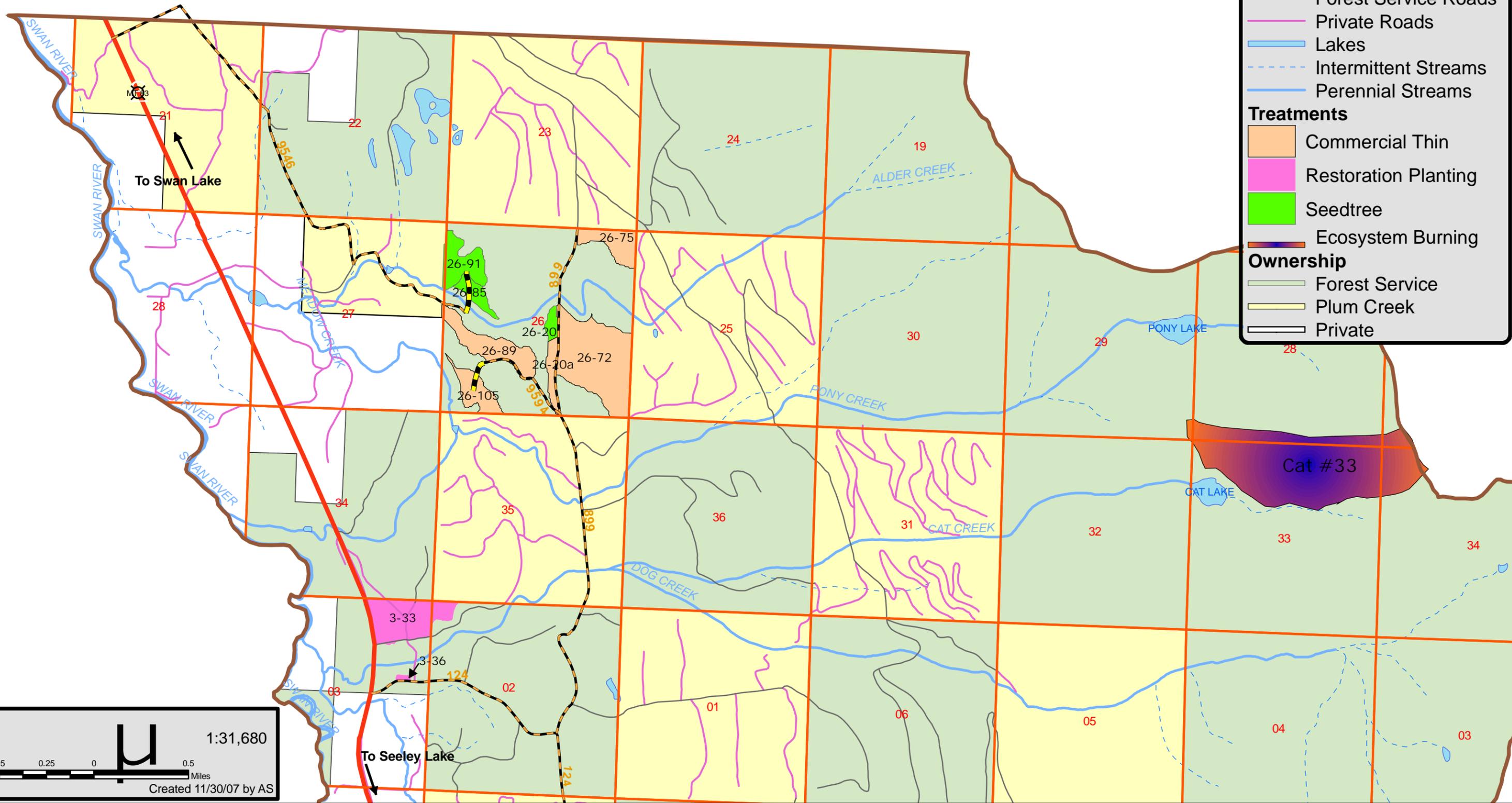
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- Temp Roads
- Specified Haul Routes
- Montana Hwy 83
- Forest Service Roads
- Private Roads
- Lakes
- Intermittent Streams
- Perennial Streams

Treatments

- Commercial Thin
- Restoration Planting
- Seedtree
- Ecosystem Burning

Ownership

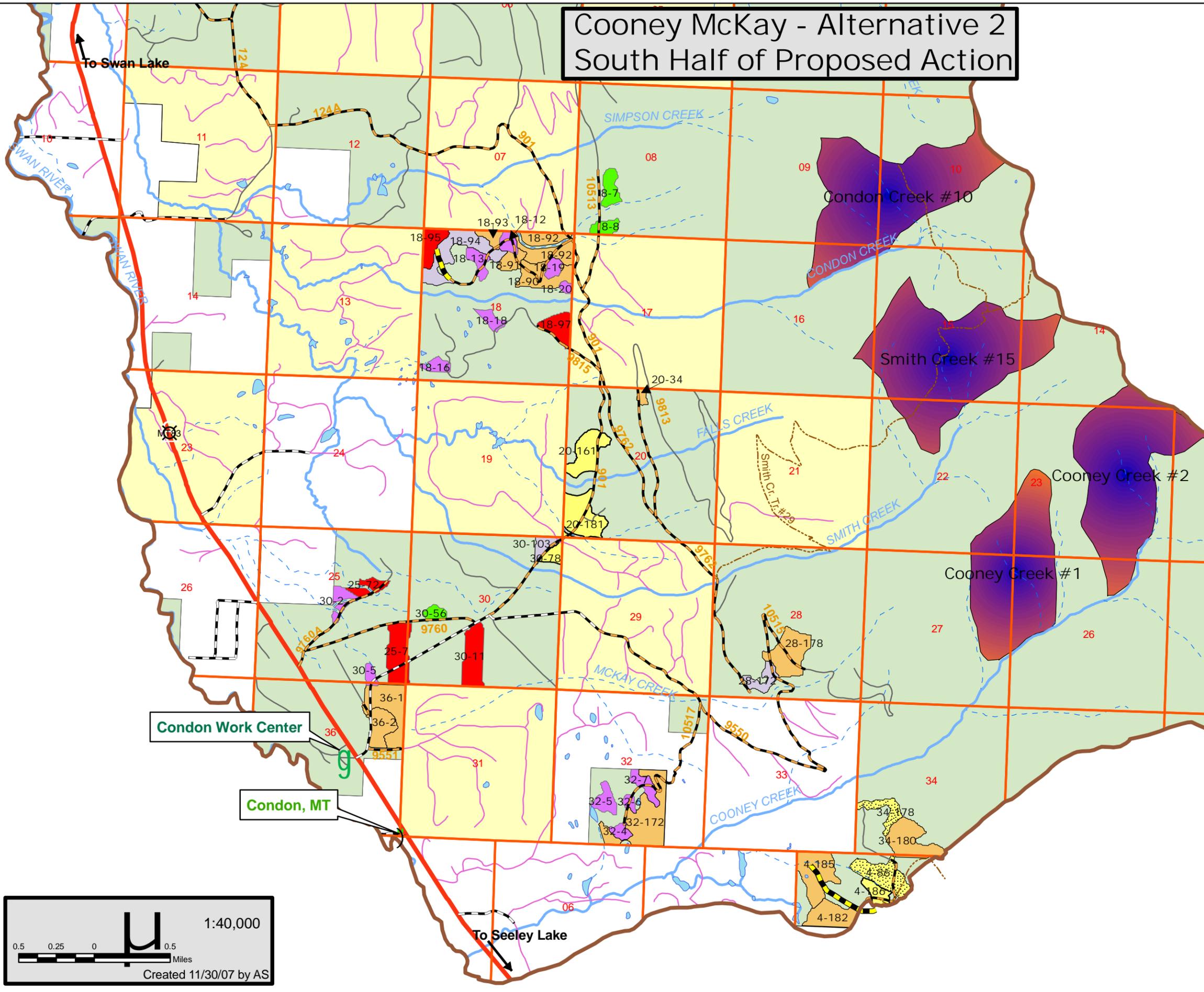
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- Private



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Cooney McKay - Alternative 2 South Half of Proposed Action



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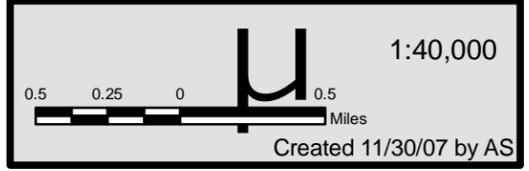
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- Specified Haul Routes
- Montana Hwy 83
- Forest Service Roads
- Private Roads
- Lakes
- Intermittent Streams
- Perennial Streams

Treatment

- Commercial Thin
- Old Growth Maintenance
- Precommercial Thin
- Salvage
- Seedtree
- Thin From Below-Commercial
- Thin From Below-Noncommercial
- Ecosystem Burning

Ownership

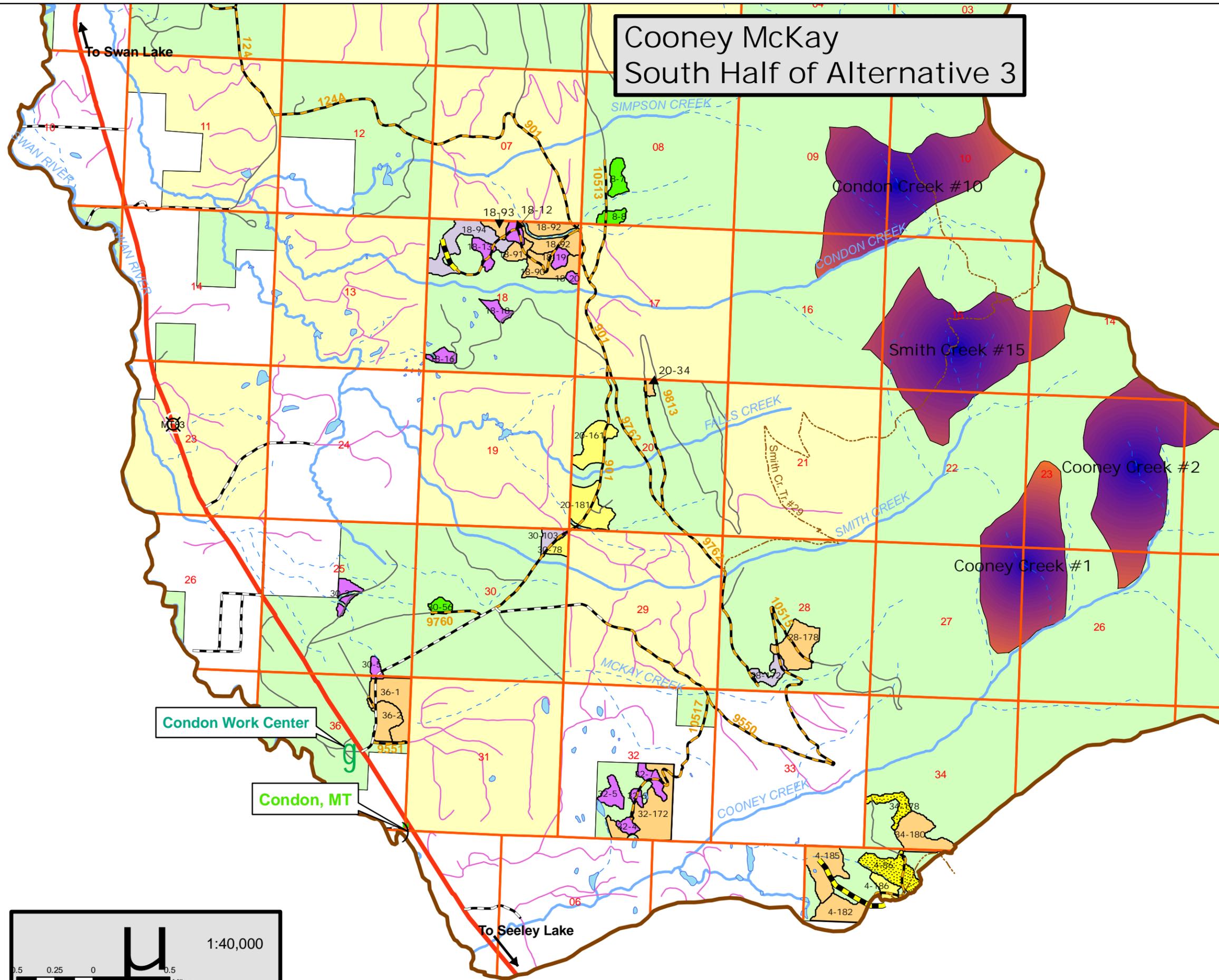
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Cooney McKay South Half of Alternative 3



LEGEND

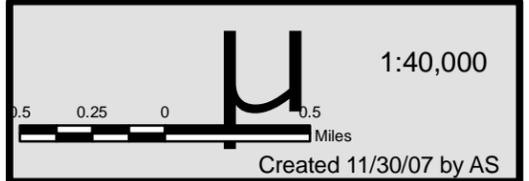
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- Temp Roads
- County Roads
- Specified Haul Routes
- Montana Hwy 83
- Forest Service Roads
- Private Roads
- Lakes
- Intermittent Streams
- Perennial Streams

Treatment

- Commercial Thin
- Precommercial Thin
- Salvage
- Seedtree
- Thin From Below-Commercial
- Thin From Below-Noncommercial
- Ecosystem Burning

Ownership

- Forest Service
- Plum Creek
- Private



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Cooney McKay North Half of Alternative 4

LEGEND

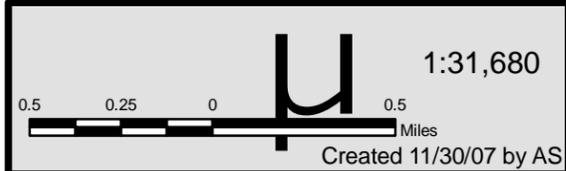
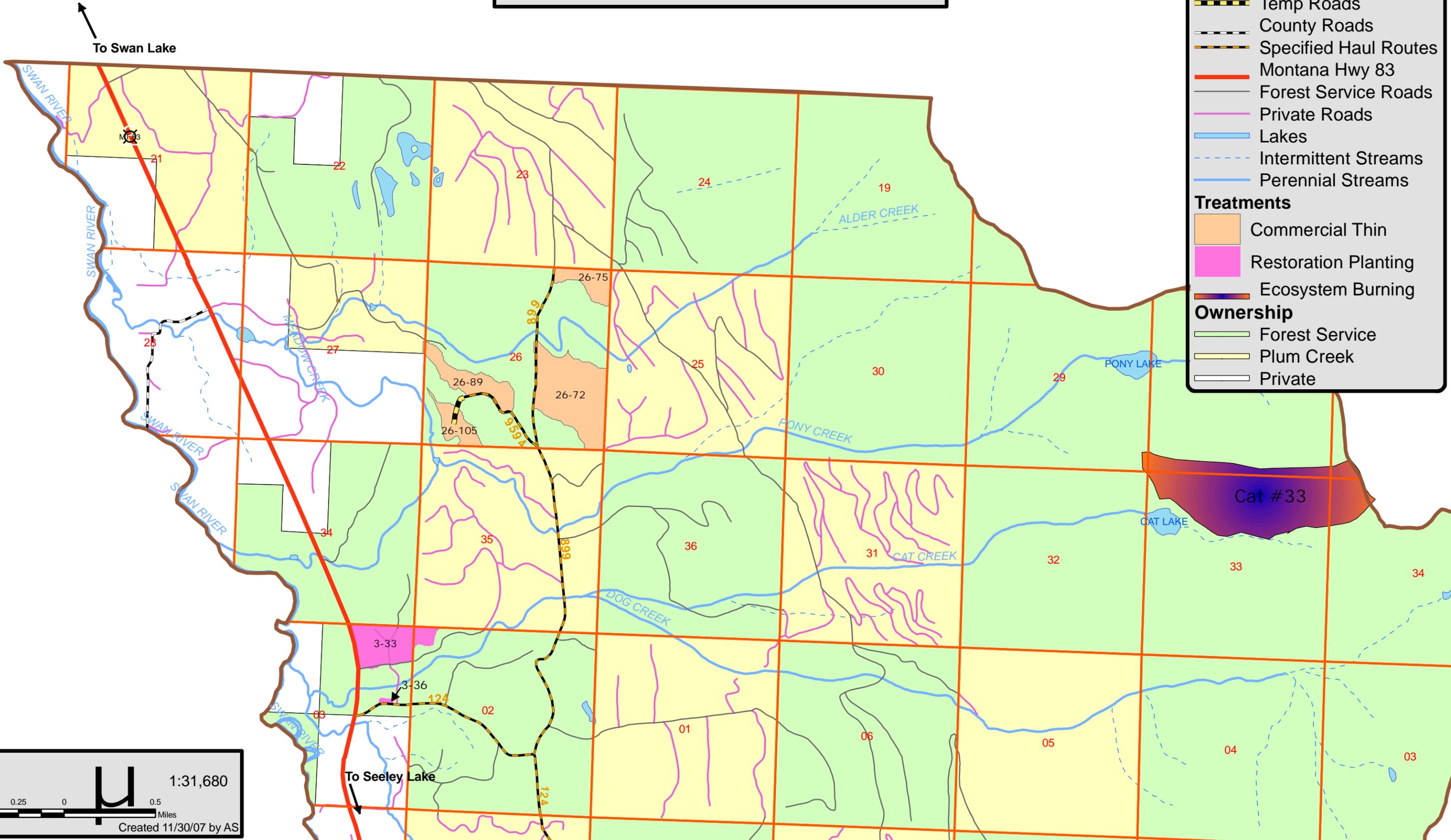
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- County Roads
- Specified Haul Routes
- Montana Hwy 83
- Forest Service Roads
- Private Roads
- Lakes
- Intermittent Streams
- Perennial Streams

Treatments

- Commercial Thin
- Restoration Planting
- Ecosystem Burning

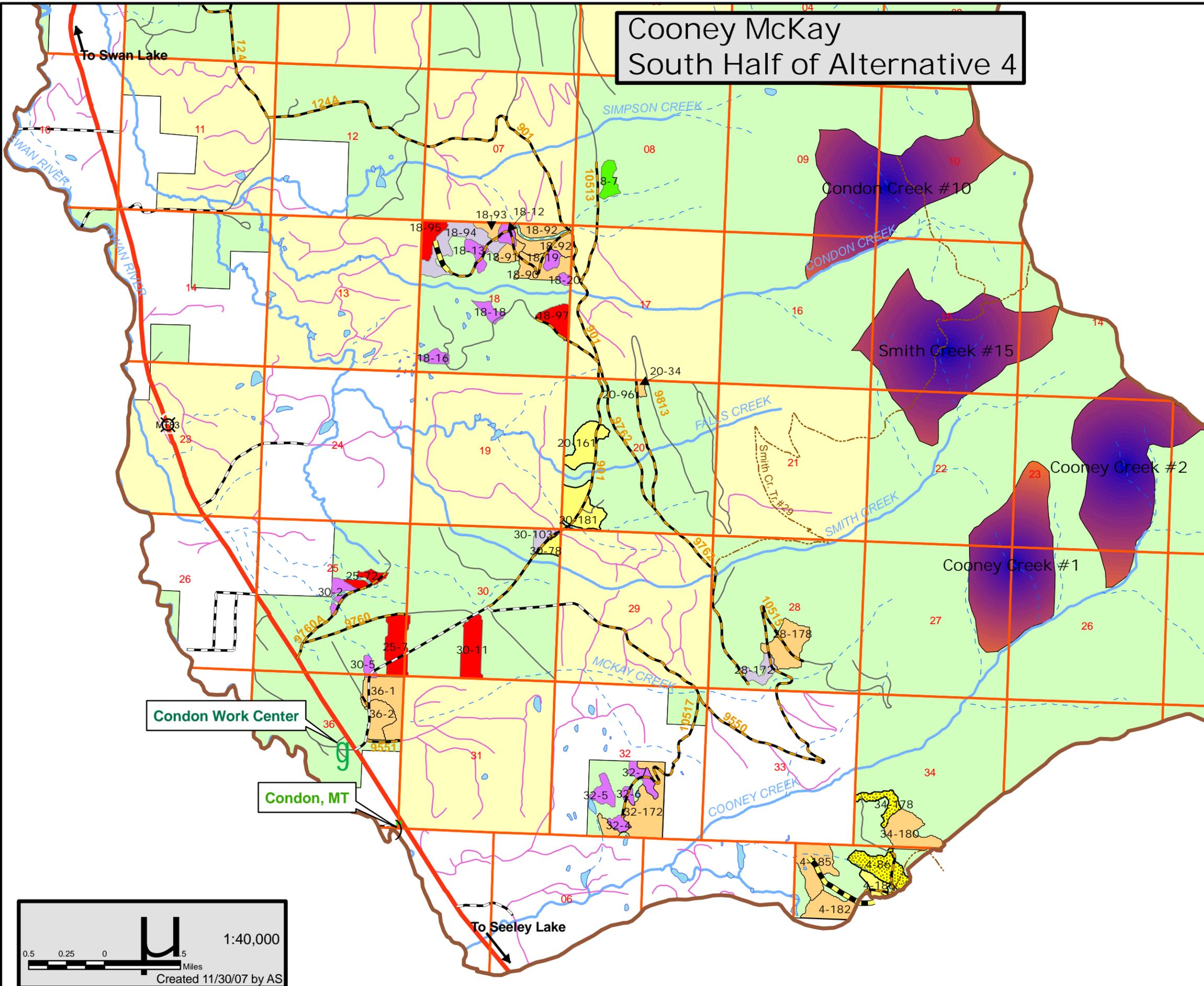
Ownership

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- Plum Creek
- Private



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Cooney McKay South Half of Alternative 4



LEGEND

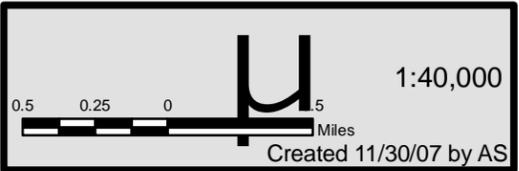
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- Temp Roads
- County Roads
- Specified Haul Routes
- Montana Hwy 83
- Forest Service Roads
- Private Roads
- Lakes
- Intermittent Streams
- Perennial Streams

Treatment

- Commercial Thin
- Old Growth Maintenance
- Precommercial Thin
- Salvage
- Seedtree
- Thin From Below-Commercial
- Thin From Below-Noncommercial
- Ecosystem Burning

Ownership

- Forest Service
- Plum Creek
- Private



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