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RECORD OF DECISION

KEELER MOUNTAIN TIMBER SALE

September 17, 1999

Montana Department of Natural Resources & Conservation

Libby Unit

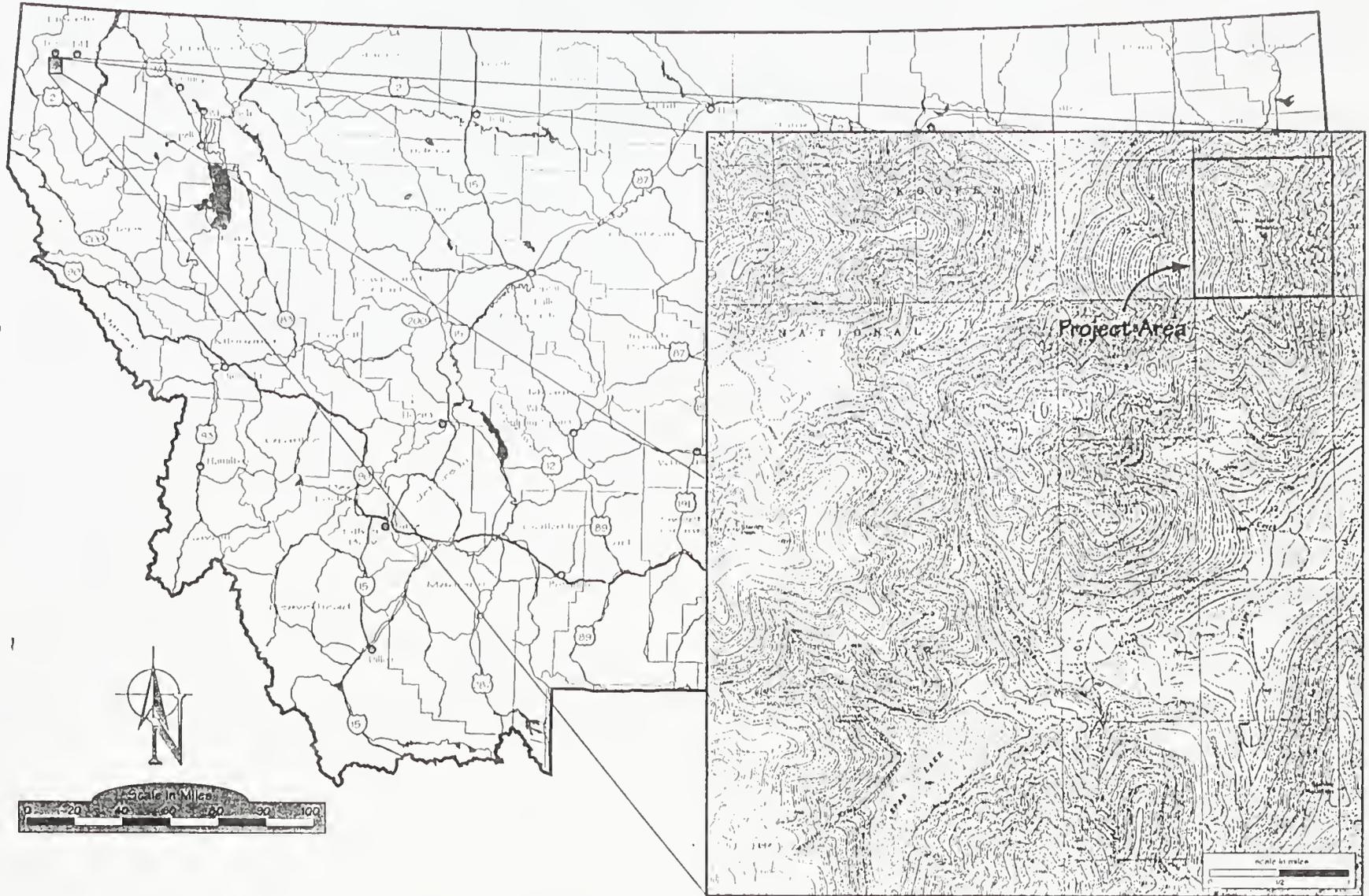
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FIGURE R-1
PROPOSED KEELER MOUNTAIN TIMBER SALE
GENERAL VICINITY MAP
STATE SECTION 36, T30N,R34W



RECORD OF DECISION

KEELER MOUNTAIN TIMBER SALE

INTRODUCTION

The Libby Unit of the Montana Department of Natural Resources and Conservation (DNRC) proposed the Keeler Mtn. Timber Sale and conducted the initial public scoping in November of 1996. Since that time an Interdisciplinary (ID) Team has been utilized to analyze the issues and concerns raised during the internal and external scoping process. This analysis ultimately resulted in the Draft and Final Keeler Mtn. Environmental Impact Statements. The Record of Decision presents the decisions made by William D. Caldwell, Libby Unit Manager, DNRC. These decisions are based on the data presented in the analysis, the guidance provided by the State Forest Land Management Plan (SFLMP) and other policies and laws related to State trust land management.

PROJECT DECISIONS TO BE MADE

- A. Do the alternatives developed meet project objectives?
- B. Which alternative should be implemented?
- C. Were all practical means to avoid or minimize environmental harm adopted? If not, why not?

SCOPE OF THE DECISIONS

The scope of this document is limited to the proposed Keeler Mtn. Timber Sale. It has no programmatic or general trust land management implications. The decisions presented here will become recommendations by DNRC to the State Land Board who will make the ultimate decision regarding implementation of the project. Furthermore, the implementation of decisions made in this document are predicated upon receiving a ruling from the U.S. Fish & Wildlife Service concurring with the NEPA analysis conducted by the Forest Service for our road use application which is required for completion of this project.

PROJECT OBJECTIVES

The lands involved in this proposed project are held by the State of Montana in trust for the support of specific beneficiary institutions such as public schools, state colleges and universities, and other specific state institutions such as the school for the deaf and blind (Enabling Act of February 22, 1889; 1972 Montana Constitution, Article X, Section 11). The Board of Land Commissioners and the Department of Natural Resources and Conservation, are required by law to administer these trust lands to produce the largest measure of reasonable and legitimate return over the long run for these beneficiary institutions (Section 77-1-202, 77-1-301, MCA). On May 30, 1996, the Department released the Record of Decision on the State Forest Land Management Plan (the Plan or SFLMP). The Land Board

approved the Plan's implementation on June 17, 1996. The Plan outlines the management philosophy of DNRC in the management of state forested trust lands, as well as sets out specific Resource Management Standards for ten resource categories. The Department will manage the lands involved in this project according to the philosophy and standards in the Plan, which states:

“Our premise is that the best way to produce long-term income for the trust is to manage intensively for healthy and biologically diverse forests. Our understanding is that a diverse forest is a stable forest that will produce the most reliable and highest long-term revenue stream...In the foreseeable future, timber management will continue to be our primary source of revenue and our primary tool for achieving biodiversity objectives.”

In order to meet the goals of the management philosophy adopted through programmatic review in the Plan, the Department has set the following specific project objectives:

1. To provide revenue to the Trust by harvesting 2.4 to 6.3 MMBF of timber.
2. To promote a diversity of stand structures and patterns to promote long-term sustainability of forest resources and move forest structures toward appropriate or desired future conditions.
3. To reduce the potential for insect and disease outbreaks and the chance of a major stand replacing fire.
4. To maintain or improve vigor of commercial timber stands on treated areas.

SUMMARY OF THE ALTERNATIVES

- A. ALTERNATIVE 1: This is the no action alternative. None of the proposed activities would be accomplished by this action. No timber harvesting, road reconstruction or improvements would be done.
- B. ALTERNATIVE 2: This alternative would harvest approximately 2.4 MMBF of timber on 114 acres using regeneration harvest methods. Fifty three acres would be treated by a clear-cut with reserves silvicultural treatment and the remaining 61 acres would receive a seedtree with reserve treatment. Approximately one mile of new road would be built and a corresponding one mile of road would be closed or obliterated. There would be 4.6 miles of road improvement to bring the haul route up to Montana' Best Management Practices (BMP's) standards.
- C. ALTERNATIVE 3: This alternative would harvest approximately 6.3 MMBF of timber on 442 acres. The same 114 acres identified under alternative 2 would be harvested using the

same silvicultural treatments. In addition, 10 acres would receive a salvage treatment removing the blow down timber. Three hundred and eighteen acres would be treated using a group selection harvest method using helicopter yarding. There would be approximately 1.4 miles of new road construction with a corresponding amount of road closures and road obliteration. The 4.6 mile haul route would be brought up to BMP standards.

D. ALTERNATIVE 4: This alternative is similar to Alternative 3. The same 6.3 MMBF of timber would be harvested over the same 442 acres using the same silvicultural treatments. However, this alternative would build 2.2 miles of new roads and approximately 2.2 miles of roads would be closed or obliterated. The 4.6 mile haul route would be brought up to BMP standards. This additional road construction would reduce the 318 acres harvested by helicopter in Alternative 3 and increase the acreage treated by cable yarding and ground based systems. Because of the rugged terrain on the east half of the project area the feasibility of the cable harvesting systems is not completely known. It is estimated that between 87 and 231 acres could be logged using a combination of ground based and cable harvesting systems. The remainder of the acreage that cannot be harvested using ground based or cable methods may be harvested using a helicopter.

The economic viability of helicopter logging appears to be uncertain. In an effort to clarify the economics of Alternative 4, four cable harvesting scenarios (87 acres and 231 acres) each with and without helicopter logging were analyzed. These scenarios are hypothetical; they are for the purposes of the analysis only, but they are expected to cover the range of acreage operable with cable yarding systems and are expected to provide a reasonable basis for judging the relative effect of harvesting systems on the value of the project.

The 87 acre cable harvesting scenario represents our estimate of the acreage on the east face of Keeler Mtn. that's operable with conventional ground based equipment and single span cable system. The 231 acre scenario represents our estimate of the number of operable acres if a multi-span cable system were used rather than a single span system. In either case the remaining acres on the east face would, or could, be harvested with a helicopter. The actual split between the operable cable and helicopter ground will not be known until the sale is prepared on the ground.

These scenarios were each analyzed in regards to the associated impacts to soils, hydrology and economics.

Table R-1 briefly summarizes the alternatives.

TABLE R-1: SUMMARY OF PROJECT ACTIONS

PROJECTED ACTIONS	ALTERNATIVES			
	ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3	ALTERNATIVE 4
Acres to be logged	0	114	442	211 - 442
Acres in regeneration harvest	0	114	114	114
Acres in group selection harvest	0	0	318	87 - 318
Acres in salvage harvest	0	0	10	10
Roads:				
Road construction (miles)	0	1.0	1.4	2.2
Road improvements	0	4.6	4.6	4.6
Road closure	0	1.0	1.4	2.2
Acres retained for Old-Growth Management	63	63	63	63
Estimated Harvest Volume (MMBF)	0	2.4 MMBF	6.3 MMBF	4.3-6.3 MMBF
Net Return to School Trust	0	\$399,651.00	\$402,653.00	\$538,862.00 - \$766,381

ISSUES DRIVING ALTERNATIVE SELECTION

Numerous resource related issues and concerns were analyzed in the Keeler Mtn. EIS; all were found to be unaffected by the action alternatives or the impacts were adequately mitigated. The real differences between alternatives for the Keeler project are the effects on vegetative cover along with the associated impacts to biodiversity and the economics of the various alternatives.

1. CHANGES IN COVER TYPE REPRESENTATION: Tables R-2, and R-3 depict the acreage by cover type currently on Libby Unit and on the Project Area, as well as the appropriate acreage of each cover type that would be expected on Libby Unit and on the Project Area in the absence of recent human intervention, primarily fire suppression.

These tables show the current acreage of the western larch/Douglas-fir (WL/DF) cover type to be substantially below the appropriate level on both Libby Unit as a whole and on the project area. The tables also show the current acreage of the mixed conifer (MC) and alpine fir (AF) cover types are substantially greater than their appropriate levels for both Libby Unit and the Project Area. In addition to the current and appropriate acres of each cover type, the acreage by cover type resulting from the implementation of each alternative is also displayed.

All of the action alternatives are projected to move the cover types toward their appropriate condition. Alternatives 3 and 4 each make the same changes to cover type, but both alternatives move the cover types closer toward the desired condition than does Alternative 2.

Table R-2 shows the changes in cover type on the Project Area for each action alternative.

TABLE R-2 PROJECT AREA				
COVER TYPE	CURRENT	APPROPRIATE	ALTERNATIVE 2	ALTERNATIVE 3 & 4
AF	103	0	74	74
DF	40	40	40	40
LP	68	43	15	15
MC	115	42	83	43
WL/DF	278	478	392	443
NF	36	36	36	36

Table R-3 shows the changes in cover type on Libby Unit for each action alternative.

TABLE R-3 LIBBY UNIT

COVER TYPE	CURRENT	APPROPRIATE	ALTERNATIVE 2	ALTERNATIVE 3 & 4
AF	188	47	159	159
DF	1278	1308	1278	1278
LP	1568	1083	1505	1505
MC	4222	833	4190	4150
PP	11241	11878	N.C.	N.C.
WL/DF	10205	14214	10319	10370
WWP	241	325	N.C.	N.C.*

* N.C. means No Change.

- The other primary factor in alternative selection is the economics or revenue potential of the various alternatives. One must use these economic comparisons cautiously, however, since the analysis used average delivered log prices for September 1998, and the actual value received will depend on the market at the time of sale. Additionally, numerous assumptions, which are displayed in Appendix C, were built into the analysis. While real experienced cost figures and actual log selling prices were used in the analysis, the intent is not to predict sale value, which is entirely market driven, but to clearly display the relative income potential of the various alternatives.

Table R-4 summarizes the projected cost and revenue for the different alternatives and indicates that while Alternative 3 would harvest nearly 4 million board feet more than alternative 2, it would only generate \$3,000 in additional income. In contrast, a similar volume harvested in Alternative 4 would net an additional \$140,000 to \$375,000 for the trust, given the conditions of this analysis.

The difference in revenue potential between these two alternatives results from the cost of the harvesting methods employed in the alternatives. Alternative 3 relies entirely on helicopter yarding for all of the additional volume, while Alternative 4 limits helicopter yarding to only that volume which is not accessible by more conventional means. This analysis indicates the high cost of helicopter yarding could essentially absorb the value of the volume harvested by helicopters. Nevertheless, it does demonstrate the difference between alternatives and that helicopter logging could have marginal profitability depending upon the market at the time of sale.

Recognition of the financial impact of helicopter logging in Alternative 3 caused us to question the profitability of the helicopter portion of Alternative 4. Table R-4 shows that Alternative 4 is indeed profitable but does not separate the costs and revenue of the conventionally logged volume from the helicopter yarded volume. A marginal analysis was conducted as a result and is summarized in Table R-5.

TABLE R-4

COSTS AND BENEFITS ASSOCIATED WITH THIS PROJECT

	ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3	ALTERNATIVE 4
1. Estimated Total Harvest Volume (MBF) (Assumption 1)*	0	2,452	6,356	5,465 to 6,356
2. Delivered Log Value (\$/MBF) (Assumption 1)	\$0	\$378.86	\$365.22	\$365.22
3. Stump to Mill Costs (\$/MBF) (Assumption 2)	\$0	\$140.00	\$241.41	\$180.47 to \$216.19
4. Development Cost (\$/MBF) (Assumption 4)	\$0	\$29.46	\$14.04	\$17.83 to \$29.60
5. Forest Improvement (\$/MBF) (Assumption 5)	\$0	\$46.41	\$46.41	\$46.41
6. Stumpage Value - (\$/MBF) (line 1 - line 2 - line 3 - line 4 - line 5) (Assumption 2)	\$0	\$162.99	\$63.35	\$84.78 to \$120.51
7. Total \$ Value based on Stumpage, FI cost and Development Cost multiplied by harvest volume ((line 4 + 5 + 6) * line 1)	\$0	\$585,685	\$786,873	\$947,171 to \$1,174,271
8. Total \$ Return to the Trust (line 1 x line 6)	\$0	\$399,651	\$402,653	\$538,862 to \$776,381

Based on the results in the previous table, Alternative 4 would yield the highest return to the trust at \$538,862, followed by Alternative 3 at \$402,653 and last Alternative 2 at \$399,651 not including treatment, field preparations and administration costs. The amount of volume increase between alternative 2 and alternative 3 equals 3,904 MBF, while the increase in the return to the trust equals only \$3,002 or less \$1.0 per MBF.

1

* Assumptions used in the economic analysis are explained in Appendix C

TABLE R-5

				Difference Between Alternative 3 (Row 2), Alternative 4 (Row 3), and Alternative 4 No Helicopter (Row 4) with Alternative 2 (Row 1)		
	1.Development Cost (\$/MBF)	2. Total Harvest Volume (MBF)	3. Total \$ Return to Trust	4.Difference in Harvest Volume (MBF) ¹	5. Difference in \$ Return to the Trust ²	6.Average Marginal Change in Value/MBF (col 5/col 4) ³
1. Alternative 2	\$29.46	2,452	\$399,651	NA	NA	NA
2. Alternative 3	\$14.04	6,356	\$402,653	3,904	\$3,002	\$ 1
3. Alternative 4a	\$17.83	6,356	\$538,862	3,904	\$139,211	\$ 36
4. Alternative 4b (No Helicopter)	\$29.60	3,738	\$565,473	1,286	\$165,822	\$129
5. Alternative 4c Extended Skyline	\$17.83	6,356	\$765,962	3,904	\$366,311	\$94
6. Alternative 4d Extended Skyline (No Helicopter)	\$20.73	5,465.5	\$776,381	3,013.5	\$376,730	\$125

¹ Column 4 is calculated by subtracting 2,452, the volume for Alternative 2, from the total harvest volume for the current row (2, 3, & 4) (column 2).

² Column 5 is calculated by subtracting \$399,651 (total \$ Return or Loss to Trust) from the total \$ return to trust for the current row (2, 3, & 4) (column 3).

³ Column 6 - Average Marginal Change in Value/MBF for the difference in \$ Return or Loss to the Trust (column 5) divide by the difference in Harvest Volume (column 4).

ADVANTAGES AND DISADVANTAGES OF THE ALTERNATIVES

A. ALTERNATIVE 1:

The no action alternative doesn't meet any of the project objectives. The preparation time and expense required for the analysis and access acquisition would be wasted, or at least not useful in the near future. Revenue production for the Common School Trust Fund would be delayed until additional projects could be developed and the local economy would also suffer to the extent that the planned harvest volume would be delayed.

There are some advantages to the No Action Alternative. No harvesting would occur and no new roads would be constructed which would leave the water yield for the watersheds as it currently exists. However, acceptance of this alternative would preclude the implementation of planned BMP work on 4.6 miles of existing roads which would be disadvantageous to water quality.

B. ALTERNATIVE 2:

The primary advantage of Alternative 2 is the reduction in road construction and cutting area which results less water yield than in Alternatives 3 & 4. However, all the action alternatives close or obliterate existing roads which are equal in length to the roads constructed by that alternative. These permanent road closures would maintain the open and total road density standards set for grizzly bear management and at least partially offset the water yield impacts of the new construction. This alternative, as well as the other action alternatives would bring 4.6 miles of existing road up to BMP standards.

Alternative 2 does generate an estimated \$399,651 for the Common Schools trust fund but it doesn't approach either the revenue potential or the volume potential for the project area. It also moves both the mixed conifer and western larch/Douglas-fir cover types toward their appropriate conditions for both the project area and for Libby Unit as a whole. However, Table R-1 reveals that Alternative 2, and the other action alternatives as well, reduce the lodgepole pine cover type to 15 acres, which is below the appropriate acreage (43) for the project area. The lodgepole pine types would be converted to western larch/Douglas-fir, which is the most under represented type on Libby Unit. Lodgepole pine is greatly over represented on the Libby Unit and is expected to remain in these stands, albeit, at a reduced stocking level.

C. ALTERNATIVES 3 & 4:

Alternatives 3 and 4 both maximize the acreage treated which provides the greatest benefit in cover type conversion to more appropriate conditions unit wide. As a result, these two alternatives produce the greatest volume of wood products among the action alternatives, nearly 2.5 times greater than the estimated volume of Alternative 2. This increased volume is a direct benefit to the local economy. However, Alternative 3 includes less road construction which necessitates a greater reliance on helicopter logging to harvest the acreage as compared to Alternative 4. Since helicopter logging is substantially more expensive than conventional logging methods, and depending upon the market conditions at the time of sale, most of the increased revenue from the higher volume harvested may simply cover the increased logging costs. Refer to tables R-1 and R-4. The primary advantage of Alternative 4 is the increased revenue potential for the Common Schools due to the construction of the additional 0.8 miles of road and the ability to utilize conventional logging systems to a much greater extent.

ALTERNATIVE SELECTION

All of the alternatives with the exception of Alternative 1, the no action alternative, meet the objectives for this project and there are no major adverse impacts that would preclude any of the action alternatives. Thus the decision revolves around how well the action alternatives meet the objectives and the overall mission of DNRC's Trust Land Management Division.

My interpretation of that mission, as it relates to this project, and the project objectives is as follows: My decision must provide for the greatest benefit to the Common Schools Trust Fund consistent with the capability of the land within the project area, the guidelines set forth in the SFLMP, other trust land management policies and the various Montana statutes, as well as federal statutes, affecting trust land management. Among others, these laws and policies include the Endangered Species Act, Streamside Management Zone and Best Management Practice laws, Environmental Quality laws and the Montana Environmental Policy Act (MEPA).

DECISION

I have decided that Alternative 4 with helicopter yarding minimized best meets these criteria.

RATIONALE

All environmental impacts associated with this project have been satisfactorily mitigated and all action alternatives will meet the various statutory requirements affecting the project. As noted above, the decision really revolves around the ability of the alternatives to produce revenue for the Common Schools trust fund, and to comply with the biodiversity standards of the SFLMP. Refer to Appendix B, Specifications and Stipulations.

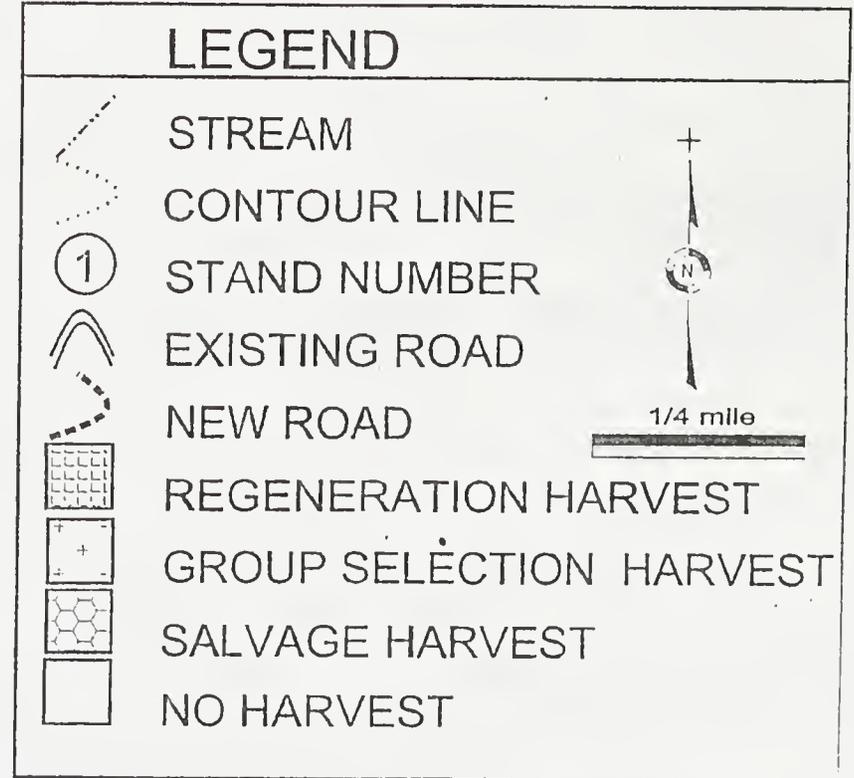
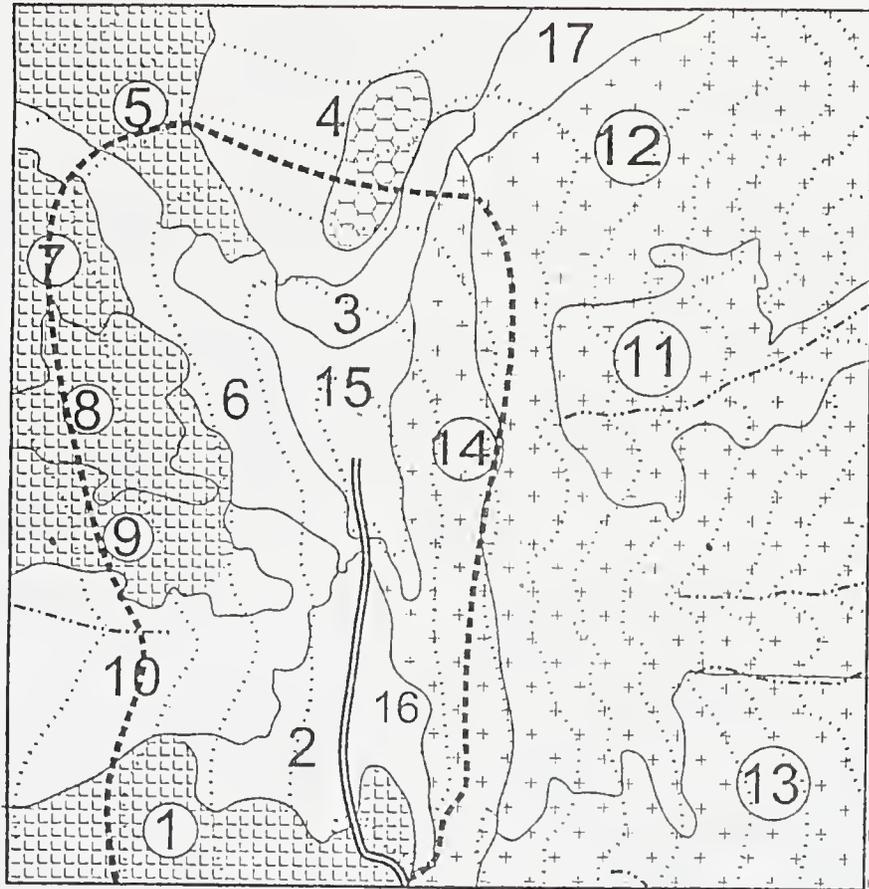
Both Alternative 3 and 4 move cover type conditions equally toward the desired conditions for Libby Unit. However Alternative 4 achieves this goal in such a manner that substantially increases the revenue potential for the Trust. The increased revenue potential is directly related to Alternative 4's decreased use of helicopter logging

The east aspect of the Keeler project area is easily visible from Highway 56; this includes stands 11, 12 & 13 (see Appendix A) which would be entirely helicopter logged in Alternative 3, and cable yarded with some helicopter logging in Alternative 4. Nevertheless, the analysis indicates visual impacts would be minor due to the availability of benches allowing most of the road to be located where it would be out of sight, and the ability to screen much of the remainder with residual timber. Also, the cable corridors would be partially obscured by the irregular patches created by the group selection harvest method.

The analysis also concludes there will be a minimal risk of impacts to watersheds resulting either from the inclusion of these east facing stands in the sale, or by either harvest method. Hence I find there is no compelling reason to spend several hundred thousand dollars to implement a harvesting system that is not really needed. I have therefore selected Alternative 4 with the option to restrict helicopter logging to only those portions of the project area that cannot be logged using conventional means.

Section 36, T30N, R34W

ALTERNATIVE # 4



APPENDIX B

STIPULATIONS AND SPECIFICATIONS

KEELER MOUNTAIN TIMBER SALE

The stipulations and specifications for the action alternatives were identified or designed to prevent or reduce potential effects to resources considered in this analysis. In part, stipulations and specifications are a direct result of issue identification and resource concerns. This section is organized by resource.

Stipulations and specifications that apply to operations required by and occurring during the contract period will be contained within the Timber Sale Contract. As such, they are binding and enforceable. Stipulations and specifications relating to activities, such as hazard reduction, site preparation, and planting, that may occur during or after the contract period will be enforced by project administrators.

The following stipulations and specifications are incorporated to mitigate effects to resources involved with the action alternatives considered in this proposal.

WATERSHED AND FISHERIES

- Planned erosion-control measures include graveling portions of roads, constructing slash-filter windrows, planting grass seed, and closing and obliterating roads. Details for these control measures will be included in Appendix B of the Timber Sale Agreement.
- Streamside Management Zones (SMZs) will be delineated where they occur within or adjacent to harvest areas to protect areas adjacent to streams or lakes to maintain water quality.
- Culvert sizing for all road projects will be as recommended by DNRC hydrologist.
- Stream crossings, where culvert installations are planned, will have the following requirements, as needed, to meet Best Management Practices (BMPs) and protect water quality:
 - Slash-filter windrows will be constructed on the approach fills.
 - Filter-fabrics fences will be in place downstream prior to and during culvert installation.
 - Erosion-control fences will be installed on fill slopes at crossing sites and remain in place until the slopes stabilize and revegetate.
 - Diversion channels will be constructed and lined with plastic to divert streamflow prior to any in-channel operations.
 - Except for the equipment used to construct the crossing, stream crossing with any equipment is prohibited. The equipment used for the crossing construction will be limited to no more than 2 crossings.

- Brush will be removed from existing road prisms to allow effective road maintenance. Improved road maintenance will reduce sediment delivery.
- The contractor will be responsible for the immediate cleanup of any spills (fuel, oil, dirt, etc.) that will affect water quality.
- Fuel-leaking equipment will not be permitted to operate in stream-crossing construction sites.
- Included in the project proposal are the following pertinent recommendations of the Flathead Basin Forest Practices, Water Quality and Fisheries Cooperative Program Final Report.

The following numbers correspond to the numbering of recommendation items contained within the aforementioned document, included in pages **154** through **162** of the final report.

- 1) BMPs are incorporated into the project design and operations of the proposed project.
- 2) Riparian indicators will be considered in the harvest unit layout.
- 3) Management standards of the Streamside Management Zone Law (75-5-301 MCA) area used in conjunction with the recommendations of the study.
- 4) The BMP audit process will continue. This sale will likely be reviewed in an internal audit and may be picked at random as a Statewide audit site.
- 7) SMZs will be evaluated as a part of the audit process.
- 12) Watershed-level planning and analysis are complete. Logging plans of USFS, as reported to the Cumulative Watershed Effects Cooperative, are used.
- 15) DNRC will use the best methods available for logging and road building for this proposal.
- 17) DNRC requested inventory information from DFWP. DNRC's mitigation's plan for roads fits all recommendations for "impaired streams". Using "worst-case-scenario" criteria provides for conservative operations in this proposal.
- 18) Provisions in the Timber Sale Agreement address BMPs that are rigidly enforced.
- 29-34) DNRC has cooperated with DFWP for continuing fisheries work. DNRC will continue to monitor fisheries in the future as funding allows.

GRIZZLY BEARS

The following items are incorporated into this proposal:

- Contractors will be required to haul or store garbage in a safe place so bears will not be attracted to the area.

- The Forest Officer will immediately suspend any or all activities directly related to the proposed action, if necessary to prevent imminent confrontation or conflict between grizzly bears and humans or other threatened or endangered species and humans.
- Contractors will be prohibited, while working under contract, from carrying firearms onto closed roads.

WOLVES

A contract provision will be included to protect any wolf den or rendezvous site within the gross sale area that may be discovered during implementation of this proposal.

BIG GAME

- Signs will be placed at the entrance of the Keeler Mountain area to:
 - inform users that the area is big game winter range,
 - request they not harass game animals with snowmobiles, and
 - request that pets are kept leashed or in direct control, so pets do not harass big game during the critical winter months.
- Additional retention of existing vegetation will be done to provide security for big game in harvest units along open roads.

WILDLIFE TREES AND SNAG RETENTION AND RECRUITMENT

- All existing high-quality wildlife trees/snags, such as large, broken-topped western larch, will be designated for retention and given special consideration during yarding operations to prevent loss.
- Some large western larch (greater than 18" dbh) with characteristics that indicate they could become high-value snags (stem rot or physical defects) will be retained.
- Clumps of larger grand fir that have stem rot will be retained to provide nesting habitat.

TOWNSEND'S BIG-EARED BAT

If any large aggregation of bats are discovered during the preparation or administration of this sale, the DNRC wildlife biologist will be informed immediately. Depending upon the nature of the report, the biologist will then coordinate efforts to determine the species. If Townsend's big-eared bats were determined to be present, further mitigative measures will be developed.

ROADS

- Information on road-construction activities and road use associated with road-construction activities will be relayed to the general public.
- BMPs will be incorporated in all planned road construction.
- Signs will be placed at some critical intersections.
- See **EROSION** section.
- Under the action alternatives, many miles of existing roads will be closed by sign or physically closed; signs will also close some proposed roads. There will be a special emphasis on closing spur roads to snowmobiles by posting signs on the big game winter range.

VISUALS

- Damaged residuals vegetation will be slashed.
- The location, size and number of landings will be limited.
- Disturbed sites along road right-of-ways will be grass seeded.
- Pockets or strips of the residual stands along topographic breaks and roadsides will be retained to limit views into harvest units.

ARCHAEOLOGY

- A contract clause provides for suspending operations if cultural resources are discovered; operations may only resume as directed by the Forest Officer.
- A review of the project area was conducted by a DNRC archaeologist.

SOILS

COMPACTION

- Logging equipment will not operate off forest roads unless soil moisture is less than 20% frozen to a depth that will support machine operations, or snow covered to a depth that will prevent compaction, rutting, or displacement.

- Existing skid trails and landings will be used where their design is consistent with prescribed treatments and meets current BMP guidelines.
- Designated skid trails will be required where moist soils or short steep pitches (less than 300 feet) will not be accessed by other logging systems. This will reduce the number of skid trails and the potential for erosion.
- Where designated skid trails are required, timber on the trails will be felled and skidded before the remaining timber in a harvest unit is felled. This will define felling patterns, facilitate skidding on designated trails, and reduce the harvest unit area impacted by skidding equipment. Skidding plans are required to be in place prior to the start of logging operations.
- Skid trail density in a harvest area will not exceed 15% of the total area.

SOIL DISPLACEMENT

- To prevent displacement and erosion of topsoil, hard-track, ground-based skidding equipment will not be operated on steep slopes (greater than 40% sustained over 300 feet) unless mitigation measures assure displacement will be minimized.
- Brush piling with dozers requires use of an approved brush rake.
- Designated skid trails will be required in all areas where tractor yarding is proposed. Existing skid trails will be used when possible.
- Lopping and scattering will be used for hazard reduction to retain woody debris onsite for nutrient cycling.

EROSION

- Ground-skidding machinery will be equipped with a winchline to limit the equipment-operation areas.
- Roads used by the purchaser will be reshaped and the ditches redefined following use to reduce surface erosion.
- Drain dips and gravel will be installed on roads, as needed, to improve road drainage and reduce maintenance needs and erosion.
- Some road sections will be repaired to upgrade the roads to design standards to reduce erosion potential and maintenance needs.
- Applications of certified weed-free grass seed and fertilizer will be applied in a timely manner to all newly-constructed road surfaces and cut-and-fill slopes. Applications will also

- be applied to any existing disturbed cut-and-fill slopes and landings immediately adjacent to open roads. This will be done to stabilize soils and reduce or prevent noxious-weed establishment. This will include:
 - Seeding all road cuts and fills concurrent with construction.
 - Apply “quick-cover” seed mix within 1 day of work completion at wet-culvert installation sites.
 - Seeding all road surfaces and reseeded installation sites when the final blading is completed for each specified road segment.
- As directed by the Forest Officer, water bars, logging-slash barriers, and, in some cases, temporary culverts will be installed on skid trails where erosion is anticipated based on ground and weather conditions. These erosion-control features will be maintained and periodically inspected throughout the contract period or extension thereof.

AIR QUALITY

The first item is designed to prevent individual or cumulative effects during burning operations. The next 2 items are designed to reduce effects from burning operations.

- Burning operations will be in compliance with the Montana Airshed Group reporting regulations and any burning restrictions imposed in Airshed 2. This will provide for burning during acceptable ventilation and dispersion conditions.
- Dozer, landing, and roadwork debris piles will be covered to allow ignition to occur during spring when ventilation is good and surrounding fuels are wet. Covered piles are drier, ignite easier, burn hotter, and extinguish sooner due to higher relative humidity during spring. This will reduce dispersed (unentrained) smoke.
- Maximize the amount of woody debris left on site. Fuels not burned do not produce smoke. If possible, larger fuels should be left and smaller fuels should be piles.
- Consider other debris disposal methods for road construction and road-improvement projects, including lopping and scattering, trampling, hand piling, chipping, etc. Road right-of-way piles tend to be shaded by surrounding timber stands and do not dry out as well as piles in harvest units.
- Dust abatement will be applied on the segments of roads in the Keeler Mountain Project area that are used during hauling and will benefit most from dust abatement.
- An alternative disposal method for slash produced by road right-of-way, other than piling and burning, will be encourage.

NOXIOUS WEED-MANAGEMENT

- Surface blading to remove weeds before the seed-set stage may be required on roads affected by the proposal.
- All tracked and wheeled equipment will be cleaned of noxious weeds prior to beginning project operations. The contract-administrating officer will inspect equipment periodically during project implementation.
- Prompt vegetation seeding of disturbed roadside sites will be required. Roads used and closed as part of this proposal will be reshaped and seeded.

HERBICIDES

To further limit the possible spread of weeds, the following integrated weed-management mitigation measures of prevention and control will be implemented:

- Road construction and skidding equipment will be cleaned of mud and weed plant parts prior to entering the site.
- Disturbed roadsides and landings will be seeded with site-adapted grasses. So grass seeding will be effective, seeding will be completed concurrently with road construction.

Herbicide Application

To reduce risk to aquatic and terrestrial resources, the following will be required:

- All herbicides will be applied by licensed applicators in accordance with laws, rules, and regulations of the State of Montana and Lincoln County Weed District.
- All applications will adhere to Montana's Best Management Practices and the herbicide's specific label guidelines.
- Herbicide application will not be general, but site specific, to areas along roads where noxious weeds are occurring. All no-spray areas will be designated on the ground before applications begin.
- Herbicides will be applied to areas where relief may contribute runoff directly into surface water.
- Application will be applied on calm, dry days to limit drift and possible surface movement off road prisms.

APPENDIX C

ASSUMPTIONS USED IN THE ECONOMIC ANALYSIS

ALL ALTERNATIVES

1. The estimated delivered log prices were from the most recent Sawlog and Veneer Log Price Report, July - September, 1998 from the Bureau of Business and economic research, University of Montana. A weighted average species log price was used based on 85 percent of the net sale volume being peeler logs and 15 percent being sawlogs.
2. The stumpage value was estimated by using a residual value approach. The stumpage value is an estimate for the winning bid for the timber sale. The value was estimated by subtracting the stump to mill costs, Forest Improvement, and development costs from the estimate for delivered log prices. Stump to mill costs were estimated by Libby Unit personnel based on local sources. Stump to mill costs by harvest method were; FMC/Skyline = \$130 per MBF, skyline = \$150 per MBF, extended skyline = \$175 per MBF, and Helicopter = \$320 per MBF.
3. The harvested volumes for the alternatives were based on estimates from Libby Unit personnel. It was assumed that 26.5 percent of the volume that is planned to be harvested with a helicopter logging system in Alternative #3 can be logged from a new road with a Skyline logging system in Alternative #4. Another logging option was evaluated for Alternative #4. The Alternative #4 extended skyline assumes that 75% of the volume that is planned to be harvested with a helicopter logging system in Alternative #3 can be logged from a new road with an extended skyline logging system in Alternative #4.
4. Development costs were estimated by Gary Hadlock, Logging Engineering Specialist, and Northwest Land Office, and varied by alternatives. Development costs on this proposal are the estimated costs of road and watershed improvement items that would be paid for by the purchaser. These improvements provide access to the State Trust Lands involved and improve water quality on State and USFS land. All development costs are paid for by the sale and are not amortized over time.
5. Costs, revenues, and returns are estimates intended for relative comparison of alternatives. They are not to be used as absolute estimates of return.
6. The FI cost is based on program-wide costs, and includes the costs to maintain the ongoing staffing, treat stands, maintain roads for the current year, and acquire rights-of-way. Money collected under FI from a purchaser provides the funding for the State to accomplish projects such as tree planting, site preparation, slash treatment, thinning, road maintenance, rights-of-away acquisitions, and some timber sale-related activities. Thus, DNRC is able to improve the long-term productivity of timber stands on State trust lands and maintain or acquire access for future revenue-producing projects.

7. The sale-specific forest-improvement (SSFI) costs are the current cost estimates for the amount and types of treatments (site preparation, hazard reduction, planting, etc.) planned for each of the alternatives being considered. Funding to complete these projects would be collected from current or future timber sales, depending on the timing of the treatments. No cost estimates for replanting or inter-planting are included. After planting, we will follow our procedures to evaluate the survival from planting and the overall regeneration status. Once we have completed these evaluations, and after assessing the current budget, market and department direction at that future time we will take the appropriate action. The appropriate action could be replant, inter-plant or do nothing and let the natural regeneration continue to regenerate the treatment unit.
8. The estimated total timber dollar return to the trust is the estimated stumpage price (winning bid price \$/MBF) multiplied by the estimated harvest volume.
9. The estimated total timber dollar amount collected by the State (total revenue) is FI costs plus the estimated stumpage price multiplied by the estimated harvest volume.
10. DNRC has a sustained yield harvest volume level of 42.164 MMBF per year Statewide. If timber is not sold and harvested relating to the highest volume alternative in this project, timber would be sold and harvested somewhere else.
11. Limitations of the economic analysis: Only know costs and benefits that are associated with the activities listed below are considered. None of the potential benefits associated with leaving trees (i.e., snag recruitment, structural diversity, aesthetics, wildlife habitat, nutrient recycling, etc.) are considered.
12. This area has no potential for cabin development based on personal communication with Mike Justus.
13. Alternative 1 is no action. There are no revenue producing activities that are solely dependent on the lands involved in this project.

DEPARTMENT OF
NATURAL RESOURCES AND CONSERVATION

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September 17, 1999

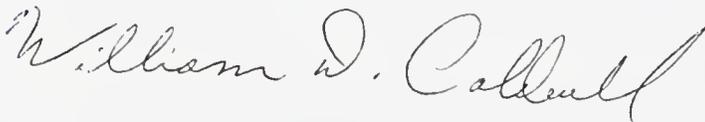
KEELER MOUNTAIN TIMBER SALE

RECORD OF DECISION

Enclosed is a copy of the Keeler Mountain Timber Sale Record of Decision. It presents the objectives of the project, summarizes the alternatives considered and displays the decisions made. In addition, the effects of the decisions are summarized and the rationale for the decisions is presented along with the mitigation measures to be implemented.

Upon execution of the decisions, and concurrence by the U.S. Fish and Wildlife Service with the Biological Assessment, field and contract work will be completed. The Keeler Mountain Timber Sale contract will then be submitted to the Board of Land Commissioners for approval sometime in the spring of 2000.

Sincerely,



William D. Caldwell
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