

Chapter 2

Alternatives

Introduction

This chapter describes and compares the alternatives considered by the Forest Service for the Valley Face Fuels Reduction Project. It includes discussion of how alternatives were developed; the significant issues raised; a description and map of each alternative considered in detail, an overview of features common to all alternatives, a monitoring plan, and a comparison of the features of these alternatives. Chapter 2 is intended to present the alternatives in comparative form, sharply defining the issues and providing a clear basis for choice among options by the decision maker and the public (40 CFR 1502.14). Alternative A is the “no action” alternative, under which no management actions would occur for the Valley Face Project. Alternative B is the “proposed action” that was developed following the initial public collaboration described in Chapter 1 of this EA. Alternative C was developed following public collaboration on the proposed action.

Alternative Development Process

The ID Team used information from public collaboration in conjunction with field-derived resource information, to identify treatment areas and formulate potential treatment prescriptions to different land units to create the proposed action. Alternative C provides a different response by applying the significant issues to the activities presented in the proposed action. The significant issues are presented below. Each action alternative is also designed to meet the stated purpose and need for the project, and the project-specific desired future conditions regarding the Wildland/Urban Interface area and other NFS resources.

Each action alternative represents a site-specific proposal developed through intensive interdisciplinary evaluation of current and desired conditions, based on field verification. Unit identification and design also made use of high resolution topographic maps and aerial photos, and a large quantity of resource data available in geographic information system (GIS) format.

Issues

An issue is defined as a point of discussion, debate, or dispute concerning environmental effects of an action. Issues are identified through the collaboration process with the public and by review from other agencies and Forest Service personnel. The scoping process is used not only to identify important environmental issues, but also to identify and eliminate issues that do not pertain to the action, narrowing the scope of the environmental documentation process accordingly. Therefore, impacts are discussed in proportion to their importance.

To identify issues specific to the Valley Face project, the ID Team studied public comments and information about historic and current conditions within the analysis area. They also reviewed the Flathead National Forest Plan and other site-specific planning documents relevant to the Valley Face area to further develop a list of issues. The Forest Service separated the issues into two groups: significant and other issues. Significant issues were defined as those directly or indirectly

caused by implementing the proposed action. Similar issues were combined into one statement where appropriate. Other issues were identified as those: 1) outside the scope of the proposed action; 2) already decided by law, regulation, Forest Plan, or other higher level decision; 3) irrelevant to the decision to be made; or 4) conjectural and not supported by scientific or factual evidence. The Council on Environmental Quality (CEQ) NEPA regulations explain this delineation in Sec. 1501.7, "...identify and eliminate from detailed study the issues which are not significant or which have been covered by prior environmental review (Sec. 1506.3)..."

The ID Team also determined quantifiable "issue indicators" to measure how each alternative responded to the significant issues. Comparison of these indicators are presented in Table 2-14 at the end of this chapter.

Significant Issues:

The following issues were determined to be significant and within the scope of the project decision. These issues are addressed through the proposed action and its alternative.

Issue 1: Old Growth Forest: There was concern that stand-regeneration next to old growth timber stands would create an "edge effect." This would reduce the value of the old growth habitat to old growth-associated wildlife. There also was concern that understory fuel reduction work (hand piling slash) in old growth would not fully maintain habitat values for old-growth dependent species.

Issue Indicators: Acres of understory fuel reduction in old growth habitat and acres of old growth habitat with new abrupt edge.

Issue 2: Forested Wildlife Habitat: There was concern that several units would negatively impact wildlife species using mature forests, such as Canada lynx and northern goshawk, and important white-tailed deer winter habitat.

Issue Indicators: Acres of potential lynx denning habitat proposed for seed tree or shelterwood treatment, acres of potential goshawk nesting habitat proposed for seed tree or shelterwood treatment, and acres of loss of important white-tailed deer winter thermal cover.

Issue 3: Soils: There was concern that past timber harvest activity in some areas proposed for treatment had resulted in levels of soil disturbance that remained too high to allow additional use of mechanized equipment.

Issue Indicator: Acres of detrimental soil disturbance at high risk of exceeding fifteen percent through treatment.

Issue 4: Aesthetics/Visuals: There was concern that certain units or prescriptions would negatively impact the appearance and/or enjoyment of the forest for members of the public that live or recreate in the area. Areas proposed for vegetation treatment in which low and moderate amounts of trees are retained typically have a higher visual impact than vegetation treatments with high retention levels. See Table 2-1 for a discussion of retention levels.

Issue Indicator: Acres of vegetation treatments proposed for low or moderate retention and acres proposed for high retention at or along established viewpoints.

Issue 5: Tree Retention Levels: There was concern that the level of fuels reduction proposed was excessive. Some commenters felt that proposed retention levels did not leave enough trees within some units.

Issue Indicator: Acres of vegetation treatment by low, moderate, and high retention levels.

Other Issues:

The following public concerns and resource areas are important and were considered in the analysis of issues; however, they were determined not to be significant issues that would require additional alternatives. Some are already addressed through other processes or in the Forest Plan (see “Features Common to All Action Alternatives” in this chapter).

- There is concern that fuel reduction actions would lead to the spread of noxious weeds.
- There is concern that use of mechanized equipment would result in impacts to fish and water quality by increasing sediment delivery and water yields.
- There is concern that not enough fuel reduction is being accomplished.
- There is concern that the fuel reduction treatments may actually increase the severity of wildland fire by promoting the growth of more understory and ladder fuels.

Alternative Descriptions

Alternatives Considered in Detail

Alternative A - The No Action Alternative

This alternative proposes no fuels reduction, timber harvest, road improvements, or temporary road construction within the Valley Face project area at this time. It does not preclude approved activities in other areas of National Forest at this time or from the Valley Face project area at some time in the future. The Council on Environmental Quality (CEQ) regulations (40 CFR 1502.14d) require that a “no action” alternative be analyzed in every EA or EIS. This alternative represents the existing condition against which the other alternatives are compared. This alternative does not reduce hazardous fuels, create and expand fuel reduction zones, or reduce the vulnerability of the forest to disturbances; therefore it would not meet the purpose and need of the project as stated in Chapter 1.

Alternative B - The Proposed Action

The emphasis of the proposed action is the reduction of hazardous fuels throughout the project area in a manner consistent with the goals of the Flathead County Community Wildfire Fuels Reduction/Mitigation Plan for the Wildland Urban Interface. This alternative is also designed to reduce the vulnerability of the forest to large scale, dramatic disturbances from insects, disease, and extreme wildland fire. This alternative was developed based in part upon comments received from the public during the initial public collaboration. Please refer to Figure 2-1 for locations of the proposed treatments.

Vegetation and Fuels Treatments

Several types of prescriptions are proposed to meet the objectives that were described in the purpose and need statements in Chapter 1. Three general categories of prescriptions proposed are regeneration harvest, commercial thin, and non-commercial fuels reduction. The retention level or average number of trees retained in each treatment type is shown in Table 2-1, below, and described in detail in Chapter 3, Vegetation section. The proposed treatment for each unit was determined from the current structure and species composition of trees and the desired future conditions for the stand. Retention would emphasize the largest, most fire tolerant trees, typically western larch and Douglas-fir.

Vegetation and fuels treatments proposed by Alternative B for 73 units include 2,965 acres of commercial harvest and 947 acres of non-commercial treatment using primarily hand tools. Tables 2-2 through 2-6 display the proposed acreage and retention levels for each unit. The proposed action was designed with no timber harvest in areas that are old growth or within riparian landtypes. However, 106 acres of fuel reduction using hand tools would occur in late seral stands that currently meet old growth definitions if this alternative is implemented. One unit (#500) would be commercially thinned in 1 to 10 acre patches to reduce fuels, break the continuity of fuels, and improve long-term thermal cover and short-term forage quality for white-tailed deer. Up to 75 acres would be treated in the 215 acre unit that currently contains dense sapling and pole-sized trees.

Table 2-1 below provides descriptions of the treatment types proposed in the action alternatives. The estimated trees per acre and canopy cover to be retained are expressed in ranges for each treatment type. Canopy cover is an estimate of the percent of the ground surface that would remain beneath the tree branches after treatment. The retention column indicates both the relative number of trees that would be left following treatment, and their distribution across the unit, either scattered throughout the unit (dispersed) or clustered in patches (aggregated).

Transportation Management

No new permanent system roads would be constructed under this alternative. An estimated 40.1 miles of existing roads would have drainage features improved to Best Management Practices (BMPs). Nine temporary road segments totaling 4.5 miles would be required to access some of the units; these temporary roads would be obliterated following their use. See Table 2-7 and Figure 2-1 for details of each temporary road segment. During the project development, the ID Team discovered several unauthorized roads (roads not designated or maintained) in the project area. These unauthorized roads totaling 1.4 miles in five separate segments would be used as temporary roads, although no construction is needed since they already exist on the landscape. These roads are identified in Figure 2-1. In this environmental assessment, these roads are referred to as “temporary road reconstruction.” These road segments would be rehabilitated to prevent erosion and motorized access once they are no longer needed to conduct fuel reduction activities. No changes to designated system road use restrictions or maintenance level designations would occur.

Table 2-1. Key to Treatment Categories in the Unit Tables

Treatment Type	Unit # group	Retention Description		
		Trees per acre	Label ¹	Canopy Cover ²
Seed Tree (ST)	1-99	5-20 medium to large trees per acre.	LDR	5-10%
Shelterwood (SW)	1-99	10-40 medium to large trees per acre.	MDR	10-30%
Commercial Thin (CT-M) (moderate retention)	1-99	20 to 100 pole to large trees per acre.	MDR	15-40% (avg 30%)
Commercial Thin (CT-H) (high retention)	1-99	30 to 200 pole to large trees per acre.	HDR	40-90%
Patch Thin (PT) (wildlife habitat treatment)	500	1-10 acre openings within dense stands of small (pole) to medium trees.	MAR or HAR	5-40% Average 60%
Sapling Thin (PCT) (non-commercial fuel treatment with precommercial thinning)	300	100 to 300 saplings per acre (Some units also have scattered pole to large trees).	LDR or MDR	5-40%
Understory Fuels Reduction (USR) (non-commercial fuel treatment)	200 400	50 to 200 small (pole) to large trees per acre.	MDR or HDR	25-90%
Downed fuels removal (HP) (non-commercial, hand fuel treatment)	400 (408, 410)	300 to 600 saplings to small (pole) trees per acre.	MDR	25-50%

¹(L, M, H) DR=Low, Moderate, High Dispersed Retention; (L, M, H) AR=Low, Moderate, High Aggregated Retention. ² Canopy cover = the proportion of the ground covered by the outermost foliage of trees above.

Table 2-2. Alternative B Commercial Harvest Units

Unit Number	Acres	Treatment Method	Retention Level	Logging ¹ System	Slash ² Treatment Method	Reforestation ³ Method
1	33	SW	MDR	Tractor	EX	Natural
1A	15	SW	MDR	Skyline	EX/JB	Natural
3	31	SW	MDR	Tractor	EX	Natural
4	56	SW	MDR	Tractor	EX	Natural
4A	48	SW	MDR	Skyline	EX/JB	Natural
5	50	SW	MDR	Tractor	EX	Natural
6	20	SW	MDR	Tractor	EX	Natural
6A	36	SW	MDR	Skyline	UB	Natural
7	159	CT-M	MDR	Tractor	EX	NA
8A	59	SW	MDR	Skyline	UB	IP/PP
9A	68	SW	MDR	Swing	EX	IP/WP
10A	28	ST	LDR	Skyline	UB	Natural
11	28	SW	MDR	Tractor	EX	Natural
11A	25	ST	LDR	Skyline	UB	Natural
12	64	SW	MDR	Tractor	EX	Natural
13	24	SW	MDR	Tractor	EX	Natural
13A	38	SW	MDR	Skyline	EX/JB	Natural

Unit Number	Acres	Treatment Method	Retention Level	Logging ¹ System	Slash ² Treatment Method	Reforestation ³ Method
14A	14	CT-M	MDR	Swing	EX	NA
16	7	SW	MDR	Tractor	EX	IP/PP
16A	21	ST	LDR	Skyline	EX/JB	IP/PP
17	51	SW	MDR	Tractor	EX	IP/PP
18	104	CT-H	HDR	Tractor	EX	NA
19	102	SW	MDR	Tractor	EX	IP/PP
19A	7	SW	MDR	Skyline	EX	IP/PP
20	147	CT-M	MDR	Tractor	EX	NA
21	138	SW	MDR	Tractor	EX	IP/WP
21A	12	SW	MDR	Skyline	EX	IP/WP
22A	14	SW	MDR	Skyline	EX/JB	IP/PP
23	19	CT-M	MDR	Tractor	EX	NA
24	51	CT-M	MDR	Tractor	EX	NA
25	76	CT-M	MDR	Tractor	EX	NA
26	163	CT-M	MDR	Tractor	EX	NA
27	113	SW	MDR	Tractor	EX	IP/PP
28	38	SW	MDR	Tractor	EX	IP/PP
29	17	SW	MDR	Tractor	EX	Natural
30	53	CT-M	MDR	Tractor	EX	NA
31	177	SW	MDR	Tractor	EX	Natural
31A	52	SW	MDR	Skyline	EX/JB	Natural
32	27	CT-M	MDR	Tractor	EX	NA
33	12	SW	MDR	Tractor	EX	Natural
34	21	SW	MDR	Tractor	EX	Natural
35	106	SW	MDR	Tractor	EX	IP/WP
36	4	CT-M	MDR	Tractor	EX	NA
37	76	ST	LDR	Tractor	EX	Plant
37A	25	SW	MDR	Skyline	EX	Plant
38	46	ST	LDR	Tractor	EX	Plant
39	123	CT-M	MDR	Tractor	EX	NA
40	59	SW	MDR	Tractor	EX	Natural
41	93	SW	MDR	Tractor	EX/JB	Natural
Total Acres	2750					

¹Logging System--Tractor=ground-based equipment, Skyline=cable equipment, Swing=ground and cable combined, NA=no product removal requiring use of mechanized equipment

²Slash Treatment—EX=Excavator pile; EX/JB=Excavator pile and jackpot burn; UB=under-burn, HP=hand pile

³Reforestation—Natural=allow natural restocking; Plant=plant larch, Douglas-fir; IP/PP, WP=interplant ponderosa pine, white pine; NA=no additional stocking needed

Table 2-3. Alternative B Non-commercial fuel reduction in old growth stands

Unit Number	Acres	Treatment Method	Retention Level	Logging ¹ System	Slash ² Treatment Method	Reforestation ³ Method
200	69	USR	HDR	NA	HP	NA
201	30	USR	HDR	NA	HP	NA
202	7	USR	HDR	NA	HP	NA
Total Acres	106					

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Table 2-4. Alternative B Pre-commercial thinning with fuel reduction

Unit Number	Acres	Treatment Method	Retention Level	Logging ¹ System	Slash ² Treatment Method	Reforestation ³ Method
300	38	PCT	LDR	NA	HP	NA
301	15	PCT	LDR	NA	HP	NA
302	38	PCT	LDR	NA	HP	NA
304	30	PCT	MDR	NA	HP	NA
305	88	PCT	MDR	NA	HP	NA
306	27	PCT	LDR	NA	HP	NA
307	30	PCT	MDR	NA	HP	NA
308	27	PCT	MDR	NA	HP	NA
309	144	PCT	MDR	NA	HP	NA
Total Acres	437					

Table 2-5. Alternative B Non-commercial fuel reduction

Unit Number	Acres	Treatment Method	Retention Level	Logging ¹ System	Slash ² Treatment Method	Reforestation ³ Method
400	54	USR	MDR	NA	HP	NA
401	50	USR	MDR	NA	HP	NA
403	44	USR	MDR	NA	HP	NA
404	15	USR	MDR	NA	HP	NA
405	43	USR	MDR	NA	HP	NA
407	40	USR	MDR	NA	HP	NA
408*	77	HP	MDR	NA	HP	NA
409	13	USR	HDR	NA	HP	NA
410*	51	HP	MDR	NA	HP	NA
411	10	USR	HDR	NA	HP	NA
412	7	USR	HDR	NA	HP	NA
Total Acres	404					

*Previously thinned units to receive hand-piling and burning of existing downed slash only

Table 2-6. Alternative B Wildlife Habitat Enhancement Unit

Unit Number	Acres	Treatment Method	Retention Level	Logging ¹ System	Slash ² Treatment Method	Reforestation ³ Method
500	215 (75)	PT	HAR	Tractor	EX	NA

¹ Logging System--Tractor=ground-based equipment, Skyline=cable equipment, Swing=ground and cable combined, NA=no product removal requiring use of mechanized equipment

² Slash Treatment—EX=Excavator pile; EX/JB=Excavator pile and jackpot burn; UB=under-burn, HP=hand pile

³ Reforestation—Natural=allow natural restocking; Plant=plant larch, Douglas-fir; IP/PP, WP=interplant ponderosa pine, white pine; NA=no additional stocking needed

Table 2-7. Alternative B Temporary Road Construction

Temporary Road Segment Number	Approximate Miles of Temporary Road	Units Accessed by Temporary Road
1	0.4	4, 4A
2	0.1	5
3	0.2	9A
4	0.2	11, 11A
6	0.5	21
7	0.9	31, 31A
8	0.6	37, 37A
9	0.4	31
10	1.1	40, 41
Total:	4.5	

Alternative C

This alternative was developed to respond to the significant issues identified following the scoping of the proposed action. In particular, Alternative C modifies the proposed action in response to concerns with the effects on wildlife habitat, and soil productivity. Public concern with the level of retention and/or visual impacts in several units also affected the design of this alternative. Please refer to Figure 2-2 for locations of the proposed treatments.

Vegetation and Fuels Treatments

Under this alternative, 2,225 acres of commercial harvest and 1,129 acres of non-commercial activity would reduce fuels in 70 units. Unit boundaries were pulled back around most identified old growth stands to reduce effects around the edges of the old growth. The hand treatment units proposed in late seral stands in Alternative B were dropped from this alternative. Several units were modified or dropped to address soil productivity and visual concerns. Unit 500 would receive 75 acres of non-commercial treatment to reduce fuels and improve wildlife habitat under this alternative. Tables 2-8 through 2-11 display the proposed acreage and retention levels for each unit.

Transportation Management

As in Alternative B, no new permanent system roads would be constructed. A total of 40.1 miles of roads would have BMPs applied. Eight temporary road segments totaling 3.5 miles would be required to access some of the units; these temporary roads would be obliterated following their use. See Table 2-12 and Figure 2-2 for details of each temporary road segment. Five unauthorized roads totaling 1.3 miles that currently exist on the landscape would be used for access and then rehabilitated afterwards. These roads are identified in Figure 2-2.

Table 2-8. Alternative C Commercial Harvest Units

Unit Number	Acres	Treatment Method	Retention Level	Logging ¹ System	Slash ² Treatment Method	Reforestation ³ Method
1	31	SW	MDR	Tractor	EX	Natural
3	27	SW	MDR	Tractor	EX	Natural
4	48	SW	MDR	Tractor	EX	Natural
4A	38	SW	MDR	Skyline	EX/JB	Natural
5	30	SW	MDR	Tractor	EX	Natural

Unit Number	Acres	Treatment Method	Retention Level	Logging ¹ System	Slash ² Treatment Method	Reforestation ³ Method
6	20	SW	MDR	Tractor	EX	Natural
6A	36	SW	MDR	Skyline	UB	Natural
8A	59	SW	MDR	Skyline	UB	IP/PP
9A	61	SW	MDR	Swing	EX	IP/WP
10A	24	ST	LDR	Skyline	UB	Natural
11	12	SW	MDR	Tractor	EX	Natural
11A	25	ST	MDR	Skyline	UB	IP/WP
12	36	SW	MDR	Tractor	EX	Natural
13	24	SW	MDR	Tractor	EX	Natural
13A	38	SW	MDR	Skyline	JB	Natural
14A	14	CT-M	MDR	Swing	EX	NA
16	7	SW	MDR	Tractor	EX	IP/PP
16A	17	ST	LDR	Skyline	EX/JB	IP/PP
17	38	SW	MDR	Tractor	EX	IP/PP
18	105	CT-H	HDR	Tractor	EX	NA
19	103	CT-H	HDR	Tractor	EX	NA
19A	7	SW	MDR	Skyline	EX	IP/PP
20	147	CT-M	MDR	Tractor	EX	NA
21	107	SW	MDR	Tractor	EX	IP/WP
22A	14	SW	MDR	Skyline	EX/JB	IP/PP
24	51	CT-M	MDR	Tractor	EX	NA
25	76	CT-M	MDR	Tractor	EX	NA
26	69	CT-M	MDR	Tractor	EX	NA
27	113	SW	MDR	Tractor	EX	IP/PP
28	38	SW	MDR	Tractor	EX	IP/PP
29	16	SW	MDR	Tractor	EX	Natural
30	44	CT-M	MDR	Tractor	EX	NA
30B	8	CT-H	HDR	Tractor	EX	NA
31	177	SW	MDR	Tractor	EX	Natural
31A	52	SW	MDR	Skyline	EX/JB	Natural
32	27	CT-H	HDR	Tractor	EX	NA
33	12	SW	MDR	Tractor	EX	Natural
34	21	SW	MDR	Tractor	EX	Natural
35	88	SW	MDR	Tractor	EX	IP/WP
35B	16	CT-H	HDR	Tractor	EX	Natural
36	4	CT-M	MDR	Tractor	EX	NA
37	76	ST	LDR	Tractor	EX	Plant
37A	25	SW	MDR	Skyline	EX	Plant
38	46	ST	LDR	Tractor	EX	Plant
39	155	CT-M	MDR	Tractor	EX	NA
41	43	SW	MDR	Tractor	EX/JB	Natural
Total Acres	2225					

¹Logging System--Tractor=ground-based equipment, Skyline=cable equipment, Swing=ground and cable combined, NA=no product removal requiring use of mechanized equipment

²Slash Treatment—EX=Excavator pile; EX/JB=Excavator pile and jackpot burn; UB=under-burn, HP=hand pile

³Reforestation—Natural=allow natural restocking; Plant=plant larch, Douglas-fir; IP/PP, WP=interplant ponderosa pine, white pine; NA=no additional stocking needed

Table 2-9. Alternative C Pre-Commercial thinning with fuel reduction

Unit Number	Acres	Treatment Method	Retention Level	Logging ¹ System	Slash ² Treatment Method	Reforestation ³ Method
300	38	PCT	LDR	NA	HP	NA
301	15	PCT	LDR	NA	HP	NA
302	38	PCT	LDR	NA	HP	NA
304	30	PCT	MDR	NA	HP	NA
305	88	PCT	MDR	NA	HP	NA
306	27	PCT	LDR	NA	HP	NA
307	30	PCT	MDR	NA	HP	NA
308	27	PCT	MDR	NA	HP	NA
309	144	PCT	MDR	NA	HP	NA
	437					

Table 2-10. Alternative C Non-commercial fuel reduction

Unit Number	Acres	Treatment Method	Retention Level	Logging ¹ System	Slash ² Treatment Method	Reforestation ³ Method
400	54	USR	MDR	NA	HP	NA
401	50	USR	MDR	NA	HP	NA
403	44	USR	MDR	NA	HP	NA
404	15	USR	MDR	NA	HP	NA
405	43	USR	MDR	NA	HP	NA
407	40	USR	MDR	NA	HP	NA
408*	77	HP	MDR	NA	HP	NA
409	13	USR	HDR	NA	HP	NA
410*	51	HP	MDR	NA	HP	NA
411	10	USR	HDR	NA	HP	NA
412	7	USR	HDR	NA	HP	NA
417	21	USR	HDR	NA	HP	NA
421	33	USR	HDR	NA	HP	NA
423	19	USR	MDR	NA	HP	NA
	477					

*Previously thinned units to receive hand-piling and burning of existing downed slash only

Table 2-11. Wildlife Habitat Enhancement Unit

Unit Number	Acres	Treatment Method	Retention Level	Logging ¹ System	Slash ² Treatment Method	Reforestation ³ Method
500	215 (75)	PT	HAR	NA	HP	NA

¹Logging System--Tractor=ground-based equipment, Skyline=cable equipment, Swing=ground and cable combined, NA=no product removal requiring use of mechanized equipment

²Slash Treatment—EX=Excavator pile; EX/JB=Excavator pile and jackpot burn; UB=under-burn, HP=hand pile

³Reforestation—Natural=allow natural restocking; Plant=plant larch, Douglas-fir; IP/PP, WP=interplant ponderosa pine, white pine; NA=no additional stocking needed

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Table 2-12. Alternative C Temporary Road Construction

Temporary Road Segment Number	Approximate Miles of Temporary Road	Units Accessed by Temporary Road
1	0.4	4, 4A
2	0.1	5
3	0.2	9A
4	0.2	11, 11A
6	0.5	21
7	0.9	31, 31A
8	0.6	37, 37A
9	0.4	31
Total:	3.5	

Alternatives Considered But Eliminated From Detailed Study

Home Ignition Zone Alternative: Several commenters suggested 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). While many of the units in Alternatives B and C are in close proximity to homes, other units are more distant but still within the Wildland/Urban Interface as identified in the FCWP. These units respond to the Purpose and Need for the project by reducing the vulnerability of the forest to large scale, dramatic disturbances from insects, diseases, or unwanted wildland fire, both on a stand basis and across the landscape.

Fuel Reduction Adjacent to Industrial Timber Lands: Several commenters requested that the project include the creation of fuel breaks along the boundary between NFS lands and lands belonging to private timber companies. Several units included in Alternatives B and C would partially address this issue, but it was determined that many of the stands affected by this approach are currently classified as old growth and fuel reduction treatments to effectively change wildland fire behavior in these areas would not allow them to remain classified as old growth. Forest Plan standards and HFRA require the maintenance of existing old growth areas.

Features Common to Action Alternatives

The Forest Service requires protective measures specific to a land management project be employed during implementation. These specific protective criteria are designed during the planning phase of a project and updated as the alternatives are developed and modified. Broad management direction is taken from the Northern Regional Guide (USDA Forest Service 1983). Additional direction comes from applicable Forest Service manuals and handbooks. The following features have been incorporated as design criteria in the two action alternatives.

Timing of Activities

If either action alternative is implemented, fuel reduction activities would be carried out beginning in 2007 and continuing approximately five years. Timber harvest, fuel reduction activities, and temporary road construction/obliteration would not occur in important big game winter range between December 1 and April 15 for big game security. This involves Units 13, 19, 19A, 20, 23 (423 in Alternative C), 25, 26, 27, 29, 30, 31, 31A, 34, 35, 37, 37A, 41, 307, 405, 409, and 500; also temporary roads 7, 11, and 12. Between April 15 and July 31, timber harvest

and fuel reduction would not occur in Unit 409 or in the area identified as Unit 30 in Alternative B and Unit 30B in Alternative C, in order to avoid disturbance to nesting loons on Bootjack Lake.

Soils

To minimize erosion and other detrimental impacts to the soil resource, all road construction, reconstruction, and timber harvest would be completed using Best Management Practices (BMPs) or Soil and Water Conservation Practices (SWCPs). The practices are described in detail in the Forest Service Soil and Water Conservation Handbook (FSH 2509.22), the Soil Management Handbook (FSH 2509.18), and the Flathead Forest Plan (pages II: 49-55) (Exhibit H-21). BMPs include practices such as providing for sufficient road drainage, limiting tractor logging operations to periods when soils are dry or under winter snow and less subject to compaction, seeding of landings and cut-and-fill slopes of roads, and maintaining undisturbed vegetation strips between cutting units and streams for sediment filtration. In order to conserve soil nutrients, treatment of slash in seed tree and shelterwood units would be delayed until after one wet season following harvest except where doing so would create an unacceptable wildland fire risk (see soils section of Chapter 3). Each harvest unit and the proposed roadwork would be reviewed and applicable SWCPs identified on a site-specific basis for protection of the soil and water resource. These practices will be listed and described for the Selected Alternative in the Decision Notice for this EA.

Two soil groups based on soil characteristics are used to discuss the features common to action alternatives: sensitive soils and non-sensitive soils. Soils are sensitive when they have a high content of clay and silt, few rocks or gravel, and high water-holding capacity. Non-sensitive soils have enough rocks and gravel to provide support to ground-based equipment operating on the soils. Water drains out of these soils and they do not hold enough water to make them soft for extended times.

Harvest Activities on Sensitive Soils

Sensitive landtypes vary from one area to another depending on climate, geology, and soil characteristics. Sensitive landtypes in the analysis area are those that have fine-textured soils with high water-holding capacity and few rocks. These soils have high productivity, but because of their physical characteristics are subject to compaction and displacement during management activities, especially those activities that use ground-based equipment. This disturbance is most likely to occur when the soils are wet. Within the analysis area, Landtype 14-2 and all riparian landtypes are sensitive.

Only Unit 307, which is a component of both action alternatives, is located on a soil type (14-2) that is seasonally sensitive. Non-commercial, non-mechanized hand treatments would be used to reduce fuels in this unit to prevent adverse effects to soils.

Harvest Activities on Non-sensitive Soils

All other proposed management activities in the analysis area are on non-sensitive soils. The following practices would be used to reduce impacts on harvest units that are not on sensitive soils. All units would be logged using designated skid trails in either winter under conditions that protect the soil from rutting, displacement, and compaction; or in summer on soils that are dry enough to prevent rutting and puddling. Winter logging would not be allowed in those units identified as important big game winter range. In either case, skid trails must be spaced far

enough apart to cause less than 15 percent of the unit to have detrimental soil disturbance from all causes including past management, skid trails, temporary roads, and landings.

There are two timing options for these units; either log in summer when the soils are dry by the “hand feel” method as described in Exhibit H-9 (usually after July 15th), or log in winter when there is frozen ground or at least 18 inches of settled snow. The winter logging option depends both on temperatures below freezing and sufficient snow depth to be effective. Skid trails can be spaced closer than 75 feet when winter conditions exist. Skid trails must be 100 feet apart when summer conditions exist.

Mechanical fuel reduction treatments are designed to meet Regional Soil Quality Standards that restrict detrimental soil disturbance to less than 15 percent of an activity area. Excavators disturb relatively small amounts of soil compared to dozers as discussed in the monitoring report called *New Soil Disturbance Associated with Slash Piling with an Excavator* (Exhibit H-11). Any mechanized piling or fuel reduction work would be accomplished with excavators.

Harvest Activities on Areas with Previous Management

All existing old road beds, trails or rail road beds should be reused where possible. This requirement would reduce the extent of both direct and cumulative effects caused by equipment operation. If they cannot be reused, their area must be considered when laying out skid trails so the end result is less than 15 percent detrimental soil disturbance. Any new trails on previously harvested units should be at least 100 feet apart. All logging activities should occur when soils are dry by the hand feel method as described in the project record or logged in winter when there is at least 18 inches of settled snow or frozen ground. The winter logging option depends on both temperatures below freezing and snow to be effective.

Wildlife

Non-Game Wildlife Habitat

Amendment 21 of the Flathead Forest Plan specifies the minimum number of snags, snag replacement trees, and pieces of downed wood to be left in each potential vegetation group (PVG). Although the minimum diameters are not always present in a given stand, these would be retained to meet or exceed the intent of the Forest Plan under all alternatives wherever they exist (Exhibit Rd-3). To provide for these snag and downed wood retention needs, as well as living tree canopy and large trees, the following would be prescribed:

- All live and dead larch and ponderosa pine 18 inches and greater diameter at breast height (DBH) and all live and dead Douglas-fir 25 inches and greater DBH would be retained, unless leaving them would compromise safety.
- Snags greater than 9 inches DBH that are felled for safety concerns would be left on site.
- Wherever present, at least 32 downed logs per acre that are 9 to 20 inches in diameter and at least 20 feet long would be left evenly distributed across the units. If there are too few large enough logs, 6 to 9 inches in diameter logs may be substituted to reach this number of pieces.
- Wherever present, at least 15 downed logs per acre that are greater than 20 inches in diameter and at least 6 feet long would be left evenly distributed across the units.
- Some slash piles would be left unburned in units, as described in Exhibit Rd-6.

Wildlife Security

Hunting, transporting of hunters, and transporting of game would be prohibited by timber, road building, or other contract workers while working on or off roads closed to motorized vehicle use by the general public.

Personal use firewood gathering would not be allowed by contractors or other workers on newly constructed roads or any other roads not open to motorized use by the general public.

All newly constructed (temporary) roads would be closed by sign or gate to public motorized use during and after road building and other activities. All existing roads currently closed to public motorized use would remain closed during implementation of all proposed activities.

Timber harvest, fuel reduction activities, and temporary road construction/obliteration would not occur in important winter range as discussed earlier under “Timing of Activities.”

Big Game Habitat Enhancement

Shrub planting to improve habitat for big game and other species may occur on approximately 50 to 150 acres in or near some of the harvest units. Shrub planting would usually consist of willow, serviceberry, red-osier dogwood, mountain maple, or redstem ceanothus at a density of about 100 to 300 plants per acre. Shrub planting could take place in areas with light or and/or moderate tree retention where sufficient soil moisture and light would assure survival and most often near riparian areas.

Threatened, Endangered, and Sensitive Wildlife

If any of the following are found within or close to any vegetation management unit or road location, operations within that unit or on that road would cease until the wildlife biologist is notified, and activities are modified if necessary:

- Active denning sites used by grizzly bears, wolves, lynx, fishers, or wolverines;
- Active nesting sites used by bald eagles, northern goshawks, black-backed woodpeckers, or flammulated owls;
- Active rendezvous (pup rearing) sites used by wolves.

All contractors and others implementing the project would be required to comply with a food-storage and sanitation order.

To avoid disturbance to nesting loons on Bootjack Lake, timber harvest and fuel reduction would not occur as discussed earlier under “Timing of Activities.”

A small portion of precommercial thinning Unit 302 may meet criteria for Canada lynx habitat. Accurate elevations on the ground would be measured at the time of unit boundary determination and any portions above 4100 feet in elevation would be excluded from treatment.

Water and Fisheries

Many of the BMPs applied to protect the soil resource would also protect watershed, fisheries, and riparian values. The measures described in the Streamside Management Zone Act (SMZ-1993, also referred to as Montana House Bill 731) and applied to this project would protect all perennial and intermittent streams flowing adjacent to treatment units. The proposed units would

also be consistent with guidelines and standards within the Inland Native Fish Strategy Environmental Assessment and its July 1995 Decision Notice (USDA Forest Service 1995).

Rehabilitation of drainage features on system roads (BMPs) as described in the Proposed Action is a feature common to both action alternatives, including two culvert replacements to reduce sediment and facilitate fish passage on FSR 2956 and FRS 542 on Lost Creek. Additional culvert replacement may occur as opportunities are identified during project implementation.

Air Quality

All prescribed burning conducted in this area would be in compliance with the Smoke Management Plan prepared by the Montana Air Quality Bureau and administered by the Montana State Airshed Group (Forest Plan, page II-64) through a Memorandum of Agreement. The Environmental Protection Agency (EPA) has approved these plans as meeting the requirements of the Clean Air Act as amended in 1987. Burning plans would be developed where prescribed burning is the method selected for slash hazard reduction and site preparation for reforestation. When feasible, prescribed burning would be done in the autumn to better mimic the natural fire regime. Nighttime burning that could affect local communities would be avoided because smoke dispersal is worst during this time. Stumps and heavy fuels (logs) would be fully extinguished adjacent to private land with residences to reduce the lingering smoke that can occur from these smoldering fuels; as well as to reduce the chance of escaped fire.

Vegetation

Timber Harvest

In units to be naturally regenerated, phenotypically superior leave trees would be selected whenever possible to increase the likelihood of leaving superior genotypes as seed sources. In all units, the largest trees would be favored to leave; harvest prescriptions would include minimum diameter limits for western larch, ponderosa pine, and Douglas-fir, as described above in the wildlife part of this section. All hardwoods would be retained, unless they compromise fuels or reforestation objectives. Small understory trees, either individually or in clusters, would also be left in harvest units to provide for vertical diversity in the stand to the extent possible without compromising fuel reduction objectives.

Fuels Reduction

Prescribed fire management plans ("burn plans") are written for each individual prescribed burn and include plans for ignition, holding, escaped fire contingency, mop-up, and patrol. This is to ensure that each burn meets the objectives prescribed for that particular area. The plan is designed to use the prescribed weather, personnel, and equipment that are needed to control the burn within the identified boundaries.

Most sub-merchantable trees would typically be felled or "slashed" and subsequently piled and burned in order to reduce the amount of ladder fuels in the residual stand. As noted above, some small understory trees would be retained to provide vertical diversity.

Fuels treatment without a commercial timber harvest or underburning would occur on about 1,000 acres in both alternatives. Vegetative materials to be piled and burned are brush and small-diameter trees and existing down and dead fuel. The work would be accomplished using hand tools and chain saws to move, pile, and burn material.

Noxious Weeds

Invasion and spread of noxious weeds is a concern in the analysis area. New cut and fill slopes would be seeded with a certified weed-free grass species mix for erosion control and to prevent establishment of noxious weeds. Any non-native seed applied would be short-lived or non-invasive.

During project implementation, logging, site preparation, and road reclamation equipment used in the area would be washed to remove weed seeds. This action is consistent with recommendations in *An Evaluation of Noxious Weeds in the Lolo, Bitterroot, and Flathead Forests* (Losensky 1987). Roadside clearing should be limited to retain as much shade as possible to help inhibit the establishment and success of noxious weeds. A Forest-wide environmental analysis (Flathead National Forest Noxious and Invasive Weed Control Decision Notice and Finding of No Significant Impact, May 2001) set priorities and parameters for noxious weed control. Weed treatments in the analysis area would be consistent with this strategy.

Revegetation with Native Plants

In places where it is necessary to revegetate, the Regional Forester has determined that using native plant species is desirable to protect ecosystem integrity. It is currently the policy of Region One to collect seed or cuttings locally for cultivation and subsequent planting. This policy and practice would occur following any action in the Valley Face decision that requires revegetation, to the extent that funds are available. In the event that funding is not available for planting native plants, short-lived or non-invasive non-native plants would be used.

Roads

Road Maintenance

Road maintenance actions consisting of brushing and blading may be needed on some of the haul roads within the project area. Other minor drainage work such as the placement of drain dips would likely take place. Dust abatement and blading would occur as needed on the main haul routes.

Temporary Road Obliteration

All temporary roads constructed for timber harvest would be obliterated immediately after mechanical slash reduction activities are complete or after the timber harvest activity is complete if the unit is to be underburned. Obliteration would consist of removal of any culverts, recontouring the slope, and revegetating the disturbed area with native grasses, shrubs, and trees.

Visual and Scenic Resources

The following are examples of techniques to be used to manage the effects of timber harvesting and fuels management on the appearance of the landscape. Implementation of these techniques would help ensure that scenic resource goals are met. These techniques are shown based on viewing distance zones.

Foreground viewing zones: "Foreground viewing zone is based upon distances at which details can be perceived. It would usually be limited to areas within 1/4 to 1/2 mile of the observer, but must be determined on a case-by-case basis" (from USDA Handbook 701,

Landscape Aesthetics). The following guidelines would be used in all units along open roads where safety for the public and contractors can be maintained and are practicable with the prescribed logging methods:

- Use whole tree removal.
- Designate skid trails to angle away from line of sight.
- Dispose of burn piles during the same or second year of operation.
- Place hand piles back at least 100 feet from the edge of roads and behind natural screens.
- In order to retain a moderate Scenic Integrity Level along open roads in the following units, residual trees should be irregularly spaced. In addition, 10 to 20 sapling and pole sized trees per acre irregularly spaced should be retained in the foreground viewing zone in these units.
 - Alternative B: 18, 21, 21a, 22a, 23, 35, 41
 - Alternative C: 18, 21, 22a, 35, 35b, 41

Middleground and background viewing zones: "Middleground is defined as the zone which extends from the foreground viewing zone to 3 to 5 miles from the observer. Individual tree forms are usually only discernible in very open or sparse stands of trees. Background is defined as the distant part of a landscape or the area located from three to five miles to infinity from the viewer" (from USDA Handbook 701, *Landscape Aesthetics*). The following guidelines would be used in middleground and background viewing zones for Units 9a, 10a, 11, 11a, 16, 16a, 17, 24, 35, 35B, 37, 38, and 39 where safety for the public and contractors can be maintained and are practicable with the prescribed logging methods:

- Leave individual and clustered trees to minimize visual contrasts.
- Shape units to merge with topographic features.
- Feather unit edges with partial cut prescriptions where feasible.
- Locate units adjacent to older cutting areas to minimize visual contrasts, link units together, and connect them to existing natural openings.
- Duplicate shapes of natural openings.

Cultural Resources

Field investigation in accordance with the National Historic Preservation Act is ongoing. This includes consultation with the State Historic Preservation Office, the Advisory Council on Historic Preservation, and local Native American tribes. Special timber sale contract provision "B6.24# Protecting of Cultural Resources" would be included in the timber sale contract to assure protection of cultural sites.

Monitoring

Monitoring is gathering information and observing management activities to provide a basis for periodic evaluation of Forest Plan goals and objectives. The purpose is to determine how well objectives have been met and how closely management standards have been applied during and after project implementation. Evaluation of the monitoring results assists in the review of the condition of NFS lands as required by National Forest Management Act regulations. It may result in decisions for further action, such as modifying management practices.

There are three basic types of monitoring:

(1) **Effectiveness Monitoring** is used to determine if management practices as designed and executed result in the desired resource condition.

(2) **Implementation/Compliance Monitoring** is used to determine if goals, objectives, standards, and management practices are implemented as detailed in the Forest Plan, this EA, or by other State or Federal agencies. This would be performed by contract administrators, the ID Team, and resource specialists.

(3) **Validation Monitoring** examines the quality of the data and assumptions used in the analysis process.

Several sources of funding exist for resource monitoring. Some items would be funded with Knutson-Vandenberg (KV) funds, while other items would be funded with appropriated funds. No assignment of funding source to the monitoring would be made at this time because future availability of funds is unknown. Priorities for annual monitoring are established and agreed upon by the ID Team and the Responsible Official, and implementation would be based on annual budgets and program direction. All legally required monitoring would be performed.

Monitoring activities are discussed by environmental component, consistent with those used in the EA.

Soils

Effectiveness Monitoring:

Forest Service Region 1 Draft Soil Quality Standards, 1999, states that at least 85 percent of an activity area must have soil that is in satisfactory and productive condition. This same document describes conditions that are not satisfactory. To determine if this direction is met, several units would be monitored if an action alternative were selected. The units to be monitored would vary depending on the alternative that is implemented. Monitoring would be concentrated on units with the highest levels of past disturbance. These units are at a higher risk of exceeding the soil quality standards. At a minimum the following units would be monitored:

Alternative B: Units 3, 19a, 23, 26, 500

Alternative C: Units 3, 19, 19a, 26

These units represent a cross-section of the management activities that would occur with the selection of an action alternative and would span the entire time frame for the project (approximately 6 years). Monitoring would follow the process outlined by Howes (undated) in Exhibit H-21. Monitoring would consist of random transects across the units. The condition of the soil surface would be recorded. Along with the condition of the soil surface, the amount of large woody debris and the percent organic cover would be determined. The objective for monitoring is to see that the productive potential of the land is maintained at a minimum of 85 percent of natural conditions.

Implementation Monitoring:

District fire personnel would monitor moisture conditions to ensure that burning occurs when soil and duff moisture content would promote fires that maintain organic matter and nutrients on the burned areas.

For units harvested by mechanical means (dozers, skidders, etc.), soil moisture levels would be monitored by the Sale Administrator to ensure that logging, fuel treatment, and site preparation activities are conducted during periods when soils are below the recommended moisture content and less susceptible to compaction. Effects of logging on soils in units harvested by mechanical methods would be monitored by on-the-ground review.

Vegetation/Timber Management

Reforestation surveys would be conducted for each regeneration harvest unit. Surveys would occur at a minimum during the first, third, and fifth year following completion of the initiating activity for reforestation (site preparation or planting). This monitoring is necessary to assure adequate stocking levels for stand certification (Flathead Forest Plan, Appendix I). Funding for this monitoring is incorporated into the Knudson-Vandenberg trust funds of the timber sale contracts.

Surveys would be conducted on all units before and after site preparation and slash treatment activities are accomplished. These would meet the dual purpose of determining whether fuel management and site preparation objectives are met and to gather data on the current condition of stands for planting needs.

All harvest activities would be monitored to ensure compliance with contract specifications. Minor contract changes or contract modifications would be enacted, when necessary, to meet objectives and standards on the ground. Timber sale layout, harvest unit prescriptions, and timber sale contract provisions would be reviewed by a district management team to determine compliance with Forest Plan and EA goals, objectives, and standards prior to sale award.

Assessment for any noxious weed problem would continue for at least three years following road reclamation activities.

Wildlife

Monitoring would determine if timber sale and site preparation activities maintained appropriate levels of present and future snags and large woody debris. This should be done after the first several units are harvested.

Monitoring of species associated with old growth habitats would occur in accordance with the Forest Plan.

Monitoring of winter white-tailed deer use in Units 500 and 19 would occur after treatment.

Monitoring of loon nesting success would continue in the nesting seasons before and after implementation of nearby fuel reduction and timber harvest.

Monitoring to assess effectiveness of public motorized access restrictions on temporary roads and other closed roads used for project implementation would occur during project activities and during big game hunting season.

Roads

All road construction and road maintenance would be monitored to ensure compliance with specifications and to meet the intent of management practices. Specifications would be designed to meet objectives and management practices. The Forest Service would monitor the work performed by the contractor to ensure that their methods of operation and work are in compliance with the specifications that were designed to meet the intent of the management practices. If the designed work is not meeting the objectives and management practices, a modification may have to be made by the Forest Service to change the work to meet the objectives and management practices.

Watershed and Fisheries

Potential sediment sources (such as stream crossings and road construction/reconstruction) in the sale area would be monitored to assess the need for stabilization to protect habitat for cutthroat trout and other aquatic species. Areas of disturbed soil as a result of logging and road reclamation would be monitored for revegetation.

Comparison of Alternatives

The following table compares the features of all three alternatives. Table 2-14 compares the alternatives by the issue indicators identified earlier in this chapter. Information in the tables is focused on activities and effects where different levels of effects or outputs can be distinguished quantitatively or qualitatively among alternatives. Further analysis of environmental consequences can be found in Chapter 3.

Table 2-13. Summary of the Features of the Alternatives.

Feature	Alternative A <i>No Action</i>	Alternative B <i>Proposed Action</i>	Alternative C
Temporary road construction	0	4.5 miles	3.5 miles
Temporary road reconstruction of low-grade roads	0	1.4 miles	1.3 miles
Road rehabilitation (BMPs)	0	40 miles	40 miles
Timber volume estimate in million board feet	0	15	12
Total timber harvest acres	0	2965	2225
- Seed tree	0	196	188
- Shelterwood	0	1614	1218
- Commercial thin - moderate retention	0	836	560
- Commercial thin - high retention	0	104	259
- Patch thinning	0	215	0
Fuel reduction acres without timber harvest	0	947	1129
- Precommercial thinning	0	437	437
- Understory fuel reduction	0	276	349
- Understory fuel reduction in old growth stands	0	106	0
- Down fuel reduction	0	128	128
- Patch thinning	0	0	215
Total Acres of Fuel Reduction	0	3912	3354

Table 2-14. Response of Alternatives to the Issues.

Issue and Issue Indicator	Alternative A <i>No Action</i>	Alternative B <i>Proposed Action</i>	Alternative C
#1. Old Growth Forest			
• Acres of understory fuel reduction in old growth habitat	0	126	0
• Acres of old growth habitat with new abrupt edge	0	138	17
#2. Forested Wildlife Habitat			
• Acres of potential lynx denning habitat proposed for seed tree or shelterwood treatment	0	330	265
• Acres of potential goshawk nesting habitat proposed for seed tree or shelterwood treatment	0	310	197
• Acres of loss of important white-tailed deer winter thermal cover.	0	420	308
#3. Soils			
• Acres of detrimental soil disturbance at high risk of exceeding 15%.	0	169	0
#4. Aesthetics/Visuals			
Acres of vegetation treatments by retention level at or along viewpoints:			
• low and moderate	0	792	559
• high	0	0	70
#5. Tree Retention Levels			
Acres of vegetation treatment by retention level:			
• low	38*	314	281
• moderate	1991*	3143	2515
• high	1883*	455	558

* untreated existing condition acres of proposed treatments in Alternative B