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Environmental Assessment

Belton Fuels Reduction Project

Hungry Horse Ranger District, Flathead National Forest
Flathead County, Montana



BELTON FUELS REDUCTION PROJECT

Environmental Assessment

**Flathead National Forest
Hungry Horse Ranger District
Flathead County, Montana**

August 2008

Lead Agency: USDA Forest Service

Responsible Official: Cathy Barbouletos, Forest Supervisor
Flathead National Forest
650 Wolfpack Way
Kalispell, MT 59901
(406) 758-5204

**For Further Information,
Please Contact:** Michele Draggoo, Planning Team Leader
Hungry Horse, Glacier View, and Spotted Bear Ranger Districts
Flathead National Forest
10 Hungry Horse Drive (P.O. Box 190340)
Hungry Horse, MT 59901
(406) 387-3827

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BELTON FUELS REDUCTION PROJECT

ENVIRONMENTAL ASSESSMENT

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INTRODUCTION

The Forest Service has prepared this Environmental Assessment (EA) in accordance with the National Environmental Policy Act (NEPA) and other relevant Federal and State laws and regulations. The Belton Fuels Reduction Project (Belton Project) will be conducted under the guidance of the Flathead National Forest Land and Resource Management Plan or Forest Plan (USDA Forest Service 1985).

This EA discloses the project's foreseeable environmental effects for consideration in determining whether to prepare an Environmental Impact Statement. The reports cited in this EA and additional project documentation are available in the Belton Fuels Reduction Project File (Project File) planning record located at the Hungry Horse Ranger District Office, Hungry Horse, Montana.

The Belton Fuels Reduction Project (Belton Project) proposes to treat approximately 1,824 acres of National Forest System (NFS) lands within a larger project area generally extending between the towns of Hungry Horse and West Glacier, and from the Middle Fork Flathead River east to the Belton Point/Desert Mountain ridgeline (see attached Proposed Action Treatment Units Map and Tables 1, 2, and 3). The entire project area is approximately 35,700 acres in size, with about 69% National Forest lands (24,600 acres) and 31% (11,100 acres) private lands.

The Flathead National Forest Land and Resource Management Plan (Forest Plan) establishes management direction for the Flathead National Forest. Project implementation consistent with this direction is the process by which desired conditions described by the Forest Plan are achieved. Affected management areas (MA) and their Forest Plan emphasis within the Belton area are listed below.

- MA 7 Lands where timber management is suitable, but special consideration of the visual impact of management activities is required. These are National Forest lands within approximately 1,500 feet of Highway 2 and include Units 24, 25, and 28.
- MA 9 Forested lands capable of providing white-tailed deer winter range that are suitable for forest management; includes Units 45 and 46.
- MA 10 Designated Administrative Sites including Units 38, 39, 40 and 49.
- MA 13A Lands designated as non-timber management lands capable of providing winter habitat for mule deer and elk; includes prescribed burning Units A – F.
- MA 14 The Coram Experimental Forest, Unit 37.
- MA 15 Forested lands where timber management with roads is economical and feasible; includes Units 1-15, 17-20, 23, 26, 29-31, 33, 34, 36, 41-44, and 50.
- MA 18 Lands within the Wild and Scenic River corridor, direction focuses on preserving the integrity of Wild and Scenic River corridor; includes Units 16 and 27.

PURPOSE AND NEED FOR ACTION

Following the 2000 fire season, Congress directed the Forest Service to identify high-risk wildland-urban interface (WUI) areas, using the 2000 National Fire Plan Guidelines

(www.fireplan.gov). The communities of the Flathead Valley have been identified as “communities at risk” from wildland fire. Flathead County identified WUIs throughout the county in their Flathead County Community Wildfire Fuels Reduction/Mitigation Plan. This fuels reduction and mitigation plan was prompted by the Healthy Forests Restoration Act (2003) which enabled communities to interact more fully with land management agencies when developing forest management and hazardous fuel reduction projects across the landscape. The county plan defines the WUI within Flathead County as being the area immediately adjacent to wildland or forest fuels within 1.5 miles of residential structures, developments, or private properties suitable for development or for residential use. This plan also established countywide priorities for funding fuels mitigation projects based on fire district input.

Addressing the direction from Congress, Forest Service staff completed a landscape level assessment in 2003 on lands that included large amounts of WUI areas around the communities of Columbia Falls, Hungry Horse, and West Glacier. This assessment area encompasses the entire Belton Project area. This assessment examined ecosystem functions and conditions in this 64,000-acre area and identified historical reference conditions to compare with existing conditions to help explain significant differences, similarities, or trends and their causes. Additionally, it identified management opportunities that could move the ecosystem toward management objectives or desired conditions. The proposed activities for the Belton Fuels Reduction Project are partly based upon recommendations from this assessment (refer to the summary of this analysis in the Project File). One of these recommendations was to strategically place fuel reduction zones throughout the assessment area to lower the risk of high intensity future wildfire, improve our ability to suppress and control wildfire, protect human life, and protect identified human and natural resource values. These values include Coram Experimental Forest, Forest Service administrative sites, private property and structures, and communities.

Since this assessment was completed, the Hungry Horse and Glacier View Ranger Districts have implemented several projects in the assessment area to reduce wildland fuels in the WUI. One of the earliest efforts was the Hungry Horse-West Glacier Fuels Reduction Project, which implemented about 210 acres of thinning treatments (2004 - 2005) between the towns of Hungry Horse and West Glacier. Comments received on that project indicated that there were additional areas where high fuel loads concerned area residents. The Hungry Horse and Glacier View staff worked with interested members of the community to examine these areas to determine if additional fuels reduction activities were warranted.

The Belton Fuels Reduction Project is proposed to respond to the goals and objectives of the Flathead National Forest Land and Resource Management Plan, the Flathead County Community Wildfire Fuels Reduction / Mitigation Plan, and input received from members of the public during our collaborative efforts identified below. A variety of current conditions and guidance from this direction provide the purpose and need for management action in the Belton Fuels Reduction Project area. The purpose and need for the proposed management actions is to:

- Create forest stand conditions that lower the risk of future high-intensity and severity wildfire (i.e. reduce the probability of a crown fire).
- Improve our ability to initial attack and control fires.

- Reduce the risk to wildland firefighters and residents of the wildland-urban interface should a fire occur.
- Facilitate protection of human and natural resource values in the event of a fire.
- Increase the diversity of tree composition to include more fire-tolerant species.
- Create a mosaic of vegetation conditions across the landscape to benefit wildlife.

PUBLIC INVOLVEMENT

Early Collaboration

The Flathead National Forest has undertaken collaborative efforts, beginning in 2001, with various state and Federal agencies (e.g. Montana Dept. of Natural Resources and Conservation, and the National Park Service) and other partners to investigate ways to lower the risk of wildfires. The focus of these meetings was how to best collaborate on reducing risk to communities through fire prevention, staffing, preparedness, fuels treatments, wildland-urban interface projects, and grant opportunities. The Belton Fuels Reduction Project analysis area was identified as one of the priority fuels reduction projects on the Hungry Horse Ranger District based upon these criteria.

Feedback received through subsequent collaboration efforts of the Forest Service with local agencies and interested parties indicated that most respondents supported some kind of fuels reduction project in the Belton area (refer to Public Involvement section of the Project File). We also met with numerous landowners near their homes to discuss specific areas and concerns related to fire risk and fuel reduction.

Proposed Action Efforts and Comments

The project was first listed in the Flathead National Forest Schedule of Proposed Actions (SOPA), in the January – March 2007 issue and has appeared quarterly to date. This listing informed the public of our plan to analyze the Belton area for fuels/fire risk. Using input we received from the collaborative effort described above, we proposed site-specific fuel reduction activities in the Belton Project area. Throughout the project-planning phase, various interdisciplinary team members met with individuals and groups of people in the field regarding questions or concerns they had on particular treatment areas.

The Belton project was initially proposed as a project that fit within a hazardous fuels categorical exclusion (CE) which had been adopted by the Forest Service in June 2003 as part of the President's Healthy Forests Initiative. On December 5, 2007, the Ninth Circuit invalidated the use of this categorical exclusion, holding that the Forest Service's adoption of the Fuels CE violated NEPA because the agency "failed to assess properly the significance of the hazardous fuels reduction categorical exclusion and thus it failed to demonstrate that it made a 'reasoned decision' to promulgate the Fuels CE based on relevant factors and information." Following the invalidation of the CE, the Flathead National Forest has taken the Proposed Action and environmental effects analysis used to support the CE and developed this Environmental Assessment. The following information documents the public involvement efforts that have been utilized to support this EA.

On January 25, 2007, a letter was sent to over 130 interested parties and landowners inviting their collaboration in the planning of the Belton Fuels Reduction Project. The District resource specialists had made a preliminary identification of broad areas with vegetation conditions that could sustain a high-severity crown fire threatening to private homes and land. At this early stage of planning no specific treatment sites had been selected, and the public was invited to give their input regarding treatment areas and methods.

On February 12, 2007, an Open House was held at the Hungry Horse office to collaborate with individuals and groups regarding the upcoming Belton Fuels Reduction Project. The purpose was to come up with a Proposed Action following the collaboration efforts.

Twenty-one letters, phone calls, and/or visits were received because of this letter and/or the Open House; 15 individuals attended the Open House. These collaborative comments were used to help design this project. The comments and the Forest Service responses to them can be found in the Project File. Several media stories about the project were published in area newspapers in January and February 2007.

On April 4, 2007, a legal notice requesting comments on the project was published in The Daily Inter Lake. A letter outlining the Proposed Action and requesting comments was sent out on April 2, 2007 to nearly 140 groups and individuals who either owned property or lived in the Belton Fuels Reduction Project area, or who had otherwise expressed interest in activities on NFS lands in the area. Approximately 18 individuals or groups submitted written, telephone, or personal visit comments because of the scoping letter. These scoping comments were considered and helped to define the Proposed Action. Scoping comments are contained in the Project File.

Many of the comments we received throughout the planning of this project were used to help design some of the features of the Belton Fuels Reduction Project Proposed Action. The majority of the comments received were very positive and supportive of the project, although several individuals expressed concerns with the project. These included concerns about increased disturbance to wildlife species; that the fuels treatments may be inefficient and/or ineffective for reducing home losses; about the appearance of post-treatment units; about the condition of roads during and after treatment activities; and/or about the possible impacts to soils. Design features were included in the Proposed Action to address and mitigate these concerns. Design features would include obliterating temporary roads, minimizing impacts to wildlife by using timing restrictions for activities, seeding areas to reduce erosion, retaining understory and overstory trees for visual qualities, and restricting use of mechanized equipment to periods when soil productivity would not be severely impacted. All comments were considered throughout the Belton Fuels Reduction Project planning process. The Forest Service has found no significant issues or unresolved conflicts concerning alternative uses of available resources that warrant consideration of additional alternatives (refer to the Public Involvement Section of the Project File for more information)

ALTERNATIVES

No-Action Alternative (Alternative 1)

Under this alternative, there would be no mechanical or hand fuels reduction treatments or prescribed burning. Conditions in the treatment areas would remain as described in the Existing Condition section of this EA and the Project File. This alternative continues standard protection and maintenance activities, such as fire suppression and road maintenance. Ecosystem processes, such as the actions of insects, disease and other mortality factors on the trees, and vegetation succession with fire exclusion, would continue their current trends. Fuel conditions would be dependent on the current condition and development of the vegetation over time as it is affected by human and natural forces.

Proposed Action (Alternative 2)

Introduction

Specific treatment sites in the Belton Project were designated by District resource specialists after assessing forest and fuel conditions in the area and receiving collaborative input from the public (see attached map). Mechanical treatments were focused near private lands and, where possible, strategically located to take advantage of existing fuel breaks, such as roads and previously treated areas. Unit location and treatment prescriptions were designed to reduce the probability of intense fire behavior from future fires, not to mimic past fire events. Implementation of the Proposed Actions in this EA would meet the need for action described above.

Prescribed fire can be a useful tool when properly applied in forested areas where natural fire has been absent or suppressed for many years. Most of the units identified for prescribed burning have not burned since the 1929 Halfmoon Fire, and heavily forested conditions exist across most of the area on the northern aspects near the prescribed burn units. The careful application of prescribed fire to these units would reduce the risk of a future high-severity wildland fire burning through the area and would provide habitat benefits to many species of wildlife.

Mechanical and/or Hand Treatments

Approximately 908 acres would be treated in 44 units (refer to Tables 1 and 2). The majority of the units would be thinned (684 acres) with remaining units receiving seedtree or shelterwood treatments (224 acres). In most stands, mechanized equipment would be used to cut and remove trees, although some sapling stands may be hand treated. The primary purpose for removal of wood would be to reduce hazardous fuels, however, if this material would provide a commercial product, utilization would be pursued to increase the economic efficiency of this project and reduce the cost to taxpayers. An estimated 3 mmbf (6,000 ccf) of merchantable material may be removed from the thinning units.

Thinning treatments would remove the smaller, poorly formed, or diseased trees first, favoring the more vigorous larch, Douglas-fir, ponderosa pine, and lodgepole pine for leave trees. The

spacing of trees would be variable, averaging 15 to 25 feet or more between stems. This would leave about 70 to 150 trees per acre of overstory trees, which would appear as a semi-open forest condition. This range of spacing would occur because of natural variability of species and size classes that exist within the units in addition to the desire to retain trees with favored characteristics. The objective would be to leave an adequate distance between the tree crowns, now and as the trees continue to grow, to reduce the risk of fire spread through the tree canopy. Most of the understory trees (primarily spruce and Douglas-fir) would be removed to reduce the risk of fire traveling from the ground into the tree crowns. Some understory sapling trees may be left to provide species and forest structure diversity and to improve the visual appearance of the area. Removal of hardwood trees and shrubs would not be required, because they are not considered a significant fire hazard in these forest types. Unless they need to be felled for operational reasons, most hardwood trees would be left.

Seedtree or shelterwood harvests would occur in the stands that are dominated by mature lodgepole pine. Treatment would leave a very open stand condition, where all western larch and Douglas-fir would be left (unless they are in very poor condition or must be removed for operational reasons) and most lodgepole pine would be removed, except where needed to meet leave tree density targets. Scattered trees and small patches of untreated forest would remain within the units, leaving 20 to 50 trees per acre (>30 foot spacing). The scattered trees and patches of untreated forest are left to provide visual screening, forest structural diversity, and future downed woody material. Conifer seedlings (western larch, Douglas-fir, ponderosa pine, and western white pine) would be planted in these open units to initiate a new stand of long-lived, fire-resistant trees; approximately 197 acres would be planted.

Our intention would be to maintain, into the future, the more open stand conditions created by these project treatments in order to facilitate protection of human and natural resource values from fire. Trees would be healthy, free to grow, and in the case of the long-lived species (larch and Douglas-fir), would have the opportunity to achieve old ages and large sizes (30" dbh or greater in many stands).

Table 1. Current Forest Condition and Proposed Treatments by Unit

Units #	Est. Acres	Current Forest Condition	Treatments
4, 10, 11, 15, 27, 36	72	Well stocked to very dense stands where lodgepole pine is dominant (>75% of stocking). Trees are about 70 years old (1929 fire origin), 4"-9" diameter breast height (dbh), and 40-70 feet tall. Douglas-fir and larch occur as a minor component in some stands. Usually understory trees are sparse and low shrubs and forbs characterize the undergrowth. Downed wood amount tends to be light, with some heavier concentrations of downfall in spots where past tree mortality has occurred.	THINNING, leaving all western larch and Douglas-fir, and removing lodgepole pine to reach a final tree density from 50 to 200 trees per acre (tpa). This would be an average spacing of about 15-30 feet between trees.
1, 5, 7, 9, 13, 14, 17, 19, 28, 29, 30, 31, 50	224	Well stocked to very dense stands where lodgepole pine is dominant (>75% of stocking). Trees are about 70 years old (1929 fire origin), 4"-9" diameter breast height (dbh), and 40-70 feet tall. Douglas-fir and larch occur as a minor component in some stands. Usually understory trees are sparse and low shrubs and forbs characterize the undergrowth. Downed wood amount tends to be light, with some heavier concentrations of downfall in spots where past tree mortality has occurred.	SEEDTREE or SHELTERWOOD harvest, leaving all western larch and Douglas-fir, and removing lodgepole pine to achieve an average leave tree density of 15-30 tpa, and providing some visual screening and structural diversity. In some units, leave trees would be left in patches of variable size and shape; other units would have leave trees more evenly scattered. The open stand conditions created by this treatment would allow planting of more desirable long-lived and fire-resistant conifer seedlings (larch, Douglas-fir, ponderosa pine, and western white pine).
2, 3, 6, 12, 16, 18A, 20, 25C, 26, 33	223	Well-stocked stands of mixed species, (mainly lodgepole pine, Douglas-fir and larch) about 70 years old (1929 fire origin), 5-10+" dbh, 50-75 feet tall. An understory of Douglas-fir and/or spruce exists in some stands. Part of Unit 25 is ponderosa pine planted in the 1950s. Downed wood and fuel are variable, mostly light to moderate amounts.	THINNING, resulting in spacing between trees from 18-25 feet (70-130 tpa). Smaller trees, deformed or diseased trees would be selected for removal first, leaving the larger and more vigorous trees. Larch, Douglas-fir, and ponderosa pine would be favored for leave, followed by lodgepole pine and other species. Leave trees would be irregularly distributed.
37, 38, 49	133	These stands are well stocked with a variable mix of tree species, sizes, and ages; from smaller understory sapling trees to scattered older (140+ year) overstory trees. Douglas-fir and spruce are common; subalpine fir, lodgepole pine, and larch also occur.	THINNING, generally removing the smaller or less vigorous understory trees first, and leaving healthy overstory trees. Larch and Douglas-fir would be favored for leave trees if available. Minimum leave tree density about 70 tpa (25' spacing), but would vary widely depending on the current pattern of the desirable trees and site-specific objectives (e.g. Unit 49 is adjacent to the Hungry Horse Ranger District office and thinning densities would differ across this unit depending on varying needs for improved security and visual screening).
41, 42, 43, 44, 45, 46,	117	These stands are well stocked stands of mixed species, Douglas-fir, spruce, subalpine fir, lodgepole pine and larch all represented. Stands were all harvested (partial cutting) nearly 40 years ago; tree sizes are mostly ≤10" dbh, with scattered larger, older trees.	THINNING, resulting in spacing between trees from 17 to 20 feet (110-150 trees per acre). Less vigorous, poorly formed, or diseased trees would be selected for removal first, leaving the healthier and/or more vigorous trees. Larch and Douglas-fir would be favored for leave trees, followed by lodgepole pine and other species.

Units #	Est. Acres	Current Forest Condition	Treatments
8, 18B, 23, 24A&B, 25B, 34, 39, 40	139	These areas have experienced past harvesting (20-40 years ago), and are composed of mostly sapling sized trees (1-4" dbh; 10-30 feet tall) with light to moderate stocking of older, larger trees in some units (70 years old, 5-9" dbh; 30-60 feet tall). Stands range from nearly 100% lodgepole pine to more mixed species with Douglas-fir, larch and spruce present.	THINNING, resulting in variable tree spacing, typically 15 to 25 feet apart. Leave trees would generally be the healthiest and best growing trees, favoring larch and Douglas-fir where available. Older, less vigorous overstory trees (primarily lodgepole pine) would be removed to favor the younger, thrifty trees.
TOTAL	908		

Table 2. Detailed Treatments by Unit

Unit	Treatment Acreage	Treatment Type	Slash/Fuel Reduction from Skid Trail or by Hand Only?	Seasonal Restrictions ¹	Acres to be Planted
1	2	Mechanical	No	None	None
2	24	Mechanical	Yes	Winter logging	None
3	18	Mechanical	No	None	None
4	10	Mechanical	No	None	None
5	20	Mechanical	No	None	15
6	28	Mechanical	No	None	None
7	5	Mechanical	No	None	4
8	23	Mech./Hand	No	None	None
9	8	Mechanical	No	None	7
10	5	Mechanical	No	None	None
11	19	Mechanical	Yes	Winter logging	None
12	61	Mechanical	Yes	Winter logging	None
13	20	Mechanical	Yes	Winter logging	15
14	11	Mechanical	No	None	9
15	9	Mechanical	No	None	None
16	6	Mechanical	No	None	None
17	27	Mechanical	No	None	20
18a	21	Mechanical	No	None	None
18b	51	Mech./Hand	No	None	None
19	17	Mechanical	No	None	15
20	41	Mechanical	No	None	None
23	12	Hand Thinning	No	None	None
24a	19	Hand Thinning	No	None	None
24b	11	Mech./Hand	No	None	None
25b	4	Mechanical	No	None	None
25c	9	Mechanical	No	None	None

Unit	Treatment Acreage	Treatment Type	Slash/Fuel Reduction from Skid Trail or by Hand Only?	Seasonal Restrictions ¹	Acres to be Planted
26	6	Hand Thinning	Hand Piling	None	None
27	13	Mechanical	No	None	10
28	19	Mechanical	No	Winter logging	17
29	61	Mechanical	No	Winter logging	50
30	11	Mechanical	No	None	11
31	15	Mechanical	No	None	14
33	9	Mechanical	No	None	None
34	11	Mechanical	No	None	None
36	16	Mechanical	No	None	None
37	17	Mechanical	No	Winter logging	None
38	10	Mechanical	No	Winter logging	None
39	5	Mech./Hand	No	Winter logging	None
40	3	Mech./Hand	No	None	None
41	32	Mechanical	No	None	None
42	8	Mechanical	No	Winter Logging	None
43	23	Mechanical	No	Winter logging	None
44	5	Mechanical	Yes	Winter logging	None
45	10	Mechanical	Yes - and no piling/burning	Winter logging	None
46	39	Mechanical	No	None	None
49	106	Mechanical	No	None	None
50	8	Mechanical	No	None	10
Total Acres	908	-	-	-	197

¹ Mechanized fuel treatments would not occur between April 1 and June 30 (all units).

Treatment of Downed Wood

This project includes the treatment of existing concentrations of downed wood and the slash created by the tree removal operation across all mechanically or hand treated areas. This may be accomplished by removal from the site for biomass utilization, chipping or mastication of the slash, piling and burning (either by hand in sapling dominated units or by excavator for larger sized slash), or a combination of these methods depending upon site-specific conditions.

Treating slash would be intended to reduce the intensity of any future wildfire by lowering the amount of surface fuel available to burn. Downed wood would be removed to a relatively low level (generally <12 tons/acre) to reduce potential surface fire intensity. Some larger diameter (>12") downed wood would be left, if available, to provide for long-term soil productivity and wildlife needs. All larch or Douglas-fir snags >18" dbh would be left for wildlife habitat unless felling were necessary for operational reasons.

Prescribed Burning

Prescribed burning would be used to reduce fuels and improve wildlife habitat on approximately 916 acres in 6 individual units (Table 3 – Prescribed Burn Treatments). All of the prescribed burning units would occur in MA13A, designated as non-timber management lands capable of providing mule deer and elk winter habitat. The units would be west of, and adjacent to, the northern-most portion of the Great Bear Wilderness (refer to attached Proposed Action Treatment Units Map). They occur on west to southwest aspects and range from about 4,000 feet in elevation near the bottom of the units to nearly 7,000 feet elevation at the ridgetop. Units have been located to take advantage of natural barriers to prevent undesired fire spread; barriers include rocky areas near the ridgetops and north aspects that are less prone to burning.

A mix of heavily forested, open forest, and shrub-dominated openings exist within these units. The prescribed fire treatments would be designed to target the shrub dominated areas, with the objective of reducing conifer encroachment, rejuvenating wildlife browse by stimulating resprouting of fire adapted shrubs and grasses, creating a more diverse mosaic of vegetation conditions and wildlife habitat across the landscape, and reducing down fuel accumulations. A mix of vegetation conditions would occur across the treated area after burning, with up to 50% of the area in an open forest condition, dominated by native shrubs, grasses, and forbs.

Whitebark pine may occur at the highest elevations in the prescribed burn units, particularly on the ridgetops. If whitebark pine were to be found, an effort would be made to avoid mortality from prescribed fire in areas of healthy whitebark pine.

Implementation of the prescribed burns may extend for several years into the future depending on desirable burning weather opportunities. Implementation strategies and desired weather conditions for prescribed burning would be described in a site-specific burn plan. This plan would include an analysis of risks, would identify mitigation methods to avoid an escaped fire, and would include contingency actions to be taken should an escape occur. While there would always be some risk of escaped fire due to ongoing drought and close proximity to private lands, strict adherence to the burn plan would ensure that this risk would remain low.

Table 3. Prescribed Burn Treatments

Unit	Estimated Acres	Current Forest Condition	Treatment
A	109	Units would be located on westerly and southwesterly aspects, where a mix of open, semi-open, and densely forested areas exists in various amounts. Douglas-fir, larch, spruce, subalpine fir, and lodgepole pine are present. Most stands are <80 years old. Whitebark pine may occur above 6,000' elevation.	PRESCRIBED BURNING would be applied in the spring, summer, or fall, and would target the treatment of the existing shrub/grass dominated openings. Fire would be of low to moderate intensity, and would result in a mix of openings, semi-open forest, and dense forest patches. Douglas-fir, larch, lodgepole pine, spruce, subalpine fir and Whitebark pine would all exist in various amounts.
B	101		
C	451		
D	104		
E	94		
F	57		
TOTAL	916		

Other Details of the Proposed Action***Implementation Methods***

Fuel reduction activities would be accomplished primarily by ground-based mechanized equipment such as feller-bunchers, rubber tired skidders, excavators, log processors, and chippers, with some work carried out by hand. Prescribed burns would generally be ignited using helicopters and would occur in the spring, summer, or fall when suitable burn and air quality conditions exist. Private contractors and Forest Service crews would be used for tree removal, prescribed burning, and slash disposal work. Small sawlogs, posts, poles, pulpwood, firewood, and biomass fuel are potential commercial materials that may be removed from the mechanical treatment units because of the fuel reduction treatments.

Duration and Season of Activities

Mechanized and hand-treated fuel reduction treatments are expected to occur over approximately 3 years and could begin as early as the fall 2008. Fuel reduction activities may take place during both the summer and winter months. Several units would only be logged in the winter to avoid soil damage; refer to Table 2 for more information.

Prescribed burning could begin as early as the spring of 2009. The specific timing of the burns would be based on prescription parameters for weather and fuel moistures determined in a prescribed fire burn plan. Suitable burning conditions typically occur in the spring, summer, or fall seasons, however, it may be several years before the right burning conditions actually occur. Burning parameters would be designed to allow fire to accomplish the resource objective of reducing the encroaching conifer trees, removing dead and dying surface fuels, and rejuvenating shrub/grass/forb dominated openings. Most burn units would be ignited by helicopter and take several days to complete; some units may be hand ignited (Fire/Fuels section of the Project File)

In order to minimize disturbance to grizzly bears during the critical spring use period, fuel reduction activities would not occur between April 1 and June 30 with the exception of 1-2 days worth of helicopter use for implementing the prescribed burning units (and other prescribed burning activities), planting, and noxious weed spraying. Road treatments (Best Management Practices), burning of slash or landing piles, and thinning of saplings may occur during the spring period if they are located along open roads (Wildlife section of the Project File).

Slash and Woody Debris Disposal

Slash and woody debris removal methods would minimize visual impacts. Additional efforts would be made to dispose of any slash piles clearly visible from homes. If pile remnants occur after the first treatment and continue to have visual impacts, further efforts would be made to dispose of this material. These efforts could include re-piling and burning, chipping, shredding, or hauling the material away. The utilization of wood (for firewood, etc) in slash piles prior to disposal would be considered on a site-specific basis. All landings would be rehabilitated to a natural appearing condition, which would include adequate slash and woody debris disposal, and recontouring and revegetation where necessary (refer to "Possible Log Landing Sites" map in the Soils section of the Project File).

Pile burning would be dependent on weather and fuel conditions identified in a prescribed fire burn plan. These weather and fuel conditions are pre-determined to allow for slash consumption while reducing the risk of an escaped fire. Generally, slash and woody debris would be disposed of within one year following treatment.

Soil Productivity

Effects to soils and soil productivity would be avoided or minimized in part by following Best Management Practices (BMPs) incorporated here as design criteria. Refer to the “Soils Specialist Report” in the Soils section of the Project File for more information on soils and the following design criteria; additional references are provided following some of the design criteria. All contractors and other project implementers would be required to comply with the following design criteria.

- All mechanized units would be logged using designated skid trails. Equipment would occasionally leave the trails to access trees or accomplish other activities.
- Due to soil concerns, Units 2, 11, 12, 13, 28, 29, 37, 38, 39, 42, 43, 44, and 45 would be winter logged only.
- In Units 2, 11, 12, 13, 44, and 45, all fuels reduction and site preparation equipment would be required to remain on skid trails; alternatively, the fuels may be treated by hand. This design feature, in tandem with the requirement to winter log these units, would minimize impacts to soils.
- Unit 26 would be treated by hand to prevent detrimental soil impacts.
- There would be no piling and burning in Unit 45; chipping, shredding, lopping, and removal from the site may all be used for fuels reduction.
- To minimize the loss of nutrients in seedtree units where material would be piled and burned, the piling would be delayed for one wet season.
- Skid trails must be spaced on average 75-100 feet apart. The goal would be to occupy less than 15% of the harvest area; this includes soil disturbance from skid trails, temporary roads, and landings associated with either past activities or proposed activities. Refer to skid trail spacing information contained in the “Monitoring Report – Hunger Henry Timber Sale” in the Soils section, the “Temporary Roads and Closed Roads Needed during Implementation” map in the Access section, and the “Possible Log Landing sites” map in the Soils section of the Project File.
- All existing roads and skid trails would be reused to the extent feasible unless doing so would adversely affect soil, water, or other resources. If roads or trails cannot be reused, their extent must be considered when laying out additional skid trails.
- To the extent possible, logging in summer would occur when the soils are drier than field capacity as determined by the hand-feel method described in the “Estimating Soil Moisture by Feel and Appearance” document in the Soils section of the Project File.
- Winter logging would only occur when settled snow and/or frozen ground would protect the soil from detrimental disturbance. If equipment does not mix soil into the snow or cause muddy water to bleed into the snow, then conditions are right for winter logging.
- Sale administrators would monitor soil moisture conditions prior to allowing equipment to begin operations in summer and monitor snow and temperature conditions prior to winter logging. This monitoring must be documented in the Timber Sale Daily Report.
- All prescribed burn units would be ignited when burning conditions would maintain soil organic matter and nutrient levels within the range of historic burns.

- To reduce soil erosion in mechanically treated units, management activities would include constructing water bars or placing slash on skid trails as necessary (refer to the “Belton Erosion Control Effectiveness” document in the Soils section of the Project File for more information).
- If monitoring after project implementation indicates that detrimental soil disturbances for a given treatment unit exceed or equal 15%, then all or a portion of the following actions would be used to begin the restoration of soil quality. The site conditions after implementation would be used to determine which of the mitigations would be used. These mitigations would not result in instant restoration of detrimentally disturbed soils; rather they would begin the restoration process.
 - Scarify heavily used skid trails and landings with the teeth on an excavator bucket to a depth of 2 – 4 inches.
 - Plant Montana-certified weed-free native grasses on the scarified soils as recommended by the Forest botanist.
 - Plant native shrubs where needed to augment natural vegetation and scarification.

Access/Roads

Amendment 19 (A19) to the Flathead National Forest Land and Resource Management Plan (Forest Plan) contains standards and objectives related to grizzly bear management. This fuels reduction project occurs entirely within the Coram Lake Five grizzly bear subunit. This subunit contains less than 75% National Forest ownership and therefore the numerical standards from A19 for open motorized access (OMAD), total motorized access (TMAD), and security core would not apply (19/19/68 percent, respectively).

Most treatment units would be accessed using existing local, county, state, or NFS roads; no new permanent roads would be constructed. Several NFS roads that would be used are either currently closed to motorized use or are historic roads. Public access would remain restricted on these closed roads on NFS lands during administrative use. In addition, approximately 1 mile of temporary roads (nine different segments, using historic templates or new) would be constructed to provide access to some of the thinning units (refer to map titled “Temporary Roads and Closed Roads Needed During Implementation” in the Access section of the Project File). Due to winter logging requirements or areas located in grizzly bear management situation 3 habitat, there would be no change in motorized access density because of project activities (refer to “Temporary and Closed Road Discussion” in the Access section of the Project File).

Access to Units 1, 10, 16, 17, 29, 30, 31, 33, and 34 may require the use of private land/roads because access routes through NFS lands would have concerns related to grizzly bear security core, soils, wetlands, or terrain limitations. Some landowners have already been contacted for permission to use private means of access; landowners would continue to be contacted during the implementation phase of the project. Roads used on private lands would be left in the same or better condition than prior to use.

Approximately 12 miles of haul route roads would need road drainage improvement work to meet current Montana State Best Management Practices and INFISH standards. Refer to the “Belton BMP” spreadsheet in the Access section of the Project File for more information on roads needing BMP work. Improvements could include additional cross-drains, culverts, drive-

through-dips, flappers, filter windrows, sediment traps, or other devices (Hydrology report in the Project File). Forest Service Soil and Water Conservation Practices (FSH2509.22) would be combined with Montana State BMPs to ensure that soil and water resources are protected. Dust abatement using non-petroleum based products on open roads and blading would occur as needed on the main haul routes.

Due to soil drainage problems in several areas, the access road associated with the pipeline adjacent to Unit 6 would require road fill material in order to make the road passable for machinery and trucks (Hydrology report in the Project File).

Contractors would be made aware of the location of the authorized occupancies (e.g. NorthWestern Energy's permitted buried gas line corridor) so that the permitted improvements are not damaged because of the project. Coordination with NorthWestern Energy would be required prior to access and hauling operations (Recreation/Lands report in the Project File).

Minimize harvest equipment traveling on the permitted trails; equipment should cross at a 90° angle. All damage and/or disturbance caused by the harvest operations would be repaired to the trail's original condition or better (Recreation/Lands report in the Project File).

Coordinate with the horse outfitter (Flying Eagle Ranch) to reduce the impacts to the permitted public's experience and to provide for safety (Recreation/Lands report in the Project File).

To protect the safety of the public using the area, contractors would be required to post signs warning the public of activities and traffic associated with the treatments.

Air Quality

On the Flathead National Forest, prescribed burning is generally accomplished when dilution, dispersal, and mixing conditions are considered fair to excellent. Prescribed burning requires a permit from the Montana/Idaho Airshed Group and the burn must be implemented within the regulatory framework. This includes daily approval from the Flathead County Air Quality hotline and the Montana/Idaho Airshed Group.

Noxious Weeds

Noxious and non-native weeds occur along some access routes and adjacent to fuels reduction units within the Belton Project area. Many of the BMPs designed to protect soils and water quality (operating machinery in the winter, utilizing skid trails, etc) would help avoid or minimize the spread of noxious weeds. Refer to the "Invasive Plant Species-Noxious Weeds report" in the Botany section of the Project File for more information on design criteria and weed treatments. All contractors and others implementing the project would have to comply with the following project design criteria.

- Equipment use associated with fuels reduction treatments and temporary road construction (excluding pickups and trucks used to remove forest products) would be power scrubbed or steam cleaned on the undercarriage and chassis before transport to the project area.

- Skid trails, landings, burn piles, temporary roads, and roadsides with soil disturbance would be seeded with a Montana-certified, weed-free grass ground cover as soon as practical after disturbance to provide for site protection until native species are established.
- During construction of temporary roads, the topsoil would be left to the side and replaced on the temporary road to the best of our ability when project use of the temporary road is completed. Seeding of temporary roads would occur after topsoil is replaced.

Prior to project implementation, some haul routes may be treated for weeds. Additionally, some units may be spot-treated for localized weed populations prior to equipment entering the unit. These treatments would reduce the potential for weeds to expand throughout the new areas opened and disturbed by the project vegetation treatments. Areas to be pre-treated would be verified with future field surveys.

In and adjacent to all project activity areas, on other disturbed ground (e.g. temporary roads, skid trails, log landings), and along all NFS roads used to transport forest products, annual surveys would be conducted for three years following the start of sale activities to identify any invasion of noxious weeds. Should weeds be discovered, treatment would be consistent with the strategy outlined in the Flathead National Forest Noxious and Invasive Weed Control Decision Notice (May 2001). Typically, treatments would occur in areas with known weed occurrences during the spring months, before weed flowers bloom, for the first two years of project implementation. Treatments would reoccur when all hauling and project activity halts. Factors that influence treatment decisions include the category of weed (i.e. new invader, widespread invader); the relative invasive nature of the weed and its potential to displace native vegetation; the potential for off-site movement of seeds; the relative ecological importance or rarity of the site that could be damaged by the invader species; and available funding. For additional information on the methods and effectiveness of weed control on the FNF, please refer to the Botany section of the Project File.

The above treatments and design criteria would not eliminate the potential for new weed populations, but would reduce that potential. Implementation of the above weed treatments would depend on sufficient availability of funds from implementing the contract. Should there be insufficient funds available from this contract, treatments would compete for funding with other Forest-wide stewardship resource conservation projects, or would be prioritized with other Forest weed sites-of-concern using the Forest annual weed budget.

Heritage

If previously unknown heritage resources are encountered during implementation of the project, activities at the site would be halted and the Forest Archaeologist would be notified immediately. Activities would not resume until adequate protective measures are developed and implemented in the field as necessary.

Recreation/Scenic Values and Public Safety

The following project design features have been developed to ensure that the existing conditions related to recreational values were maintained, and to maintain public safety. Refer to the

Recreation/Lands report in the Recreation section and the “Visual Resource Report” in the Visuals section of the Project File for more information.

- To protect the safety of the public using the area, contractors would be required to post signs warning the public of activities and traffic associated with the treatments.
- Skid trails and temporary roads within treatment units would be closed in a manner that discourages future off-road motorized use (e.g. slash and down-woody material scattered on trail surfaces, or recontouring if necessary). Adequate signing and barriers would be a part of this effort. Refer to the “Temporary Roads and Closed Roads Needed during Implementation” map in the Access section of the Project File.
- Any reports of illegal off-highway vehicle (OHV) use within the project area would be investigated by Forest Service law enforcement personnel and appropriate action taken to prevent such use.
- All damage and/or disturbance caused to trails by the harvest operations would be repaired to meet Forest Service trail standards.
- Slash adjacent to non-system trails would be managed to provide for aesthetics and to ensure slash does not impede non-motorized travel on these routes.
- Vegetation management within the Wild and Scenic River corridor would appear natural and blend well with existing vegetation patterns. In Unit 16, vegetation management would be restricted to above the existing topographical break above the riverbank.

Water, Riparian Areas, and Fish

All treatments would comply with Montana Stream Management Zone (SMZ) laws and Inland Native Fish Strategy (INFISH) direction. This would include retaining INFISH buffers along stream channels as follows.

Fish-bearing Streams	300 ft
Permanently Flowing, Non-fish Bearing Streams	150 ft
Seasonally flowing or Intermittent Streams	50 ft
Ponds, Lakes, or Wetlands >1 Acre	150 ft
Ponds, Lakes, or Wetlands <1 Acre (non-priority bull trout watershed)	50 ft
Landslide Prone Areas (non-priority bull trout watershed)	50 ft

Implementation of BMPs as described in the Soils section of this document would also serve to protect fisheries by substantially reducing risk of sediment reaching any water. All landings would be rehabilitated and revegetated once the mechanical operations are completed (refer to “Possible Log Landing Sites” map in the Soils section of the Project File).

Threatened, Endangered, and Sensitive Species

The Proposed Action includes specific design features (e.g. timing, location, duration), and specific implementation requirements that would minimize effects to wildlife, including threatened and endangered species (refer to Duration and Season of Activities above).

If a den, nest site, or other important habitat feature for any sensitive, threatened, or endangered species were to be discovered within or in close proximity to any treatment unit, project activities would be suspended until the District Wildlife Biologist approves a resumption of activities.

Documentation of a discussion between the contractor/purchaser and a Forest Service representative (e.g. Sale Administrator) regarding the requirement/responsibilities relative to the NCDE Food Storage Order would be provided to the Wildlife Biologist.

Any sightings or sign of grizzly bear use of the project area would be documented and a copy of this documentation provided to the Wildlife Biologist.

Any population of sensitive plants found during project implementation would be evaluated and protected.

Old-Growth Forest

No old-growth forest would be treated. All large, older (i.e. >20" DBH and >150 years old) western larch or Douglas-fir trees, live or dead, would be left standing unless they create a safety hazard. If felled for safety reasons, these trees would be left on site to preserve the more valuable snag and large downed wood habitat for wildlife (refer to "Vegetation Existing Condition and Effects Analysis" in the Vegetation section of the Project File).

Monitoring

The Contract Administrator monitors all treatment units during implementation to ensure that contract specifications and applicable treatment objectives are being met. Contract specifications would be included to ensure resource protection during implementation. Refer to the "Other Details of the Proposed Action" section of this document for detailed information regarding individual resource treatment specifications.

To ensure the regeneration units are adequately stocked, monitoring the establishment and survival of planted or naturally regenerated conifer and shrub seedlings would be required. Additional monitoring would likely occur (depending upon funding sources) to assess the result of treatments on specific resources. This additional monitoring could include:

Evaluation of post-treatment forest conditions (tree density, down woody debris, etc).

- Determining post-project soil disturbance levels in Units 2, 11, 12, 44, and 45, to verify compliance with Regional Soil Quality Guidelines.
- Monitoring noxious weed establishment and spread.
- Monitoring quality of forage vegetation in prescribed burn units.

AFFECTED ENVIRONMENT/ ENVIRONMENTAL EFFECTS

This section provides a brief summary of the existing resource condition and a discussion of the potential impacts of the alternatives. More detailed analysis and conclusions about the potential effects are documented in each Resource Specialists' Report, available in the Project File. The environmental effects analysis provides the necessary information to determine whether to prepare an Environmental Impact Statement. The associated Finding of No Significant Impact (FONSI) discusses whether this project has significant effects.

Vegetation

The information in this section is from the “Vegetation Existing Condition and Effects Analysis” report in the Vegetation Section of the Project File.

Affected Environment

Cool, moist, forested sites characterize the project area, with moderate to high productivity for vegetation and tree growth. Lodgepole pine is the most common tree within the treatment areas, followed by western larch, Douglas-fir, spruce, and subalpine fir. Minor amounts of ponderosa pine and cedar occur in some areas.

About 28% (6,830 acres) of the National Forest lands within the project area have experienced past harvesting, with the first recorded harvest in 1943. Most of this harvesting (about 4,400 acres) was a regeneration harvest that removed most or all of the existing trees, creating very open areas and regenerating the stand to a new stand of conifers. Regrowth of the forest was rapid, and it is estimated that 17% of the project area (about 6,200 acres) is currently in an open condition dominated by grass, forbs, shrubs, and conifer seedlings and saplings, or in open forests (less than 25% tree canopy cover). Most of these acres are on private lands, where forests have been logged or cleared for development.

An estimated 60% (about 21,300 acres) of the project area is composed of stands dominated by small to medium sized trees, 5 to 15” diameter at breast height (dbh) and 60-70 feet tall. These are mainly stands that originated after a large wildfire in 1929, or from timber harvest activities over the past 60 years; they are dominated by trees less than 100 years old. Another 22% of the project area (about 8,000 acres) are stands where the average tree size is larger, over 15” dbh. These stands range from an average age of 70 years old to over 200 years old. Late successional or old growth forest conditions occur within some of these stands. No old-growth forest would be proposed for treatment in the Belton Project. For general information on existing forest conditions within the proposed treatment units, refer to Table 1 in this EA. For more information, refer to the Silviculture Diagnosis Report found in the Forest Vegetation section of the Project File.

The amount of dead standing and down trees/woody material varies considerably across the project area, from heavy pockets of downed trees due to blowdown events, to stands with very light amount of downfall. Many factors influence this component, including stand age, species, mortality due to insects or other elements, and disturbance events such as past fire or harvest activity. The Vegetation section of the Project File contains tables that provide information on the amount of dead woody material within each proposed treatment area.

Currently there are low to moderate amounts of tree mortality occurring across the project area due to insect, disease, windthrow, animal damage, or inter-tree competition – some of the major causes of tree death. However, the mature lodgepole trees and stands are of the age and size where they are now highly susceptible to mountain pine beetle infestation and mortality.

Environmental Effects

No-Action Alternative (Alternative 1)

Direct, Indirect, and Cumulative Effects

There would be no change in existing forest conditions under this alternative. At the stand and individual tree level, increased stress and reduced growth and vigor would occur due to continuing high tree densities and resulting competition for light and moisture. Tree mortality rates from this source and from insect and disease are not expected to decrease, and would probably increase in many stands, particularly the lodgepole pine dominated forests where risk to bark beetle attack is increasing. One result would be gradual increase in fuel loadings of dead woody material, which could fuel more intense wildfires.

Proposed Action (Alternative 2)

Direct and Indirect Effects

Mechanized Treatments – Forest Conditions

About 2% (684 acres) of the total project area would be affected by the proposed thinning activities. On these acres, the forest density would be reduced and a single-story stand condition created. Competition between trees for light (and moisture on some drier sites) would be substantially reduced, thus maintaining or improving the vigor and growth of the remaining trees. In stands with larch or Douglas-fir, the improved growing conditions would have the potential to result in a substantial increase in the diameter of individual trees over time. This would occur because the trees are still immature, with full crowns, and they have a high capacity to respond to improved conditions.

Less than 1% of the total project area would be affected by seedtree and shelterwood harvests in the dense, mature lodgepole pine stands. These treatments would allow for the successful establishment (through planting) and adequate growth of larch, Douglas-fir, western white pine, and/or ponderosa pine. These species are desired because they are long-lived, are insect, disease, and fire resistant, and they provide wildlife habitat benefits.

The thinning and seedtree/shelterwood treatments would result in overall reduction in lodgepole pine and increase in larch and Douglas-fir over a very small portion (about 1%) of the total project area acres. This effect would result from selection against lodgepole pine when picking leave trees and from the planting of larch and other species in the lodgepole pine seedtree and shelterwood regeneration units. A more diverse species mix would result with longer-lived, more fire-tolerant species.

Downed surface fuel loadings would be reduced to 10-12 tons per acre and emphasis would be placed on leaving the larger (>12" diameter) downed wood. Larger wood is of value to many wildlife species and to soil processes. Largely decomposed, existing woody debris would not be removed. The prescribed residual downed wood quantity along with the residual live trees that would be left in the treatment areas would provide for soil protection and qualities both long- and

short-term, while meeting the objective of lowering potential future fire intensity on the site. Substantial numbers of standing live trees would be left, especially in the thinned units, to provide for future snag and downed wood recruitment (see also Soils, Fire/Fuels, and Wildlife sections of the Project File).

Prescribed Burning – Forest Conditions

The burns would target the more open, shrub/forb/grass dominated areas within the burn units. The burns would maintain these areas for wildlife needs and possibly expand them by killing trees invading from the edges and creating new openings in areas currently densely forested. Mortality of individual and patches of trees would be expected, and openings across 25-50% of the unit would be desired after burning. Increase in forest structural diversity would be expected, including the variability and amount of snags and dead woody component of the forest. Regeneration of conifers and establishment of a new age class of trees would be expected in portions of the openings. Because of the decreased tree density, increased vigor and growth would be expected on the remaining trees. Whitebark pine would have an opportunity to regenerate in the burned openings created in the higher elevations ($\geq 6,000'$ elevation).

Insect, Disease, Other Mortality Factors

Minor changes to existing insect and disease conditions would occur across the project area under the Proposed Action, mainly because of the relatively small area actually treated. The most notable effect would be the increased vigor of the remaining live trees due to the reduction in stand density. This would have the potential to increase the stand, and an individual tree's ability to withstand future insect or disease influences, especially in the mixed-species stands.

Windthrow would likely increase in the treated areas, particularly within mature lodgepole pine dominated units. The susceptibility of mixed-species stands to windthrow after thinning is much less than in the dense lodgepole pine stands that have been thinned. Wherever possible (considering other resource and social concerns) treatments within the lodgepole pine dominated stands propose removal of the large majority of the trees, leaving relatively few of the overstory trees and regenerating the stand to other species. Any trees that may fall would provide the wildlife and soils related benefits associated with downed woody material. If an unusually high amount of windthrow were to occur, a site-specific assessment and analysis would be made and an appropriate course of action designated.

Old Forest/Old-Growth Condition

The proposed actions would have no direct or indirect effects on old-growth forest, and no proposed treatment areas would occur in old-growth forest. Treatment of forest in a late successional stage, containing some of the elements of old-growth forest, would occur with implementation of the proposed thinning in Units 37 (27 acres) and 49 (106 acres). Unit 49 has relatively few old forest qualities and would be in the Hungry Horse District administrative site, immediately adjacent to the town of Hungry Horse. Treatment in Unit 37 would occur on only 27 acres of an area where several thousand contiguous acres of similar forest type exist. The impacts to the late successional forest in the project area would have no measurable impact at the landscape scale.

Several prescription requirements would maintain some of the older forest characteristics in all units, including Units 37 and 49. These entail leaving the older, large diameter (>20" dbh) live or dead larch or Douglas-fir trees or snags, and leaving intact (to the greatest degree possible) all larger diameter (>16" dbh) dead, downed, and decayed woody material. These components of the forest are of highest value to wildlife and are the longest-lived trees and snags.

Cumulative Effects

The 908 acres proposed for mechanized treatment represent about 4% of the FNF lands in the Belton Project area. The 916 acres proposed for prescribed burning for wildlife reasons represent about another 4% of the FNF lands. The cumulative impact of these treatments on vegetation structure, composition, and age at the landscape scale would be small, and the current condition on the majority of FNF lands (92%) within the project area would remain unchanged under the Proposed Action.

Natural forest succession, with its expected fluctuations in dead woody material over time, would be allowed to occur across the vast majority of the Flathead National Forest lands in the area (about 22,500 acres). Downed wood and snags in areas closest to private lands would be maintained at the low end of the historical range of variability to meet fuel reduction objectives. Adjacent untreated stands and untreated areas across the larger landscape would provide the full range of snag and downed wood conditions. This would include areas of heavier concentrations of large diameter snags and downed wood, which provide for short- and long-term snag and downed wood needs and the associated soil processes and wildlife habitat. No change in the current amount of larger diameter (>20" dbh) live or dead larch and Douglas-fir would occur with implementation of the Proposed Action; these would be required to be left intact unless they would need to be felled for safety reasons.

Because of the small treatment area, the Proposed Action would have little or no impact on the insect and disease or windthrow conditions at a landscape scale. Over time, the conversion of lodgepole pine dominated forests to a more mixed-species composition would reduce the vulnerability of the area to the effects of severe insect or disease infestation.

The forest canopy would be opened up and the mechanized treatments in mixed-species units and prescribed burn units would promote the development of large diameter, healthy, old trees on the treated sites. In the mechanized treatment units, the typical multi-canopy old-growth forest structure that would normally develop over time in these cool, moist habitat types would not be desired, as these conditions would conflict with the fuel reduction objectives. However, the large old trees that would occupy these sites would be highly valuable, long-lived components of this landscape, providing feeding and nesting habitat for a variety of associated wildlife species and an aesthetically pleasing visual appearance. Natural succession, with subsequent possible development of old, multi-storied forest conditions, would be allowed to occur across the majority (92%) of FNF lands within the project area.

Fuels and Fire

Affected Environment

Fire has historically been the dominant disturbance factor affecting the vegetation in the project area, and forests have evolved with the continual influence of fire. Fire history information for the project area based on historical accounts and records spanning about the past 100 years (refer to “Fire Start History” document in the Fire and Fuels section of the Project File). The last and only major fire within the project area over the last 100 years was the Half Moon fire in 1929, which burned an estimated 18,360 acres within the project area (about 51% of the area). Since 1925, there have been 268 known fire starts in the project area. These starts are both lightning and human-caused, and suppression actions contained them to less than a few acres in size. The area is becoming more populated and visited, increasing the likelihood for human caused fires in the future.

Fire regimes describe the frequency, predictability, and severity of fire in an ecosystem. The majority of the project area is characterized by fire regimes with relatively long fire return intervals, from 35 to over 100 years, and it is generally described as being within its historical range of variability. However, much of the area that has not experienced timber harvest or large fire in the past 100 years is nearing the end of its natural fire return interval (“Fire and Fuels” report in the Fire/Fuels section of the Project File).

All of the proposed treatment units are contained within the area defined as wildland-urban interface (WUI). These are zones adjacent to residential structures, developments, or private properties where the presence of wildland fires would pose greatest risk of inflicting unacceptable damage to values considered important to many. Current forest conditions in the WUI lands within the project area are susceptible to future lethal or mixed-severity fires, either starting on or spreading to NFS lands. Existing forest conditions, including discussion of dead woody material both standing and down, are described under the Vegetation section of this document. Fire fuels are made up of this dead woody material as well as living vegetation. The crown fuels (live and dead material in the canopy of trees) and surface fuels (grass, shrubs, litter, and wood in contact with the ground surface) are the main concern in project treatment areas.

In this section, forest fuels are described for the purpose of predicting fire behavior and thus assessing the degree to which the treatments meet the purpose and need of the project. This fuel model classification is based on several factors, including type of fuel and amount of surface fuel present. Treatment areas mostly fall into fuel model 10, which are forested areas where fires burn in the surface and ground fuels with greater intensity than other timber models due to tree densities and amount of litter and dead woody material. A few of the units fall into fuel model 8, a forested condition where past thinning or other treatments have reduced surface fuels to minimal levels, and slow burning ground fires with low flame lengths are generally the case (refer to “Fire and Fuels” report in the Fire/Fuels section of the Project File for more information).

Environmental Effects

No-Action Alternative (Alternative 1)

Direct, Indirect, and Cumulative Effects

In the absence of disturbance, fuel conditions would generally persist or fuel loadings would increase throughout the project area over the next 15 years. In the forest types that comprise the majority of the treatment units (fuel model 10), the predicted fire behavior under weather conditions associated with the 97% Energy Release Component (a high relative fire danger) indicates high rates of spread of 12 to 32 chains/hour, up to 62 chains per hour on the steeper slopes (one chain equals 66 feet), and flame lengths of 8 to nearly 50 feet (refer to the “Estimated Rate of Spread” maps and the “Estimated Flame Length” maps in the Fire/Fuels section of the Project File for more information). These indicators are particularly important to fire suppression techniques. If flames are over 4-feet high, suppression with hand crews is generally unsuccessful; if flames are over 8-feet high, mechanized equipment is considered ineffective.

The type of fire that would occur is an important factor considered when estimating how successful suppression efforts would be; it is the resistance of the fire to control. Under existing forest conditions, the fires that would burn within the treatment areas would be primarily passive or active crown fires. A crown fire is a fire that burns in elevated canopy fuels, including live and dead foliage, lichens, and very-fine live and dead branchwood found in the forest canopy. A passive crown fire, also called torching, is one in which individual or small groups of trees become engulfed in flame (torching-out), but a solid flame is not consistently maintained in the canopy. These can encompass a wide-range of fire behavior, from the occasional tree torching-out, to nearly an active crown fire. An active crown fire is one in which the entire fuel complex becomes involved, but the crowning phase remains dependent on heat released from the surface fuel for continued spread. Active crown fires are characterized by a solid wall of flame that extends from the fuelbed surface through the top of the canopy. Refer to the “Estimated Fire Type” maps and the “Fire and Fuels” report in the Fire/Fuel section of the Project File for more information.

The torching index is defined as the twenty-foot windspeed (speed of the wind twenty feet above ground level) at which some kind of crown fire (passive or active) is expected. Crowning index is defined as the twenty-foot windspeed at which active crown fire is possible (Scott and Reinhardt 2001). These two indices are often useful when comparing fuels conditions rather than in an absolute sense. For example, if one forest stand has a much higher torching index than another, it is assumed that the higher index stand is less likely to experience torching under consistent weather conditions than the stand with the lower index.

The crowing index in the treatment area ranges from 10-20, indicating that it would take a twenty-foot windspeed of 10-20 mph to cause an active crown fire under the 97% Energy Release Component weather conditions. Refer to the Fire and Fuels report in the Fire/Fuels section of the Project File for more information on torching and crown indices.

Proposed Action (Alternative 2)

Direct and Indirect Effects

Refer to the “Fire and Fuels” report, and NEXUS and FireFamily modeling output in the Fire/Fuels section of the Project file for details on the following information.

This alternative focuses mechanical treatments on areas closest to private lands. It also strategically locates treatment areas to take advantage of adjacent existing roads and previous treatment areas. Because of the amount of area treated, the type of treatment proposed, and the strategic location of units, the Proposed Action fuels reduction treatments would effectively reduce the probability of a crown fire, lower the risk of severe and intense wildfire, improve our ability to initial attack and control fires, and protect human life by providing a safer environment for firefighters. Treatments reduce the crown and surface fuels by thinning trees, and by burning, removing, or chipping fuel on the ground. The following table describes the effects in general terms of some fuel treatment principles.

Table 4. Effects Based on Fuel Treatment Principles¹

Principle	Effect	Advantage
Reduce Surface Fuels (removal from site, chip, or pile and burn)	Reduces potential flame length	Improves control, reduces torching
Increase Canopy Base Height (removal of understory trees)	Requires longer flame length to start torching	Reduces torching
Decrease Crown Density (thinning)	Makes tree-to-tree crown fire less likely	Reduces potential for crown fire
Retain and Grow Larger Trees Favoring Fire Tolerant Species (favor larch, Douglas-fir as leave trees; thinning; regeneration of new stand of trees)	Increases proportion of trees with thicker bark, taller crowns	Increases tree survival

¹ Adapted from Agee, J. K. 2002. Fire behavior and fire-resilient forests. In: Fitzgerald, S. A., ed. Fire in Oregon’s forests: risks, effects, and treatment options. Portland, OR: Oregon Forest Resources Institute: 119.126.

The proposed fuel reduction techniques focus on reducing the potential for crown fires and high intensity surface fires in treatment units, and thus reducing the resistance to control. Thinning the trees would reduce the crown density. By removing understory trees, it would also increase the canopy base height, making it more difficult for a crown fire to be initiated. The thinning would focus on removing the smaller trees and species that are less resistant to fire, leaving larger, fire-resistant species where possible. The proposed surface fuel treatment would reduce the amount of surface fuels to lower potential flame lengths. This would decrease the resistance to control and reduce the likelihood of crown fire initiation. The preferred method for surface fuel treatment in order would be first removal, then chipping, and lastly excavator piling and burning. By reducing the fuel loading to approximately 10 to 12 tons per acre, consisting primarily of the largest material available, surface fire behavior would be consistent with a fire behavior fuel model 8 (Anderson 1982). By comparison, a fuel model 10 has on average 12 tons per acre just in materials less than 3 inches in diameter (Anderson 1982).

Fire behavior modeling indicates the treatments would substantially reduce the rate of spread of fire, over the existing condition, to an estimated 1.5 chains per hour (3.3 chains/hour on steeper

slopes), and flame length would be about 1 foot. Based on this scenario, it is likely a fire event would be similar to a surface fire, burning primarily in the surface fuels layer below the forest canopy. It would take a twenty-foot windspeed of 20 to 33 mph to cause active crown fire at the 97% ERC conditions. In addition, the torching index would be very high, ranging from 185 to 311, indicating the twenty-foot windspeed at which some kind of crown fire would be expected.

In some areas, thinning may result in an increased risk of blowdown to the remaining trees, especially within stands where lodgepole pine has been left (see also the vegetation section of this document). Stands would be thinned and down woody material reduced to a level that could accommodate increased fuel loading from blowdown. This anticipated blowdown following fuels reduction treatment should not in most cases result in fuel loadings that exceed the target levels especially in the less than 3-inch diameter classes (target levels are approximately 10 to 12 tons per acre, consisting primarily of the largest material available). However, there would be the potential to exceed the desired fuels loading were an unusually high amount of windthrow to occur, particularly in the mixed-species stands (larch or Douglas-fir) because more trees would be left. These species also have more biomass in their canopies than lodgepole pine, so there would be a greater amount of downed material should they be blown down. If an unusually high amount of windthrow were to occur, a site-specific assessment and analysis would be made and an appropriate course of action designated.

The prescribed fire areas are a mix of open, shrub-dominated areas and timber, where prescribed burning would be intended to reduce dead and down fuels and cause mortality in understory trees and patches of overstory trees. It would also kill the above ground portion of shrubs and forbs. This would only have a short-term effect on fire behavior in the shrub-dominated areas because re-sprouting would be expected to occur. The resulting vegetation in the timber-dominated areas should be in a more open condition with fewer ladder fuels and surface fuels.

Cumulative Effects

There have been past fuels reduction projects on National Forest lands completed or ongoing in and near the project area. These include Hungry Horse to West Glacier, Blankenship Fuels Reduction, and Cedar Spoon Fuel Reduction Projects. Many private landowners have also performed fuels reduction work on their own properties with and without the help of government grants. All of these activities cumulatively serve to reduce fuels across a landscape level.

<h2><i>Threatened, Endangered, and Sensitive Plants</i></h2>

Affected Environment

A habitat suitability analysis was conducted to evaluate the potential for sensitive plant occurrences within the project area. The majority of the area is in the upland coniferous forest habitat guild plant grouping, with small inclusions of other guilds, such as wetlands and riparian. There are three known occurrences of sensitive plants within the project boundary, but none is within any proposed treatment areas. Surveys for threatened, endangered, and sensitive plants were conducted within all proposed treatment areas, and none was found. Refer to the

Biological Assessment and Biological Evaluation in the Botany/Weeds section of the Project File for more information.

Environmental Effects

No-Action Alternative (Alternative 1)

Direct, Indirect, and Cumulative Effects

There would be no effect to any threatened, endangered, or sensitive plants under this alternative, as no project activities would be proposed.

Proposed Action (Alternative 2)

Direct, Indirect, and Cumulative Effects

The Forest Botanist has prepared a Biological Assessment (BA) and determined that the Proposed Action would have “no effect” on the threatened water howellia (*Howellia aquatilis*) or Spalding’s catchfly (*Silene spaldingii*), their habitat, or potential habitat for these species. This determination is based on the lack of known occurrences within the project area and the lack of suitable habitat within the action area (Botany BA in the Project File).

The Forest Botanist has prepared a Biological Evaluation (BE) and determined that the Belton Project would have “no effect” for all Regional Forester’s Sensitive Plants with habitat affinities for alpine and subalpine habitats due to lack of habitat in the project area (Botany BE in the Project File).

The Botanist determined that this project “may affect habitat, but will not likely contribute to a trend towards federal listing or cause a loss of viability” for all Regional Forester’s Sensitive Plants listed in Appendix D of the BE (Project File) with habitat affinities for: aquatic; fens and fen margins; other wetlands; riparian; upland coniferous forest; wet coniferous forest; moist cliffs, seeps, and talus slopes; and grasslands and forest openings. This is due to the occurrence of these habitat guilds within the project area (Botany BE in the Project File).

The areas of highest potential for Sensitive plants within the project area are in the wetland and rocky outcrops. Design criteria would avoid wetlands with all ground disturbing equipment, so any potential sensitive plants within these habitats would not be disturbed (refer to “Other Details of the Proposed Action” section of this EA for more information).

Noxious Weeds

The information in this section is from the “Invasive Plant Species, Noxious Weeds” report in the Botany/Weeds section of the Project File.

Affected Environment

The analysis area is highly susceptible to weed invasion due to its proximity to urban development and the high concentrations of existing weed populations. Most forested communities have low susceptibility to invasion and infestation by weed species because of the shade and competition for water and nutrients they provide (with the exception of orange and yellow hawkweeds). Areas most susceptible to invasion by weeds are areas of severe ground disturbance (e.g., parking lots, gravel pits, roads, skid trails, horse corrals, and landings). Although disturbed sites are not high-value, naturally occurring habitat, these areas may act as sources for new invasions into undisturbed native communities. Non-forested plant communities (e.g. grasslands and rock outcrops), are also at high risk for invasion by weed species.

Invasive species considered for this analysis are those listed as noxious by the State of Montana, as well as other exotic species determined to be highly invasive. Surveys conducted within the project and adjacent areas identified ten noxious weed species and eight undesirable weed species of concern (there is a list and description of these species in the “Invasive Plant Species, Noxious Weeds” report in the Botany section of the Project File). The most abundant and widely distributed noxious weed species in the project area are oxeye daisy (*Leucanthemum vulgare*), spotted knapweed (*Centaurea biebersteinii*), St. John’s wort (*Hypericum perforatum*) and sulphur cinquefoil (*Potentilla recta*). The amount and distribution of the invasive plants is highly variable within the project area, ranging from scattered isolated individuals to small, dense groups. These species occur along portions of many of the roads, gravel pits, and other disturbed sites. They generally have not invaded into understory forested habitats. However, they have the potential to expand into open canopies and natural occurring forest openings such as grasslands and open rock outcrops. Most of the area outside of these more heavily disturbed sites has experienced limited invasive plant establishment.

Minimal noxious weed treatments have occurred along roads in the project area. Management priority for this area is moderate due to the close proximity to urban areas; it is not connected to weed-free National Forest lands where containment would be a high priority. In addition, the project area and road systems within this area do not lead to special areas of unique habitats or wilderness that are generally weed free.

Environmental Effects

No-Action Alternative (Alternative 1)

Direct, Indirect, and Cumulative Effects

Because the No-Action Alternative proposes no ground disturbance, the potential for noxious weeds species to establish in undisturbed areas and spread within the project area is low.

Past, present, and future private land development would continue to increase the potential for new weed spread. Roads currently open would continue to serve as corridors for weed spread, allowing existing weed populations to continue their spread. Continuing and increasing recreational use of the area, road maintenance activities, forest products gathering, and other activities would increase the potential for weeds to establish in new areas.

The No-Action Alternative would be less likely to address existing weed populations within the project area than would Alternative 2, because no treatment of haul routes would occur, as it would under the Proposed Action.

Proposed Action (Alternative 2)

Direct and Indirect Effects

Establishment of noxious weeds within treatment units would be expected because ground disturbance caused by harvest equipment (skidders, etc), log landing sites, slash treatment methods, temporary road construction, and use of existing roads are all actions that create the potential for weed establishment and spread. Native vegetation would be expected to compete with noxious weeds and the sites would recover as canopies become increasingly closed over the next 10 to 20 years.

Under the Proposed Action, 39 units (778 acres, approximately 86% of the treatment acres) would utilize ground-based mechanized operations to meet stand objectives; 3 units (37 acres, approximately 4% of the treatment acres) would utilize hand thinning; the remaining 5 units (93 acres, approximately 10% of the treatment acres) would use a mix of hand thinning and mechanized equipment. Hand methods usually disturb less ground than mechanized methods.

Fuels treatment methods using excavators to pile slash would disturb more ground and expose more bare soil than hand piling the slash piles. In addition, burning the slash piles would expose some bare mineral soil to create a favorable environment for noxious weeds. Masticating or chipping the slash piles would provide the least opportunity for new weed establishment. Where possible within treatment units, chipping/masticating would be favored to meet the fuels objectives.

The thinning prescriptions proposed for this project would create less potential for weed establishment than the seedtree and shelterwood prescriptions. With thinning prescriptions, less volume would be removed, more canopy cover (shade) would remain, and less soil would be disturbed. The Proposed Action includes 684 acres of thinning and 224 acres of seedtree and shelterwood harvests. Approximately 282 acres of the treated areas would be winter logged, which would reduce the potential for spread of weeds seeds during implementation.

The noxious weed design criteria detailed previously in this EA would reduce the potential for weed establishment into the newly disturbed areas of this project. The design criteria intended to minimize soil impacts would also aid in reducing noxious weed spread. These measures would not eliminate all weed seeds from becoming established within the project area, but would reduce the potential for establishment and spread.

Although there would be potential for weed establishment into the prescribed burn units, the potential for establishment and spread would be low because of the cool, low to moderate intensity of the burn (refer to Fire and Fuels report in the Fire/Fuels section of the Project File for more information on prescribed burns).

The design criteria and management requirements for actions proposed under this project follow requirements documented in the Forest Service Manual Amendment for Noxious Weed Management, and road and timber management projects.

Cumulative Effects

Many past, present, and foreseeable actions have and would contribute to weed risk and spread in the project area (see discussion under the No-Action Alternative). Additional acres, outside and adjacent to the treatment units, would become more susceptible to weed invasion. This contribution to cumulative effects would be moderated, however, by the design criteria that would reduce the potential for new weed introduction and spread into existing un-infested areas; specifically weed treatments, soil stabilization measures, revegetation of disturbed sites, and restoration of constructed temporary roads. The objectives of the weed treatments associated with the Proposed Action would be to reduce the short-term potential for new establishment into the newly disturbed areas created by this project, not to reduce the total infested acres of the project area.

<h2><i>Soils</i></h2>

The following information is from the “Soils Specialist Report” in the Soils section of the Project File.

Affected Environment

The components of the soil resource that could be affected by the proposed activities include soil productivity, soil erosion, and mass failure or soil stability. Soils in the Belton Project area have mainly sandy textures and contain high amounts of gravel, reducing their water and nutrient holding capacity compared to soils in other areas of the Flathead National Forest. They are generally of moderate productivity for vegetation growth, with some areas achieving high productivity. Surface soil erosion ratings are moderate relative to other landtypes within the Flathead National Forest.

Many of the proposed mechanical treatment areas have had previous management activities over the past 60 years, including partial cutting (such as salvage harvest) and regeneration cuts, which removed most or all of the trees. Field investigations were conducted to determine whether these past activities had any detrimental soil disturbance still in evidence. Detrimental soil disturbance includes compaction, displacement, rutting, surface erosion, and mass movement. Regional Soil Quality Standards specify that to maintain soil quality, management activities should not create detrimental soil disturbance across more than 15% of an activity area.

All of the proposed mechanical treatment units (41 units) have a current percent detrimental soil disturbance from past activities of less than 15% of the activity area. The majority of mechanical treatment units (31 units) had minimal soil disturbance ($\leq 5\%$ of the activity area), and 17 of the 31 units had 0% detrimental soil disturbance. In the entire project (both mechanical and hand treated units), only one unit, Unit 26, was found to exceed 15% detrimental soil disturbance due to past activities. The proposed prescribed burn units have had no past disturbance. Refer to Table 3-1 in the "Soils Specialist Report" in the Project File for more detailed information on current percent detrimental soil disturbance.

Environmental Effects

No-Action Alternative (Alternative 1)

Direct, Indirect, and Cumulative Effects

No short-term effects on the soil resource would occur beyond the existing condition. Existing soil erosion would decrease as vegetation returns to soils that lack plant cover. Soil productivity in areas where past management has compacted soils would slowly improve as plant roots, soil organisms, and freeze-thaw events loosen the soil. Most soil disturbances would recover within 70 years. All standing dead trees would eventually fall over, contributing to the downed wood component. Nutrients associated with this material would slowly become available for plant growth. As the tree canopies close in and shade the soil surface, the rate of decomposition would slow, allowing organic matter and nutrients to accumulate on the soil surface. This process would continue until another major disturbance such as fire or a windstorm opens the tree canopy and speeds up the recycling process again. An intense wildfire would be a possibility at some time in the future. This event could reduce the amount of organic matter and associated nutrients on the site, and cause an increase in soil erosion. These changes would be temporary.

Proposed Action (Alternative 2)

Direct and Indirect Effects

Physical Soil Characteristics

The proposed mechanized treatments would cause effects to soil physical characteristics. Effects would be concentrated in the skid trails, temporary roads, and landings. Reduced productivity would be caused by compaction, displacement, and rutting. Literature and local monitoring on similar soils indicates that the Regional Soil Quality Standards can be met by using designated skid trails that occupy less than 15 percent of the harvest area, and by using excavators rather than dozers to treat slash. Additional protection of the soil resource would be afforded by applying the measures as listed under "Soil Productivity" in the "Other Details of the Proposed Action" section of this document. Refer to the skid trail spacing discussion in the "Monitoring Report, Hunger Henry Timber Sale" and to the "Soils Specialist Report" in the Soils section of the Project File, for more information. See also the "Temporary Roads and Closed Roads Needed during Implementation" map in the Access section of the Project File.

Chipping/mastication of slash and woody material would have similar effects as excavators. However, this method has the advantage in that it leaves all the material it treats on the soil surface where natural processes can decompose the organic matter and release nutrients.

Proposed hand treatments would create no detrimental soil disturbance. Prescribed burns that burn with light or moderate severity have no affect on physical soil conditions (DeBano et al. 1999). Burning would occur when soils are moist enough to reduce soil heating and would likely produce burns with light or moderate severity.

Organic Matter and Nutrients

The total amount of nutrients on a site would likely be reduced where organic matter (i.e. woody material) would be removed. However, the plant available nutrients (those released from organic matter) would increase because sun and moisture would be increased in the treated stands; both sun and moisture speed the breakdown of the remaining organic matter and the release of nutrients (Harvey and others, 1994). All units would have an active, microorganism-rich organic layer remaining on the soil surface. After project implementation, competition between trees would be reduced because fewer trees would remain on the sites. This situation could result in more available nutrients and water for the remaining trees, increasing their productivity.

In addition, all harvest prescriptions would leave a portion of the existing stand on the site. Proposed thinning units would retain 70 to 200 live trees per acre, which would retain a large amount of nutrients on site. Most of the living forbs, grasses, and shrubs would remain along with much of the material on the ground. In the seedtree units, which have the highest risk of losing organic matter, treatment of fuels by piling with an excavator would be delayed one wet season to allow the nutrients to leach from the needles and fine branches and for the needles to fall from the branches prior to removing them.

The nutrients in the soil and the organic matter are not the only nutrients available to the forest vegetation. Jurgenson, et al. (1981) studied logging followed by low-severity slash burning in northwestern Montana. The authors concluded there would be no long-term depletion of nitrogen reserves because lost nitrogen would be more than replenished by inputs from precipitation and by biological nitrogen fixation over a rotation of 100 to 150 years, indicating these are temporary changes.

The potential result of this proposed project would be to reduce the risk of wildland fire by reducing the amount of fuels within the activity areas and by increasing the spacing of the remaining trees. More nutrients and organic matter would remain on these treated sites compared to a site burned by a severe wildfire. Thus, the effects are within the range of natural variability for organic matter.

Chipping or mastication would leave nutrients associated with the slash on the site to be utilized by the remaining forest vegetation and would cause fewer effects than excavator piling and burning. In order to reduce the loss of nutrients in seedtree units where material would be piled and burned, the piling would be delayed for one wet season. These design criteria would provide time for nutrients to leach from the organic debris and for needles to fall off, as discussed by Garrison and Moore (1998). A delay in treatment would not be needed for the units proposed for

chipping or mastication because all the material would remain on the ground.

Hand treatments would result in minimal effects to soil nutrients. The amount of heat generated by small hand piles would be less than that created when large piles burn. As a result, the amount of nutrients lost during burning would be minor. The ash where the hand piles are burned would contain nutrients available to nearby vegetation.

The prescribed burns would have minor effects that are well within the natural range of variability. The effects of light, short-duration burning that does not result in consumption of the duff layer does not strongly affect soils organic content. Sites would revegetate quickly because they still have viable seeds or roots that could produce more plants and because the soil contains a complement of microorganisms and nutrients (Ryan and Noste 1983).

Soil Organisms

Because the amount of detrimental physical soil changes would be minimized, and because organic matter in various forms would remain on the proposed units, the effects to soil microorganisms would be minor. Soil microorganisms are mobile; they can move from undisturbed sites to disturbed sites. If a reduction in soil organism were to occur, it would be temporary. A variety of organic matter would remain on all sites, including living trees and other forest vegetation. In addition, the organic layer on the soil surface would be retained over at least 85 percent of the area, providing habitat and nutrients for soil microorganisms.

Soil Erosion

Soil Erosion would be most likely where equipment is used to implement the proposed activities. In general, erosion would be unlikely in the project area because the slopes are mostly less than 25 percent. Management activities would leave organic matter (live and dead plants) on the soil surface and these would reduce soil erosion; these activities could include constructing water bars and placing slash on skid trails, seeding of disturbed sites, and reducing the area where equipment operates.

Cumulative Effects

The cumulative disturbance of past activities combined with the proposed activities was determined for each treatment area. The Proposed Action was specifically designed to reduce the amount of detrimental soil disturbance, and all units would meet the regional soil quality standards after implementation. These standards specify that management actions should not result in detrimental soil disturbance on more than 15 percent of an activity area. This would be ensured by implementing the design features as described in the “Other Details of the Proposed Action” section of this document. To minimize risk of exceeding standards, design features for higher risk units include requiring winter logging, operating from existing skid trails when implementing post-harvest slash reduction, and requiring hand treatments rather than mechanized treatments.

Water Resources

Affected Environment

Three major characteristics describe the existing condition of a watershed: (1) stream channel condition and stability, (2) water quantity, and (3) water quality. Water quantity and quality are two aspects of the water resource that are vulnerable to either natural disturbance (wildfire) or to management activities (timber harvest).

Stream Channel Condition and Stability

All streams having effects from the Proposed Action drain in to the Middle Fork Flathead River. Most of these do not have channels that extend all the way to the river, but go underground and become incorporated into the groundwater catchment for the river. Abbot Creek is the only stream where the proposed treatments would occur in a perennial stream basin, with water concentrated into a channel that flows in to the river. Surveys and stream stability ratings indicate that Abbot Creek is in the “Good to Fair” stream stability category, and that all streams affected by the project are in proper functioning condition (refer to the Hydrology report and “Stream Channel Stability Field Evaluation” forms in the Hydrology section of the Project File).

Water Quantity

Removal of forest vegetation (e.g. fire or timber harvest) may result in an increase in water yield from the site for a period of years, with yields decreasing as vegetation re-establishes on the site. The existing water yield increase above natural for the Abbot Creek watershed (the primary perennial watershed affected by the proposal) is 4.1%, mainly influenced by past timber management activities and removal of vegetation on private lands for development. Refer to the Hydrology report, and the “Past Regeneration Harvest” and “Past Intermediate Harvest” spreadsheets in the Hydrology section of the Project File for more information.

Water Quality

The main source of direct sediment input to streams is from roads and areas of concentrated soil disturbance, such as log landings and skid trails. There are a total of 189.7 miles of existing roads (including U.S. Highway 2) in the affected watersheds, and 50 places where roads cross the streams. The summation of the potential sediment yield associated with the stream crossings is 1.4 tons per year. (Refer to “All Roads in Total Analysis Watershed” spreadsheet, the three “WEPP: Road Results” for Stream Crossings (flat, steep-sandy, and steep-silty) in the Hydrology section, and the “Possible Log Landing Sites” map in the Soils section of the Project File for more information). Erosion potential, and thus sediment production, can increase with timber harvest due to a reduction of vegetative cover over the soil. This erosion potential decreases rapidly over time as the site revegetates. All the past timber harvest sites in the project area have

revegetated well with trees, shrubs, grasses and forbs, and are not contributing any measurable sediment to the project area streams (refer to the Hydrology report in the Hydrology section of the Project File).

Environmental Effects

No-Action Alternative (Alternative 1)

Direct and Indirect Effects

There would be no direct or indirect effects to the existing condition of the streams, water quantity, or water quality under the No-Action Alternative (Alternative 1) because no project activities would occur.

Cumulative Effects

The current water yield in Abbot Creek is 4.1% above normal, primarily due to past-harvest activities in the area. All of these sites are now vegetated with trees, shrubs, and grasses, and are well on their way to hydrologically recovering from past-harvest actions. Water yield would continue to decline towards normal levels as vegetation on past-harvested areas increases in density and canopy coverage over time. However, past and expected future development on private lands, and the associated vegetation removal, would continue to cause some level of increased water yield over natural levels (Hydrology report in the Hydrology section of the Project File).

Proposed Action (Alternative 2)

Direct and Indirect Effects

Water Quantity

There would be no measurable effect to the water quantity in the Belton Project area from implementation of the Proposed Action. After treatment, the water yield in Abbot Creek would be expected to be 4.4%, only a 0.3% increase above existing conditions. This would be substantially less than the 9 to 10% water yield increase threshold where increased channel erosion would be initially expected to occur. No increase in stream channel erosion would occur in Abbot Creek. The proposed thinning and prescribed burning in the remainder of the affected watersheds would have very little potential to produce a measurable water yield increase above the existing levels. This would be because there are relatively few acres within the watersheds actually being treated (partial removal of cover on about 5% of the analysis area), and the small amount of increase expected compared to the much greater flow of the Middle Fork Flathead River. In addition, the effect would be ameliorated by the buffering effect of the groundwater storage and movement in the area (Hydrology report in the Hydrology section – Project File).

Water Quality – Sedimentation

There would be little to no potential for increased stream channel erosion or sedimentation due to project activities (thinning and prescribed burning) because of the lack of any measurable

increase in water quantity, the location of the units, and the character of the landforms and soils. The landforms and soils where the proposed mechanical/hand treatment units would be located are very permeable to water and are on flat to slightly sloping terrain. Buffers of untreated vegetation would remain adjacent to any streams or wetlands. In addition, skid trails would be water-barred and reseeded, and landings rehabilitated and revegetated at the end of use to ensure no post-harvest soil erosion occurs.

Surface road drainage devices (e.g. drive-thru-dips) would be installed as needed on existing and temporary roads. Along with the untreated stream buffers, this would reduce any potential soil erosion and sediment delivery to a stream, and would result in no measurable sediment input. The soil erosion potential from the temporary roads would be reduced to virtually nothing following the rehabilitation and revegetation of the temporary roads. There would be no additional sedimentation from the installation of devices and practices associated with Best Management Practices (BMP). There would be a reduction of approximately 0.13 tons/year in road associated sediment with BMP installation at four existing culvert sites (refer to Hydrology report, and the “WEPP: Road Results” for BMP Improvements, Hydrology section of the Project File for more information; refer also to the “Temporary Roads and Closed Roads Needed during Implementation” map in the Access section).

Approximately 36 landings would be required to extract logs from the proposed units. These would be located on flat to slightly sloping terrain, and the soils in the potential locations are well drained which would decrease the potential for runoff from landings. Due to distance from streams and the stream buffers that would be left, there should be no measurable amount of sediment reaching a stream channel from any of these temporary landings. The landings would be rehabilitated and revegetated once the mechanical operations are completed. The “Possible Log Landing Sites” map can be found in the Soils section of the Project File; refer also to the Hydrology report in the Hydrology section of the Project File for more information).

Through modeling, it is estimated that the potential short-term impact to the soil quality from prescribed burning would be significantly less with the implementation of the Proposed Action than under a wildfire scenario. This would be because of the lower intensity fire and resulting effects on vegetation that would occur under a prescribed burning scenario compared to a lethal, high-severity wildfire. After prescribed burning, the erosion potential would be rapidly reduced as the sites revegetates. Because all of the ephemeral streams adjacent to proposed broadcast burn units go underground when they reach the valley floor, there would be no potential for sediment to enter a perennial stream channel due to the proposed broadcast burning. Refer to the Hydrology report and “Disturbed WEPP Results” for wildfire and broadcast burns, in the Hydrology section of the Project File for more information.

Water Quality – Nutrients

The proposed thinning/broadcast burning treatments could cause a slight short-term increase in the nutrient levels in the analysis area streams due to the leaching of nutrients from small limbs and needles left on the ground following thinning activities, and from the increased nutrients made available for leaching and/or plant uptake following the burning of biomass. Because of the volcanic ash surface soil layer in this area, potential nutrient leaching from needles and burn piles would be very low, and there should be no measurable increase in the stream-water nutrient

levels in the analysis watersheds (refer to the Hydrology report in the Hydrology section of the Project File).

Conclusions

Based on the analysis summarized above, the proposed action meets the Clean Water Act, Montana State Water Quality Standards, and Forest Plan Water Standards.

Cumulative Effects

Cumulatively, past road building had an annual sediment yield of approximately 1.4 tons per year above the natural background. The annual sediment yield due to continuing road maintenance would be 0.18 tons. Past, present, and foreseeable future actions (including the Proposed Action) would not cause a measurable increase to water yield, sediment yield, and/or nutrient levels outside the natural range of variation for the streams in the analysis watersheds. Because all of the streams having effects from the Proposed Action drain in to the Middle Fork Flathead River, the volume of water contained in the river effectively dilutes beyond measurable amount the incoming water yield increase, sediment yield increase, and nutrient yield increase from the Proposed Action in the affected watersheds. Refer to the Hydrology report in the Hydrology section of the Project File for more information.

<i>Fisheries</i>

Affected Environment

Abbot Creek and South Fork Abbot Creek are the only perennial streams found within the project area. They contain westslope cutthroat trout, rainbow trout hybrids, and brook trout. Westslope cutthroat trout are the only fish species of concern that may be affected by this project. There is no specific population data available for Abbot Creek, but informal surveys conducted in recent years by Fish, Wildlife, and Parks (FWP) have not located any individuals with cutthroat appearance in the stream, suggesting that no genetically pure cutthroat remain (refer to citations in “Fisheries Biological Assessment/Evaluation” in the Fisheries section of the Project File). Bull trout do not reside in these streams nor did they historically. Although Abbot Creek is connected to the Middle Fork Flathead River, bull trout do not spawn, rear, or reside within the Abbot Creek drainage. Critical habitat for bull trout has recently been designated and includes the main stem of the Flathead River on private land sections. No treatment units in this project are located close enough to the river to affect the critical habitat condition.

Environmental Effects

No-Action Alternative (Alternative 1)

Direct, Indirect, and Cumulative Effects

No change to the existing condition of the fisheries would occur under the No-Action Alternative, because there would be no ground disturbing actions.

Proposed Action (Alternative 2)

Direct, Indirect, and Cumulative Effects

Potential effects to fisheries from the Proposed Action could include sediment produced by the project activities reaching water, increases in water yield that could degrade stream channels, change in bank or channel stability, or a change in substrate composition. None of these effects would be likely to occur because there would be no expected measurable increase in sediment or water yield within the project area, and no project activities within the stream channel. The discussion that supports this determination can be found in the previous section on “Water Resources.” Design criteria for treatments would comply with Montana Stream Management Zone (SMZ) laws and Inland Native Fish Strategy (INFISH) direction. This would include retaining INFISH buffers along stream channels to protect riparian zones and stream channels.

The greatest threat to the fisheries located within the project area is hybridization between native westslope cutthroat trout and non-native rainbow trout. The Proposed Action would have no effect on the rate and level of introgression found in Abbot and South Fork Abbot Creeks because habitat conditions favoring one species over another would not occur.

The District Fisheries Biologist determined that a “no effect” conclusion was appropriate for the threatened bull trout and a “no impact” determination was appropriate for the sensitive westslope cutthroat trout. These determinations are based upon the professional judgment of the Fisheries Biologist that the activities planned for this project would not have a significant impact upon the bull trout and westslope cutthroat population in the Middle Fork Flathead River (refer to “Fisheries Biological Assessment/Evaluation” in the Fisheries section of the Project File).

Wildlife

Grizzly Bear (Threatened Species)

Affected Environment

The Coram Lake Five (CLF) Grizzly Bear Subunit is the same as the Belton Project Area. There is a considerable amount of private lands embedded within this subunit (nearly 30% of the area) and this situation has created a considerable challenge for grizzly bears to use available habitats in the area while avoiding conflict. Despite the growing human population, grizzly bears continue to frequent the area and occasional sightings occur. Other infrastructure that have created an environmental baseline that generally preclude effective grizzly bear use of the entire subunit includes the transportation corridors (US Highway 2, and to a lesser extend the railroad). The most significant beneficial past management decision favoring grizzly bears was to implement an area closure for motorized use on NFS roads, this area closure is still in effect.

In recognition of the amount of private lands within this subunit, the Flathead Forest Plan designated grizzly bear Management Situations (MS). About 30% of NFS lands in the CLF subunit are designated MS 2, which are areas considered unnecessary for survival and recovery or the need has not been determined; about 13% are designated MS 3, which are areas where habitat maintenance and improvement are not management considerations; and the remainder are designated as MS 1, which are areas where habitat is necessary for survival and recovery of the grizzly bear.

The CLF subunit is dominated by forest cover containing mostly 70 to 80 year old forests. Relatively little past timber harvest activity has occurred within the subunit. There are spring, summer, and fall grizzly bear seasonal habitat values present, but a high-level of habitat security exists only in the eastern third of the subunit. No known den sites occur within the CLF subunit, but potential denning habitat exists in the upper elevations of the subunit. Refer to the “Wildlife Report” in the Wildlife section of the Project File for more information.

Environmental Effects

No-Action Alternative (Alternative 1)

Direct, Indirect, and Cumulative Effects

No activities are proposed, and thus no direct or indirect effect to grizzly bear would occur. The trend of continued development on private lands suggest that grizzly bears would likely have a much more difficult time using available habitats in an effective manner. Grizzly bear habitat on private lands would continue to be unavailable and mortality risk would likely increase. Increased volumes of traffic (both highway and railway) contribute to this increased risk, as well as creating somewhat of a barrier to grizzly bear movements.

Habitat/vegetation diversity has been created through past timber harvesting on National Forest System land and on private lands, which sometimes has created a source of food for bears. The roads associated with many of these harvest areas have sometimes made access easier, increasing vulnerability of bears to human-caused mortality.

Proposed Action (Alternative 2)

Direct and Indirect Effects

The Wildlife Biologist has determined that the implementation of the Belton Fuels Reduction Project “may effect – but is not likely to adversely affect grizzly bears or their habitat.” This determination is based on the discussion in the “Biological Assessment for Terrestrial Wildlife Species” (in the Wildlife section of the Project File), and is summarized below.

The Coram Lake Five Subunit contains less than 75% Forest Service land ownership and provides a relatively low level of security. It meets Amendment 19 standards because it does not cause a net increase in total motorized access or open motorized access density, or a net decrease

in security core. There is no requirement to meet numerical objectives as with subunits containing greater than 75% Forest Service land ownership.

Nearly half of the mechanical fuels reduction units (48%) are located within MS 3. Another 36% occur within MS 2, and only 16% of the Belton fuels treatments would occur within MS 1.

The prescribed burn units are within grizzly bear security core habitat, and helicopter use during implementation may result in some level of disturbance. This impact would be expected to be of short duration (1 to 2 days). There would be no project activities within the critical grizzly bear spring use period with the exception of one or two days worth of helicopter use for implementing the prescribed burning units (and other prescribed burning activities), planting, and noxious weed spraying. Road treatments (BMPs), burning of slash or landing piles, and thinning of saplings may occur during the spring period if they are located along open roads.

The implementation of this project would introduce mechanized noise into dispersed sites throughout the project area. Noise from saws and heavy equipment used for felling trees, skidding /removing merchantable trees, and possible chipping of unmerchantable material to reduce fuel loading, would have the potential to displace/disturb the use of the area by grizzly bears. These potential disturbance/displacement activities could last up to three seasons (contract terms).

There are no known den sites within the subunit, though an overlap of approximately 119 acres of prescribed burning in potential denning habitat would occur. The burns are not expected to reduce this habitat potential because grizzly bears den in open habitats as much as in closed forest canopies.

It would be likely that spring food production for bears (grasses/forbs/shrubs) could increase (quantity and quality) in response to a more open forest canopy created by proposed treatments, because more sunlight would reach the forest floor. The treatment sites have varying levels of berry-producing shrubs, including huckleberry, buffaloberry, and serviceberry. There may be an unknown reduction in some of these species due to damage to root systems by machinery. On the whole, berry food production would be not expected to be substantially reduced due to treatment activities.

Cumulative Effects

Timber harvesting has occurred on both private and Forest Service lands in the Coram Lake Five subunit, this has created habitat and vegetation diversity for grizzly bears. Ungulates, which sometimes become a source of food for grizzly bears, have also benefited from forest management activities because of increased foraging opportunities. The Belton Project would be additive to previous forest thinning, and forest openings created by private landowners. However, the proposed Belton treatments are fairly constrained in size and are widely distributed throughout the subunit.

The Belton Project would cumulatively add to the previous, smaller-scale Hungry Horse-West Glacier Fuels Reduction Project. Additional openings would be created and grizzly bears could potentially be more easily seen. However, the project would also cumulatively diversify habitat

conditions, which grizzly bears tend to favor. The Coram Lake Five subunit only has a small amount of security core habitat, and during project implementation, there may be unintended displacement effects on grizzly bears using the area. However, because the subunit has an area closure to motorized access on Forest Service lands (except on existing open roads), and because project activities would not occur in the spring (April 1 – June 30), the project is not expected to adversely cumulatively affect grizzly bears or their habitat. The Forest Plan standards relative to grizzly bears would be met (refer to the “Biological Assessment for Terrestrial Wildlife Species” in the Wildlife section of the Project File).

Gray Wolf

Affected Environment

There are no known wolf packs within the Belton Project Area, nor do the nearest known wolf packs have the project area as a major part of their overall territory. The nearest pack at the end of 2006 was the Nyack pack (in the Middle Fork Flathead River drainage), which is a new pack of two wolves; they are considered a non-breeding pair. Between 1999 and 2001 two wolf packs were near and/or adjacent to the project area (Whitefish and South Camas). Two members of the Whitefish Pack were documented within or immediately adjacent to the project area boundary in 2000. Although the project area does not constitute a core area for wolf packs, it does contain habitat components that probably draw members to the area occasionally for foraging/hunting purposes. Ungulate populations (deer, elk, and moose) appear to be adequate to provide a food base that could attract wolves during the winter. The project area also contains approximately 19,893 acres of potential wolf denning habitat. However, it is likely there may be too much human presence and/or lack of enough habitat security for the project area to effectively function as denning habitat or to allow wolves to actually live in the area. However, because the project area is dominated by forest cover (see Vegetation Report and Vegetation Effects Analysis documents in the Project File) the opportunity for wolves to hunt or travel through the area undetected is still relatively good.

Environmental Effects

No-Action Alternative (Alternative 1)

Direct, Indirect, and Cumulative Effects

No activities are proposed, and thus no direct or indirect effect to wolves would occur. Wolves have shown the ability to co-exist with humans, especially in area where no livestock operations are involved and an ungulate population is self-sustaining. Occasionally, however, domestic pets get killed by wolves and this generally precipitates management control actions on depredating wolves. In addition, wolves do not ordinarily select territories in the midst of human presence and/or development. Although there appears to be suitable wolf habitat in the project area (prey base and denning habitat), the continued development of private lands and increased recreational and other human use of the area would likely preclude wolf use of the area for the foreseeable future.

Proposed Action (Alternative 2)

Direct and Indirect Effects

The District Wildlife Biologist has determined that the implementation of the Belton Fuels Reduction Project “may effect, but is not likely to adversely affect” gray wolves or their habitat. This determination is based on the discussion in the “Biological Assessment for Terrestrial Wildlife Species” (Wildlife section of the Project File), and is summarized below.

The potential effects on wolves are primarily related to the effects on ungulates (their prey base) and security/mortality risk. Denning and rendezvous habitat are not considered to be limiting across the Forest. No known denning or rendezvous sites are known to occur in the Belton Project area. If any were found, they would be protected during implementation for the breeding and pup rearing seasons.

Prey Base

The proposed treatments would change existing stands of forest cover (security/thermal cover) into more open forested conditions. This would potentially increase ungulate forage production, due to increased sunlight reaching the forest floor. In addition, the prescribed burning would be expected to increase the quality and quantity of winter browse production within treated sites. Of the 53 proposed mechanized, hand and prescribed burning treatment sites, 49 are within ungulate winter range. A slight increase of winter ungulate population may occur, although reduced cover resulting from the treatments may potentially increase vulnerability of ungulates to predation (humans and other carnivores). Potential wolf use of the area could occur, however the high amount of human presence would make permanent residency by wolves unlikely.

Habitat Security

Short term displacement of wolves, if they are using the area, may occur due to: (1) displacement of ungulates caused by temporary use of some currently restricted roads during project implementation; (2) temporary road construction into proposed treatment sites may reduce habitat security until rehabilitation of roads is completed; and (3) the introduction of mechanized noise (chainsaws, heavy equipment, chipping activity) into widely dispersed sites while the project is being implemented (up to 3 years).

Proposed treatments would reduce security cover in areas adjacent to human presence and/or private lands. It would be possible that there could be potential attraction of wolves to the thinned sites (thus increasing vulnerability to human-induced mortality), in response to increased levels of ungulate foraging. However, because the treatment sites are adjacent to private lands and homes, it seems unlikely that wolves would choose to hunt there.

Cumulative Effects

The project and cumulative effects areas are dominated by closed-canopied forests containing adequate wolf security cover (on National Forest System lands). Other past treatments of vegetation (on private and National Forest System lands) have generally provided a net-positive benefit for ungulates because they have resulted in open forest conditions favorable to the growth of grass, forbs, and shrubs (ungulate forage). Past road construction and maintenance of roads in the subunit had the effect of allowing humans relatively easy access into the area, during the

hunting season this may have had the effect of reducing local ungulate populations. Motorized access restrictions imposed in this subunit have stabilized the level of habitat security for local ungulates. Because of these reasons, gray wolf habitat on National Forest System lands would still be viable and available and it is concluded that the proposed project activities would not cumulatively adversely affect gray wolves or their habitat.

Additionally, the Flathead National Forest Land and Resource Management Plan contains standards for management of gray wolf habitat. These standards would be met with this project.

Canada Lynx (Threatened species)

Affected Environment

Potential lynx habitat is common across the Flathead Forest with 1,733,094 acres of estimated habitat, approximately $\frac{3}{4}$ of the forest. Lynx habitat on the Flathead National Forest is generally described as mesic coniferous vegetation with cold, snowy winters that provide a prey base of snowshoe hares. Denning habitat is found in a variety of forest conditions; they are found in small pockets scattered across the area and are generally found across the landscape; lynx denning sites are not believed to be a limiting factor (USDA Forest Service 2007).

Winter snowshoe hare habitat is a limiting factor for lynx persistence (Ibid). Snowshoe hare habitat consists of forests with densely growing young trees or shrubs. Multistory forests with tree limbs at snow level and an abundance of trees in the understory also provide winter snowshoe hare habitat. During winter, hare forage is limited to twigs and stems protruding above the snow within reach of the hares.

The Belton project area is contained entirely within three Lynx Analysis Units (LAUs); Moccasin Nyack, Lake Five, and Coram Abbot. All three are dominated by forested areas of pole-sized and larger trees (refer to the Vegetation section of this document) and contain varying amounts of private lands and lynx habitat/non-habitat. Likely or potential winter snowshoe hare habitat ranges from 20% in the Lake Five LAU, 40% in the Moccasin Nyack LAU, and 52% in the Coram Abbot LAU. These numbers only reflect conditions on National Forest System lands, and include hare habitat in the stand initiation stage (young seedlings and/or saplings) and in older multi-storied forest conditions.

Environmental Effects

No-Action Alternative (Alternative 1)

Direct, Indirect, and Cumulative Effects

The cumulative effects analysis area (combined acres of all three LAUs) totals approximately 52,572 acres. Of this amount, private land constituted approximately 21% (11,130 acres). Though private lands contained relatively little mapped lynx habitat within them (4%; 459 acres) it is likely that continued development of these lands would likely turn this habitat to non-habitat over time.

Currently, lynx security and travel is affected by the presence of human travel corridors, such as the railway, U.S. Hwy 2, and private and Forest Service roads. Most recently (in the last 10 years), an area closure to motorized use on Forest Service roads has provided better habitat security. This situation would remain unchanged under the No-Action Alternative.

Proposed Action (Alternative 2)

Direct and Indirect Effects

The Wildlife Biologist has determined that the implementation of the Belton Fuels Reduction Project “may effect-but is not likely to adversely affect” Canada lynx or its habitat. This determination is based on the discussion in the “Biological Assessment for Terrestrial Wildlife Species” (Wildlife section in the Project File), and is summarized below.

Approximately 178 acres of mechanical treatment and 318 acres of prescribed burning (or about 27% of the total acres treated) would occur within occupied lynx habitat. The 178 acres of mechanical treatments only constitutes 0.2%, 1%, and 0.4% of National Forest land within the Moccasin Nyack, Lake Five and Coram Abbott LAUs respectively. None of the 496 acres (combined mechanical treatment and prescribed burning acreage) are suitable winter snowshoe hare habitat. Therefore, all the acres of proposed treatments within lynx habitat are suitable for purposes other than foraging, such as traveling through the area. These acres are all within the WUI and are located near private lands; it would be questionable whether lynx would choose to live that close to human presence.

Compacted snow during winter treatment operations could facilitate increased use by competitor carnivores. There could also be some potential for temporary displacement, due to noise/disturbance from equipment/machinery use, if a lynx happened to be in an area during project implementation activity. Potential lynx exposure to project activities would be no more than three years.

Cumulative Effects

The effects on lynx and lynx habitat from past human habitat alterations has been mixed: some have been beneficial, some have not. Only past effects of private land development have the permanence that could exclude lynx from these areas. The project and cumulative effects areas would be dominated by closed-canopied forests with high security cover, and would have habitat diversity produced by limited past timber harvests. This, coupled with the fact of no new permanent road access, indicates that lynx habitat would still be viable and available. The proposed project would, at least in the short-term, reduce the amount of suitable lynx habitat in the LAUs. Because the long-term intention would be to maintain the fuels reduction sites in their post-treated condition (except for the prescribed burn units), these sites may no longer function as suitable lynx habitat. This would be cumulative, though not permanent, to the reduction of suitable lynx habitat that has already occurred on private lands.

There would be no adverse cumulative effect to lynx habitat security. Ongoing actions, such as recreational activities and forest products gathering, are unlikely to produce cumulative effects to

lynx because of the relatively low level of these activities.

Based on this analysis summary, the Belton Fuels Reduction Project meets the standards and guidelines contained in the Northern Rockies Lynx Management Direction, which has been incorporated into existing forest plans of all National Forests in the Northern Rockies Planning Area.

Sensitive Species

Affected Environment

Sensitive species are those identified to receive special management emphasis to ensure their viability and to preclude trends that could threaten the species with extinction resulting in federal listing under the Endangered Species Act (FSM 2672.1). Habitat conditions are not present, or are limited, for eight of the thirteen sensitive wildlife species that occur on the Flathead National Forest. These include the peregrine falcon, common loon, flammulated owl, harlequin duck, northern bog lemming, northern leopard frog, western toad, and bald eagle. The Wildlife Biologist has determined that the proposed treatment activities would have “no impact” on these eight species. Sensitive species and determinations are discussed in the “Wildlife Report” found in the Wildlife section of the Project File, and are summarized below; refer also to the “Vegetation Existing Condition and Effects Analysis” in the Vegetation section of the Project File for information on stand condition, old-growth, and other vegetation conditions.

Habitat may occur within the proposed treatment areas for the remaining five sensitive species: fisher, black-backed woodpecker, northern goshawk, Townsend’s bat, and wolverine. The Townsend’s bat and the wolverine would not be affected by the treatment activities proposed, and the biologist has determined that this project would have “no impact” on the Townsend’s bat or the wolverine.

The fisher, black-backed woodpecker, and northern goshawk may potentially be affected by proposed treatment activities. Discussion of these three species follows.

Fisher

The fisher is most commonly found in mature to old-growth, mid-elevation Douglas-fir and mixed conifer forest habitat types near water, with large down logs for denning. Proposed Unit 37 may be close to meeting the habitat needs of the fisher.

Black-backed Woodpecker

Subalpine fir, spruce, and lodgepole pine dominated forests make up the bulk of the habitat requirements for this species. Individuals are somewhat nomadic and populations tend to erupt after stand replacement fires because of the abundance of wood boring beetles and bark beetles after these fires. Because of the forest stands that comprise the treatment units, the black-backed woodpeckers could occur in the project area, although none have been observed or documented.

Northern Goshawk

Mature and old growth coniferous forests are prime nesting habitat for this forest-dwelling raptor; it feeds on birds and small mammals. Unit 37 contains potential nesting habitat because it contains older, late-successional forest characteristics. Other units do not have nesting habitat, but could potentially function as feeding habitat.

Environmental Effects

No-Action Alternative (Alternative 1)

Direct, Indirect, and Cumulative Effects

No activities are proposed under this alternative, so there would be no change to the existing status or habitat conditions for sensitive species.

Proposed Action (Alternative 2)

Direct, Indirect, and Cumulative Effects

For the fisher, black-backed woodpecker, and northern goshawk, the biologist has determined that the project “may impact individuals or habitat, but will not likely contribute to a trend towards federal listing or cause a loss of viability to the population.” The following discussion clarifies the rationale for determining no significant effects to these three species.

Fisher

Fuel reduction treatments would likely move Unit 37 (the unit associated with potential fisher habitat) further from meeting fisher habitat needs. This unit would probably not function as fisher habitat after treatment; however, the 16 acres of potentially suitable habitat involved, and its location adjacent to large areas of similar older forest conditions, would probably not be enough to contribute to a potential trend for federal listing of the fisher. The other units in this project are not old enough, nor do they have the structural attributes to provide fisher habitat; treating them would not affect the fisher.

Black-backed Woodpecker

Post-treatment condition of the units would not preclude woodpecker use, but would likely reduce the occurrence of stand-replacement fires that create important woodpecker habitat. However, the cumulative effects area (Coram-Lake Five Subunit) has the potential to produce a high amount of woodpecker post-fire habitat conditions. While individual black-backed woodpecker territories could potentially be affected, this project is unlikely to contribute towards a trend to federal listing of the black-backed woodpecker.

Northern Goshawk

Because Unit 37 (the unit associated with northern goshawk habitat) would be adjacent to, and contiguous with, large areas of similar older forest habitat conditions, it does not appear that this

16-acre reduction in potential nesting habitat would cause or contribute to any trend to federal listing.

<i>Air Quality</i>

Affected Environment

The primary air quality concerns associated with forest management activities include road dust and smoke from wildfires and prescribed burning. The main air quality concern associated with this specific project would be the amount and concentration of particulate matter (PM) produced by proposed prescribed burning. Prescribed burning would consist of pile burning of materials that result from mechanical fuels reduction treatments and broadcast burning natural fuels units.

The basic framework for controlling air pollutants in the United States is the 1970 Clean Air Act (CAA), as amended in 1990 and 1999 (42 U.S.C. 7401 et seq.). The major pollutant of concern in smoke from wildland fire would be fine particulate matter. Smoke from prescribed fire must meet the ambient air quality standards for fine particulate matter.

Environmental Effects**No-Action Alternative (Alternative 1)*****Direct, Indirect, and Cumulative Effects***

No effect to air quality would occur under this alternative, as no actions or treatments of any kind are proposed.

Fire has historically been a part of the vegetative dynamics in the Northern Rockies, and would continue to be a part of the natural forest ecosystem. Local short-term impairment of air quality would continue to occur from wildland fires. Forest Service management prescribed and wildland fire use in areas outside the Belton Project area contribute smoke that may cause short-term deterioration of air quality. Prescribed fires tend to produce less smoke than wildfires of equal size, since fuel consumption is typically lower in prescribed burns. Refer to the “Air Quality” report and the “Smoke Impact Spreadsheets” in the Fire/Fuels section of the Project File for more information.

Proposed Action (Alternative 2)***Direct and Indirect Effects***

Road dust due to log hauling and normal public traffic would be common in the project area. Dust abatement may be used if needed on haul roads to minimize the effects of road dust. This would reduce negative effects to air quality in the local area.

Prescribed burning would produce some smoke emissions. Machine piles and hand piles tend to produce more smoke than broadcast or underburns because much of the consumption occurs during the inefficient smoldering phase of combustion. All burning would occur under conditions designed to ensure adequate smoke dispersal. Even when modeled under a “worst-case scenario” (such as implementing the burning all in one day, an unlikely event), results indicate that all areas over ½ mile from the concentrated burning are well below standard levels established for fine particulate matter and meet EPA air quality standards. Refer to the “National Ambient Air Quality Standards (NAAQS)” and the “Smoke Impact Spreadsheets” in the Air Quality section of the Project File for more information.

Smoke from prescribed burning could cause short-term impacts on recreation and transportation in and near the project area. The size and location of a prescribed burn and weather conditions determine how much and in what direction smoke travels. Weather and smoke dispersion conditions outlined in the prescribed burn plan should alleviate any adverse smoke effects (Air Quality” report, Air Quality section of the Project File). Proposed prescribed burning would be monitored and controlled by airshed regulations to avoid violation of air quality standards.

Cumulative Effects

Smoke emissions produced by the implementation of the project, road dust, and vehicle emissions could combine with air pollutants from other projects in the area such as other prescribed burning and particulates produced west of the project area. This could adversely affect the air quality in the analysis area and surrounding area temporarily.

The cumulative impacts of all private and agency burning are assessed daily during the burning season through the coordination of the Montana/Idaho Air Quality Bureau. This group considers other sources of smoke such as wildfires, wildland fire use events and industrial sources. Prescribed burning in the Belton Project area would need to be approved on a daily basis through the Montana/Idaho Air Quality Bureau. Based on current and forecasted weather, burns are approved or disapproved based on their cumulative impact on the airshed. This regulatory mechanism helps ensure that the cumulative effects of prescribed burning do not lead to a violation of air quality standards.

Wildland fires locally, or anywhere in the northwest and Canada, can affect regional haze in the Flathead Valley. Wildland fires would continue to produce smoke, primarily during the summer months. Areas where fuels have been treated under conditions selected to minimize effects on air quality, such as the Belton Project area, should be less vulnerable to future intense wildfires where smoke effects are unpredictable (“Air Quality” report, Air Quality section of the Project File).

<p style="text-align: center;"><i>Recreation, Inventoried Roadless, Wild and Scenic River, and Scenic Values</i></p>

Affected Environment

Most of the following information is from the “Recreation/Lands Report” and the “Inventoried Roadless Analysis” found in the Recreation section of the Project File, and the “Visual Resource Report” found in the Visual section of the Project File.

Trails and Dispersed Use

There are no system trails within the project area, but the Flying Eagle Ranch holds a special use outfitter guide permit, near the project area, for horse rides on permitted trails. Dispersed use (such as berry picking and hunting) in the project area is minimal since access is limited to the open roads and the intermix of private lands limits access for dispersed use. There is a closed and/or historic road system within the project area used year-round by recreationists for hiking, riding horses, mountain biking, skiing, and snowshoeing. An existing Forest Order prohibits motorized use throughout this area (Refer to Special Order #D06044L96 in the Recreation section of the Project File). There is evidence of unauthorized wheeled motorized use throughout the project area on historic roads and user-created routes.

Wild and Scenic River

The Middle Fork Flathead River (Middle Fork), which borders the Belton Project area, is part of the 219 miles of the Flathead River System designated as a Wild and Scenic River. This section of the Middle Fork is classified as recreational. Units 16 and 27 fall within the Wild and Scenic River Corridor that borders the river.

Lands

Currently there are ten private non-recreation special use permits authorized for water lines/systems and private roads. In addition, there are several utility companies permitted for transmission, gas, and phone lines. Several proposed treatment units are adjacent or within the utility corridors.

Inventoried Roadless Area

The western portion of the 42,000 acre Middle Fork Inventoried Roadless Area is within the Belton Project area, and contains the proposed prescribed burning units.

Scenic Values

Visually sensitive areas within the Belton Project Area include National Forest System land near Highway 2, the Wild and Scenic River corridor. In addition, the mid to upper slopes of the Flathead Range are visible in the background from several vantage spots within the project area. The proposed prescribed burn units are located in this area. Refer to the “Visual Resource Report” in the Visuals section of the Project File for more information on scenic resources.

Environmental Effects

No-Action Alternative (Alternative 1)

Direct, Indirect, and Cumulative Effects

No direct or indirect effect to current recreational or scenic values in the project area would occur. The process of forest succession would continue, and over time the areas that have been heavily to moderately altered by past timber harvesting would blend into the landscape. This would be assuming the area remains unaffected by wildland fire. In the event of a fire, visual change to the landscape would be dramatic. This change would be natural in appearance, but fires of large magnitude may be visually unappealing to some viewers. The fires could create vast expanses of even-aged stands with little visual diversity, which would exist for decades.

Proposed Action (Alternative 2)***Direct and Indirect Effects***Trails and Dispersed Use

There would be no direct effects to system trails or dispersed recreational use, as none of the units occur at these sites. The many user-created trails may be impacted to some degree where they intersect proposed treatment units or temporary roads (refer to the “Temporary Roads and Closed Roads Needed during Implementation” map in the Access section of the Project File). Indirectly, treatments may increase the site distance from and between these non-system trails for recreationists who use them to hike, bike, ride horses, ski, and snowshoe.

The treatments adjacent to private lands can invite additional dispersed use on National Forest System lands, including off-highway vehicle (OHV) travel, camping, user-created trails, hunting, etc. Seasonal workforces sometimes take up residency on the National Forest to reduce their living expenses. Unauthorized residency may increase due to the creation of landings, improved roads, and access.

Wild and Scenic River Corridor

There would be no effect on the scenic values of the river corridor because treatments in the two units in the corridor (Units 16 and 27) would not be visible from the river. This would be due to the retention of a buffer strip of untreated forest in Unit 16, and natural vegetative screening and topographic breaks in Unit 27.

Recreation Special Use

Flying Eagle Outfitter’s clients would be displaced from their permitted routes while fuels treatments intersecting these routes are active. Coordination between the outfitter, permit administrator, sale administrator, and contractor would be essential to reduce conflicts and provide for public safety. The public using these routes would be displaced for the duration of the treatments. The terrain surrounding the trails would be opened up with the removal of the vegetation, increasing the site distance between routes.

Lands

Several units would be accessed and material hauled out using NorthWestern Energy's permitted buried gas line corridor. The line would be protected as detailed by gas company mandates. There should be no direct effects to the other special use permit holders.

Fuel treatments may open the forest adjacent to private lands, and new encroachments on National Forest System lands may occur (e.g. roads, water systems, structures). Should new encroachments be discovered, they would be appropriately documented and addressed.

Inventoried Roadless Areas

There are no direct, indirect, or cumulative effects from mechanical treatments since they would occur outside of the Middle Fork Inventoried Roadless Area (IRA).

The prescribed burning units impact only the far western edge of the Middle Fork IRA. As discussed in the Fire/Fuels and Vegetation section of this document, fire is the main natural disturbance feature of these landscapes, and introducing fire through the prescribed burn units would be within the historical range of variability for this ecosystem. Burning would be expected to enhance the natural integrity and apparent naturalness of the area and would not affect the feeling of remoteness of the Middle Fork IRA.

Effects to solitude from prescribed burning are expected to be minimal. The fires would likely be ignited by helicopter, and helicopter use would be expected to occur for about two days. The noise could impact those who expect solitude during those few days, however, helicopter use would not be unusual in this area. In addition, noise from Highway 2 and the Burlington Northern – Santa Fe Railroad can already be heard in the distance from most portions of the prescribed burn units.

The burns could minimally affect primitive recreational opportunities. People who use the area for primitive recreation would be able to use the area as usual (except during the time the area would be actively burning). Instead of the area being 'green' as it was prior to burning, portions would now be considered 'black,' but this should not affect recreational use of the area. There are no system trails within the prescribed burn areas.

Scenic Values

In the short-term, tree canopy openings created by treatments of various sizes with varying numbers of trees remaining may be visible from nearby roads and private lands. Additionally, views of stumps and reduced shrub growth may also be visible. Over time, these changes would be softened due to vegetation growth, which would be expected to be fairly rapid. To reduce the visual impact of landings and slash piles, additional efforts would be made to dispose of any slash clearly visible from homes, and to restore visible landings and temporary roads to a more natural appearing condition. Most of the units near U.S. Highway 2 are either not visible from the road or would blend in adequately under the proposed treatment prescription. Refer to the "Possible Log Landing Sites" map in the Soils section of the Project File for more information.

The proposed treatment areas would be spread throughout the project area. Structure of the forest stands would change from dense stands to stands with more openings and fewer trees per acre. The prescriptions allow for an uneven pattern of overstory leave trees, which would create

a non-uniform appearing stand. In addition, as many as thirty smaller trees per acre would be left in a non-uniform pattern in the understory. In some of the lodgepole pine dominated treatment units there would be small openings with intermittent overstory trees left along with planted western larch, Douglas-fir, and western white pine. This would provide for a long-term, diverse stand and would add vegetation to soften the short-term visual effects of tree removal. The maximum stump height allowed in treatment units would be 12 inches.

Since this is a fuels reduction project, there would be an effort made to reduce slash and woody debris as soon as possible. Logging residue is often a concern heard from the public. Slash reduction treatments may include piling and burning, chipping, shredding, lopping, or removal from the site. Additional efforts would be made to dispose of any piles clearly visible from homes. If pile remnants occur after the first treatment and continue to have visual impacts, further impacts would be made to dispose of this material. All landings would be rehabilitated to a natural appearing condition, which would include disposal of woody material as mentioned above, recontouring, and revegetation where necessary. Any temporary roads would be returned to a natural looking appearance. Weed spraying would also occur adjacent to roads within the project area (authorized under a different project) which could reduce visual impacts from existing noxious weeds populations.

The intent of the prescribed burns would be to create a mosaic of open and semi-open areas scattered across the slope. Patches of blackened trees are desired to create openings so shrubs and forbs can dominate. It would not be the intention to have these slopes dominated by large blackened stand replacing fire areas. Full views of these burned areas would not be apparent in most areas within the project area, including Highway 2, because of foreground screening by trees/shrubs and smaller ridges. Views of these burns from Glacier National Park would not be readily apparent. Refer to the “Visual Resource Report” in the Visuals section of the Project File for more information on scenic resources.

Cumulative Effects

Recreational activities of all types are increasing on National Forest lands as the area’s population and popularity expand. Creating openings along open roads and adjacent to private land would have the potential to increase unauthorized OHV use. Current regulations prohibit cross-country vehicle travel. These openings may also encourage more dispersed camping in these areas; dispersed camping would be allowed only within 300’ of a system road.

The Belton Project would cause changes in the visual appearance of the treatment units similar to what occurred with the previous fuels reduction project in this area (the Hungry Horse-West Glacier Fuels Reduction Project completed in 2004). Past-harvested units now have new shrub growth covering up stumps and other signs of ground disturbance. However, change in vegetation structure would still be noticeable in these past units.

Other past harvests and private land development has placed unnatural shapes and textures on the landscape in several areas. Visibility of some of these features would continue. Similar actions to reduce fuels buildup and thinning are occurring on surrounding private lands within this project area.

<i>Heritage Resources</i>

The proposed treatment areas were inventoried by a records search and an on-the-ground survey; it did not result in the discovery of any historical or cultural sites. There are some historical and prehistoric sites within the project area but would not be affected by any of the proposed activities (Refer to the historical documents in the Heritage section of the Project File for more information). Any unknown sites found during project implementation would be protected through contract provisions. Thus, there would be no direct, indirect, or cumulative effects to heritage/cultural resources and this project complies with the National Historic Preservation Act.

<i>Public Health & Safety</i>
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The safety of surrounding private residences, other structures, and forestland would be improved. Reducing fuels changes fire behavior enough to allow direct suppression tactics by local firefighting resources. This increases the chance of suppressing the fire before it reaches the adjacent privately owned structures. Smoke management actions would limit exposure of workers and local residents during prescribed burning activities.

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PLANNING TEAM MEMBERS

Michele Draggoo – Planning Team Leader	Bill Basko – Soils Scientist
Heidi Trechsel - Silviculturist	Linh Hoang – Botanist
James Barnett – Fire and Fuels Specialist	Tim Light – Archeologist
Henry Rivera – Wildlife Biologist	Dave Yarger – Resource Info. Manager
Dean Sirucek – Hydrologist	Linda Donner – Writer/Editor
Pat Van Eimeren – Fisheries Biologist	Paula Peterson – Recreation Specialist

PERSONS AND AGENCIES CONSULTED

Bengston, Charles & Susan	Colman, Tom & Gail
Bengston, Chuck	Daley, Carol
Bengston, John	Downes, Jack
Borkoski, William	Fetters, Ken
Brescianai, Marjeanne	Flint, Kathleen
Brown, Dee	Furnia, C.J.
Burt, David	Harada, Sumio
Byrd, Gerard & Loretta	Heffernan, Patrick
Carlson, Karsten	Hinchey, John

Hodgeboom, Fred – Montanans for Multiple
Use
Hooker, Bob
Hopkins, Sherman
Jarecki, Chuck – Recreational Aviation
Foundation
Juel, Jeff – WildWest Institute
Kellenback, Frank
Lawson, Kendall & Mary
Mackie, Wayne – Flying Eagle Ranch
Mariscal, Raymond
McClure, Greg
Petroni, John
Rinck, William
Ringdal, Helge
Roady, Chuck – F.H. Stoltze Land &
Lumber Co.

Ryan, Ben
Ryan, Butch
Savage, Grant
Seim, Ted
Steel, Elizabeth
Still, Cass – Belton Chalet
Stoneman, Darwon
Swope, Bill
Van Alstine, W. Duff
Watkins, Jackie
Williams, Dave & Debbie
Woehler, Jennie – Tamarack Lodge
Yates, Rick
Young, Chuck
Zerbe, Victoria