

Swift Smith Blowdown Timber Project Environmental Assessment



Stillwater Unit
Northwest Land Office
Montana Department of Natural Resources and Conservation
June 2020



Swift Smith Blowdown Timber Project

Environmental Assessment

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Environmental Assessment

Project Name: Swift Smith Blowdown Timber Project
Proposed Implementation Date: June 2020
Proponent: Stillwater Unit, Northwest Land Office, Montana DNRC
County: Flathead

Type and Purpose of Action

Description of Proposed Action:

The Stillwater Unit of the Montana Department of Natural Resources and Conservation (DNRC) is proposing the Swift Smith Blowdown Timber Project. The project is located approximately 6.5 miles northwest of Whitefish Montana (refer to attachments **A-1** Vicinity Map and **A-2** Project Map) and includes the following sections:

Beneficiary	Legal Description	Total Acres	Treated Acres
Common Schools			
Public Buildings			
MSU 2 nd Grant	Sec. 19, 30, 31, & SW ¼ Sec. 32 T32N R22W	2,028	614
MSU Morrill	Sec. 32 T32N R22W	481	233
Eastern College-MSU/Western College-U of M			
Montana Tech	Sec. 29 T32N R22W	320.5	147
University of Montana			
School for the Deaf and Blind	Sec. 20 & 33 T32N R22W	479.5	15
Pine Hills School			
Veterans Home			
Public Land Trust			
Acquired Land			

DNRC's primary objectives are to:

- Salvage and capture the value of the blown down and damaged timber for the School for the Deaf and Blind, School of Mines, Montana State University, and MSU Morrill trusts in accordance with DNRC's *Salvage Timber Program Law*, Montana Code Annotated (MCA) 77-5-207;
- Reopen roads and areas to general and licensed recreational uses such as the Whitefish Swift Creek Trail and Disc Golf Course;

- Lessen the risk and severity of wildland fire in the Wildland Urban Interface (WUI) by reducing continuous fuel loading and ladder fuels, complementing the 2009 City of Whitefish Community Wildfire Protection Plan (CWPP).
- Limit the spread of Douglas-fir bark beetle, whose favored habitat is windthrown Douglas-fir and older, large-diameter Douglas-fir trees.
- Rehabilitate the area to the extent practicable by planting and regenerating new seedlings, tipping back root wads, and chipping and/or burning limbs and slash in highly visible areas.
- Contribute 2-3 million board feet (MMbf) to the annual targets of timber-harvest volumes of DNRC and the Northwestern Land Office. DNRC is required by state law (MCA 77-5-221 through 223) to sell approximately 56.9 MMbf of timber annually and continue to produce revenue over time.

Proposed activities include:

Action	Quantity
Proposed Harvest Activities	
	# Acres
Clearcut	
Seed Tree	76.1
Shelterwood	22.5
Salvage/Sanitation	910.4
Total Treatment Acres	1,009
Proposed Forest Improvement Treatment	
	# Acres
Mechanical Site Prep/Scarification	172
Planting	500
Proposed Road Activities	
New permanent road construction	1,250 feet
Permanent road reclaimed	1,350 feet
Road maintenance	16.6 miles
Temporary road reconstruction	1.5 miles
New temporary road construction	0.2 miles
Other Activities	
Native Culvert Removal	1

Duration of Activities:	3 years
Implementation Period:	June 2020-March 2023

The lands involved in this proposed project are held in trust by the State of Montana. (Enabling Act of February 22, 1889; 1972 Montana Constitution, Article X, Section 11). The Board of Land Commissioners and the DNRC are required by law to administer these trust lands to produce the largest measure of reasonable and legitimate return over the long run for the beneficiary institutions (Section 77-1-202, MCA).

The DNRC would manage lands involved in this project in accordance with:

- The State Forest Land Management Plan (SFLMP) (DNRC 1996),

- Administrative Rules for Forest Management (ARM 36.11.401 through 471),
- The Montana DNRC Forested State Trust Lands Habitat Conservation Plan (HCP) (DNRC 2010)
- and all other applicable state and federal laws.

Project Development

SCOPING:

DATE: March 27, 2020- April 13, 2020

- **PUBLIC SCOPED:**
 - The scoping notice was posted on the DNRC Website: <http://dnrc.mt.gov/public-interest/public-notices>
 - Adjacent landowners, businesses and interested parties
 - Local industry professionals
 - Whitefish Legacy Partners (WLP)
 - Legals ad in Daily Interlake
- **AGENCIES SCOPED:**
 - MT Fish, Wildlife, and Parks
 - USFS – Tally Lake Ranger District
 - All Montana Tribal Organizations
 - City of Whitefish
 - Flathead County Commissioners
- **COMMENTS RECEIVED:**
 - How many: There were nine comments received by letter, e-mail, and by telephone. Three comments were from local community members, three from local businesses, two from WLP, and one from an adjacent landowner.
 - Concerns and Responses: Some commenters raised multiple concerns, and some concerns were duplicated by other commenters. Concerns and DNRC's responses have been summarized in the chart below:

Issues raised externally during scoping	Response
Timeliness of harvest: The State should consider harvesting blowdown as soon as possible.	The State is prioritizing harvest in the WUI and areas of high recreational use. These areas are proposed to be harvested under an expedited timber permit issued from the Stillwater State Forest. Other extents of the project area will be under a normal Timber Sale process that will require Land Board Approval.
The State should harvest the blowdown and treat the areas around the blowdown to lessen bark beetle infestation	Bark beetles will continue to infest areas with harvest of blowdown. Timely harvest of blowdown and some residual Douglas-fir trees would lessen the spread of the beetles, but would not prevent the occurrence or spread of beetles entirely.

Issues raised externally during scoping	Response
The State should consider fuels reduction in Wildland Urban Interface (WUI)	The State looks for opportunities to reduce fuel loading in the WUI and adjacent to other ownerships whenever practical. Current fuel loading in the project area has increased the risk of high-intensity wildfires near structures.
The State should act quickly to capture economic value of blowdown timber.	*See "Timeliness of harvest"
The State should consider the impacts to recreational access	*See "Timeliness of harvest" and Project Development section of this document.
Definition of Clearcut	A clearcut may be defined as an even-aged regeneration harvest leaving at least 4 overstory trees per acre \geq 21 inches at dbh, or of the largest size class available, of which 2 may be snags and 2 snag recruits. Often, DNRC employs a Clear cut with Reserves treatment, rather than a clear cut. Clear cut with Reserves are clear cut treatments that leave additional groups and scattered submerchantable and merchantable trees and additional wildlife trees.
The State has harvested timber beyond its means to manage sustainably.	This comment is beyond the scope of this project. It pertains to the sustainable yield calculation which is a complex State-wide project. The sustainable yield calculation for the Stillwater Unit and for all of DNRC's forest land is based on the best available forest inventory data modeling current and future growth the ability of the forest land to grow trees ("site index"), current board foot volume, manageable forest acres, logging systems, forest management rules, forest management policies and expected levels of forest management activities. DNRC is required to have a third-party entity calculate the annual sustainable yield for forested trust lands at least every 10 years. MCA 77-5-223 (Last calculated 2015)
Previous harvest and additional harvest will lead to an unintended consequence of a drier, fire prone landscape, and increased windthrow to State and adjacent ownership.	The State prioritizes decreasing fuel loading within the WUI and adjacent to other ownership to lessen the risk and severity of wildfires, and this project is designed accordingly. While regeneration harvest does lead to increased wind speed, windthrow, and a drier landscape within the harvest area, the amount of increase in the former will be slight compared to the No-Action Alternative of not treating the stands through blowdown salvage, sanitation, and other harvest prescriptions.
Further harvest would result in reduced wintering range for deer and elk.	*See analysis related to wildlife in this document.
Recommend salvage harvest only, leaving all trees that were not damaged in the recent wind event.	See Project Development and Alternatives Considered section (especially pages 5-7) of this document.
New road construction should be limited or not at all.	The State seeks to limit road construction in all projects as part of Best Management Practices (BMP's) and the SFLMP. However, some temporary road construction is necessary for harvest. Temporary roads and main skid trails would be reclaimed post-harvest.

Issues raised externally during scoping	Response
Requesting winter logging outside priority areas to lessen impacts on the area, soils, and future conservation and recreation opportunities.	The Inter Disciplinary Team (ID Team) determined winter logging the entire project is not advisable during icy conditions due to East Lake Shore Drive's sharp curves and narrow roadway presenting a heightened risk for truck drivers and the general public. Small areas that can only be winter harvested may be considered.
Impact on Whitefish Trails and other recreation amenities should be minimized.	The State is working directly with the City of Whitefish to minimize damage to the trail system during salvage operations.

- **OTHER PUBLIC INVOLVEMENT:**
 - Tours:
 - Zoom Meeting: This meeting was set up as the City of Whitefish along with WLP are holders of the Swift Creek Trail Land Use License with DNRC. The main discussion was about the status of opening the Lower Whitefish Road, the Swift Creek Trail Loop, and the potential timing of opening the portion of the Swift Creek trail from Lower Whitefish Road to Smith Lake. It was decided to have a field tour of this section of trail.
 - Field Tour with WLP: A tour took place on May 1, 2020 with the project leaders and Stillwater Unit Manager. Most discussion was about the damage that uprooted trees have caused to the trail, the potential damage logging operations might cause to the trail and mitigations to minimize further damage, and opportunities to open the trail to the public.

PURPOSE AND NEED AND PROJECT DESIGN CONCEPTS:

Several key concepts were used in developing this timber sale project in a timely manner to address wildfire, Douglas-fir bark beetle, and timber value issues. These include:

- Prioritizing access: Foresters prioritized areas based on opening the Lower Whitefish Road, the main access road into the Stillwater State Forest from Whitefish.
- Locating and assessing the amount of blowdown within the project area: field reconnaissance was conducted to locate and categorize the levels of blowdown encountered.
- Developing mitigations to reduce resource and recreational impacts.
- Reducing the risk and severity of wildland fire in the WUI where possible, and
- Maintaining as much of the areas that qualify as Old Growth as possible.

Blowdown areas were prioritized for treatment based on multiple factors. The location, amount and severity of blowdown concentrations was a main driver of the scope of the project. Another factor considered is that freshly blown-down Douglas-fir is the preferred habitat of Douglas-fir bark beetle, creating the potential for an epidemic population to build and continue to attack live, standing Douglas-fir in the years to come.

Another factor considered in developing the project is that certain areas require a mobile cable-yarding machine (often referred to as an excaline yarder). The excaline can travel off-road and yard trees from steeper ground. Approximately 94 acres requires the use of this harvesting method. Excaline harvesting costs more than normal ground-based operations and has slightly more impact, with somewhat higher disturbance on the trails they use. Salvaging only blowdown trees on steeper, “excaline” ground would be an increased safety risk to contractors, because it is difficult in places where there are concentrations of standing trees to remove blowdown without bumping standing trees, which might cause the top to break out or knock an entire tree down onto workers below.

Considering the above factors, the ID Team recommends not only salvage harvesting, but also treating stands with an elevated prescription such as shelterwood or seedtree when appropriate. Under this recommendation, 22.5 acres in Unit 28A would be harvested to a shelterwood prescription. This would limit future soil impacts (by having one entry with machines rather than a second follow-up treatment), lessen risk to contractors, be more economical, and steer the area into DNRCs Desired Future Conditions (DFC’s) by regenerating the tree species that should be on the landscape. Additionally, units 6, 25, and 30 are proposed to receive an elevated silviculture prescription of seedtree with reserves (77.6 acres). This would regenerate the stands to meet DFCs where salvage operations are necessary and respond to existing insect and disease in the stand.

Recreation is also a primary consideration in this project. Two recreation related Land Use Licenses (LUL) are within the project area, the Swift Creek Trail and the Disc Golf Course. The concerns are how to open more of the trail and the disc golf course for users as soon as practicable, and how to minimize damage to infrastructure. Discussions with the Disc Golf President led to closing most of the course for 2020, and closing the Smith Lake Trail from Lower Whitefish Road to the Smith Lake Trailhead.

With this assessment foresters were able to start strategizing how to harvest the project in a pragmatic and timely manner, and how to prioritize and package a set of timber contracts within DNRC’s rules set for sale of the timber. A top priority is to lessen wildfire hazards adjacent to private homes by creating a fuel break along the open roads (East Lakeshore Drive, Delrey Road and Lower Whitefish Road) and by implementing a timber permit for approximately 500 thousand board feet (Mbf) in June 2020.

Following the implementation of the permit mentioned above, a timber sale contract utilizing the excaline yarder would be presented to the Land Board for approval in August, with most of the harvest accomplished through the fall period. This would clear most of the concentrations of blowdown and bark beetles before they attack additional live trees in May 2021 on the east side of Swift Creek. The trail from Lower Whitefish Road and Smith Lake kiosk would be opened, allowing trail repair to begin by 2021. The disc golf course would also be reopened by spring of 2021, although site preparation and tree planting may have short-term impacts to the reopening of both projects.

A timber permit would also be planned for units 12-16 where more finesse would be necessary. Harvest of these units involves crossing the Swift Creek Trail and would require decking logs in the pit connected to the trailhead parking lot.

Units 32 through 41 are located on the west side of Swift Creek, necessitating a second timber sale. As a separate sale, this portion would be presented to the Land Board separately from the other projects. Much of this area was harvested as a seed tree prescription in 2014 as part of the Lazy Swift 2 Timber Sale. This area is accessed by a completely different road system west of the project area; the access road is off the Upper Whitefish Road near Olney, MT and crosses newly acquired lands sold to DNRC. Some road Best Management Practices would be implemented on this access road system and approximately 1250 feet of road would be relocated and constructed in a location that can maintain BMPs over the long term. The plan is to have most of the blowdown concentrations harvested before May 2021.

ALTERNATIVES CONSIDERED:

DNRC specialists on the Interdisciplinary Team (ID Team) were consulted. The ID Team considered all the internal and external issues and determined that through project design and various mitigations one action alternative could be developed and reviewed in this EA. The ID Team includes several foresters and DNRC specialists: Leah Breidinger (Wildlife Biologist), Marc Vessar (Hydrologist), and Patrick Rennie (Archeologist).

This section discusses two alternatives that were considered during the “alternative development” process but were dropped from further analysis, and it considers two alternatives for further analysis, the ‘No-action’ and the ‘Action’ alternatives. Both alternatives will be analyzed for disclosure of effects with the No-action Alternative helping display the baseline impacts.

Alternatives Considered but Dropped from Further Consideration:

Action Alternative to Salvage Harvest Only – Comments from the public supporting salvaging only trees that have blown down led to this alternative being considered. However, for several reasons, including increased safety risk to contractors during harvest, economics, current and future expected insect and disease issues, and the opportunity to meet DFC’s, this alternative would not meet the objectives of this project and was dropped from further consideration.

Action Alternative to Harvest outside of salvage areas – Expanding harvest treatments to stands in the project area that did not have blowdown trees, but displayed poor stand health and vigor, insect and disease impacts, or other issues that would drive silvicultural treatments was considered. While this alternative would meet the goals of the project, these stands were not found to need immediate treatment and this, combined with the need to limit the scope of the project to harvest blowdown in a timely fashion, led to the decision to drop this alternative from further consideration at this time.

Alternatives Considered for Further Analysis:

No-Action Alternative:

Under this alternative no timber would be harvested, and therefore, no revenue would be generated for the School for the Deaf and Blind, MSU Morrill, MSU 2nd Grant, School of Industrial, and School of Mines trusts. Firewood gathering, recreational use, fire suppression, noxious-weed control, additional requests for permits and easements, and ongoing management requests may still occur. Natural events such as plant succession, tree mortality from insects and disease, windthrow, downed fuel accumulation, in-growth of ladder fuels, and wildfires would continue to occur.

Action Alternative: A commercial timber harvest utilizing salvage, sanitation, and other enhanced treatments would take place to remove ~3 MMbf of mainly downed timber using tractor and cable-based methods on 1,009 acres. Specific harvest unit data and definitions of proposed harvest treatments are provided in *Attachment B—Swift Smith Timber Sale Project Prescription Table*. Using this table with *Attachment A-Swift Smith Project Map* provides additional detail for this project.

It is estimated approximately 172 acres would require site preparation and an estimated 500 acres would be planted, following timber harvest.

Roads used for log hauling would receive BMP improvements and maintenance and approximately 1,250 feet of road would be relocated and constructed while an estimated 1,350 feet of road would be reclaimed due to road relocation project.

**OTHER GOVERNMENTAL AGENCIES WITH JURISDICTION, LIST OF PERMITS NEEDED:
(Conservation Easements, Army Corps of Engineers, road use permits, etc.)**

- **United States Fish & Wildlife Service-** DNRC is managing the habitats of threatened and endangered species on this project by implementing the Montana DNRC Forested Trust Lands HCP and the associated Incidental Take Permit that was issued by the United States Fish & Wildlife Service (USFWS) in February of 2012 under Section 10 of the Endangered Species Act. The HCP identifies specific conservation strategies for managing the habitats of grizzly bear, Canada lynx, and three fish species: bull trout, westslope cutthroat trout, and Columbia redband trout. This project complies with the HCP. The HCP can be found at <http://dnrc.mt.gov/divisions/trust/forest-management/hcp>.
- **Montana Department of Environmental Quality (DEQ)-** DNRC is classified as a major open burner by DEQ and is issued a permit from DEQ to conduct burning activities on state lands managed by DNRC. As a major open-burning permit holder, DNRC agrees to comply with the limitations and conditions of the permit.
- **Montana/Idaho Airshed Group-** The DNRC is a member of the Montana/Idaho Airshed Group which was formed to minimize or prevent smoke impacts while using fire to accomplish land management objectives and/or fuel hazard reduction (Montana/Idaho Airshed Group 2006). The Group determines the delineation of airsheds and impact

zones throughout Idaho and Montana. Airsheds describe those geographical areas that have similar atmospheric conditions, while impact zones describe any area in Montana or Idaho that the Group deems smoke sensitive and/or having an existing air quality problem (Montana/Idaho Airshed Group 2006). As a member of the Airshed Group, DNRC agrees to burn only on days approved for good smoke dispersion as determined by the Smoke Management Unit.

- **Montana Department of Fish, Wildlife and Parks (DFWP)**- A Stream Protection Act Permit (124 Permit) is required from DFWP for activities that may affect the natural shape and form of a stream's channel, banks, or tributaries. Such activities include:
 - Removal of a native crossing structure on King Creek (Sec. 29, T32N R22W).
- **Flathead County** – Flathead County has an air quality program and their authority supersedes any decision regarding burning from the Airshed Group and MT DEQ. This project area falls under county airshed regulations and DNRC would comply with the regulations by contacting the County ventilation hotline prior to burning logging slash.
- **Montana Department of Natural Resources and Conservation** - A Site-specific Alternative Practice (ARM 36.11.310) to the Streamside Management Zone (SMZ) Law (MCA 77-5-303(1)) is required. Mitigations have been designed to allow equipment to enter a class II SMZ to suspend logs and lessen disturbance, to allow SMZ harvest of blowdown in some places where leave tree requirements may fall below the 10 trees per 100 lineal feet requirement, and allow for skidding across a wetland adjacent to a class II stream by installing corduroyed logs above a slash mat or filter fabric. This site-specific plan demonstrates reasonable certainty that the proposed alternative practice would conserve the integrity of the SMZ and would not significantly diminish its function.

LOCALLY ADOPTED ENVIRONMENTAL PLANS AND GOALS (includes local MOUs, management plans, conservation easements, etc.):

Whitefish Area Trust Lands Neighborhood Plan (WNP)

In 2004, the Montana DNRC and the Whitefish Area Trust Lands Advisory Committee collaborated in the design of a land use plan encompassing 13,000 acres of State School Trust Lands surrounding the community of Whitefish in Flathead County, Montana. This plan is known as the Whitefish Area Trust Lands Neighborhood Plan (WNP). The WNP defines future land uses for these acres in cooperation with the Whitefish City Master Plan adopted in 1996, and the Flathead County Master Plan of 1987. All or portions of sections 29, 30, 31, 32 and 33 are within the Swift Creek Subarea. All activities related to the proposed timber sale are compatible with future goals outlined in the plan in these subareas.

Whitefish Community Wildfire Protection Plan (CWPP)

This project was designed to accommodate the strategic requirements detailed within the CWPP. The CWPP plan identifies the area immediately adjacent (south) of the Swift Smith Project Area as a priority treatment area (Whitefish, 2009). See <http://wafsc.com/docs/FinalWhitefishCWPP.pdf> for *Whitefish Community Wildfire Protection Plan* which delineates the relationship between the CWPP priority area and the Swift Smith Project Area.

Trail Runs Through It Master Plan (2006)

One of the recommendations of the WNP was to establish a recreational loop trail around the Whitefish Area. This master plan establishes the framework for decision-making regarding the management and conservation of State Trust Lands within the WNP area. This plan contains design standards, management strategies, and an action plan.

Lazy Creek Conservation Easement and the Swift Creek Conservation Easement

In 2019 Stillwater Unit purchased or acquired additional lands in T33N, R23W and T32N, R23W with conservation easements attached to the titles. These two conservation easements are to be managed under separate management plans. Several roads associated with this Swift Smith project are on these lands.

OTHER ENVIRONMENTAL DOCUMENTS PERTINENT TO THE AREA:

- Proposed Swift Smith SMZ Alternative Practice Environmental Assessment Checklist (EAC), (DNRC, in progress)
- Beaver-to-Boyle Timber Sale Project Environmental Assessment (EA) (December 2019)
- Close the Loop Trail and Recreation Use Easements EA (January 2019)
- Whitefish Disc Golf EAC (2017)
- King Hemlock Timber Sale Project EA (2014)
- Lazy Swift 2 Timber Sale Project EA (2013)
- Whitefish Trail Phase III: Swift Creek EAC (2012)
- Beaver Swift Skyles Project Timber Sale EA (April 2009)
- Trail Runs Through It EA (2007)

Impacts on the Physical Environment

VEGETATION:

Issues and Concerns- The following issue statements were developed during scoping regarding the effects of the proposed action to vegetation:

- *COVER TYPE & AGE CLASS DISTRIBUTION: Covertypes and age-class distributions may be affected by timber harvesting related to this project and other timber-harvesting projects*
- *OLD GROWTH: Timber harvesting in old-growth timber stands may affect the amount and distribution of old growth remaining on Stillwater Unit.*
- *TIMBER STAND HEALTH: The large amount of blowdown and damaged trees in the project area could trigger an infestation of Douglas-fir bark beetle, which without harvesting would send a second generation to infest residual green standing timber next year, worsening the outbreak and overall health of stands considerably.*

- *FIRE REGIMES & FOREST FUELS: Forest fuel loadings in the project area, especially in the WUI, are at a moderate to high level, and in many areas are continuous, which can increase the risk and severity of wildland fire.*
- *NOXIOUS WEEDS: Soil disturbances and logging equipment could increase the amount and distribution of noxious weeds in the project area.*

COVER TYPES & AGE CLASS DISTRIBUTION

The desired future condition of the forest in the project area should be mostly represented by the western larch/Douglas-fir cover type (66%) and is still slightly underrepresented currently (55%). The project area is also showing an overrepresentation of stands that are predominately Douglas-fir, mixed conifer, & western white pine while the ponderosa pine cover type is slightly underrepresented.

No-Action Alternative: *Direct, Secondary, and Cumulative Effects*

No trees would be harvested in the analysis area, thus cover type and age-class distributions would remain unchanged.

Action Alternative: *Direct, Secondary, and Cumulative Effects*

Trees would be harvested on 1,009 acres throughout the analysis area to promote desired species throughout. Harvest areas and follow-up treatments would be designed to retain all age classes while creating conditions appropriate for regenerating future generations of sawtimber.

Cover type on 755.9 acres would be unchanged consisting of 740.6 acres of the western larch/Douglas-fir cover type and 15.3 acres of ponderosa pine cover type.

The results of blowdown and salvage would reduce approximately 695.7 acres to a seedling/sapling age class (0-39 years old) when regeneration is established. These are areas where only a few large trees per acre were remaining prior to the wind event.

OLD GROWTH

Prior to the blowdown event 640 acres in the project area met the minimum criteria to be classified as old growth according to DNRC's old-growth definition described in ARM 36.11.403(48). Following this event old growth surveys estimate 501 acres continue to meet the definition.

No-Action Alternative: *Direct, Secondary, and Cumulative Effects*

No change in amount or distribution of old growth would occur.

Action Alternative: *Direct, Secondary, and Cumulative Effects*

Under the Action Alternative, approximately 91 acres that meet old-growth criteria have been proposed for harvest. Light salvage and sanitation would be implemented on approximately 81 acres of the remaining old growth. The 81 acres would remain old growth after harvesting by retaining enough large-diameter trees, basal area, snags, trees per acre, and large downed logs. The old-growth attributes would be slightly less in these units due to fewer trees being

retained over existing conditions. Unit 25's proposed seedtree harvest would remove approximately 10 acres of old growth. This would result in a 2% reduction of old growth within the project area.

Overall, this proposal and other proposed sales on the Stillwater would remove approximately 0.3% of the 15,029 total acres identified as old-growth on the Stillwater Unit. It is estimated the Stillwater Unit would retain 11.4% of the timbered stands in old growth.

TIMBER STAND HEALTH

The project area and units were developed around downed and root-pulled trees from the March 2020 wind event. Root-pulled trees have a very high mortality rate since the roots have been severed to varying levels. The amount of standing residual timber varies by stand. Some areas were unaffected, while others had severe windthrow.

The insects and diseases encountered in the project area commonly infect, infest, and damage the tree species in the area. Armillaria root rot, larch dwarf mistletoe, pouch fungus stem rot, quinine conks, pini (red-ring rot), western gall rust, Douglas-fir beetle, and fir engraver were the most commonly observed.

Even without the blowdown, stand health is low, with poor vigor, leading to a high risk of infestation by Douglas-fir bark beetle. Currently a high level of beetle infestation is occurring within most downed Douglas-fir trees.

No-Action Alternative: *Direct, Secondary, and Cumulative Effects*

Insect populations, disease infestations, mortality, and decay would continue to rise and fall as they respond to natural conditions. Individuals harvesting firewood would continue to remove trees from accessible areas but have no impact on reducing Douglas-fir beetle populations. Douglas-fir beetle would continue to increase in population. Infestations would continue to occur, and transfer to trees not damaged from the March 2020 wind event.

Action Alternative: *Direct, Secondary, and Cumulative Effects*

Trees would be harvested throughout the project area with silvicultural treatments intended to promote insect and disease resistant tree species.

Stands would be treated in accordance with the following list:

- Trees that have been downed and those with root pull from the March 2020 wind event would be harvested. Removal and processing of logs infested with Douglas-fir beetle would reduce the population of the beetle but would not eradicate the insect. Mortality from Douglas-fir bark beetle would continue for years since not all downed trees would be harvested.

- Individual larch trees heavily infected with dwarf mistletoe would be harvested if they are within a tree length of blowdown. This would result in the reduced spread of mistletoe to regenerating western larch and improved vigor of the residual stands.
- Species with known resistance to and/or tolerance of root infection such as western larch and ponderosa pine would be the preferred species for leave tree retention and regeneration.

The proposed treatments would have the result of increasing overall insect and disease resistance while retaining important habitat structures in the project area.

FIRE REGIMES & FOREST FUELS

The proposed project is located within the WUI and a portion of the area (surrounding Smith Lake) is part of the Community Wildfire Protection Program (CWPP) area. Also, the amounts and arrangement of forest fuel are critical factors considered for successful engagement by wildland firefighters.

The fire regimes within the project area varies between cool and moist or wet subalpine fir habitats and warm and moist grand fir habitat types. Both habitat types average more than 25 tons per acre of fuel loading, but despite this, the fire hazard is normally low, with fire frequency low and severity either low or intense and stand-replacing. However, drought and increasing fuel loading in the area has pushed the area towards an elevated risk of wildfire occurring, and risk of increased fire severity to high-intensity, stand-replacing fire.

A fire specialist modeled a forest fire with the BehavePlus (5.0.5) program using current blowdown fuel loadings on a summer day. It was predicted that average flame height would be around 10 feet and rate of travel would be 17 chains/ hour or 0.2 MPH. Flames of this magnitude would not be able to be fought by ground crew.

No-Action Alternative: *Direct, Secondary, and Cumulative Effects*

Trees would not be harvested from the proposed stands other than those stems removed by firewood harvesting activities. Stands would retain current density, fuel load, and ladder fuels until a prescribed or natural disturbance occurs. The openings created from the March 2020 wind event would likely increase windspeeds within the project area. Because these characteristics would not be altered, the risk of wildfire and the potential wildfire intensity in the area would continue to increase.

Action Alternative: *Direct, Secondary, and Cumulative Effects*

Trees would be harvested throughout the project area with the intention of reducing the existing continuity and density of available forest fuels, especially in the WUI.

Strategic fuel breaks would be placed next to open roads to keep flames out of canopies and on the ground, where fire is easier to extinguish.

Maintaining an age-class mosaic, in conjunction with proposed fuel-treatment projects, would reduce the potential of high-intensity wildfires in the future, although winds may slightly increase following harvest treatments. Success of aerial- and ground-attack would also potentially be improved by the reduction of available forest fuels.

NOXIOUS WEEDS

Throughout the project area, noxious weeds have been identified on roadsides, old skid trails, previously used landings, and other areas where soil had been disturbed. Currently, the primary vectors for noxious weeds are vehicle traffic, human and animal traffic, and illegal motorized access causing ground disturbance. DNRC has been spraying herbicide and hand-picking along most road systems and the City of Whitefish has been integrated into the weed management plan.

No-Action Alternative: *Direct, Secondary, and Cumulative Effects*

No additional soil disturbance would be caused in the proposed harvest units. Established infestations of noxious weeds would continue to be treated with an ongoing program of site-specific herbicide spraying along roads and in small areas of infestation.

Action Alternative: *Direct, Secondary, and Cumulative Effects*

Direct and Secondary

The proposed activities would result in an increase in ground disturbance. Mechanized equipment and ground disturbance could increase or introduce noxious weeds along roads and throughout forested areas. Weed seeds are likely to be scattered throughout the forested areas, and the reduction of canopy and disturbance from the timber-harvesting activities are expected to provide the catalyst for spread. Mitigation measures to reduce the establishment or spread of weed seed would include:

- Pressure-washing of all equipment used in road construction and off-road logging activity
- Sowing grass seed on temporary roads after harvesting has been completed, and
- Applying herbicide along roadsides, landings, and any identified weed outbreaks.

Cumulative

The open roads in the project area receive regular vehicle traffic from residents, recreation users, and forest managers. The weed management program at Stillwater Unit, in cooperation with the City of Whitefish, and the weed department in Flathead county, will continue to monitor and control weed populations in the area.

FOR SPECIFIC VEGETATION AND NOXIOUS WEED MITIGATION MEASURES, SEE APPENDIX D - STIPULATIONS AND SPECIFICATIONS.

SOILS:

Issues and Concerns- The following issue statements were developed during scoping regarding the effects of the proposed action to soils:

- Timber harvesting activities may adversely affect soil resources due to increased compaction, displacement and erosion.
- Removal of both coarse and fine woody material off site during timber harvest operations can reduce nutrient pools required for future forest stands and can affect the long-term productivity of the site.

FOR COMPLETE SOILS ANALYSIS SEE APPENDIX A:

FOR SPECIFIC SOILS MITIGATION MEASURES, SEE APPENDIX D - STIPULATIONS AND SPECIFICATIONS.

WATER RESOURCES AND FISHERIES:

Issues and Concerns- The following issue statements were developed during scoping regarding the effects of the proposed action to water resources:

- Timber harvesting and road construction has the potential to increase water yield, which, in turn, may affect erosive power, in-stream sediment production, and stream channel stability.
- Timber harvesting and road construction may increase sediment delivery into streams/lakes and affect water quality.
- Timber harvesting activities may adversely affect water quality by reducing shade and increasing stream temperature.
- Fisheries resource issues raised internally include: the proposed actions may adversely affect fisheries habitat features, including channel forms, stream temperature and connectivity.

FOR COMPLETE WATER RESOURCES AND FISHERIES ANALYSIS SEE APPENDIX B:

FOR SPECIFIC WATER RESOURCES AND FISHERIES MITIGATION MEASURES, SEE APPENDIX D - STIPULATIONS AND SPECIFICATIONS.

WILDLIFE:

Issues and Concerns- The following issue statements were developed during scoping regarding the effects of the proposed action to wildlife:

- *Mature forest cover and connectivity.* The proposed activities could decrease mature forested cover, which could reduce habitat connectivity and suitability for wildlife species associated with mature forests.
- *Old-growth forests.* The proposed activities could affect wildlife species associated with old-growth forests by reducing habitat availability and increasing fragmentation.
- *Canada lynx.* The proposed activities could reduce landscape connectivity and the availability of suitable Canada lynx habitat, reducing the capacity of the area to support Canada lynx.
- *Grizzly bears.* The proposed activities could affect grizzly bear cover, affect important habitat, and increase human access, which could adversely affect bears by displacing them from important habitat, and/or by increasing risk of human-caused bear mortality.
- *Fishers.* The proposed activities could reduce the availability and connectivity of suitable fisher habitat and increase human access, which could reduce fisher habitat suitability and increase trapping mortality.
- *Pileated woodpeckers.* The proposed activities could reduce tree density and alter the structure of mature forest stands, which could reduce habitat suitability for pileated woodpeckers.
- *Big game winter range.* The proposed activities could reduce cover, which could reduce the quality of big game winter range habitat.

FOR COMPLETE WILDLIFE ANALYSIS SEE APPENDIX C:

FOR SPECIFIC WILDLIFE MITIGATION MEASURES, SEE APPENDIX D - STIPULATIONS AND SPECIFICATIONS.

AESTHETICS:

Any change to the scenery in the area from these alternatives would be in addition to past activity within the project area. This analysis includes all past and present effects.

Issues and Concerns- The following issue statements were developed during scoping regarding the effects of the proposed action to aesthetics:

- Timber harvest may impact visual experience for recreationists on the Whitefish Trail/Smith Lake Trail and open road systems.

- Harvesting should occur during frozen or snow packed conditions to lessen impacts on the area, soils, and future conservation and recreation opportunities.
- Site preparation post-harvest would expose more soil and create more piles.

Existing Conditions

The amount of blowdown varies across the project area and areas have been classified as Low, Medium, and High. This classification varies as there is approximately 670 acres of existing seedtree harvest with blowdown. Many areas that are visible from the open roads have a high level of blowdown and currently appear as a clearcut, while some areas only have scattered downed trees.

A few to 100 trees per acre lay on the ground. Many roots have been pulled up with the trees; these are commonly called 'root wads'. These root wads stand approximately 10 feet above the ground with large amounts of soil attached to them.

Environmental Effects

-VISUAL QUALITY

No-Action Alternative:

Under this alternative no trees would be commercially harvested unless another salvage project is planned. Firewood harvest would likely occur near roadways slowly addressing the large logs remaining on-site but piling and burning of limbs would generally not occur. Throughout the summer/fall of 2020 the needles on the downed trees would turn red.

Action Alternative:

Direct, Secondary, and Cumulative Effects

Under this alternative most areas would be harvested as proposed. The downed logs would be harvested and no longer remain on site. Following harvest there would be a variable amount of trees remaining following harvest; some areas would appear similar to a clearcut and some areas would still resemble a fully stocked stand.

Root wads would remain from a few per acre to 100 per acre. Some root wads would be tipped back into place, but they would still be noticeable. Following harvest activities, DNRC would determine those areas where this action might improve visual quality within a budget. Scattered limbs would remain following harvest, yet concentrations of limbs would be piled for burning.

-NOISE

No-Action Alternative:

No harvest of blowdown or standing trees would occur. Firewood-cutting, administrative activities and recreation would continue to occur in the area, producing some noise audible to properties adjacent to the proposed project area.

Action Alternative:

Direct, Secondary, and Cumulative Effects

Harvest activities would be audible in areas adjacent to the project area, and depending upon air conditions, equipment could be heard miles from their location. Noise would be generated by harvest operations, harvest related traffic, road construction, and administrative oversight. This could be expected to be present for the entire season of harvest, typically from mid-June through mid-March of the following year, for the duration of the project during the general “work week” of Monday through Friday.

If fire restrictions are implemented because of high fire danger, operations may be active very early in the morning.

Based on the anticipated operating periods and the short duration of the timber sale direct, secondary, and cumulative effects of noise would be low.

HISTORICAL AND ARCHEOLOGICAL SITES:

A Class I (literature review) level review was conducted by the DNRC staff archaeologist for the area of potential effect (APE). This entailed inspection of project maps, DNRC's sites/site leads database, land use records, General Land Office Survey Plats, and control cards. The Class I search revealed that no cultural or paleontological resources have been identified in the APE, and that much of the APE has been inventoried previously for cultural resources. Because much of the APE was once logged, because the Holocene age soils in the APE are relatively thin, and because the local geology is not likely to produce caves, rock shelters, or sources of tool stone, no additional archaeological investigative work will be conducted in response to this proposed development. However, if previously unknown cultural or paleontological materials are identified during project related activities, all work will cease until a professional assessment of such resources can be made.

DEMANDS ON ENVIRONMENTAL RESOURCES OF LAND, WATER, AIR, AND ENERGY:

There will be no measurable direct, secondary, and cumulative impacts related to environmental resources of land, water, air, and energy due to the relatively small size of the timber sale project.

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Impacts on the Human Population

HUMAN HEALTH AND SAFETY:

Air Quality

The DNRC is a member of the Montana/Idaho Airshed Group which was formed to minimize or prevent smoke impacts while using fire to accomplish land management objectives and/or fuel hazard reduction (Montana/Idaho Airshed Group 2006). The Group determines the delineation of airsheds and impact zones throughout Idaho and Montana. Airsheds describe those geographical areas that have similar atmospheric conditions, while impact zones describe any area in Montana or Idaho that the Group deems smoke sensitive and/or having an existing air quality problem (Montana/Idaho Airshed Group 2006).

The project area is located within Montana Airshed 2, which encompasses portions of Flathead, Lake, Sanders, Powell, and Missoula Counties. Currently, this Airshed does contain any impact zones, but the project area is not located in an impact zone.

Issues and Concerns- The following issue statements were developed during scoping regarding the effects of the proposed action to air quality:

- Smoke would be produced during pile burning.
- Dust would be produced during harvesting and hauling activities.

-SLASH BURNING

No-Action Alternative:

No slash would be burned within the project areas as a result of this No-Action Alternative. Thus, there would be no direct effects to air quality within the local vicinity and throughout Airshed 2.

Action Alternative:

Direct and Secondary Effects

Slash consisting of tree limbs and tops and other vegetative debris would be piled throughout the project area during harvesting. Slash would ultimately be burned after harvesting operations have been completed. Burning would introduce particulate matter into the local airshed, temporarily affecting local air quality. Over 70% of emissions emitted from prescribed burning are less than 2.5 microns (National Ambient Air Quality PM 2.5).

Burning within the project area would be short in duration and would be conducted when conditions favor good to excellent ventilation and smoke dispersion as determined by the Montana Department of Environmental Quality and the Montana/Idaho Airshed Group. The DNRC, as a member of the Montana/Idaho Airshed Group, would burn only on approved days.

Thus, direct and secondary effects to air quality due to slash burning associated with the proposed action would be minimal.

Cumulative Effects for No-Action and Action Alternatives

Cumulative effects to air quality would not exceed the levels defined by State of Montana Cooperative Smoke Management Plan (1988) and managed by the Montana/Idaho Airshed Group. Prescribed burning by other nearby airshed cooperators (for example the U.S. Forest Service) would have potential to affect air quality. All cooperators currently operate under the same Airshed Group guidelines. The State, as a member, would burn only on approved days. This should decrease the likelihood of additive cumulative effects. Thus, cumulative effects to air quality due to slash burning associated with the proposed action would also be expected to be minimal.

-DUST

No-Action Alternative:

No increased dust would be produced by proposed timber sale. Current levels of dust would be produced in the area, most from public access to Lower Whitefish Road, and potentially from USFS and private logging traffic.

Action Alternative:

Direct, Secondary, and Cumulative Effects

Harvesting operations would be short in duration. Dust may be created from log hauling on portions of gravel surface roads during summer and fall months. Contract clauses would provide for the use of dust abatement or require trucks to reduce speed if necessary to reduce dust near any affected residences.

Thus, direct, secondary, and cumulative effects to air quality due to harvesting and hauling associated with the proposed action would be minimal.

Log Hauling Traffic

Log hauling traffic is common in the project area.

Issues and Concerns- The following issue statements were developed during scoping regarding the effects of the proposed action to log hauling traffic:

- There will be increased travel by the general public on weekends.
- Increased traffic, especially log truck traffic, may increase the risk to the public and contractors while driving the Lower Whitefish Road, which is narrow and winding, and has limited visibility.

No-Action Alternative:

No increase in log truck traffic on Lower Whitefish Road would occur as a result of the No-Action Alternative. Cumulatively, logging traffic could increase due to proposed projects by the USFS and private landowners.

Action Alternative:

Direct, Secondary, and Cumulative Effects

Log truck traffic in the area would increase for the duration of the timber sale. However, signs will be posted indicating that log truck traffic is present in the area. If necessary, a slower speed limit may be imposed in the timber harvest contract during weekdays.

Based on the mitigation measures direct, secondary, and cumulative effects of log hauling on human health and safety would be moderate during the work week, and minimal during weekends.

FOR SPECIFIC LOG HAULING MITIGATION MEASURES, SEE APPENDIX D - STIPULATIONS AND SPECIFICATIONS.

RECREATION

Issues and Concerns- The following issue statements were developed during scoping regarding the effects of the proposed action to recreation:

- Salvaging of downed timber should be completed by spring of 2021 to reopen areas and allow for continued use in high recreation areas.
- Salvage units should be prioritized and focused on opening roads, trails and other licensed uses on behalf of the public.
- Mitigations should be implemented that reduce impacts to licensed recreational improvements such as landing locations, skid trails, designated trail crossings for heavy machinery, etc.
- The continued closure of the Smith Lake Disk Golf Course would impact the club's ability to raise funds for the annual license fee.

Existing Conditions

The project area receives a high amount of use from recreationalist due to its close proximity to the City of Whitefish and Whitefish Mountain Resort. The area surrounding Smith Lake is frequented recreationally for hunting, fishing, hiking, camping and other recreational pursuits. Motorized access to the lake is from West Smith Lake Road which is currently closed due to heavy blowdown.

Along with general dispersed recreational use, the DNRC also grants Land Use Licenses (LULs) and Special Recreational Use Licenses (SRULs). LULs are term licenses that are non-exclusive and may consist of some minor development such as trails, etc. SRULs are issued for short-term concentrated use such as product demo days, races, tours and special events. The Whitefish Disc Federation has a current LUL to maintain the 27-hole Smith Lake Disk Golf Course. Improvements authorized under this license include a designated parking area, t-boxes, baskets and signage. The license was issued in September of 2017 and construction of the course was completed in November of 2019. There are two areas used for parking. The lower parking area allows for 5 vehicles maximum and is still accessible. The primary parking area was constructed in the fall of 2017 and has an associated informational kiosk. The primary parking area is accessed via West Smith Lake Road that is closed. Currently, only the bottom half of the course (holes 18-27) adjacent to DelRey Road are playable. The rest of the course is closed due to the heavy blowdown and consequent damage to baskets.

Approximately half an acre of the Whitefish (DelRey) gravel pit serves as the existing trailhead currently known as the Swift Creek Trailhead and accesses approximately 3.7 miles of existing trail under an LUL. Currently, the Swift Creek Loop portion of the trail system is open. The remainder of the trail leading up to Smith Lake (approximately 1.4 miles) remains closed.

The Whitefish gravel pit also serves as a trailhead and parking for a snowmobile trail maintained by the Flathead Snowmobile Association under an LUL that accesses a system of groomed snowmobile trails on state land. The gated connector trail leading from the pit to the Lower Whitefish Road received moderate blowdown but is only open between December 1st through April 1st.

SRULs have been issued annually to certain businesses and organizations in the project area. Race events, such as the Glacier Challenge, have been hosted annually along the Swift Creek portion of the Whitefish Trail. Other businesses such as Odysseys Unlimited, Adventure Cycling, etc. have also been issued SRULs in the past for specialized tours along the trail system and open road systems.

The proposed Close the Loop and Recreation Use Easements EA was published in January of 2019. The City of Whitefish, in conjunction with Whitefish Legacy Partners, are in the fundraising stage of securing funds to purchase easements in the project area that would secure a 480-recreation easement around Smith Lake, convert the current Swift Creek Trail license to an easement and develop new trails that would connect Swift Creek to the Beaver Lakes area. This project is currently in the planning phase until an application is submitted and funds become available to purchase easements.

Environmental Effects

No Action Alternative:

If no action is taken at this time to harvest the blowdown, the segments of the Whitefish Trail and disk golf course that are currently closed would need to remain closed until another solution to remove blowdown is considered.

The Whitefish Trail LUL and Operating Plan does allow for reconstruction and maintenance of the trail within the 10-foot trail corridor. Non-merchantable woody debris, brush and branches may be removed without DNRC's authorization; however, merchantable timber across the trails would require prior authorization and compensation to the trust for lost volume from the City to the State upon removal.

Without treatment of the blowdown in areas of holes 3-17, the course would be unplayable. The LUL would most likely need to be amended to reduce the footprint of the course to holes 18-27 or the Whitefish Disk Federation may choose to terminate the license and pursue the buildout of a new course in another location.

General dispersed recreation by the public in and around the area of Smith Lake would most likely decrease due to the inaccessibility of popular recreation sites until further action is taken to remove blowdown from West Smith Lake Road.

Action Alternative:

Direct, Secondary, and Cumulative Effects

Harvesting downed timber would have a positive effect on both dispersed and developed recreation in the project area by opening roads and trails that are currently closed to the public due to heavy blowdown. The Whitefish Trail segment that extends from the Lower Whitefish Road to Smith Lake would be cleared of blowdown allowing for trail repair to begin by spring of 2021. The Smith Lake Disc Golf Course would also be reopened by spring of 2021 allowing for course repairs; however, short-term closures may be implemented during the summer and fall of 2021 for site preparation and slash burning. The gravel pit which serves as the Swift Creek Trailhead and Flathead Snowmobile Association Trailhead would be used as a small log landing site from harvested timber in Units 11, 12, 14, & 15. Logs would be cut to length in the units.

The east side of the Swift Creek Loop Trail (that is currently open) would be temporarily closed during active logging of Units 14 and 15. The segment of the disk golf course that is currently open (holes 18-27) would also be temporarily closed during active logging of Unit 6. Likewise, the Lower Whitefish Road would be temporarily closed to through traffic for approximately one week during active logging of Unit 27.

Indirectly, minor alterations to the current layout and design of holes 3-17 may be needed after logging operations are completed. Alterations would be approved by DNRC in advance and work would be completed by the Whitefish Disk Federation.

SRULs normally renewed annually within the project area would require either postponement, cancelation or additional mitigations implemented for safety during active logging operations.

FOR SPECIFIC RECREATION MITIGATION MEASURES, SEE APPENDIX D - STIPULATIONS AND SPECIFICATIONS.

OTHER IMPACTS TO THE HUMAN POPULATION

Will the Alternative result in potential impacts to:	Impact												Can Impact Be Mitigated?	Comment Number
	Direct				Secondary				Cumulative					
	No	Low	Mod	High	No	Low	Mod	High	No	Low	Mod	High		
No-Action														
Health and Human Safety		X				X				X			Yes	H-1
Industrial, Commercial, and Agricultural Activities and Production		X				X				X			Yes	H-2
Quantity and Distribution of Employment		X				X				X			Yes	H-3
Local Tax Base and Tax Revenues		X				X				X				H-3
Demand for Government Services	X				X				X					
Density and Distribution of Population and Housing	X				X				X					
Social Structures and Mores	X				X				X					
Cultural Uniqueness and Diversity	X				X				X					
Action														
Health and Human Safety		X				X				X				H-1
Industrial, Commercial, and Agricultural Activities and Production		X				X				X				H-2
Quantity and Distribution of Employment		X				X				X				H-3

Will the Alternative result in potential impacts to:	Impact												Can Impact Be Mitigated?	Comment Number
	Direct				Secondary				Cumulative					
	No	Low	Mod	High	No	Low	Mod	High	No	Low	Mod	High		
Action														
Local Tax Base and Tax Revenues		X				X				X				H-3
Demand for Government Services	X				X				X					
Density and Distribution of Population and Housing	X				X				X					
Social Structures and Mores	X				X				X					
Cultural Uniqueness and Diversity	X				X				X					

Comments: Health and Safety:

H-1 No-Action: With no logging occurring the public would still be able to use the forest at their own risk. There is a likelihood of accidents from firewood gathering or clearing trails and roadways; sawing blowdown has the risk of stumps tipping back upright. Fire starts are another safety concern in an area that currently has concentrated and continuous fuel loads. As the tree needles cure out the risk of fire would increase.

Action Alternative: Timber harvest and log hauling would create some hazards to visitors and vehicle travel, but road signs and potentially the use of social media would help notify the general public of closures and log hauling. When harvest operations are occurring near the open roadways the roads would be closed temporarily or utilize flaggers to limit hazards. On steep slopes root wads may be unstable and roll downslope; hazards could increase along roadways below logged areas on these steeper slopes.

H-2 A consistent flow of timber contributes towards meeting the current and future demand for raw material resources to operate value-added timber products manufacturing facilities. The No-Action Alternative would not contribute to these operations.

H-3 Employment in the logging industry is common in the area and this project would, in a small part, contribute to local employment and the status quo of logging community.

Other Appropriate Social and Economic Circumstances:

No-Action Alternative: The No-Action alternative would not generate any return to the trust at this time.

Action Alternative: The timber harvest would generate approximately \$699,651 for the following grants: MSU 2nd Grant, MSU Morrill, School of Mines and the School for the Deaf and Blind Trusts, and approximately \$109,793 in Forest Improvement (FI) fees would be collected for FI projects. This is based on a stumpage rate of \$28.23 per ton, multiplied by the estimated volume of tons. This stumpage rate was derived by comparing attributes of the proposed timber sale with the attributes and results of other DNRC timber sales recently advertised for bid. Costs related to the administration of the timber sale program are only tracked at the Northwestern Land Office (NWLO) and Statewide level. DNRC does not track project-level costs for individual timber sales. An annual cash flow analysis is conducted on the DNRC forest product sales program, and revenue and costs are calculated Statewide and by the NWLO. From 2006 through 2014, revenue-to-cost ratio of the Northwestern Land Office was 2.07. This means that, on average, for every \$1.00 spent in costs, \$2.07 in revenue was generated. Costs, revenues, and estimates of return are estimates intended for relative comparison of alternatives. They are not intended to be used as absolute estimates of return.

Environmental Assessment Checklist Prepared By:

Name: Les Thomas and Mike McMahon
Title: Management Forester and Forest Management Specialist
Date: June 17, 2020

Finding

Alternative Selected

Upon Review of the EA and attachments, I find the Action Alternative, as proposed, meets the intent of the project objectives as stated in Section I – *Type and Purpose of Action*

The lands involved in this project are held by the State of Montana in trust for the support of specific beneficiary institutions and DNRC is required by law to administer these trust lands to produce the largest measure of reasonable and legitimate return over the long run (*Enabling Act of February 22, 1889; 1972 Montana Constitution, Article X Section 11; and, 77-1-212 MCA*).

The Action Alternative complies with all pertinent environmental laws, the DNRC SFLMP and HCP, and is based upon a consensus of professional opinion on limits of acceptable environmental impact. It is through the project development of this project (pages 5 to 7), addressing the 9 public comments received during the 30-day public scoping process, 1 virtual meeting and one site visit with Whitefish Legacy Staff that we arrived at this Action Alternative. For these reasons and on behalf of DNRC I have selected the Action Alternative to be implemented on this project.

Significance of Potential Impacts

After a review of the scoping documents and comments, project file, Forest Management Rules, SFLMP and HCP checklists, and Department policies, standards, and guidelines, I find that all the identified resource management concerns have been fully addressed in this EA and its attachments.

Specific project design features and various recommendations by the resource management specialists will be implemented to ensure that this project will fall within the limits of environmental change. Taken individually and cumulatively, the proposed activities are common practices, and no project activities are being conducted on important unique or fragile sites. I find there will be no significant impacts to the human environments as a result of implementing the Action Alternative.

In summary, I find that the identified adverse impacts will be controlled, mitigated, or avoided by the design of the project to the extent that the impacts are not significant.

Need for Further Environmental Analysis

EIS

More Detailed EA

No Further Analysis

Environmental Assessment Checklist Approved By:

Name: Dave Ring

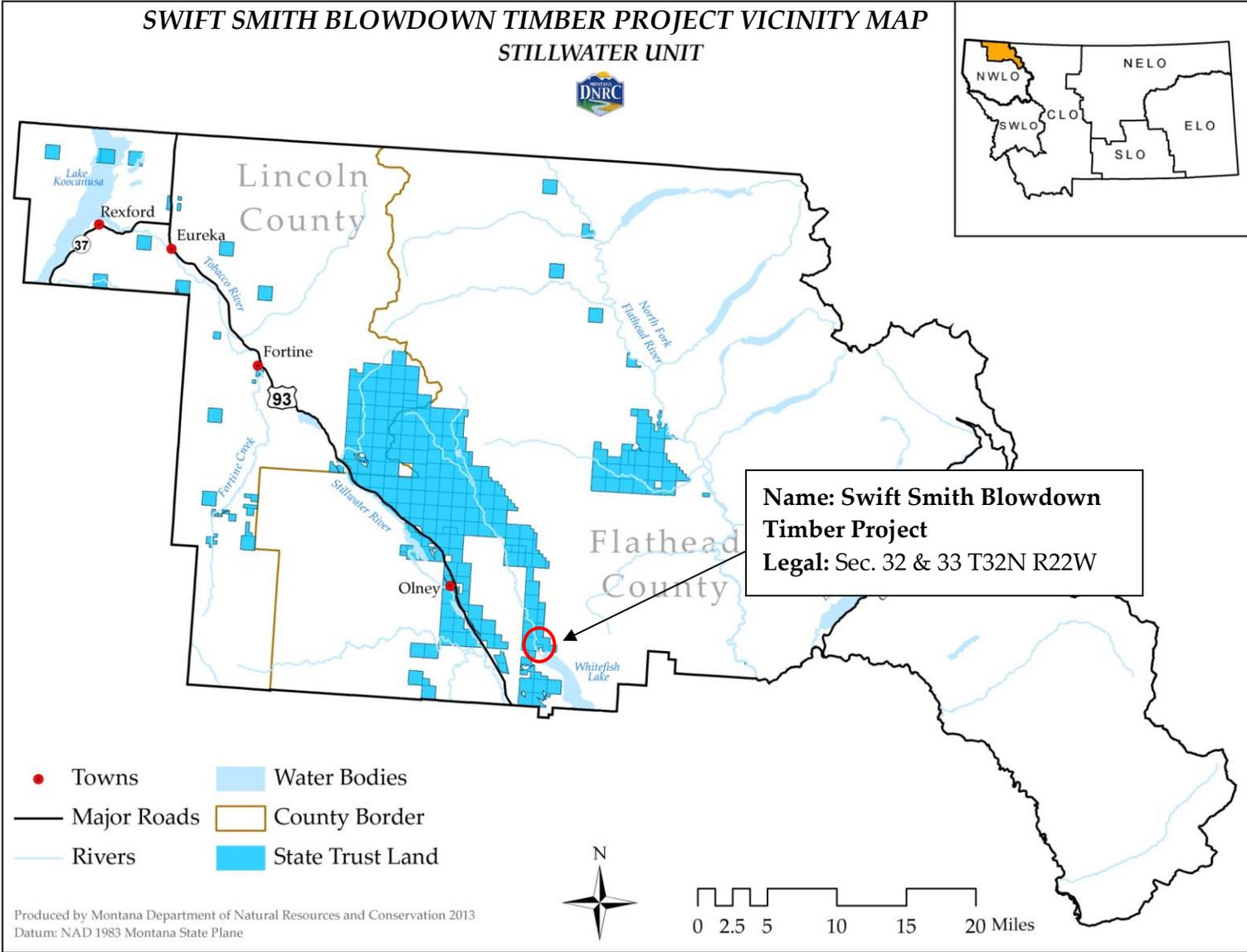
Title: Stillwater Unit Manager

Date: July 1, 2020

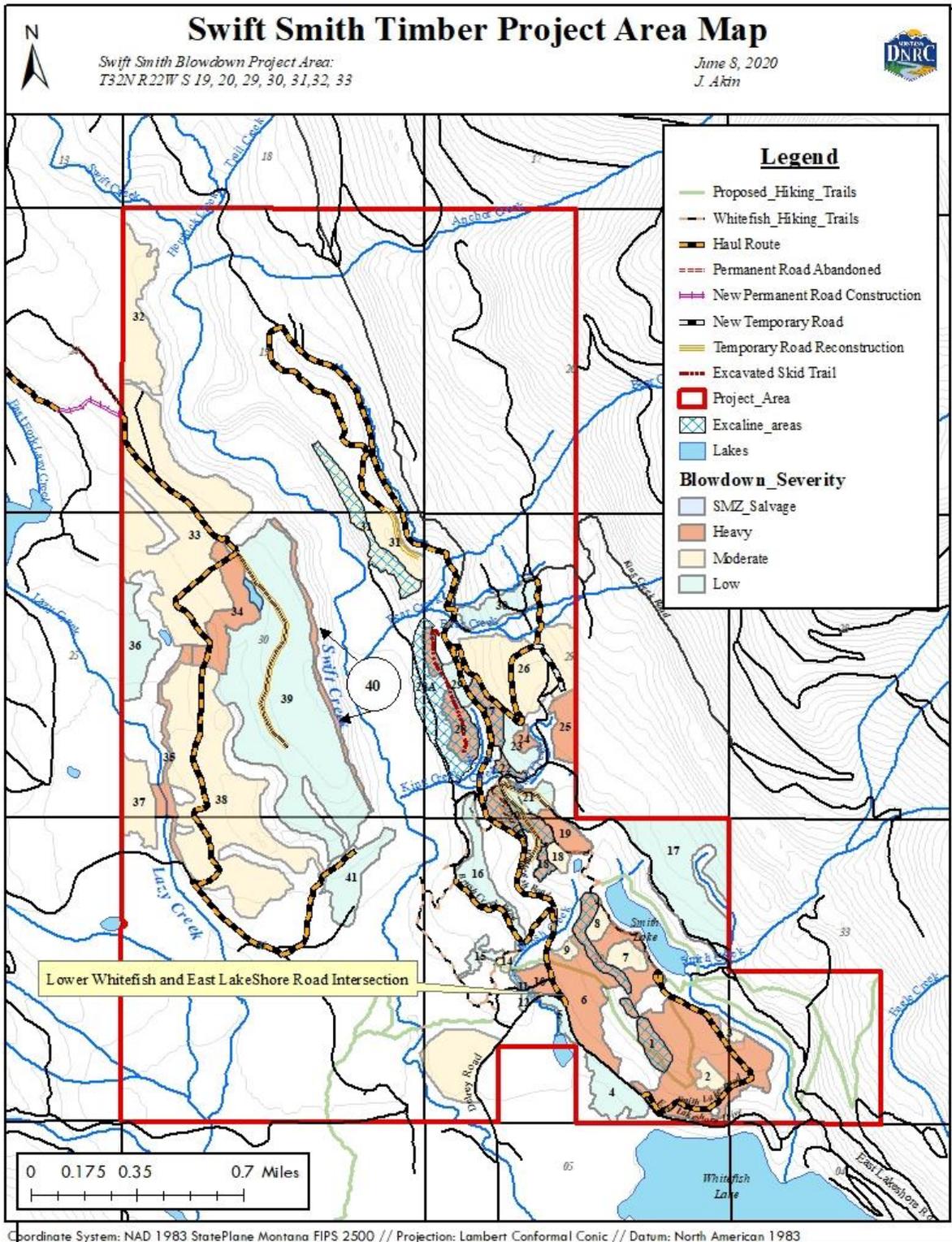
Signature: /s/ Dave Ring

Attachment A - Maps

A-1: Swift Smith Blowdown Timber Project Vicinity Map



A-2: Timber Sale Harvest Units



Attachment B – Prescription Table

Attachment B: PRESCRIPTION TABLE

Unit Number	Acres & Volume's (estimates)	Prescription	Particulars involved in unit(s)
1	68.8 (425 Mbf)	- Salvage/Sanitation - Group select retention of 6 -10 TPA left in clump distribution when available.	- Tractor harvest - Retain all snags - Minimize damage to Disc Golf Course - Mechanical piling; Plant WL/DF
2	4.4 (5 Mbf)	-Salvage/Sanitation - Leave tree retention will range from 0 – 4 TPA of largest size class available.	- Tractor harvest - Older seedtree unit - Retain all snags. - Minimize damage to Disc Golf Course - Mechanical piling; Plant WL/DF
3	2.3 (2 Mbf)	-Salvage/Sanitation - Leave tree retention will range from 0 – 4 TPA of largest size class available.	- Tractor harvest - Older seedtree unit - Retain all snags - Minimize damage to Disc Golf Course - Mechanical piling; Plant WL/DF
4	15.3 (170 Mbf)	-Salvage/Sanitation	- Tractor harvest - Retain all snags - Protect septic system - Mechanical piling
5	3.8 (8 Mbf)	-Salvage/Sanitation	- Tractor harvest - Retain all snags - SMZ - Maintain old growth where present
6	52.3 (425 Mbf)	-Salvage/Sanitation	- Combination Tractor/Cable harvest - Retain all snags - Minimize damage to trail - SMZ - Maintain old growth where present - Mechanical piling; Plant WL/DF
7	6.3 (8 Mbf)	-Salvage Sanitation - Leave tree retention will range from 0 – 4 TPA of largest size class available.	- Tractor harvest - Older seedtree unit - Retain all snags - Minimize damage to trail - Mechanical scarification; Plant WL/DF
8	3.8 (4.5 Mbf)	-Salvage Sanitation - Leave tree retention will range from 0 – 4 TPA of largest size class available.	- Tractor harvest - Older seedtree unit - Retain all snags - Minimize damage to trail - Mechanical scarification; Plant WL/DF
9	2.1 (2 Mbf)	-Salvage Sanitation - Leave tree retention will range from 0 – 4 TPA of largest size class available.	- Tractor harvest - Older seedtree unit - Retain all snags - Mechanical scarification; Plant WL/DF

Unit Number	Acres & Volume's (estimates)	Prescription	Particulars involved in unit(s)
10	6.1 (25 Mbf)	-Salvage/Sanitation	-Tractor harvest - Retain all snags - Maintain old growth where present - Mechanical piling/scarification
11	1.7 (5 Mbf)	-Salvage	- Tractor harvest - SMZ harvest with SMZ Site-specific Alternative Practice - Maintain old growth where present - Retain all snags
12	0.9 (2.5 Mbf)	-Salvage/Sanitation - Resemble intermediate treatment (80% of original stand remains)	- Tractor harvest - Retain all snags - Maintain old growth where present
13	26.2 (40 Mbf)	-Salvage/Sanitation	- Tractor harvest - Retain all snags - Maintain old growth where present
14	1.8 (15 Mbf)	-Salvage/Sanitation -Resemble group removal (retain 4 – 8 TPA of largest size class available)	- Tractor harvest (In-woods processing) - Retain all snags - Minimize damage to trail - Mechanical piling/scarification
15	4 (10 Mbf)	-Salvage/Sanitation	- Tractor harvest (In-woods processing) - Retain all snags - Minimize damage to trail - Maintain old growth where present - Mechanical piling/scarification
16	18.3 (15 Mbf)	-Salvage/Sanitation	- Tractor harvest - Retain all snags - Minimize damage to trail - Maintain old growth where present - Mechanical piling/scarification
17	58.6 (50 Mbf)	-Salvage	- Tractor harvest - Older seedtree unit - Retain all snags
18	5.9 (10 Mbf)	-Salvage/Sanitation	- Combination Tractor/Cable harvest - Portion of unit is older seedtree unit - Retain all snags - Minimize damage to trail
19	7.7 (65 Mbf)	-Salvage/Sanitation	- Tractor harvest - Retain all snags - Minimize damage to trail - Mechanical piling/scarification
20	11.5 (65 Mbf)	-Salvage/Sanitation	- Cable harvest - Retain all snags - Minimize damage to trail -Plant WL/DF

Unit Number	Acres & Volume's (estimates)	Prescription	Particulars involved in unit(s)
21	8.8 (12 Mbf)	-Salvage	- Tractor harvest - Older seedtree unit - Retain all snags - Minimize damage to trail
22	2.5 (25 Mbf)	-Salvage/Sanitation	- Cable harvest - Retain all snags - SMZ - Plant WL/DF
23	7.9 (10 Mbf)	-Salvage	- Tractor harvest - Older seedtree unit - Retain all snags
24	2.7 (22 Mbf)	-Salvage/Sanitation	- Tractor harvest - Retain all snags - Mechanical piling/scarification; Plant WL/DF
25	10.9 (60 Mbf)	-Salvage/Sanitation & Seedtree (Retain 6 – 8 TPA of largest size class available)	- Tractor harvest - Retain all snags - SMZ - Mechanical piling/scarification; Plant WL/DF
26	51.3 (20 Mbf)	-Salvage	- Tractor harvest - Older seedtree unit - Retain all snags
27	6.3 (40 Mbf)	-Salvage/Sanitation	- Cable harvest - Retain all snags - Plant WL/DF
28	14.8 (100 Mbf)	-Salvage/Sanitation	- Cable harvest (Two-stage) - Retain all snags - Plant WL/DF
28A	22.5 (90 Mbf)	-Shelterwood -Retain 15 – 20 TPA (45 to 55 feet spacing)	- Cable harvest (Two-stage) - Retain all snags
29	4.6 (5 Mbf)	-Salvage	- Tractor harvest - Older seedtree unit -Retain all snags
30	12.9 (55 Mbf)	-Seedtree -Retain 6 – 10 TPA	- Tractor harvest - Retain all snags - SMZ - Mechanical piling/scarification
31	28.5 (75 Mbf)	-Salvage/Sanitation	- Combination Tractor/Cable harvest - Tractor area is older seedtree unit -SMZ
32	31.2 (28 Mbf)		- Tractor harvest - Older seedtree unit - Retain all snags - 'SMZ Site-specific Alternative Practice'

Unit Number	Acres & Volume's (estimates)	Prescription	Particulars involved in unit(s)	
33	123.2 (100 Mbf)	-Salvage/Sanitation	<ul style="list-style-type: none"> - Tractor harvest - all areas except units 34 and 35 are older seedtree units - Retain all snags - Plant WL/DF 	
34	26.8 (35 Mbf)			
35	11.5 (150 Mbf)			
36	18.7 (5 Mbf)			
37	16.7 (25 Mbf)			
38	120.2 (125 Mbf)			
39	160 (40 Mbf)		<ul style="list-style-type: none"> - Tractor harvest - ERZ (Hand-felling required) - Older seedtree unit - Retain all snags - Plant WL/DF 	
40	9 (40 Mbf)			
41	19.2 (5 Mbf)			<ul style="list-style-type: none"> - Tractor harvest - Older seedtree unit - Retain all snags

Salvage/Sanitation Criteria:

- All blowdown
- Root-pulled standing green trees to reduce Douglas-fir bark beetle impacts
- Mistletoe infected western larch with greater than '2' in Hawksworth rating. Must be within tree length of blowdown units and have need for additional volume to yard
- Undesirable trees (shape, damage to crown ratio, would die within 5 years, (i.e. sound GF)
- Retain a minimum of 2 snag recruits and 2 snags ≥ 21" per acre (leave trees ≥ 21" DBH fill this requirement for recruits).

WL = Western larch
 DF = Douglas-fir
 Mbf = Thousand board feet
 MMbf = Million board feet
 DBH = Diameter at breast height
 ERZ = Equipment restriction zone
 SMZ = Streamside Management Zone

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Appendix A – Soils Analysis

Swift Smith Blowdown – Soils Analysis

Analysis Prepared By:

Name: Marc Vessar

Title: Forest Hydrologist, Montana DNRC

Introduction

The following analysis will disclose anticipated effects to soil resources within Swift Smith Blowdown project area. Direct, secondary, and cumulative effects to soil resources of both the No-Action and Action alternatives will be analyzed.

DNRC strives to maintain soil productivity by limiting cumulative soil impacts to 15 percent or less of a harvest area, as noted in the State Forest Land Management Plan (SFLMP) (DNRC 1996). As a recommended goal, if existing detrimental soil effects exceed 15 percent of an area, proposed harvesting should minimize any additional impacts. Harvest proposals on areas with existing soil impacts more than 20 percent should avoid any additional impacts and include restoration treatments, as feasible, based on site-specific evaluation and plans.

Issues

- Timber harvesting activities may adversely affect soil resources due to increased compaction, displacement and erosion.
- Removal of both coarse and fine woody material off site during timber harvest operations can reduce nutrient pools required for future forest stands and can affect the long-term productivity of the site.

Regulatory Framework

The following plans, rules, and practices have guided project planning and/or will be implemented during project activities:

- The Administrative Rules for Forest Management (ARM 36.11.401 to 456) include several rules that guide conservation of soils resources. The Administrative Rules were generally adopted from recommendations in the SFLMP (DNRC 1996). Part of the project area is also covered by the Montana DNRC Forested Trust Lands Habitat Conservation Plan (HCP) (2012). The project was developed to be compliant with both the Administrative Rules and the HCP.
- DNRC strives to maintain soil productivity by limiting cumulative soil impacts to 15 percent or less of a harvest area, as noted in the SFLMP (DNRC 1996). As a recommended goal, if existing detrimental soil effects exceed 15 percent of an area, proposed harvesting should minimize any additional impacts. Harvest proposals on areas with existing soil impacts in excess of 20 percent should avoid any additional impacts and include restoration treatments, as feasible, based on site-specific evaluation and plans.

Analysis Areas

Direct, Secondary and Cumulative Effects Analysis Area

The analysis area will be the proposed harvest units and road locations. This analysis area encompasses all areas that could be impacted from soil disturbance associated with this project and cumulative impacts due to past activities.

Analysis Methods

Compaction, Displacement and Erosion

Methods for disclosing impacts include using general soil descriptions and the management limitations for each soil type. This analysis will qualitatively assess the risk of negative effects to soils from erosion, compaction, and displacement from each alternative, using insight from previously collected soils-monitoring data from over 90 DNRC post-harvest monitoring projects (DNRC 2011).

Nutrient Cycling and Soil Productivity

If the Action Alternative is selected, recommendations based upon scientific literature as required by ARM 36.11.414 (2) will assist in developing contract requirements and mitigation measures necessary to ensure post project levels of coarse woody debris (CWD) adequately meet the recommendations of relevant literature, primarily Graham et.al. (1994). Fine woody material will be addressed solely through contract language that minimizes removal (ARM 36.11.410).

Risk Communication

Effective risk management requires assessment of inherently uncertain events and circumstances, typically addressing two dimensions: how likely the effect is to occur (probability) and the magnitude the effect (impact) would be if it happened (Hillson and Hullett, 2004).

In terms of the risk that an impact may occur, a *low risk* of an impact means that the impact is unlikely to occur. A *moderate risk* of an impact means that the impact may or may not occur. A *high risk* of an impact means that the impact is likely to occur.

A *very low impact* means that the impact is unlikely to be detectable or measurable, and the impact is not likely to be detrimental to the resource. A *low impact* means that the impact is likely to be detectable or measurable, but the impact is not likely to be detrimental to the resource. A *moderate impact* means that the impact is likely to be detectable or measurable and the impact is likely to be moderately detrimental to the resource. A *high impact* means that the impact is likely to be detectable or measurable, and the impact is likely to be highly detrimental to the resource.

Existing Conditions

Geology

Stillwater State Forest, like much of northwest Montana, is dominated by bedrock consisting of metasedimentary rocks from the Proterozoic age. Rocks in this formation are generally comprised of argillites, quartzites, and siltites. Surface deposits of glacial till, outwash, and lacustrine sediments can be found throughout the area. Overlying many of these sediments is a layer of loess that has been influenced by

volcanic ash deposited and redeposited from Mount Mazama approximately 6,800 years ago (Martinson and Basko, 1998).

Physical Disturbance (Compaction, Displacement and Erosion)

Past monitoring on DNRC timber sales from 1988 to 2010 has shown an average of 12.2 percent soil impacts across all parent materials. Sales harvested prior to 1990 exhibited impacts of 16.8 percent; sales harvested post-1990 showed impacts averaging 7.3 percent of the harvest area. This provides a strong relationship to the implementation of Forestry Best Management Practices (BMPs) and the Streamside Management Zone (SMZ) law.

Stratifying the results by soil texture that are similar to the majority of the proposed harvesting shows an average of approximately 12.4 percent of the harvest areas impacted from erosion, displacement or severe compaction (DNRC 2011). Of the 21 sites with similar soil textures (silt loam and gravelly-silt loam), 3 were cable yarded while 18 were skidded using ground-based equipment. The cable yarded units averaged 4.5% impacts from erosion, displacement or severe compaction; the ground-based units averaged 13.7% impacts.

Cumulative effects from past and current forest management in the proposed harvest units are a result of skid trails and landings although very little of the proposed harvest area has been previously entered. While records show evidence of harvest dating as early as 1948 in the project area, most of the harvest occurred after 1963. Other forest product removals include fence posts and rails, firewood, and individual and commercial Christmas tree harvests throughout the last 70 years.

Table S3 – Soil Map Unit Description

Map Unit	Description	Acres	Analysis Area	Landtype Description	Compaction hazard	Erosion Hazard	Displacement Hazard
10-2	Fluvents Slopes 0-5%	46.6	4.6%	Landform: Stream bottoms along streams Parent material: alluvial deposits Vegetation: moist mixed forest type	H	M	M
14-2	Aquepts Slopes 0-5%	8.5	0.8%	Landform: Stream bottoms and moraines Parent material: lacustrine deposits Vegetation: moist mixed forest type	H	M	M
16	Fluvents Alluvial fans Slopes 5-25%	8.9	0.9%	Landform: Alluvial fans Parent material: alluvial deposits Vegetation: moist mixed forest type	H	M	M
26C-7	Andeptic cryoboralfs moraines/glaciated mountain slopes Slopes 10-20%	418	41.4%	Landform: Moraines and glaciated mtn slopes; Parent material: glacial till Vegetation: moist, mixed forest	M/H	M	M/H
27-8	Dystric Eutrochrepts, kames, kettles, terraces Slopes 20-40%	364.7	36.1%	Landform: Kames, kettles, terraces Parent material: glacial till Vegetation: mixed Douglas-fir forest	M	M	L

Map Unit	Description	Acres	Analysis Area	Landtype Description	Compaction hazard	Erosion Hazard	Displacement Hazard
28-7	Dystric eutrochrepts outwash substratum Slopes 0-20%	164.4	16.1%	Landform: Terraces Parent material: Glacial outwash Vegetation: dry, mixed forest	M	M	M

Nutrient Cycling and Soil Productivity

Coarse and fine woody debris provide a crucial component in forested environments through nutrient cycling, microbial habitat, moisture retention and protection from mineral soil erosion. (Harmon et al. 1986). Fine woody debris, typically the branches and foliage, contain the majority of the macronutrients in forest stands. Harrington and Kirkland found higher levels of nitrogen, carbon and other important macronutrients on sites where debris was retained compared to sites where most of the debris is removed (Harrington and Kirkland 2012). While coarse woody debris decays at various rates due to local climatic conditions, the advanced stages of decay contain many nutrients and holds substantial amounts of moisture for vegetation during dry periods (Wicklowsky et al. 1973). Forest management can affect the volumes of fine and coarse woody debris through timber harvesting and result in changes to the available nutrients for long term forest production.

Recommendations for CWD by habitat type can be found in Managing Coarse Woody Debris in Forests of the Rocky Mountains (Graham et al. 1994). Douglas fir, grand fir and subalpine fir habitat types similar to the project area are recommended to have a level of coarse woody debris in the range of 12 to 25 tons per acre to maintain forest productivity. Wetter habitat types tend to have higher amounts recommended while drier habitat types would be on the lower end of the scale.

Environmental Effects

No-Action Alternative: Direct, Secondary, and Cumulative Effects

Implementation of the No-Action alternative would result in no soil resource impacts in the project area. Soil resource condition would remain similar to those described in the Existing Conditions sections of this environmental assessment.

Action Alternative: Direct, Secondary, and Cumulative Effects

Geology

Direct and Secondary & Cumulative

The geology would remain similar to those described in the Existing Conditions sections of this environmental assessment.

Physical Disturbance (Compaction, Displacement and Erosion)

Direct and Secondary

Considering data from the DNRC SOIL MONITORING REPORT (DNRC 2011), the implementation of Forestry BMPs has resulted in less risk of detrimental soil impacts from erosion, displacement, and severe compaction. While the report noted that the impacts were more likely on the fine-textured soils and steep slopes, reduced soil productivity due to compaction and displacement can occur on coarser parent materials. Also, the greatest impacts occurred where harvesting implementation departed from BMPs by ground-based skidding on slopes of greater than 40 percent.

Comparing the soil type map, field reconnaissance notes, and topographic map features with the proposed harvest unit map, indicates that ground-based skidding would occur on slopes of up to 45 percent. A cumulative, estimated 0.4 mile of excavated skid trail would be constructed to facilitate yarding. Excavated skid trails constructed by this project would be fully recontoured and stabilized when yarding has been completed. The extent of expected impacts would likely be similar to those reported in the DNRC SOIL MONITORING REPORT (DNRC 2011), or approximately 13.7 percent of the harvest area for ground-based operations during summer conditions. Monitoring data shows that cable yarding averages approximately 4.5 percent impacts. Therefore, the impacts from this proposal are estimated to be approximately 7.1 percent (see Table S4).

In addition to impacts within harvest units, new road construction, including temporary roads, essentially removes land from forest production for several decades. The proposal would construct approximately 0.2 miles of new temporary road and an additional 0.2 miles of permanent road. At the close of the project, all temporary roads would have drainage structures removed. Although the road prism may remain on the landscape, usage of the road would not be feasible because a portion of the road would be recontoured to prevent use by all motorized vehicles. Additionally, approximately 0.26 miles of existing permanent road would be reclaimed. TABLE S4– DETRIMENTAL SOIL DISTURBANCE FOR THE ACTION ALTERNATIVE summarizes the expected impacts to soils within harvest units and for new road construction including temporary roads.

Although erosion would potentially result from this alternative, the magnitude, area and duration of erosion and other adverse impacts such as compaction and displacement would remain low. Therefore, a high risk of low direct and indirect impacts would be expected from the implementation of the Action Alternative.

Cumulative

As vegetation begins to establish on the impacted areas and freeze-thaw cycles occur, the area of reduced productivity due to skid trails and landings would decrease. Proposed harvest units that have been previously impacted by skid trails and landings would utilize existing trails to minimize additional areal extent of cumulative impacts. Per the SFLMP direction, areas with existing soil impacts more than 20 percent would require skid trail planning and include restoration treatments based on site-specific evaluation.

By implementing Forestry BMPs and adhering to recommended mitigation measures listed below, DNRC concludes that the risk of unacceptable adverse cumulative impacts from this project would be low.

Table S4 – Detrimental Soil Disturbance for the Action Alternative

Area of Analysis	Total Area (Acres)	Disturbance Rate (%)	Affected Area (Acres)
Ground Based Harvest Area (including landings)	915	13.7%	125.4
Cable Yarded Harvest Area (including landings)	94	4.5%	12.7
Total Cable and Ground Based	1009	12.7%	138.1
Excavated skid trail	0.7	100%	0.7
Roads * (0.4 miles)	1.3	100%	1.3
*Acres in roads are calculated with a 25-foot impact width for the cutslope, fillslope and driving surface. This equates to approximately 3 acres per mile of road.			

Nutrient Cycling and Soil Productivity

Direct and Secondary

As required in the DNRC Timber Sale Contract, both fine and coarse woody debris would be retained to reduce potential impacts to forest productivity. Although, fine woody debris would be left on-site for nutrient retention, a moderate reduction in annual fine material contribution would result from this alternative for up to 20 years. Coarse woody debris would be left on-site in volumes recommended to help maintain soil moisture and forest productivity, generally in the 12 to 24 tons per acre range for habitat types found in the harvest locations (Graham et al. 1994).

Because coarse woody debris would be left on site in amounts recommended by scientific literature, and fine debris removal would be maintained as much as practicable, a moderate risk of low direct or indirect impacts to nutrient cycling would be expected.

Cumulative

Coarse woody debris would be maintained at levels recommended by Graham et al (1994) to maintain long-term soil productivity. Although a short-term reduction in fine material would result from this alternative, contract clauses developed from mitigation measures listed below would be expected to minimize long-term impacts until acceptable stocking levels of vegetation is established. For these reasons, a low risk of low cumulative impacts to nutrient cycling and soil productivity would be expected from this alternative.

Soils Mitigations

- 1) Limit equipment operations to periods when soils are relatively dry, (less than 20 percent oven-dried weight), frozen, or snow-covered to in order to minimize soil compaction and rutting and maintain drainage features. Check soil moisture conditions prior to equipment start-up.
- 2) On ground-based units, especially on previously harvested areas, the logger and sale administrator would agree to a skidding plan prior to equipment operations. Skid-trail planning would identify which main trails to use and how many additional trails are needed. Trails that do not comply with BMPs (i.e. trails in draw bottoms) would not be used unless impacts can be adequately mitigated. Regardless of use, these trails may be closed with additional drainage installed, where needed, or grass-seeded to stabilize the site and control erosion.

- 3) Tractor skidding should be limited to slopes of less than 40 percent unless the operation can be completed without causing excessive displacement or erosion. Based on site review, short, steep slopes may require a combination of mitigation measures, such as adverse skidding to a ridge or winchline, and skidding from more moderate slopes of less than 40 percent.
- 4) Keep skid trails to 20 percent or less of the harvest unit acreage. Provide for drainage in skid trails and roads concurrently with operations.
- 5) Skyline corridors shall be spaced not less than 75 feet apart. In the case of ridges where fan-shaped settings are required, the minimum distance at the widest divergence will be 150 feet. Clearing width for corridors to accommodate yarding should not exceed 12 feet. Where skyline is required, harvest would be by log-length skidding. Leading end of the logs would be carried free of the ground at all times except during lateral yarding. Erosion control, such as slashing or retaining tops, would be required within cable skidding corridors where excessive soil disturbance may be of an extent to cause erosion. The contract administrator would monitor conditions and recommend erosion control as needed.
- 6) Slash disposal: Limit the combination of disturbance and scarification to 30 to 40 percent of the harvest units. No dozer piling on slopes over 35 percent; no excavator piling on slopes over 40 percent, unless the operation can be completed without causing excessive erosion. Consider lopping and scattering or jackpot burning on the steeper slopes. Consider disturbance incurred during skidding operations to, at least, partially provide scarification for regeneration.
- 7) Retain 12 to 25 tons of large woody debris and a feasible majority of all fine litter following harvesting operations. On units where whole tree harvesting is used, implement one of the following mitigations for nutrient cycling: 1) use in-woods processing equipment that leaves slash on site; 2) for whole-tree harvesting, return-skid slash and evenly distribute within the harvest area; or 3) cut tops from every third bundle of logs so that tops are dispersed as skidding progresses.

Soils References

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- Martinson, A. H. and W. J. Basko. 1998. Soil Survey of Flathead National Forest Area, Montana. USDA Forest Service, Flathead National Forest, Kalispell, Montana.

Wicklow, M.C., W. B. Bolen, and W.C. Denison. 1973. Comparison of Soil micro-fungi in 40-year-old stands of pure alder, pure conifer and alder-conifer mixtures. *Soil Biology and Biochemistry*, 6:73-78.

Appendix B – Water Resources and Fisheries Analysis

Swift Smith Blowdown – Water Resources and Fisheries Analysis

Analysis Prepared By:

Name: Marc Vessar

Title: Forest Hydrologist, Montana DNRC

Introduction

The following analysis will disclose anticipated effects to water resources and fisheries within the Swift Smith Blowdown project area. Direct, secondary, and cumulative effects to water resources of both the No-Action and Action alternatives will be analyzed.

Issues and Measurement Criteria

Issue: Timber harvesting and road construction has the potential to increase water yield, which, in turn, may affect erosive power, in-stream sediment production, and stream channel stability.

Measurement Criteria: Because much of this project is removing dead, windthrown trees, the potential increase resulting from the removal and limited green tree harvest would be very small and likely immeasurable. Therefore, the risk of adverse impacts will be based on channel condition and beneficial uses present. A qualitative risk assessment will assess potential impacts in relation to previous annual water yield analysis.

Issue: Timber harvesting and road construction may increase sediment delivery into streams/lakes and affect water quality.

Measurement Criteria: Risk assessment using DNRC road inventory sediment risk ratings for existing; erosion risk from SOILS ANALYSIS portion of the EA coupled with sediment travel distances found in relevant literature.

Issue: Timber harvesting activities may adversely affect water quality by reducing shade and increasing stream temperature.

Measurement Criteria: Changes in riparian canopy due to the project proposal.

Issue: Fisheries resource issues raised internally include: the proposed actions may adversely affect fisheries habitat features, including channel forms, stream temperature and connectivity.

Measurement Criteria: Changes to current connectivity conditions at road-stream crossing sites.

Changes to stream temperature will be addressed by assessing the risk of stream shading within Class 1 Riparian Management Zones (RMZs).

Channel form will be addressed by qualitatively assessing the risk of channel changes due to increased water yields and a reduction of recruitable woody debris.

Regulatory Framework

The following plans, rules, and practices have guided project planning and/or will be implemented during project activities:

Water Quality Standards

This portion of the Flathead River basin, including the Whitefish River and its tributaries, is classified as A-1 by the Montana Department of Environmental Quality (MDEQ), as stated in ARM 17.30.608. The water quality standards for protecting beneficial uses in A-1 classified watersheds are located in ARM 17.30.622. Water in A-1 classified waterways is suitable for drinking, culinary and food processing purposes (after conventional treatment), bathing, swimming and recreation, growth and propagation of salmonid fishes and associated aquatic life, waterfowl and furbearers, and agricultural and industrial water supply. State water quality regulations prohibit any increase in sediment above naturally occurring concentration in water classified A-1. Naturally occurring is defined as, "condition or materials present from runoff or percolation over which man has no control or from developed land where all reasonable land, soil and water conservation practices have been applied" [ARM 17.30.602 (17)]. Reasonable land, soil and water conservation practices include, "methods, measures or practices that protect present and reasonably anticipated beneficial uses..." [ARM 17.30.602 (21)]. The State of Montana has adopted Best Management Practices (BMPs) through its non-point source management plan (MDEQ, 2007) as the principle means of meeting the Water Quality Standards. These practices include, but are not limited to, structural and nonstructural controls as well as operation and maintenance procedures. Appropriate practices may be applied before, during, or after completion of activities that could create their own impacts.

Water Quality Limited Waterbodies

The streams in the project area are not considered impaired waterbodies and are not listed on the 2018 303(d) list. The 303(d) list is compiled by MDEQ as required by section 303(d) of the Federal Clean Water Act and the Environmental Protection Agency Water Quality Planning and Management Regulations (40 CFR, part 130). Under these laws, MDEQ is required to identify water bodies that do not fully meet water quality standards, and/or where beneficial uses are threatened or impaired.

Streamside Management Zone Law (SMZ)

All rules and regulations pertaining to the SMZ Law are to be followed. An SMZ width of 100 feet is required on Class 1 and 2 streams and lakes when the slope is greater than 35 percent. An SMZ width of 50 feet is required when the slope is less than 35 percent.

In order to implement practices within the SMZ that are generally prohibited, an alternative practice application must be submitted to a DNRC Public Assistance Forester for approval.

Forest Management Rules

In 2003, DNRC drafted Administrative Rules for Forest Management. The portion of those rules applicable to watershed and water resources include ARM 36.11.422 through 426 and 470 through 471.

Habitat Conservation Plan (HCP)

DNRC is managing the habitats of threatened and endangered species on this project by implementing the Montana DNRC Forested Trust Lands Habitat Conservation Plan (HCP) and the associated Incidental Take Permit that was issued by the United States Fish & Wildlife Service (USFWS) in February of 2012 under Section 10 of the Endangered Species Act. The HCP identifies specific conservation strategies for managing the habitats of grizzly bear, Canada lynx, and three fish species: bull trout, westslope cutthroat trout, and Columbia redband trout.

Fisheries

The US Fish and Wildlife Service has listed bull trout as 'threatened' under the Endangered Species Act. Both bull trout and westslope cutthroat trout are listed as S2 Montana Animal Species of Concern. Species classified as S2 are considered to be at risk due to very limited and/or potentially declining population numbers, range, and/or habitat, making the species vulnerable to global extinction or extirpation in the state (Montana Fish, Wildlife and Parks, Montana Natural Heritage Program, and Montana Chapter American Fisheries Society Rankings). DNRC has also identified bull trout and westslope cutthroat trout as sensitive species (ARM 36.11.436).

DNRC is a cooperator and signatory to the following relevant agreements: Restoration Plan for Bull Trout in the Clark Fork River Basin and the Kootenai River Basin, Montana (2000), Memorandum of Understanding (2005) for the Swan Valley Bull Trout Work Group, and Memorandum of Understanding and Conservation Agreement for Westslope Cutthroat Trout and Yellowstone Cutthroat Trout in Montana (2007). All 3 agreements contain land management conservation strategies or action items utilized by DNRC as decision-making tools.

Water Rights and Beneficial Uses

Water rights for surface water within and three miles downstream of project area waterbodies include domestic use, fish and wildlife, lawn and garden, irrigation, stock watering, and recreation.

Designated beneficial water uses within the project area include domestic use, cold-water fisheries, aquatic life support, irrigation, stock water and recreational use in the streams, wetlands, and lakes in the surrounding areas.

Analysis Areas

Sediment Delivery

The analysis area for sediment delivery is the proposed harvest units and roads used for hauling. This includes upland sources of sediment that could result from this project. In addition, in-channel sources of sediment such as mass-wasting locations or excessive scour/deposition will be disclosed if found in project area streams.

Water Yield

The 6th code HUC analysis areas for annual water yield will include the Lazy Creek Watershed, Swift Creek-Hemlock Creek watershed and Whitefish Lake watersheds. Due to the scattered blowdown, and the small amount harvest in each watershed, potential impacts whether direct, secondary or cumulative will be difficult to identify.

Woody Debris Recruitment

The direct/indirect and cumulative analysis area for woody debris recruitment is the RMZ of all Class 1 streams covered by the HCP in the project area and Class 1 fish-bearing streams on lands not covered by the HCP.

Stream Temperature Increases

The analysis area for stream temperature increase will be identical to the analysis area for woody debris recruitment.

Connectivity (Fish Passage)

The analysis area for stream passage will be on crossing structures on fish-bearing streams within the project area.

Analysis Methods

Sediment Delivery

The methods applied to the project area to evaluate potential direct, indirect, and cumulative effects include a field review of potential sediment sources from haul routes. Stream crossings and roads were evaluated during recently executed projects to determine existing sources of introduced sediment from existing and proposed roads.

Potential sediment delivery from harvest units will be evaluated from a risk assessment. This risk assessment will use the soil information provided in Attachment D: SOILS ANALYSIS and the results from soil monitoring on past DNRC timber sales.

Sediment sources from in-channel sources will be addressed qualitatively by identifying stream segments with atypical levels of instability and assessing the risk of adverse impacts from each alternative using the Risk Communication descriptions below.

Water Yield

ECA is a function of total area roaded, harvested, or burned; percent of crown removed during harvesting or wildfire; and amount of vegetative recovery that has occurred in the harvested or burned areas. As live trees are removed, the water that would have otherwise evaporated and transpired, either saturates the soil, or is translated to runoff. This method also estimates the recovery of these increases as new trees revegetate the site and move toward preharvest water use.

Cumulative annual water yield increases for this project will be somewhat difficult to show as a meaningful impact due to the scattered nature of the blowdown across three watersheds. For this reason, potential impacts will be discussed qualitatively, although previous quantitative modelling efforts will be referenced. Disclosure will address the risk of direct, indirect or cumulative impacts to the stability of streams in each watershed.

In order to evaluate the potential effects of water-yield increases, a threshold of concern for each watershed was established per ARM 36.11.423. Thresholds were established based on evaluation of the acceptable risk level, resources value, and watershed sensitivity. Increased annual water yields above the threshold of concern may result in an increased risk of in-channel erosion and degradation of fisheries habitat and may

have detrimental impacts on other downstream beneficial uses. The threshold for these watersheds will be a low degree of risk for impacts derived from vegetation removal.

Woody Debris Recruitment

The analysis method for woody debris recruitment will evaluate the potential reduction in available woody debris and shading due to timber-harvesting activities in the riparian management zone (RMZ) of the project area.

Stream Temperature Increases

Stream temperature will be addressed by evaluating the risk of stream temperature increases due to reduced shading from existing vegetation.

Connectivity (Fish Passage)

Fish passage will be addressed by evaluating the risk of adversely or positively altering the current fish passage condition along the haul route.

Risk Communication

In terms of the risk that an impact may occur, a *low risk* of an impact means that the impact is unlikely to occur. A *moderate risk* of an impact means that the impact may or may not (50/50) occur. A *high risk* of an impact means that the impact is likely to occur.

A *very low impact* means that the impact is unlikely to be detectable or measurable, and the impact is not likely to be detrimental to the resource. A *low impact* means that the impact is likely to be detectable or measurable, but the impact is not likely to be detrimental to the resource. A *moderate impact* means that the impact is likely to be detectable or measurable, and the impact is likely to be moderately detrimental to the resource. A *high impact* means that the impact is likely to be detectable or measurable, and the impact is likely to be highly detrimental to the resource.

Existing Conditions

General Description

Swift Creek is the main channel of a 49,244-acre watershed that contributes surface flow to Whitefish Lake. Annual precipitation in the watershed ranges from 20 inches at its lowest elevations to 70 inches near Stryker Peak. Average annual precipitation is approximately 48 inches per year. The elevation ranges from 3,000 feet above sea level at the mouth of the creek at Whitefish Lake to approximately 7,420 feet above sea level at the watershed divide. Ownership within the watershed is 80 percent State Trust Lands managed by DNRC, 19 percent federal lands managed by the USFS and the remaining 1 percent in private ownership including F.H. Stoltze Land and Lumber Company. The Swift Creek watershed is split into four, 6th hydrologic unit code (HUC) watersheds: Swift Creek-Hemlock Creek, Swift Creek-Antice Creek, West Fork Swift Creek and East Fork Swift Creek.

The main channel of this Class 1 fish-bearing stream flows at the base of several eroding Pleistocene banks along the middle and lower reaches of the stream (Watershed Consulting, LLC 2004).

Swift Creek-Hemlock Creek watershed

The 6th code Swift Creek-Hemlock Creek watershed is an 18,248-acre subset of the entire Swift Creek watershed. Several named streams are tributary to Swift Creek in the project area including King, Bear, and Anchor creeks. Further upstream in the watershed, but outside of the project area are, Trail, Hemlock, Taylor and Gill creeks. Multiple unnamed tributaries are also present. Ownership within the Swift Creek-Hemlock Creek watershed is 77 percent State Trust Lands managed by DNRC, 21 percent federal lands managed by the USFS, 1 percent industrial timber lands and 1 percent in private non-industrial ownership.

Swift Creek and its tributaries were inventoried in 1999 for channel stability, sediment sources and stream crossing conditions. Channel stability was also evaluated during fieldwork in 2020 for this timber sale proposal and during fieldwork for the King-Hemlock Timber Sale (DNRC 2014), Lazy-Swift 2 Timber Sale (DNRC 2013), and the Beaver-Swift-Skyles Timber Sale (DNRC 2011). An R1/R4 fisheries habitat inventory was conducted on Swift Creek in 2002. In-channel sediment sources such as mass wasting sites or excessive erosion were not found during field reconnaissance on the tributaries to Swift Creek. Several large eroding Pleistocene banks can be found along Swift Creek above, below and along the southwestern side of the project area. These eroding banks are very similar to eroding banks on the North and Middle Forks of the Flathead River and are considered natural features. Suspended sediment in Swift Creek is high during the high flow period but low during the low flow period (DEQ 2012).

Fish presence in streams within the project area was investigated using the Montana Fisheries Information System (MFISH) managed by Montana Fish, Wildlife and Parks. Field verification was conducted by the DNRC fisheries biologist using a backpack electroshocker. Streams that had fish presence include the lower King Creek, Anchor Creek, Bear Creek and Swift Creek. No fish were found upstream of the Lower Whitefish Road on any of these streams, indicating that some impediment to fish passage may be occurring, however habitat above the Lower Whitefish Road is marginal due to steeper stream gradients. Species present within the project area streams include bull trout, westslope cutthroat trout, eastern brook trout, rainbow trout, slimy sculpin, and mountain whitefish.

Lazy Creek watershed

Lazy Creek is the main channel of a 10,430-acre watershed that contributes surface flow to Whitefish Lake. Annual precipitation in the watershed ranges from 20 to 30 inches. The elevation ranges from 3,000 feet above sea level at the mouth of the creek at Whitefish Lake to approximately 4,800 feet above sea level at the northern boundary; however most (91%) of the watershed area is below 3,600 feet in elevation. Terrain is generally gentle with slopes predominately less than 40%. Ownership within the watershed is 72 percent State Trust Lands managed by DNRC, 19 percent industrial lands, and 9 percent in private non-industrial ownership.

Lazy Creek and its three main tributaries—East Fork, Middle Fork and West Fork—all originate on recently acquired industrial forest lands. This Class 1 stream flows into and through several meadows and wetlands as it flows across State lands for approximately 1.5 miles prior to crossing non-industrial private lands and entering Whitefish Lake. Two other streams in the project area on state-managed lands are intermittent and discontinuous, meaning they do not contribute surface flow to a downstream waterbody. Lazy Creek contains introduced eastern brook trout according to the FWP.

Whitefish Lake watershed

The 6th code watershed that includes southern end of the project area is the 17,109-acre Whitefish Lake watershed. This watershed includes Smith Lake, Smith Creek and Brush Creek within the project area. Ownership within the Whitefish Lake (6th code only) watershed is 5 percent State Trust Lands managed by DNRC and MFWP, 16 percent federal lands managed by the USFS, 4 percent industrial timber lands and 75 percent in private non-industrial ownership.

Brush Creek and Smith Creek were GPS'd and reviewed for stability during field reconnaissance. No unstable soils, or substantial sediment sources were found. Some very minor bankcutting was identified at meanders and constrictions. Some windthrown trees on the banks will be a minor sediment source as soil falls off the rootwads. Brush Creek is a spring-fed stream that has little fluctuation in stream flow throughout the year. The stream terminates in Brush Lake, as no outlet was found although the USGS mapped outlet area appears to contain wetland vegetation. This stream was inventoried for fish using a backpack electroshocker; no fish were found.

Smith Creek is a Class 1 fish-bearing stream that flows into and out of Smith Lake. The lake serves as a settling pond for sediments transported above the lake. Bank cutting downstream of the lake is minimal and stability is good. A concrete weir is located a few hundred feet above East Lakeshore Drive and several water lines are in the stream.

Smith Creek above the lake contains westslope cutthroat trout and eastern brook trout. MFWP stocks Smith Lake with westslope cutthroat trout and rainbow trout.

Water Quality

DNRC is striving to inventory all roads to identify sediment delivery risk and determine if Forestry BMPs are lacking. The project area, including haul roads were reviewed in 2018 and 2019. Three sites were identified as potential sediment sources from road; two are listed as needing additional road surface drainage and the third is a partially plugged culvert that could result in impacts to intermittent stream. During field reconnaissance for this project, a native crossing on an abandoned road was identified as a sediment source because water was flowing across the road and a portion of the road has sloughed. This has been recommended for removal and reclamation. The remainder of the existing roads that are proposed for use during this timber sale have been upgraded to meet BMPs and minimize the risk of sediment delivery to streams.

Harvest units proposed for harvesting as part of this project are located on landtypes with moderate erosion risk. Standard Forestry BMPs and mitigation measures are generally sufficient for minimizing erosion risk from these landtypes.

In-channel sources of sediment are primarily limited to a few constricted sites or outcurves, however windthrown trees on streambanks will likely contribute sediment as the soil falls off of the rootwads. Many of the streams in the project area are very small and are spring influenced which leads to a more stable flow regime. No evidence of mass wasting was identified during field reconnaissance, except for the Pleistocene banks along Swift Creek.

Water Quantity

Annual water yield has been modelled during previous projects for various watersheds that intersect the project area. These efforts have modelled the annual water yield and compared the modelled values to a threshold. The threshold remains the same for this project; a low degree of risk.

The Swift Creek-Hemlock Creek watershed was modelled for annual water yield increases as part of the King Hemlock Timber Sale project (DNRC 2014). Since this project, no additional timber harvest has occurred that would alter the projected water yield. Currently, this watershed is estimated to have a 7 percent annual water yield increase. The threshold for this watershed was set at 11 percent during the King Hemlock timber sale.

The Whitefish Lake watershed has a large tributary area, however most of it would not be affected by vegetation management in the project area. Smith Creek, a subset of the Whitefish Lake watershed was modelled for annual water yield increases as part of the Beaver/Swift/Skyles Timber Sale Project in 2009 (DNRC 2009). Currently, this watershed is estimated to have a 3.9 percent annual water yield increase. The threshold for this watershed was set at 13 percent during the Beaver/Swift/Skyles timber sale. Brush Creek is also a subset of the Whitefish Lake watershed, but this small, spring-fed stream terminates in Brush Lake and does not contribute surface flow to Whitefish Lake. While a modelled annual water yield is not available for Brush Creek, due to the steady hydrograph from the spring origin, this is a very stable stream and shows no signs of adverse effects to past management activities. Due to the (1) limited proposed removal of additional trees in the Brush Creek and Smith Creek watersheds, (2) the stability of these channels, and (3) the limited harvest in the entire Whitefish Lake watershed no further analysis of annual water yield is warranted for this watershed.

Lazy Creek was evaluated as part of the Lazy Swift 2 Timber Sale project (DNRC 2013) and the Beaver to Boyle Timber Sale Project (DNRC 2019). This stream is a very stable stream that shows no substantial adverse impacts from increased annual water yields. This may be attributed to low precipitation levels in comparison to other watersheds in the Stillwater State Forest, the low stream gradient and/or the wetlands found along the length of the stream, especially lower Lazy Creek. Due to the stable channel and low amount of proposed salvage in this watershed, no further annual water yield analysis is warranted for this watershed.

Woody Debris Recruitment

Large woody debris recruitment to streams is important to maintain channel form and function and as a component of fish habitat. According to ARM 36.11.425, DNRC will establish a RMZ ‘...when forest management activities are proposed ...on sites that are adjacent to fish bearing streams and lakes.’ One reason for the RMZs is to retain adequate levels of large woody debris recruitment to the stream channel. Site potential tree height (SPTH) is the method used to identify RMZ width according to ARM 36.11.425 (5). Past analysis has looked at the site potential tree heights (SPTH₁₀₀) at 100 years in the Stillwater State Forest (DNRC 2005, DNRC 2009). The average SPTH₁₀₀ in the Stillwater State Forest has ranged from 87 feet in West Fork Swift Creek (DNRC 2005) to 111 feet in Swede Creek (USFWS and DNRC 2010). The RMZ width for this project will be 100 feet for all Class 1 streams.

An estimated 300 acres within the project area is considered to be the riparian management zone. Using the most recent NAIP aerial photo layer in GIS, all of the RMZ appears to be fully stocked with the exception of road crossing.

Stream Temperature Increases

Water temperature data has been collected for varying numbers of years on streams in or near the project area since 2001. Stream temperature data in Lazy Creek has been collected monthly (May through October) by the Whitefish Lake Institute since 2007. Of the 37 individual temperature readings, two have been over 15 degrees Celsius. Swift Creek has a cold water temperature regime that supports cold water fisheries. Summer temperatures are below levels that have been shown to adversely affect bull trout and westslope cutthroat trout (DEQ 2012a).

The main stem Swift Creek near the lower end of the project area has over 12 years of data with the highest recorded seven-day average temperature of 13.9 degrees Celsius.

These temperatures are conducive to beneficial uses including cold water fisheries.

Connectivity (Fish Passage)

Crossings on Bear Creek and the East Fork Lazy Creek are the only sites on fish-bearing streams along the haul route to do not provide full connectivity throughout the year. Bear Creek has marginal fish habitat above the culvert and East Fork Lazy Creek contains only non-native species. Both sites have been identified as lower priorities for replacement, but will be accomplished as funding allows in the future. Neither site is proposed for replacement under this project.

Environmental Effects

No Action Alternative: Direct, Secondary, and Cumulative Effects

Water Quality

Under this alternative, no timber harvesting or related activities would occur. Water Quality issues would continue as described in the Existing Conditions until future projects make repairs or vegetation establishes to stabilize soils and filter runoff.

No additional cumulative impacts to water quality would be expected. Sediment delivery sites from roads on the proposed haul routes would remain unchanged, as would the sediment sources described in Existing Conditions. Rootwads on immediate streambanks would be a low-level and short-term sediment supply to streams and the banks along Swift Creek would continue to 'bleed' sediment during spring snowmelt.

Water Quantity

No increased risk of direct or secondary increases or reductions in annual water yield or ECA would result from this alternative. Cumulative changes in water yield would change as vegetation continues toward a fully forested condition. A low risk of low direct, secondary or cumulative impacts to channel stability would be expected from this alternative.

Woody Debris Recruitment

No harvest in the RMZ would result from this alternative. All windthrown trees would remain. Previously harvested stands within the RMZ would continue to revegetate and grow towards pre-harvest conditions. Woody debris would be expected to contribute to streams as naturally dictated with a low risk of low impacts to channel form and function.

Stream Temperature Increases

Stream temperature increases would not be affected by harvest under this alternative. Stream temperatures would be expected to support fisheries with a low risk of low impacts.

Connectivity (Fish Passage)

No improvements to fish passage are associated with this alternative. The two sites that do not fully meet fish passage requirements would remain unchanged.

Action Alternative: Direct, Secondary, and Cumulative Effects

Water Quality

Direct and Secondary

As part of the timber sale requirements, roads that do not meet Forestry BMPs would be improved to minimize sediment delivery. Although much work has been done on the haul route over the last decade, the sediment risk sites identified during road inventory work would be improved to reduce the risk of sediment delivery to stream.

Other improvements would include removing the native stream-road crossing structure that is no longer deemed necessary and is constricting flow. By implementing these upgrades on identified sites and maintaining BMPs on previously upgraded roads, the risk of sediment delivery would be substantially reduced. Although the native culvert removal would be completed in a dewatered condition which would minimize the risk of sediment delivery during installation and Forestry BMPs would be followed to minimize sediment delivery, a high risk of a short-term increase in sediment would be expected during the removal process. The increase in sediment would be short-lived and would be expected to have a moderate risk of low impacts to beneficial uses present.

Approximately 3.1 acres of SMZ salvage harvest within on Class 1 streams (Lazy and Brush creeks) is proposed under this alternative. An alternative practice for work along Brush Creek would be required to allow equipment to operate within the SMZ. As a required mitigation, equipment would not be allowed to turn within 50 feet of the stream. This would protect soil from being disturbed. By minimizing soil disturbance, sediment delivery to the stream would be have a low risk of occurring due to flat terrain.

During a review of BMP effectiveness, including stream buffer effectiveness, Raskin et al. (2006) found that 95 percent of erosion features (disturbed soil) greater than 10 meters (approximately 33 feet) from the stream did not deliver sediment. Their findings indicated that the main reasons stream buffers are effective include 1) keeping active erosion sites away from the stream, and 2) stream buffers may intercept and filter runoff from upland sites as long as the runoff is not concentrated in gullies or similar features (Raskin et.al. 2006).

Past monitoring of DNRC timber harvests has shown erosion on approximately 6 percent of the sites monitored, although no water-quality impacts from the erosion were found (DNRC 2011). These sites were

harvested during the summer period, and the erosion was attributed to inadequate skid-trail drainage. Displacement was limited to main skid trails that occupy less than 2% of the harvest units. (DNRC 2011). By minimizing displacement, less erosion would likely occur compared to other harvest methods with more extensive disturbance (DNRC 2011).

Because (1) harvesting within 50 feet of streams would be limited to 3.1 acres, (2) additional mitigation measures would be required to avoid soil disturbance within the SMZ, and (3) all Forestry BMPs would be followed, this alternative would be expected to have a low risk of low impacts from sediment delivery to streams from proposed harvest units.

Cumulative

Considering the risk of impacts to water quality from sediment originating in harvest units, roads and in-stream sources due to this harvest proposal, a moderate risk of low impacts to water quality would be expected from the implementation of this alternative.

Water Quantity

Direct and Secondary

The proposed harvest would primarily remove windthrown trees that no longer use water. Therefore, annual water yield attributed to timber harvest would be very limited. Within the Swift Creek-Hemlock Creek watershed approximately 2.8 percent of the watershed would have timber harvest under this proposal. While the vast majority of the proposed harvest is salvage, approximately 46 acres would remove standing green trees. This limited amount of green tree harvest would not be expected to have a measurable effect in terms of annual water yield or adverse effects to stream channel stability.

Cumulative

Because the cumulative annual water yield increases would remain well below the threshold of concern, a low risk of low impacts to adverse changes in channel form due to increase flows would be expected in these watersheds.

Woody Debris Recruitment

Direct and Secondary

Under this alternative, approximately 6.8 acres of RMZ along Class 1 streams would be have windthrown trees removed. This includes 1.3 acres of SMZ along Lazy Creek. In addition to the 6.8 acres of RMZ harvest, approximately 1.7 acres of SMZ along Brush Creek would have up to 29 windthrown trees removed. Segments of trees would be left across and within Brush Creek to continue to provide for stream form. Since Brush Creek does not contain fish, the woody debris would not improve or maintain any fish habitat.

Th salvage of windthrown trees would affect approximately 2% of the Class 1 RMZ within the project area. The Action Alternative would not reduce the standing recruitable woody debris since only downed trees would be removed. This would result in a low risk of low impacts to woody debris recruitment and would be expected to continue providing adequate woody debris recruitment to streams for maintaining their current form and functions.

Cumulative

Within the project area, the 2017 NAIP layer show that nearly all of the harvested RMZ area is fully vegetated. Because only windthrown trees would be removed from the RMZ and SMZ of streams in the project area, the potential cumulative impacts from this project would be very limited. Therefore, this alternative would result in a low risk of low cumulative impacts to woody debris recruitment. Additionally, the implementation of this

alternative would be expected to continue providing adequate woody debris recruitment to streams for maintaining their current form and functions.

Stream Temperature Increases

Direct and Secondary

Through implementation of the SMZ Law, HCP and Forest Management ARMs for RMZs along Class 1 streams, timber harvest within 100 feet of Class 1 streams in the project area would be limited to 5.4 acres of the total RMZ in the project area. All harvesting would be limited to windthrown trees that are currently not producing shade to the streams. This prescription is expected to result in no additional loss of stream shading. The consequent impact to stream temperatures in the project area would also be expected to be very low and immeasurable.

Cumulative

Because no additional shade-producing vegetation would be removed as part of this alternative, a low risk of cumulative temperature increases above naturally-occurring ranges would result from the implementation of this alternative. Therefore, beneficial uses, such as cold-water fisheries, would continue to benefit from water temperatures conducive to salmonids.

Connectivity (Fish Passage)

Direct, Secondary and Cumulative

No changes to the current connectivity issues on Bear Creek or East Fork Lazy Creek would be implemented with this project. The current conditions would remain.

Water Resources Mitigations

Hydrologic related resource mitigations that would be implemented with the proposed Action Alternative include:

- Limit equipment operations to periods when soils are relatively dry, (less than 20 percent oven-dried weight), frozen, or snow-covered to in order to minimize soil compaction and rutting, and maintain drainage features. Check soil moisture conditions prior to equipment start-up.
- On ground-based units, especially on previously harvested areas, the logger and sale administrator would agree to a skidding plan prior to equipment operations. Skid-trail planning would identify which main trails to use and how many additional trails are needed. Trails that do not comply with BMPs (i.e. trails in draw bottoms) would not be used unless impacts can be adequately mitigated. Regardless of use, these trails may be closed with additional drainage installed, where needed, or grass-seeded to stabilize the site and control erosion.
- Tractor skidding should be limited to slopes of less than 40 percent unless the operation can be completed without causing excessive displacement or erosion. Based on site review, short, steep slopes may require a combination of mitigation measures, such as adverse skidding to a ridge or winchline, and skidding from more moderate slopes of less than 40 percent.
- Keep skid trails to 20 percent or less of the harvest unit acreage. Provide for drainage in skid trails and roads concurrently with operations.

- Slash disposal: Limit the combination of disturbance and scarification to 30 to 40 percent of the harvest units. No dozer piling on slopes over 35 percent; no excavator piling on slopes over 40 percent, unless the operation can be completed without causing excessive erosion. Consider lopping and scattering or jackpot burning on the steeper slopes. Consider disturbance incurred during skidding operations to, at least, partially provide scarification for regeneration.
- Follow all Forestry Best Management Practices for road construction and maintenance to minimize the risk of sediment delivery, including dewatering channels when installing or removing crossing structures.

Water Resources References

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Appendix C – Wildlife Analysis

Swift Smith Timber Sale – Wildlife Analysis

Analysis Prepared By:

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Introduction

The following analysis will disclose the anticipated direct, secondary, and cumulative effects to wildlife associated with the No-Action and Action alternatives.

Issues

- *Mature forest cover and connectivity.* The proposed activities could decrease mature forested cover, which could reduce habitat connectivity and suitability for wildlife species associated with mature forests.
- *Old-growth forests.* The proposed activities could affect wildlife species associated with old-growth forests by reducing habitat availability and increasing fragmentation.
- *Canada lynx.* The proposed activities could reduce landscape connectivity and the availability of suitable Canada lynx habitat, reducing the capacity of the area to support Canada lynx.
- *Grizzly bears.* The proposed activities could affect grizzly bear cover, affect important habitat, and increase human access, which could adversely affect bears by displacing them from important habitat, and/or by increasing risk of human-caused bear mortality.
- *Fishers.* The proposed activities could reduce the availability and connectivity of suitable fisher habitat and increase human access, which could reduce fisher habitat suitability and increase trapping mortality.
- *Pileated woodpeckers.* The proposed activities could reduce tree density and alter the structure of mature forest stands, which could reduce habitat suitability for pileated woodpeckers.
- *Big game winter range.* The proposed activities could reduce cover, which could reduce the quality of big game winter range habitat.

Regulatory Framework

The following plans, rules, and practices have guided this project's planning and/or will be implemented during project activities: *DNRC Forest Management Rules, DNRC Forested Trust Lands Final Environmental Impact Statement and Habitat Conservation Plan (USFWS and DNRC 2010), the Endangered Species Act, the Migratory Bird Treaty Act, and the Bald and Golden Eagle Protection Act.*

Analysis Areas

Direct and Secondary Effects Analysis Area

The direct and secondary effects of the proposed activities on all species/issues were analyzed within the Project Area (TABLE WI-1, FIGURE WI-1).

Cumulative Effects Analysis Areas

The cumulative effects of the proposed activities on all species/issues were analyzed at a broad surrounding landscape scale that varies according to the issue or wildlife species being discussed. Cumulative effects analysis areas are named according to the size of the area and are summarized in *TABLE WI-1* and *FIGURE WI-1*. Cumulative effects analysis areas (CEAAs) include the Project Area as well as lands managed by the USFS, Southern Pines Plantation, Stoltze, and other private land owners. The DNRC manages 46% and 69% of the Medium CEEA and Large CEEA, respectively. The northern portions of the CEAAs are managed primarily for timber production, while the southern portions consist of private residences and contain recreational trail systems. The elevation of the CEAAs ranges from 3,000 to 7,100 feet. Detailed descriptions of each analysis area are in the affected environment section for each issue or species evaluated (e.g., pileated woodpecker, etc.).

Table WI-1– Descriptions of wildlife analysis areas.

Analysis Area Name	Description	Total Acres	Issues/Species Analyzed
Project Area	Sections 19, 20, and 29-33, T32N, R22W	3,310	Direct & secondary effects for all issues/species
Medium CEEA	The Project Area and surrounding sections; defined by streams, ridgelines, and topographic features	10,395	Mature forest cover and connectivity, old-growth forests, pileated woodpeckers, fishers, big game
Large CEEA	Portions of the Lazy Creek Grizzly Bear Subunit in addition to lands extending south to the head of Whitefish Lake	30,881	Canada lynx, grizzly bears

Analysis Methods

Analysis methods are based on the DNRC State Forest Land Management Plan, which is designed to promote biodiversity. The primary basis for this analysis includes information obtained by: field visits, review of scientific literature, Montana Natural Heritage Program (MNHP) data queries, DNRC Stand Level Inventory (SLI) data analysis, aerial photograph analysis, and consultation with professionals. The coarse-filter wildlife analysis section includes analyses of the direct, secondary, and cumulative effects of the proposed alternatives on old-growth forest and the connectivity of mature forest habitats.

In the fine-filter analysis, individual species of concern are evaluated. These species include wildlife species federally listed under the Endangered Species Act, species listed as sensitive by DNRC, and species managed as big game by the Montana Department of Fish Wildlife and Parks (DFWP).

Cumulative effects analyses account for known past and current activities, as well as planned future agency actions. Timber sales that occurred on other ownerships are accounted for in analyses of aerial photographs. Proposed timber sales on other ownerships and recent DNRC timber sale projects (≤ 10 years) that could contribute to cumulative effects are summarized in the following table. Analysis for the USFS Taylor Hellroaring Timber Sale is complete and the sale is currently in the bidding process.

Table WI-2 – Recent projects and known proposed projects that could contribute to cumulative effects and the number of harvested acres that occur in each analysis area.

Sale Name	Agency	Harvest Year	Project Area	Medium CEAA	Large CEAA
Taylor Hellroaring	USFS	Analysis Complete	0	~798	~996
King Hemlock	DNRC	2015-2018	136	438	493
Good Long Boyle 2	DNRC	2013-2015			390
Lazy Swift #2	DNRC	2013-2015	666	666	666
Highway 93 Corridor	DNRC	2012-2014			84
Lupfer #3	DNRC	2010-2013			195
NE Smith	DNRC	2010-2013	64	64	64
Beaver Smith	DNRC	2009-2012	77	77	77
Grand Total			943	2,043	2,965
% of Analysis Area			28%	19%	10%

Coarse Filter Wildlife Analysis

MATURE FOREST COVER AND CONNECTIVITY

Issue

The proposed activities could decrease mature forested cover, which could reduce habitat connectivity and suitability for wildlife species associated with mature forests.

Introduction

Mature forests characterized by large-diameter trees and dense canopy cover provide many wildlife species with food, shelter, breeding sites, and travel corridors. Historically, the spatial configuration of mature forested habitat in the western United States was shaped by natural disturbance, primarily wildfire, blowdown, and pest outbreaks. These events resulted in a mosaic-like spatial configuration of forest patches varying in age, species composition, and development. Spatial configuration, including patch size and connectivity of forested habitat, is important for many wildlife species. Patch size may affect the distribution of wildlife species that are attracted to or avoid forest edges. Additionally, connectivity of mature forested habitat may facilitate movements of wildlife species that avoid openings in canopy cover. For example, discontinuous mature forested habitat would negatively affect movements of fisher, which avoid large openings in canopy cover. Timber harvest, like wildfire and blowdown, is a disturbance event that often creates open patches of young, early-successional habitats. Forest management considerations for wildlife species dependent on mature forested habitat include providing well-connected patches of habitat with $\geq 40\%$ canopy cover.

Analysis Area

The analysis area for direct and secondary effects is the Project Area and the analysis area for cumulative effects is the 10,395-acre Medium CEAA as described in *TABLE W-1* and depicted in *FIGURE W-1*. The Medium CEAA is defined by geographic features and provides a reasonable analysis area to assess the impact of the proposed activities on wildlife species near the Project Area.

Measurement Criteria

Factors considered in the analysis include: 1) the degree of timber harvesting, 2) availability and patch size of mature forested habitat ($\geq 40\%$ canopy cover, trees > 9 inches dbh average), 3) open and restricted road density, and 4) the availability of potential travel corridors. Mature forested habitat is defined here and in the remainder of the document as forest stands with $\geq 40\%$ canopy cover comprised primarily of trees that are on average > 9 inches dbh. Known impacts of the windstorm on mature forests were accounted for in the Project Area. Forested stands containing trees of at least this size and density were considered adequate for providing minimal conditions necessary to facilitate movements of wildlife species that benefit from well-connected mature forest conditions.

Affected Environment

The Project Area contains mature stands composed primarily of Douglas-fir and western larch stands (*TABLE WI-3*, *FIGURE WI-2*). to Grand fir, subalpine fir, ponderosa pine, lodgepole, and Engelmann spruce are also present. The Project Area is adjacent to the urban interface with many residences present south of the Project Area along the north shore of Whitefish Lake. Recreational activity including a disk golf course, hiking trails, and a snowmobile route are also present in the Project Area and may impact habitat connectivity for wildlife. Most recreation is concentrated around Smith Lake and the east side of Swift Creek with the west side of Swift Creek receiving less use. Wildlife sightings in the area are frequent and drainages in the Project Area likely provide important corridors. Swift Creek, which bisects the Project Area is a major riparian corridor and smaller creeks such as King Creek lead to saddles in the Whitefish Range that likely provide travel corridors between Swift Creek and the Big Creek drainage. Overall, the connectivity of mature forests is moderate across the Project Area with habitat occurring in large patches. Portions of the Project Area have been harvested (28% in the past 10 years), reducing connectivity, particularly west of Swift Creek. There are 0.6 miles/square mile of open roads present in the Project Area, which is low but reduces connectivity for wildlife species that avoid roads.

The Medium CEAA consists primarily of DNRC and USFS lands (74% of Medium CEAA) and overall, mature forested habitat in the Medium CEAA is well-connected along Swift Creek and between Anchor and Bear Creeks (*TABLE WI-3*, *FIGURE WI-2*). Approximately 12% of the Medium CEAA has been impacted by DNRC timber harvest in the past 10 years, reducing connectivity. Connectivity is lower in the Lazy Creek area due to timber sales that occurred on DNRC and former Plum Creek Timber Company Lands, although corridors are present to facilitate wildlife movement. Open road density is relatively low in the Medium CEAA at 0.4 miles/square mile, with road density higher in low-elevation portions of the CEAA adjacent to Swift Creek and few roads present in the eastern high-elevation portion of the CEAA.

Table WI-3– Average patch size and acreage of mature forested habitat ($\geq 40\%$ canopy cover, > 9 inches dbh) pre- and post-harvest in the Project Area and Medium CEAA for the Swift Smith Timber Sale. Percent of the total corresponding analysis area is in parentheses.

Mature Forest Attribute	Project Area		Medium CEAA	
	Existing	Post-Harvest	Existing	Post-Harvest
Acres of mature forest	1,804 (55%)	1,750 (53%)	4,764 (46%)	4,710 (45%)
Number of patches	4	4	16	16

Average patch size (acres)	451	438	298	294
Maximum patch size (acres)	1,799	1,746	3,291	3,237

Environmental Effects – Mature Forest Cover and Connectivity

No Action Alternative: Direct, Secondary, and Cumulative Effects

None of the proposed forest management activities would occur on DNRC lands. In the short-term, no changes to the amount, quality, or spatial arrangement of mature forested habitat would occur. In the long-term and in the absence of natural disturbance, the availability and connectivity of mature forested wildlife habitat may increase as stands age.

Action Alternative: Direct and Secondary Effects

The proposed activities would occur in 181 (10%) of the 1,804 acres of mature stands available in the Project Area (*TABLE WI-3, FIGURE WI-2*). Approximately 53 of these acres would be treated with salvage/sanitation treatments similar to seed tree and shelterwood treatments which would retain 5-25% mature canopy cover post-harvest, removing mature forested habitat. The remaining acres would also be treated with salvage/sanitation treatments but would retain greater amounts of mature canopy cover. The largest patch of mature forested habitat would be impacted and average patch size would be reduced by 13 acres (*TABLE WI-3*). Connectivity of upland mature canopy forest within the Project Area would be reduced, particularly near Bear and King creeks. However, corridors would be retained between Swift Creek and higher elevation portions of the Project Area (*FIGURE WI-2*). Approximately 0.8 miles of gated road are proposed for construction and only administrative use and non-motorized public would be permitted on these roads. Approximately 0.3 miles of road would be reclaimed and overall, total permanent roads on the landscape would increase by 0.5 miles. Thus, since: 1) the abundance of mature forested habitat would decrease by 53 acres (3% of existing mature forest); 2) connectivity would be reduced but corridors would remain; and 3) 0.8 miles of roads closed to motorized public use would be constructed, but 0.3 miles of existing road would be reclaimed; minor adverse direct or secondary effects to mature forested habitat abundance, suitability, or connectivity would be anticipated as a result of the Action Alternative.

Action Alternative: Cumulative Effects

The proposed activities would affect 181 acres (4%) of the 4,764 acres of mature forested habitat available in the Medium CEAA. Post-harvest, 53 of these acres would not provide mature forested habitat for wildlife, causing a small decrease in average patch size from 298 acres to 294 acres (*TABLE WI-3, FIGURE WI-2*). The remaining acres would be treated with salvage/sanitation treatments that retain greater amounts of mature trees and these acres are anticipated to continue providing mature forested habitat post-harvest. Connectivity of upland mature forest would be reduced; however, corridors would remain between Swift Creek and the Whitefish Divide. Reductions in the availability of suitable mature forested habitat would be additive to harvest activities that are proposed or ongoing in the Medium CEAA (*TABLE WI-2*). The impacts of the windstorm on mature forests were also accounted for in the Project Area to the extent possible. Approximately 0.8 miles of roads restricted to motorized public use would be constructed and 0.3 miles of road restricted to the public would be reclaimed. Thus, since: 1) the abundance of mature forested habitat in the Medium CEAA would decrease by 53 acres (1% of existing mature forest); 2) mature forest fragmentation would increase but corridors would remain; and 3) 0.8 miles of roads closed to motorized public use would be constructed, but 0.3 miles of existing road would be reclaimed; minor adverse cumulative effects to mature forested habitat abundance, suitability, or connectivity would be anticipated as a result of the Action Alternative.

OLD-GROWTH FORESTS

Issue

The proposed activities could affect wildlife species associated with old-growth forests by reducing habitat availability and increasing fragmentation.

Introduction

Old-growth forests are an important component of biological diversity. Old-growth forest stands typically contain various combinations of large old trees, abundant snags and downed logs, and multiple canopy layers, which are typically not found in young forests. These attributes provide structures used by a diversity of wildlife species. The diversity of species and the complexity of interactions between them can be different than in earlier successional stages (*Warren 1990*). Of the 48 old-growth associated species occurring in the Northern Rockies, about 60% may require stands larger than 80 acres (*Harger 1978*). Smaller patches may be unsuitable for wildlife species with large home ranges. Additionally, small, less-mobile species may be at greater risk of local extirpation in small patches/habitat islands. Timber harvest can affect the size, availability, and spatial juxtaposition of old-growth stands.

Analysis Area

The analysis area for direct and secondary effects is the Project Area and the analysis area for cumulative effects is the 10,395-acre Medium CEAA as described in *TABLE W-1* and depicted in *FIGURE W-1*. The Medium CEAA is defined by geographic features and provides a reasonable analysis area to assess the impact of the proposed activities on wildlife species near the Project Area.

Measurement Criteria

Old-growth forest stands were identified as described in the Vegetation Analysis. Factors considered in the analysis include: 1) the level of harvesting, 2) the abundance of old-growth, and 3) the abundance of patches >80 acres. Known impacts of the windstorm on old-growth stands were accounted for in the Project Area.

Affected Environment

The Project Area contains western larch and Douglas-fir old-growth stands (*TABLE WI-4; Green et al. 1992*). There are 2 old-growth patches >80 acres in the Project Area including a 321-acre patch located between Swift Creek and Smith Lake and a 123-acre patch located between Anchor and Bear creeks (*FIGURE WI-2*).

The Medium CEAA contains old-growth stands on DNRC-managed lands (*TABLE WI-4*) and an additional 331 acres of stands with trees that are 15 inches dbh or larger that may meet old-growth definitions (8% of Medium CEAA; *USFS vmap data v12*). Old-growth stands are primarily east of Swift Creek and the largest patches are in the Project Area.

Table WI-4– Average patch size and acreage of old-growth stands pre- and post-harvest in the Project Area and Medium CEAA for the Swift Smith Timber Sale. Percent of the total corresponding analysis area is in parentheses (only includes DNRC lands).

Old-growth Forest Attribute	Project Area		Medium CEAA	
	Existing	Post-Harvest	Existing	Post-Harvest
Acres of old-growth	501 (15%)	491 (15%)	537 (11%)	527 (11%)
Number of patches >80 acres	2	2	2	2
Number of patches	6	6	8	8
Average patch size (acres)	84	82	67	66
Maximum patch size (acres)	321	321	321	321

Environmental Effects – Old-growth Forests

No-Action Alternative: Direct, Secondary, and Cumulative Effects

No changes to the amounts, quality, or spatial arrangement of old-growth would occur on DNRC lands under this Alternative. Thus, no direct, secondary, or cumulative effects associated with the abundance or fragmentation of old-growth forests would be anticipated as a result of the No-Action Alternative.

Action Alternative: Direct and Secondary Effects

Approximately 91 acres (18%) of existing old-growth would be impacted by the proposed timber sale. Of these acres, 10 acres would be treated with a seed tree treatment and post-harvest these stands would not meet old-growth definitions (*Green et al. 1992*). The remaining 81 acres would be treated with salvage/sanitation cuts but these stands would continue to provide old-growth habitat post-harvest. Habitat quality may decrease in these stands for species that prefer high stand density and coarse-woody debris. Considering the small amount of habitat proposed for removal, fragmentation and impacts to old-growth are anticipated to be minimal. Average patch size would decrease by 2 acres and the large patches >80 acres would be retained. Thus, since 1) the availability of old-growth would decrease by 10 acres (2% of existing old-growth); 2) stand density would decrease on 81 acres of old-growth, which may affect wildlife species that prefer dense old-growth stands (16% of existing old-growth); 3) average patch size would decrease by 2 acres; 4) the abundance of old-growth patches >80 acres would not be impacted; and 5) post-harvest 15% of the Project Area would meet old-growth definitions; minor adverse direct and secondary effects associated with the abundance or fragmentation of old-growth forests would be anticipated as a result of the Action Alternative.

Action Alternative: Cumulative Effects

Approximately 91 acres (10%) of the 868 old-growth acres in the Medium CEAA would be affected by the proposed activities. Approximately 10 acres would be treated with a seed tree treatment and would not be considered old-growth post-harvest considering the low retention of large-diameter trees. The remaining 81 acres would be treated with Salvage/Sanitation cuts that would retain old-growth features although habitat quality may be reduced in these stands for species preferring dense old-growth with high coarse woody debris. Average patch size would decrease by 1 acre so fragmentation would be minimal. All patches >80 acres would be retained. Changes in structural attributes of old-growth would be additive to ongoing forest management activities in the Medium CEAA (*TABLE WI-2*) including impacts of the recent wind event, although impacts of these activities have been accounted for in old-growth availability and patch size analysis. Thus, since: 1) the availability of old-growth would decrease by 10 acres (1% of existing old-growth); 2) stand density would decrease on 81 acres of old-growth, which may affect wildlife species that prefer dense old-growth stands (9% of existing old-growth); 3) average patch size would decrease by 1 acres; 4) the abundance of old-growth patches >80 acres would not change; and 4) post-harvest 11% of the Medium CEAA (DNRC only) would meet old-growth definitions; minor adverse cumulative effects associated with the abundance or fragmentation of old-growth forests would be anticipated as a result of the Action Alternative.

Fine Filter Wildlife Analysis

In the fine-filter analysis, individual species of concern are evaluated. These species include those listed as threatened or endangered under the Endangered Species Act of 1973, species listed as sensitive by DNRC, and animals managed as big game by Montana DFWP. *TABLE WI-5*—provides an analysis of the anticipated effects for each species.

Table WI-5 –Anticipated effects of the Swift Smith Timber Sale on wildlife species.

Species/Habitat	[Y/N] Potential Impacts and Mitigation Measures N = Not Present or No Impact is Likely to Occur Y = Impacts May Occur (Explain Below)
Threatened and Endangered Species	
Grizzly bear (<i>Ursus arctos</i>) Habitat: Recovery areas, security from human activity	[Y] Detailed Analysis Provided Below. The Project Area contains recovery zone and non-recovery occupied habitat associated with the Northern Continental Divide Ecosystem (NCDE) (USFWS 1993, Wittinger 2002).
Canada lynx (<i>Felix lynx</i>) Habitat: Subalpine fir habitat types, dense sapling, old forest, deep snow zone	[Y] Detailed Analysis Provided Below. The Project Area contains approximately 1,885 acres of suitable lynx habitat.
Sensitive Species	
Bald eagle (<i>Haliaeetus leucocephalus</i>) Habitat: Late-successional forest <1 mile from open water	[Y] Bald eagles nest on private property near the outlet of Swift Creek. Most of the harvest units are located outside of the primary use area (>0.5 miles from the nest) and a visual buffer of cottonwoods associated with Swift Creek is present limiting disturbance to the nesting birds. One 15-acre unit is located 0.4 miles from the nest near Brush Creek and timing restrictions would apply from February 1 – July 15 to reduce disturbance to nesting birds during critical periods when chicks are young and vulnerable. Thus, negligible direct, secondary, or cumulative effects to bald eagles would be expected to occur as a result of the Action Alternative. No direct, secondary, or cumulative effects would be anticipated as a result of the No Action Alternative.
Black-backed woodpecker (<i>Picoides arcticus</i>) Habitat: Mature to old burned or beetle-infested forest	[N] No recently (<5 years) burned areas occur within 0.25 miles of the Project Area. Thus, no direct, secondary, or cumulative effects to black-backed woodpeckers would be expected to occur as a result of either alternative.
Coeur d'Alene salamander (<i>Plethodon idahoensis</i>) Habitat: Waterfall spray zones, talus near cascading streams	[N] No moist talus or streamside talus habitat occurs in the Project Area. Thus, no direct, secondary, or cumulative effects to Coeur d'Alene salamanders would be expected to occur as a result of either alternative.
Columbian sharp-tailed grouse (<i>Tympanuchus Phasianellus columbianus</i>) Habitat: Grassland, shrubland, riparian, agriculture	[N] No suitable grassland communities occur in the Project Area. Thus, no direct, secondary, or cumulative effects to Columbian sharp-tailed grouse would be expected to occur as a result of either alternative.
Common loon (<i>Gavia immer</i>) Habitat: Cold mountain lakes, nest in emergent vegetation	[N] Smith Lake is in the Project Area. However, loons have not been documented on the lake and were not observed during field visits in April 2020 (MNHP data, May 13, 2020). Thus, no direct, secondary, or cumulative effects to common

Species/Habitat	[Y/N] Potential Impacts and Mitigation Measures N = Not Present or No Impact is Likely to Occur Y = Impacts May Occur (Explain Below)
	loons would be expected to occur as a result of either alternative.
Fisher <i>(Martes pennanti)</i> Habitat: Dense mature to old forest less than 6,000 feet in elevation and riparian	[Y] Detailed Analysis Provided Below – Approximately 1,278 acres of suitable fisher habitat occur within the Project Area.
Flammulated owl <i>(Otus flammeolus)</i> Habitat: Late-successional ponderosa pine and Douglas-fir forest	[Y] Approximately 35 acres of flammulated owl habitat would be impacted by the proposed salvage. These acres would be salvaged and would retain approximately 6-25 trees per acre post-harvest. Overall these stands would remain suitable for flammulated owl use although use of the area by flammulated owls is unlikely considering that dry forest types preferred by flammulated owls are uncommon in the Stillwater State Forest. To provide potential nest trees at least 2 large snags and 2 large snag recruitment trees per acre (>21 inches dbh) would be retained. Thus, negligible adverse direct, secondary, or cumulative effects to flammulated owls would be expected to occur as a result of the Action Alternative. No direct, secondary, or cumulative effects would be anticipated as a result of the No Action Alternative.
Gray Wolf <i>(Canis lupus)</i> Habitat: Ample big game populations, security from human activities	[Y] Wolves may use habitat near the Project Area. Disturbance associated with timber sales at den and rendezvous locations can adversely affect wolves; however, timing restrictions would apply if den or rendezvous sites are documented (<i>ARM 33.11.430(1)(a)(b)</i>). Thus, negligible adverse direct, secondary, or cumulative effects to wolves would be anticipated as a result of the Action Alternative. No direct, secondary, or cumulative effects would be anticipated as a result of the No Action Alternative.
Harlequin duck <i>(Histrionicus histrionicus)</i> Habitat: White-water streams, boulder and cobble substrates	[Y] Potentially suitable stream habitat occurs along Swift Creek. However, there is no evidence of harlequin ducks breeding in the area (<i>MNHP data, May 13, 2020</i>) and harlequin ducks were not observed during brood surveys (DNRC, unpublished data 2015). Logging would occur adjacent to Swift Creek, and if present nearby harlequin ducks could be displaced. However, considering the infrequency of sightings in the area and lack of evidence of breeding, adverse impacts would be unlikely. Thus, negligible adverse direct, secondary, or cumulative effects to harlequin ducks would be anticipated as a result of the Action Alternative. No direct, secondary, or cumulative effects would be anticipated as a result of the No Action Alternative.

Species/Habitat	[Y/N] Potential Impacts and Mitigation Measures N = Not Present or No Impact is Likely to Occur Y = Impacts May Occur (Explain Below)
Northern bog lemming <i>(Synaptomys borealis)</i> Habitat: Sphagnum meadows, bogs, fens with thick moss mats	[N] No suitable wetlands occur within the Project Area. Thus, no direct, secondary, or cumulative effects to northern bog lemmings would be expected to occur as a result of either alternative.
Peregrine falcon <i>(Falco peregrinus)</i> Habitat: Cliff features near open foraging areas and/or wetlands	[N] Suitable nesting cliffs were not observed near the Project Area and peregrine eyries have not been reported in the area (<i>MNHP data, May 13, 2020</i>). Thus, no direct, secondary, or cumulative effects to peregrine falcons would be anticipated as a result of either alternative.
Pileated woodpecker <i>(Dryocopus pileatus)</i> Habitat: Late-successional ponderosa pine and larch-fir forest	[Y] Detailed Analysis Provided Below – Approximately 1,215 acres of pileated woodpecker habitat occur in the Project Area.
Townsend's big-eared bat <i>(Plecotus townsendii)</i> Habitat: Caves, caverns, old mines	[N] No suitable caves or mine tunnels are known to occur in the Project Area and observations have not been reported in the area (<i>MNHP data, May 13, 2020</i>). Thus, no direct, secondary or cumulative effects to Townsend's big-eared bats would be expected to occur as a result of either alternative.
Wolverine <i>(Gulo gulo)</i> Habitat: Alpine tundra and high-elevation boreal forests that maintain deep persistent snow into late spring	[Y] No high-elevation habitat with persistent spring snowpack occurs in the Project Area per USFS data (<i>Copeland et al. 2010</i>). However, wolverine sightings have been reported in the Stillwater State Forest and, wolverines may travel through the area at any time (<i>MNHP data, May 13, 2020</i>). Given the large home range area wolverines occupy (average 150 plus square miles) and the long distances wolverines typically cover during their movements, the proposed activities are not expected to measurably affect use of the area by wolverines. Thus, negligible adverse direct, indirect, or cumulative effects to wolverines would be expected to occur as a result of the Action Alternative. No direct, secondary, or cumulative effects would be anticipated as a result of the No Action Alternative.
Big Game Species	
Elk	[Y] Detailed Analysis Provided Below – The Project Area is considered elk, white-tailed deer, and mule deer winter range by DFWP (2008).
Whitetail	
Mule Deer	

Threatened and Endangered Species

CANADA LYNX

Issue

The proposed activities could reduce landscape connectivity and the availability of suitable Canada lynx habitat, reducing the capacity of the area to support Canada lynx.

Introduction

Canada lynx are medium-size cats that prey primarily on snowshoe hares and they are federally listed as a threatened species (*Ruediger et al. 2000*). Lynx foraging habitat in western Montana consists of a mosaic of young coniferous stands and mature forested stands with high levels of canopy cover, which provide snowshoe hare habitat (*Squires et al. 2010, Squires et al. 2013*). Retaining habitat connectivity of both summer and winter lynx foraging habitat is important since winter corridors may provide local connectivity while summer corridors are more likely to facilitate long-distance dispersal (*Squires et al. 2013*). Forest management considerations for lynx include providing a mosaic of well-connected young and mature lynx habitat patches containing high horizontal cover.

Analysis Area

The analysis area for direct and secondary effects is the Project Area and the analysis area for cumulative effects is the 30,881-acre Large CEAA as described in *TABLE WI-1* and depicted in *FIGURE WI-1*. The Large CEAA approximates the size of a lynx home range and is defined according to geographic features (e.g., ridgelines), which are likely to influence movements of Canada lynx near the Project Area providing a reasonable analysis area for Canada lynx that could be influenced by project-related activities.

Measurement Criteria

Factors considered in the analysis include: 1) the level of harvesting, 2) the availability of suitable lynx habitat classes, and 3) landscape connectivity. Lynx habitat was subdivided into the following lynx habitat classes: 1) winter foraging, 2) summer foraging, 3) other suitable, and 4) temporary non-habitat. All habitat classes were identified according to DNRC's lynx habitat mapping protocols (*USFWS and DNRC 2010*). Suitable habitat is the sum of winter foraging, summer, foraging, and other suitable habitat. Other suitable lynx habitat is defined as habitat that has the potential to provide connectivity and lower quality foraging habitat but does not contain the necessary attributes to be classified as winter or summer foraging habitat classes. The temporary non-habitat category consists of forested stands that are not expected to be used by lynx until suitable horizontal cover develops. On non-DNRC lands, stands with $\geq 40\%$ canopy cover provided by trees > 9 inches dbh on average were considered to provide potential lynx habitat. This habitat definition provides a conservative estimate of suitable lynx because it excludes young, dense stands that can also serve as suitable habitat for lynx but are difficult to quantify using aerial photographs. Known impacts of the windstorm on lynx habitat were accounted for in the Project Area.

Existing Environment

The Project Area contains 1,885 acres of suitable lynx habitat (57% of the Project Area; *TABLE WI-6*). These stands are primarily western larch and Douglas-fir stands with grand fir in the understory. The remaining acres in the Project Area consists of 1,095 acres of habitat that are suitable forest types, but do not contain sufficient structure to support lynx and 330 acres of dry forest types that are not preferred by lynx. Suitable habitat is well connected east of Swift Creek, but less connected west of Swift Creek due to recent timber sale units that do not have many conifer seedlings in the understory yet.

The Large CEAA contains 20,176 acres of suitable lynx habitat (65% of the Large CEAA; *TABLE WI-6*) including 3,448 acres of stands on other ownerships that may provide suitable habitat. The Large CEAA contains cool moist forest types with grand fir and subalpine fir components, which is favorable for lynx. Suitable habitat is distributed throughout the CEAA and is well-connected although the Lazy Creek area contains large patches of unsuitable habitat. The remaining 10,705 acres in the Large CEAA consist of 6,040 acres of stands on other ownerships that contain <40% mature canopy cover and may not have sufficient conifer cover, 3,294 acres of stands that were impacted by timber harvest on DNRC-lands and have low conifer cover, and 1,371 acres of stands that are not suitable forest types or are lakes or meadows.

Table WI-6– Estimated acreage of lynx habitat that would remain in the Project Area and Large CEAA post-harvest. Values in parentheses refer to the percentage of the total potential lynx habitat that each lynx habitat class represents.

Lynx Habitat Category	Project Area		Large CEAA	
	Existing	Post-Harvest	Existing	Post-Harvest
Other Suitable (DNRC)	126 (4%)	131 (4%)	4,137 (18%)	4,142 (18%)
Summer Foraging (DNRC)	21 (1%)	21 (1%)	3,613 (15%)	3,613 (15%)
Winter Foraging (DNRC)	1,738 (58%)	1,682 (57%)	8,978 (38%)	8,922 (38%)
Temporary Non-habitat (DNRC)	1,094 (37%)	1,146 (38%)	3,294 (14%)	3,339 (14%)
Additional Potential Habitat ^a – non-DNRC Ownership	0 (0%)	0 (0%)	3,448 (15%)	3,445 (15%)
Grand Total - Suitable Lynx Habitat ^b (All Ownerships)	1,885 (63%)	1,840 (62%)	20,176 (86%)	20,131 (86%)

^aTotal potential lynx habitat describes all areas that contain appropriate habitat types for lynx (i.e., sum of summer forage, winter forage, other suitable, and temporary non-suitable lynx habitat classes).

^bTotal suitable lynx habitat describes all lynx habitat categories that contain structural attributes necessary for lynx use (i.e., sum of summer forage, winter forage, other suitable lynx habitat classes, potential habitat on non-DNRC lands).

Environmental Effects

No Action Alternative: Direct, Secondary, and Cumulative Effects on Canada Lynx

None of the proposed forest management activities would occur on DNRC lands. In the short-term, lynx habitat availability and connectivity would not change. In the long-term and in the absence of natural disturbance, winter foraging habitat availability would increase due to natural forest succession while summer foraging habitat availability would decrease due to the lack of young regenerating stands. Connectivity may also increase in the long-term due to increasing canopy cover over time.

Action Alternative: Direct and Secondary Effects on Canada Lynx

The proposed activities would affect 204 acres (11%) of the 1,885 acres of suitable lynx habitat available in the Project Area. Most of these acres would remain suitable lynx, but 48 acres would be treated with salvage/sanitation cuts that retain <40% canopy cover of conifers and these areas would become temporarily unsuitable for lynx use (*TABLE WI-6*). These stands may be suitable for lynx use again in 10-15 years after young trees have grown to a sufficient height. To ensure that forest structural attributes preferred by snowshoe hares remain following harvest, dense patches of advanced regeneration would be retained in lynx winter forage habitat. Additionally, coarse woody debris would be retained (*ARM 36.11.414*) with an emphasis on logs ≥15 inches diameter and 3-acres of heavy blowdown would be deferred from harvest to provide

potential denning habitat. Lynx habitat would remain well connected considering the small amount of habitat proposed for removal and multiple corridors would remain including corridors along Swift, Lazy, and Bear creeks. If present near the Project Area, lynx could be temporarily displaced by forest management activities for approximately 2 years. Thus, since: 1) lynx suitable habitat availability would be reduced by 48 acres (3%) of existing habitat in the Project Area; 2) patches of shade-tolerant trees, large coarse-woody debris, and 3 acres of blowdown would be retained; and 3) landscape connectivity would be minimally affected and multiple corridors would be retained; minor adverse direct and secondary effects to Canada lynx associated with landscape connectivity and availability of suitable habitat would be anticipated as a result of the Action Alternative.

Action Alternative: Cumulative Effects on Canada Lynx

The proposed activities would affect 204 acres (<1%) of the 23,470 acres of potentially suitable lynx habitat available in the Large CEAA. Of these acres 48 would retain insufficient conifer canopy cover to provide suitable lynx habitat post-harvest. The remaining acres would be continue providing habitat, although tree density and habitat quality would decrease. Patches of shade tolerant trees, large coarse woody debris, and 3-acres of blowdown would be retained to provide important lynx and snowshoe hare habitat components. Connectivity between Swift Creek and the Whitefish Divide would be minimally impacted considering the small amount of habitat proposed for removal. Changes to lynx habitat availability and connectivity would be additive to past, proposed, and ongoing projects (see *TABLE WI-2*). However, the impacts of past activities and the impact of the recent wind event have been accounted for in analysis of habitat structure. Lynx could be temporarily displaced by forest management activities associated with the Swift Smith Timber Sale and other ongoing activities for approximately 2 years. Thus, since: 1) lynx suitable habitat availability would be reduced by 48 acres (<1% of potentially suitable lynx habitat in the Large CEAA); 2) patches of shade-tolerant trees, large coarse woody debris, and 3-acres of blowdown would be retained; and 3) landscape connectivity would be minimally impacted and would remain well-connected overall; minor adverse cumulative effects to Canada lynx associated with landscape connectivity and suitable habitat type availability would be anticipated as a result of the Action Alternative.

GRIZZLY BEAR

Issue

The proposed activities could affect grizzly bear cover, affect important habitat, and increase human access, which could adversely affect bears by displacing them from important habitat, and/or by increasing risk of human-caused bear mortality.

Introduction

Grizzly bears are opportunistic omnivores that inhabit a variety of habitats in Montana. Preferred grizzly bear habitat includes avalanche chutes, fire-mediated shrub fields, and riparian areas, all of which provide seasonal food sources (*McLellan and Hovey 2001*). Grizzly bears are federally listed as a threatened species and primary threats are related to human-bear conflicts and long-term habitat loss associated with human development (*Mace and Waller 1997*). Forest management considerations for grizzly bears include minimizing potential for conflicts with humans, minimizing adverse effects to vegetation and cover, minimizing access and the construction of new roads, and reducing disturbance levels during the non-denning season, especially in the spring and fall when grizzly bears have important nutritional demands.

Analysis Area

The analysis area for direct and indirect effects is the Project Area and the analysis area for cumulative effects is the 30,881-acre Large CEAA as described in *TABLE WI-1* and depicted in *FIGURE WI-1*. The Large CEAA

is defined by geographic features and approximates the home range of a female grizzly bear in northwest Montana.

Measurement Criteria

Factors considered in the analysis included: 1) the degree of harvesting, 2) the availability of visual screening cover, 3) risk of displacement from important grizzly bear habitat including spring habitat and riparian habitat, 4) open and restricted road densities, and 5) impacts on security zones. Forest cover capable of hiding 90% of a grizzly bear from 200 feet was considered to provide visual screening cover. Visual screening was estimated by evaluating forest stand size class and the total crown density of all trees in the stand using GIS and SLI data. Seedlings/sapling stands were included in estimates of visual screening cover if they were >4 feet tall and contained ≥ 350 trees/acre. Known impacts of the windstorm on hiding cover were accounted for in the Project Area. On non-DNRC lands the acreage of stands with $\geq 40\%$ canopy cover provided by trees >9 inches dbh on average was used to estimate the availability of visual screening cover. Open road densities were calculated using the simple linear calculation method (road length miles divided by area in square miles). Security zones are quiet areas where motorized use is prohibited during the non-denning period and no permanent road construction is permitted.

Existing Environment

The Project Area is non-recovery occupied and recovery zone habitat associated with the NCDE (*USFWS 1993, Wittinger 2002*) and grizzly bears are frequently observed in and around the Project Area. Approximately 1,802 acres (54%) in the Project Area provide visual screening for grizzly bears. Preferred bear habitat is present in the Project Area and includes low-elevation wetlands that provide good spring foraging habitat, riparian habitat associated with streams including Swift and Lazy creeks, and areas with berry foraging opportunities in the summer and fall. Security zone habitat is not present in the Project Area. Open road density is low at 0.6 miles per square mile, but may displace bears or impact temporal habitat use near these roads. Human activity including residences south of the Project Area, hiking trails, and a disk golf course may also cause displacement.

The Large CEAA is non-recovery occupied and recovery zone habitat associated with the NCDE. At least 17,760 acres (58%) in the Large CEAA are considered visual screening including 14,312 acres of visual screening on DNRC lands and an additional 3,448 acres on other ownerships. The CEAA includes 852 acres of security zone habitat (3% of CEAA) located in the northeastern portion of the analysis area near the Whitefish Range Divide. The CEAA contains many preferred bear habitat types including huckleberry patches, riparian areas, and avalanche chutes. Open road density is low at 0.9 miles/square mile.

Environmental Effects- Grizzly Bears

No Action Alternative: Direct, Secondary, and Cumulative Effects on Grizzly Bears

None of the proposed forest management activities would occur. In the short-term, no changes to grizzly bear habitat would be expected. Visual screening, risk of displacement, and open and restricted road density would not be affected. However, in the long-term and in the absence of natural disturbance, visual screening may increase as stands age increasing the availability of visual screening. Thus, no adverse direct, secondary or additional cumulative effects associated with grizzly bear displacement or human-caused bear mortality risk would be anticipated as a result of the No-Action Alternative.

Action Alternative: Direct and Secondary Effects on Grizzly Bears

Timber harvest would affect 219 acres (12%) of the 1,802 acres of visual screening available in the Project Area. Approximately 68 of these acres would not provide hiding cover for 10-20 years, although small patches

of trees and shrubs would be retained. Open stands created by logging would likely have a greater availability of forage plants post-harvest, particularly huckleberries. However, logging would increase sight distances within proposed harvest units. To facilitate bear travel and use in these stands, all harvest units are designed so that no location is >600 feet to hiding cover. Some preferred bear habitat would be impacted, including 9 acres of riparian habitat associated with small streams; however, only blowdown would be removed from these areas and impacts to habitat structure would be minimal. Security habitat would not be impacted. Overall accessibility of the area would increase following the construction of 0.8 miles of roads and the reclamation of 0.3 miles of road (both sections are or would be closed to public use). Traffic would increase on 12 miles of road in the Project Area including 2 miles of temporary roads which would be closed post-harvest. If present nearby, grizzly bears could be displaced from preferred habitat by forest management activities for approximately 2 years. However, spring timing restrictions would be enforced from April 1 – June 15 in all units except for those in Sections 31 and 32 to provide security for grizzly bears in the spring. Thus, since: 1) visual screening would be removed from 68 acres (4%) of existing visual screening; 2) motorized disturbance would increase on 12 miles of road during hauling and harvesting; 3) roads would increase by 0.5 miles following new road construction and reclamation, and 4) security zone habitat would not be impacted; minor adverse direct or indirect effects associated with grizzly bear displacement or human-caused bear mortality risk would be anticipated as a result of the Action Alternative.

Action Alternative: Cumulative Effects on Grizzly Bears

The proposed activities would affect 219 acres (1%) of the 17,760 acres of visual screening available in the Large CEAA. Logging would increase sight distances within proposed harvest units and post-harvest 68 of these acres would not provide visual screening for 10-20 years. However, small patches of shrubs and conifers would be retained where feasible and units are designed so that no point in a harvest unit is >600 feet to hiding cover. Blowdown would be removed from 9 acres of riparian habitat, but green trees would not be removed and impacts to habitat quality would be minimal. Roads would increase by 0.5 miles following construction of 0.8 miles of road and reclamation of 0.3 miles of road. Traffic would increase on 21 miles of road in the CEAA including 2 miles of temporary roads which would be closed post-harvest. Impacts to bear habitat would be additive to past, proposed, and ongoing projects (see *TABLE WI-2*). However, the impacts of past activities and the recent blowdown have been accounted for in analyses of stand structure. Grizzly bears could be temporarily displaced by forest management activities associated with the Swift Smith Timber Sale and other ongoing activities for approximately 2 years. However, timing restrictions would apply from April 1 – June 15 in all harvest units except for units in Sections 31 and 32. Thus, since: 1) visual screening would be removed from 68 acres (<1% of existing screening); 2) motorized disturbance would increase on 21 miles of road during hauling and harvesting; 3) roads would increase by 0.5 miles following new road construction and road reclamation, and 4) security zone habitat would not be impacted; minor adverse cumulative effects associated with grizzly bear displacement or human-caused bear mortality risk would be anticipated as a result of the Action Alternative.

Sensitive Species

FISHERS

Issue

The proposed activities could reduce the availability and connectivity of suitable fisher habitat and increase human access, which could reduce fisher habitat suitability and increase trapping mortality.

Introduction

Rocky Mountain fishers prefer mesic late-successional forests with complex vertical and horizontal structure, large-diameter trees, and relatively dense canopies (*Raley et al. 2012, Schwartz et al. 2013*). Fishers generally avoid large openings, clearcuts, and ponderosa pine and lodgepole pine stands (*Schwartz et al. 2013*). Fishers prey upon snowshoe hares, ungulate carrion, porcupines, birds, and small mammals as well as seasonally available fruits and berries. Resting and denning sites are found in cavities of live trees and snags, downed logs, brush piles, mistletoe brooms, squirrel and raptor nests, and holes in the ground. Forest-management considerations for fishers involve providing upland and riparian resting and denning habitat, maintaining a network of travel corridors, and reducing trapping risk associated with motorized access.

Analysis Area

The analysis area for direct and secondary effects is the Project Area and the analysis area for cumulative effects is the 10,395-acre Medium CEAA as described in *TABLE WI-1* and depicted in *FIGURE WI-1*. The Medium CEAA is centered on the Project Area and is defined according to geographic features and could support the home range of at least one fisher, providing a reasonable analysis area for fishers that could be influenced by project-related activities.

Measurement Criteria

Factors considered in the analysis include: 1) the degree of harvesting, 2) availability and structure of preferred fisher habitats (upland, riparian), 3) landscape connectivity, and 4) trapping risk. Fisher habitat classifications considered in the analysis include: 1) upland fisher habitat, and 2) riparian fisher habitat, which are defined according to proximity of forest stands to streams. Riparian fisher habitat is located within 100 feet of Class 1 streams or within 50 feet of Class 2 streams (*ARM 36.11.440(b)*). The remaining fisher habitat is considered upland fisher habitat. Habitat structure considered appropriate for fisher use includes stands with 40-100% total stocking density with appropriate mesic cover types. Potential fisher habitat (riparian, upland) on other ownerships was estimated by identifying mature forested habitat ($\geq 40\%$ cover, trees > 9 inches dbh average) below 6,000 feet elevation in proximity to perennial and intermittent streams. Known impacts of the windstorm on fisher habitat were accounted for in the Project Area.

Existing Environment

Fisher habitat is present in the Project Area (*TABLE WI-7*). These stands consist of cool, moist Douglas-fir and western larch forest types and are interspersed by subalpine fir stands and dry forest types on south-facing slopes (946 acres), stands that do not contain sufficient canopy cover including stands logged under previous timber sales (968 acres), and meadows or lakes (118 acres). Connectivity is highest in the southern portion of the Project Area where forest types preferred by fishers are prevalent and there is a greater proportion of mature stands.

In the Medium CEAA, potential fisher habitat is located primarily between Lazy and Brush creeks and in the western portion of the CEAA, which is less impacted by timber harvest (*TABLE WI-7*). Approximately 1,273 acres (12%) in the Medium CEAA (DNRC-only) are not forest types preferred by fishers such as subalpine fir and the remaining 5,263 acres (51%) do not contain sufficient structure or are non-forested areas including lakes and avalanche chutes. Overall, the connectivity of fisher habitat near the Project Area is moderate considering the availability of connected riparian habitat. There are no historical records of fishers using the CEAA (*MNHP data, May 13, 2020*) and fisher use of the CEAA may be limited by the deep unconsolidated snowpack that is common in the area (*Raine 1983*).

Table WI-7 –Fisher Habitat in the Project Area and Medium CEAA and anticipated effects of the Swift Smith Timber Sale. Habitat estimates include potential habitat on non-DNRC ownership.

Fisher Habitat Attribute	Project Area		Medium CEEA	
	Existing	Post-Harvest	Existing	Post-Harvest
Fisher Habitat (% of analysis area)	1,278 (39%)	1,270 (38%)	3,859 (37%)	3,851 (37%)
Fisher Habitat Affected (% of available habitat)	132 (10%)		132 (3%)	

Environmental Effects

No Action Alternative: Direct, Secondary, and Cumulative Effects on Fishers

None of the proposed forest management activities would occur on DNRC lands. The level of motorized access would not change and no additional risk associated with trapping would be expected. In the short term, no changes to fisher habitat availability or connectivity would occur. In the long-term and in the absence of natural disturbance, fisher habitat suitability and connectivity may increase as stands age, the availability of large-diameter trees increases, and mature canopy cover increases.

Action Alternative: Direct and Secondary Effects on Fishers

The proposed activities would affect fisher habitat (*TABLE WI-7*). Approximately 124 acres would continue providing suitable fisher habitat, but 8 acres would be treated with a heavier salvage and would not provide suitable fisher habitat post-harvest. The Action Alternative includes removing blowdown from 5 acres of riparian fisher habitat; however, green trees would not be cut and habitat suitability would not change. Impacts to connectivity would be negligible considering that only 8 acres of fisher habitat would be removed. The availability of important habitat characteristics (i.e., snags, coarse woody debris) could be reduced by harvest activities; although retention of dead material and live snag recruitment trees would be required (*ARM 36.11.411, ARM 26.11.414*). Trapping risk would increase slightly considering that roads would increase by 0.5 miles following proposed road construction and reclamation. If present near the Project Area, fishers could be displaced by forest management activities for approximately 2 years. Thus, since: 1) habitat availability would be reduced by 8 acres (<1%), but snags and coarse woody debris would be retained; 2) blowdown would be removed from approximately 5 acres of riparian habitat, but habitat suitability would not be impacted; 3) impacts to habitat connectivity would be negligible; and 5) trapping risk increase slightly; minor adverse direct and secondary effects to fisher associated with habitat suitability and trapping risk would be anticipated as a result of the Action Alternative.

Action Alternative: Cumulative Effects on Fishers

Fisher habitat would be affected by the proposed activities (*TABLE WI-7*). Approximately 132 acres of fisher habitat would be impacted and 8 of these acres would not be suitable for fisher use post-harvest due to low tree retention. Blowdown would be removed from 5 acres of fisher riparian habitat, but the suitability of these stands would not change considering that green trees would not be impacted. The availability of important habitat characteristics (i.e., snags, coarse woody debris) would be reduced by harvest activities; although retention of dead material and live snag recruitment trees would be required (*ARM 36.11.411, ARM 26.11.414*). Impacts to connectivity would be minimal considering the small amount of habitat proposed for removal. Trapping risk would not increase somewhat considering that roads would increase by 0.5 miles following road construction and reclamation. Impacts to fisher habitat would be additive to past, proposed, and ongoing projects (see *TABLE WI-2*). However, the impacts of past activities and the wind event have been

accounted for in analyses of stand structure. Fishers could be temporarily displaced by forest management activities associated with the proposed Swift Smith Timber Sale and other ongoing projects for approximately 2 years. Thus, since: 1) habitat availability would be reduced by 8 acres (<1%), but snags and coarse woody debris would be retained; 2) blowdown would be removed 5 acres of riparian fisher habitat, but suitability would not be impacted; 3) impacts to habitat connectivity would be negligible; and 4) trapping risk would increase slightly; minor adverse cumulative effects to fisher associated with habitat suitability and trapping risk would be anticipated as a result of the Action Alternative.

PILEATED WOODPECKERS

Issue

The proposed activities could reduce tree density and alter the structure of mature forest stands, which could reduce habitat suitability for pileated woodpeckers.

Introduction

Pileated woodpeckers play an important role in mature forests by excavating large cavities that are often used in subsequent years by a variety of wildlife species for nesting and roosting. Pileated woodpeckers require mature forest stands with large-diameter (≥ 20 -inch dbh) dead or defective trees for nesting and foraging and the density of pileated woodpeckers is positively correlated with the amount of dead and dying wood in a stand (*McClelland 1979*). Timber harvest may remove large-diameter trees necessary for nesting and fragmentation can make birds more vulnerable to predation as they travel between habitat patches (*Bull and Jackson 2011*). Forest management considerations for pileated woodpeckers include retaining dense patches of old and mature coniferous forest with abundant large snags and coarse-woody debris for foraging, roosting, and nesting.

Analysis Area

The analysis area for direct and secondary effects is the Project Area and the analysis area for cumulative effects is the 10,395-acre Medium CEAA is defined according to geographic features as described in *TABLE WI-1* and depicted in *FIGURE WI-1*. This scale provides a sufficient area to support multiple pairs of pileated woodpeckers (*Bull and Jackson 2011*).

Measurement Criteria

Factors considered in the analysis include: 1) the degree of harvesting and 2) the structure of pileated woodpecker preferred habitat types. On DNRC-managed lands, sawtimber stands ≥ 100 years old within preferred pileated cover types (*ARM 36.11.403(58)*) with $\geq 40\%$ canopy closure were considered potential pileated woodpecker habitat. On non-DNRC lands, mature forest stands ($\geq 40\%$ canopy cover, > 9 inches dbh average) below 6,000 feet elevation were considered potential pileated woodpecker habitat. Known impacts of the windstorm on pileated woodpecker habitat were accounted for in the Project Area.

Existing Environment

The Project Area contains 1,215 acres (37% of Project Area) of suitable pileated woodpecker habitat. This habitat is composed of Douglas-fir and western larch stands. The remaining acres consist of 772 acres of stands that are not preferred by pileated woodpeckers like subalpine fir, 1,205 acres of stands that contain poor stocking densities or are < 100 years old, and 118 acres of meadows and wetlands. Snags are available for nesting and retention of snags through the large wind events of winter/spring 2020 was high. However, snags are typically not available near open roads considering that they are frequently removed for firewood.

The Medium CEAA contains 3,813 acres (37% of Medium CEAA) of potential pileated woodpecker habitat scattered throughout the CEAA including 1,423 acres on DNRC lands and 2,390 acres on other ownerships. The remaining stands consist of 1,492 acres forest stands on DNRC lands that are typically not used by pileated woodpeckers and 5,090 acres of stands with low stocking density of mature trees or open areas like meadows. The largest habitat patches are between Anchor and Bear creeks and between Hellroaring and Smith creeks. Open road density in the Medium CEAA is 0.4 miles/square mile, limiting firewood cutting in the area. In general snags are available for nesting and foraging in portions of the CEAA are far from open roads.

Environmental Effects

No Action Alternative: Direct, Secondary, and Cumulative Effects on Pileated Woodpeckers

None of the proposed forest management activities would occur on DNRC lands. In the short-term, no changes to pileated woodpecker habitat would be anticipated. However, in the long-term, and in the absence of natural disturbance, pileated woodpecker habitat availability and connectivity may increase due to natural succession and aging of timber stands.

Action Alternative: Direct and Secondary Effects on Pileated Woodpeckers

The proposed activities would occur in 128 acres (11%) of the 1,215 acres of pileated woodpecker habitat available in the Project Area. Of these acres, 66 acres would be treated with salvage/sanitation cuts that would retain <25% mature canopy cover and would not provide suitable habitat post-harvest. The remaining 62 acres would be treated with a light salvage/sanitation cut and would continue providing suitable habitat. However, blowdown would be removed from all units, reducing foraging opportunities and habitat quality. Snags would be removed by the proposed harvest, but at least 2 large snags and 2 large snag recruitment trees per acre (>21 inches dbh) would be retained and snags cut for safety reasons would be left in the harvest units (*ARM 36.11.411*). Disturbance associated with harvesting could adversely affect pileated woodpeckers for approximately 2 years, should they be present in the Project Area. Thus, since: 1) forest structural changes would occur, but mitigation would include retention of snags and coarse woody debris (*ARM 36.11.411*, *ARM 36.11.414*); and 2) harvesting would reduce suitable habitat availability by 66 acres (5%); minor adverse direct and secondary effects to pileated woodpecker habitat suitability in the Project Area would be anticipated as a result of the Action Alternative.

Action Alternative: Cumulative Effects on Pileated Woodpeckers

The proposed activities would occur in 128 acres (3%) of the 3,813 acres of potential pileated woodpecker habitat in the Medium CEAA. Approximately 66 of these acres would retain <40% mature canopy cover and would not provide suitable habitat post-harvest, while the remaining 62 acres would continue providing suitable habitat. Snags would be removed by the proposed harvest, but at least 2 large snags and 2 large snag recruitment trees per acre (>21 inches dbh) would be retained (*ARM 36.11.411*). Changes in pileated woodpecker habitat suitability would be additive to proposed and ongoing activities occurring in the Medium CEAA; however, the impacts of past activities and the recent wind event have been accounted for in analyses of stand structure (see TABLE WI-2). Disturbance associated with the Swift Smith Timber Sale and other ongoing activities could adversely affect pileated woodpeckers near the Project Area for up to 2 years. Thus,

since: 1) structural changes would occur, but mitigations would include retention of snags and coarse woody debris; and 2) harvesting would reduce pileated woodpecker suitable habitat availability by 66 acres (2%) within the Medium CEAA; minor adverse cumulative effects to pileated woodpecker habitat suitability would be anticipated as a result of the Action Alternative.

BIG GAME

ELK, WHITE-TAILED DEER, AND MULE DEER WINTER RANGE

Issue

The proposed activities could reduce cover, which could reduce the quality of big game winter range habitat.

Introduction

Elk, mule deer, and white-tailed deer require areas with adequate amounts of cover and forage at lower elevations during winter. Effective big game winter range contains ample mid-story and overstory, which can ameliorate severe winter conditions by reducing wind velocity and providing snow intercept, enabling big game to move across the landscape, and by improving access to forage with less energy expenditure. Forest management considerations for big game include providing adequate hiding cover and ample overstory, which lessen the effects of harsh winter weather conditions.

Analysis Area

The analysis area for direct and indirect effects is the Project Area and the analysis area for cumulative effects is the 10,395-acre Medium CEAA as described in *TABLE WI-1* and depicted in *FIGURE WI-1*. The Medium CEAA is defined according to geographic features like ridgelines which provides a reasonable analysis area for local animals that could be influenced by project-related activities.

Measurement Criteria

Factors considered in the analysis include: 1) the degree of timber harvesting and 2) the availability and structure of big game winter range. Forested habitat ($\geq 40\%$ canopy cover, >9 -inch dbh average) was considered capable of providing minimal conditions capable of providing thermal cover for big game. Known impacts of the windstorm on thermal cover were accounted for in the Project Area.

Existing Environment

Most of the Project Area provides winter range for wintering white-tailed deer, mule deer, and elk and the area contains favorable characteristics for winter range including low elevations (3,000-6,500 feet), west facing slopes, and desirable forage plants such as Oregon grape (*DFWP 2008*; 99% of Project Area is winter range). The Project Area is located at the north end of a large winter range extending south into the Flathead Valley. Thermal cover is composed primarily of Douglas-fir with the largest patches located adjacent to Swift Creek and between Anchor and King creeks (*FIGURE WI-2*, *TABLE WI-8*).

The Medium CEAA also contains white-tailed deer, mule deer, and elk winter range (66%, 65%, 76% of MCEAA is considered winter range, respectively; *DFWP 2008*). The CEAA may not be used frequently by deer and elk considering that it is located on the northern edge of the winter range where snow accumulation is greater. However, big game may still use the area when snow conditions are favorable. Mature forested

habitat ($\geq 40\%$ canopy cover, >9 -inch dbh average) is present in the Medium CEEA and provides thermal protection for big game (*TABLE WI-8*). The largest patches of low-elevation thermal cover are near Swift Creek. Residential development around Whitefish Lake may reduce the quality of big game winter range and may cause displacement (*Vore 2012*). Additional displacement may be caused by snowmobiling activity in the winter.

Table WI-8 – Anticipated effects of the Swift Smith Timber Sale on thermal cover in the Project Area and Medium CEEA. Values in parentheses refer to the percentage of thermal cover present in winter range as identified by DFWP (2008) for each species.

Species	Project Area		Medium CEEA	
	Existing	Post-Harvest	Existing	Post-Harvest
White-tailed deer	1,799 (55%)	1,746 (53%)	3,190 (46%)	3,137 (45%)
Mule deer	1,799 (55%)	1,746 (53%)	3,157 (47%)	3,104 (46%)
Elk	1,799 (55%)	1,746 (53%)	3,682 (47%)	3,629 (46%)

Environmental Effects

No Action Alternative: Direct, Secondary, and Cumulative Effects on Big Game

None of the proposed forest management activities would occur. No changes in disturbance levels would occur. In the short term, no change in the availability of thermal cover would occur. In the long term and in the absence of natural disturbance, thermal cover may increase as stands age and canopy cover increases.

Action Alternative: Direct and Secondary Effects on Big Game

The proposed activities would affect 180 (10%) of the 1,799 acres of thermal cover available in the Project Area. Approximately 53 of these acres would be treated with a salvage/sanitation cut reducing mature canopy cover to $<25\%$ limiting the capacity of these acres to provide snow intercept and reduce wind velocity. The remaining 128 acres would be treated with a light salvage/sanitation cut that would focus on removal of blowdown and these stands would continue providing thermal cover, albeit at a reduced density and potentially habitat quality. Considering that canopy cover would be reduced below 70% in most of these harvest units, white-tailed deer would likely not use them when snow accumulation is high. However, elk and mule deer may continue using these areas if snow conditions and temperatures are favorable. Overall thermal cover would remain well-connected with the greatest impacts occurring in the King and Bear creek areas. Winter logging may occur, but would not be required and wintering animals could be displaced for 1 winter by the proposed activities. Thus, since: 1) canopy cover would be reduced on 128 acres (7% of existing thermal cover), 2) thermal cover would be removed on 53 acres (3% of existing thermal cover), 3) displacement of big game would be temporary (1 winter), and 4) connectivity would be maintained, minor adverse direct and indirect effects to big game winter range quality and wintering animals would be anticipated as a result of the Action Alternative.

Action Alternative: Cumulative Effects on Big Game

The proposed harvest would reduce canopy cover in 180 (5% of elk thermal cover, 6% of deer thermal cover) in the Medium CEAA. Salvage/sanitation cuts proposed for these acres would remove thermal cover in 53 acres, but adequate cover would be retained in 127 acres where lighter cuts or salvage of blowdown would occur. Corridors would be retained facilitating travel between patches of thermal cover along Swift Creek and between Swift Creek and the Whitefish Range Divide. Changes in thermal cover would be additive to proposed and ongoing activities occurring in the Medium CEAA; however, the impacts of past activities and the recent wind event have been accounted for in analyses of stand structure (see TABLE WI-2). Winter logging may occur, but would not be required and wintering animals could be displaced for 1 winter by the proposed activities in addition to any other ongoing activities. Thus, since: 1) canopy cover would be reduced on 127 acres (3% and 4% of elk and deer thermal cover, respectively); 2) thermal cover would be removed on 53 acres (2% and 3% of elk and deer thermal cover, respectively); 3) displacement of big game would additive to other sources of disturbance, but would occur for a short period; and 4) connectivity would be retained; minor adverse cumulative effects to big game winter range quality and wintering animals would be anticipated as a result of the Action Alternative.

Wildlife Mitigations

- If a threatened or endangered species is encountered, consult a DNRC biologist immediately. Similarly, if undocumented nesting raptors or wolf dens are encountered within ½ mile of the Project Area contact a DNRC biologist.
- Prohibit contractors and purchasers conducting contract operations from carrying firearms while on duty as per *ARM 36.11.444(2)* and *GB-PR2 (USFWS and DNRC 2010)*.
- Contractors will adhere to food storage and sanitation requirements as described in the timber sale contract. Ensure that all attractants such as food, garbage, and petroleum products are stored in a bear-resistant manner.
- Restrict public access on restricted roads that are opened for harvesting activities. Effectively close all restricted roads following harvest completion.
- Prohibit motorized activities including commercial forest management from April 1-June 15 in EA Units 16 and 19-40 to provide seasonal security for grizzly bears as per *GB-NR3 (USFWS and DNRC 2010)*. Commercial forest management is allowed within 100-feet of open roads.
- Prohibit motorized activities from February 1 – July 15 in EA Unit 4 to reduce disturbance to nesting bald eagles.
- Retain visual screening along open roads to prevent human-wildlife conflict and increase security for bears and big game as per *GB-NR4 (USFWS and DNRC 2010)*.
- Retain patches of advanced regeneration of shade-tolerant trees as per *LY-HB4* in EA Units 3-5, 7-19, 25, 28, 30, 31, 34, and 35 (*USFWS and DNRC 2010*).
- Retain 1% of heavy blowdown (3 acres) to provide denning habitat for lynx as per *LY-HB2(3) (USFWS and DNRC 2010)*.

- Retain at least 2 snags and 2 snag recruits per acre that are ≥ 21 inches diameter or the next largest available size class, favoring western larch and Douglas-fir for retention. Large downed logs may be substituted if standing trees are not available. If snags are cut for safety concerns, they must be left in the harvest unit.
- Retain coarse-woody debris according to *ARM 36.11.414* and emphasize retention of 15-inch diameter downed logs aiming for at least one 20-foot-long section per acre.

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Figure WI-1 –Wildlife analysis areas and harvest units for the proposed Swift Smith Timber Sale.

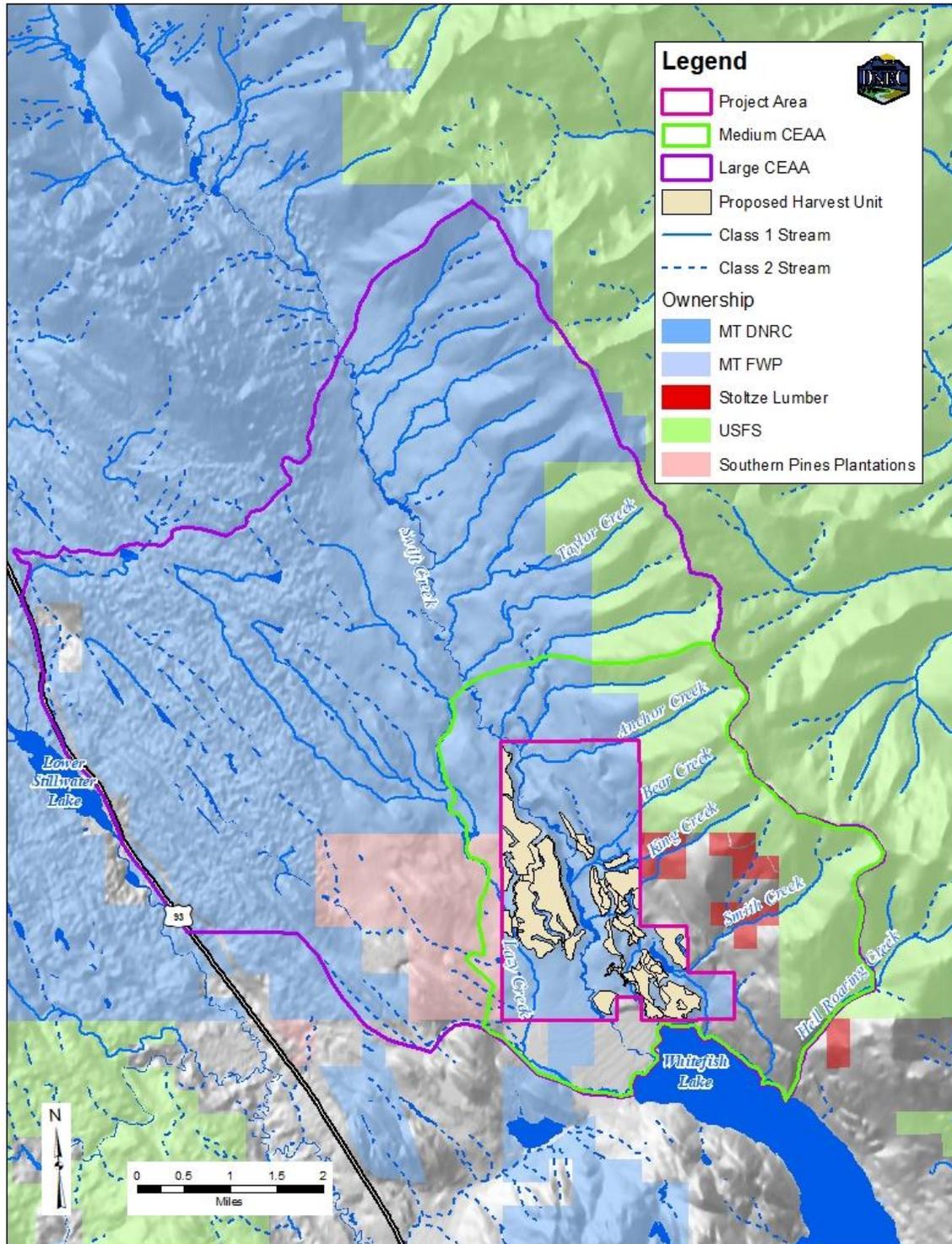
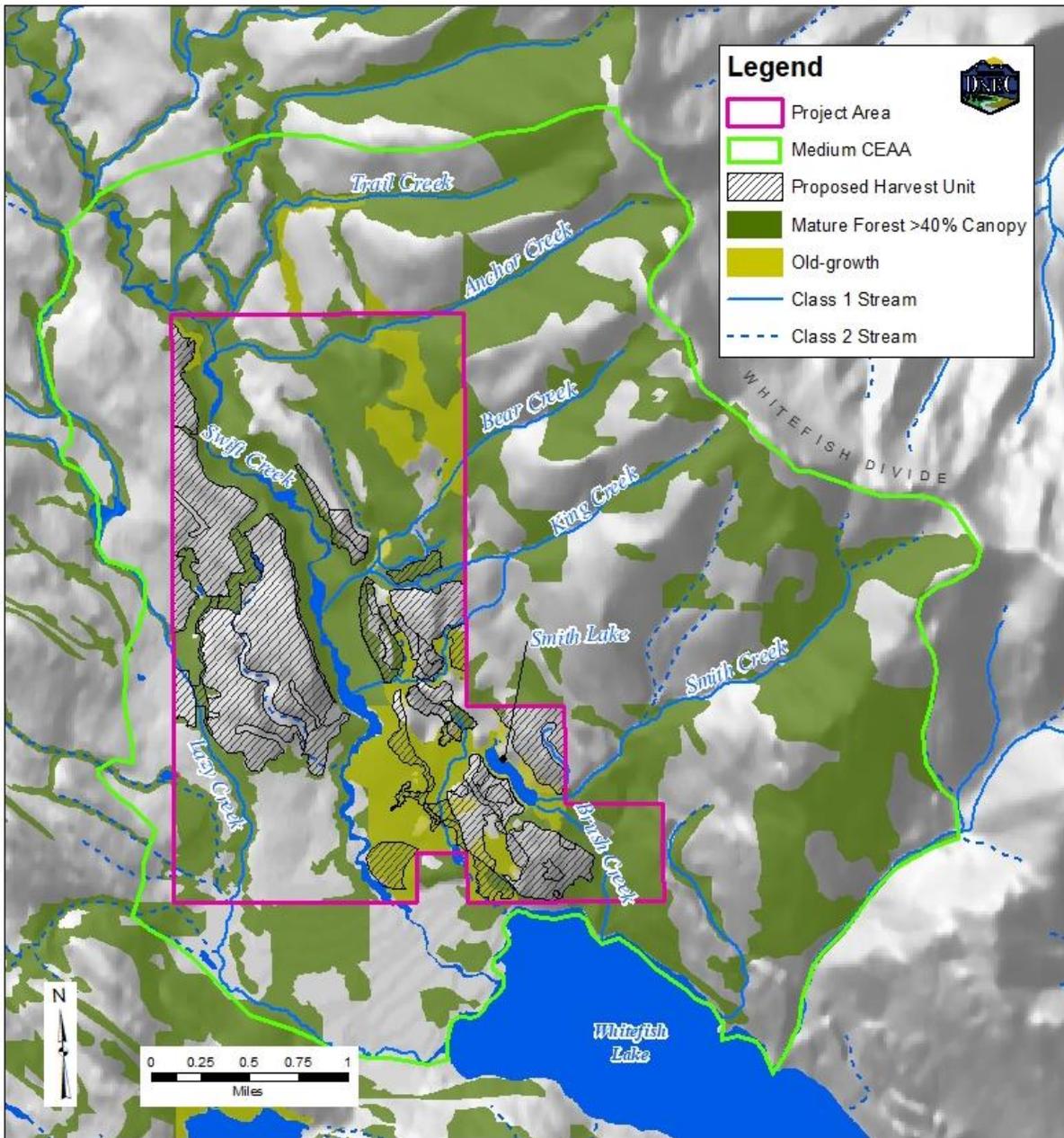


Figure WI-2 –Harvest units, mature canopy cover, and potential connectivity areas for the proposed Swift Smith Timber Sale.



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Appendix D – Stipulations and Specifications

Swift Smith Timber Project – Stipulations and Specifications

Stipulations and specifications for the Action Alternative include project design provisions that follow Forest Management Rules, relevant laws and regulations. They also include mitigations that were designed to avoid or reduce potential effects to resources considered in this analysis. In part, stipulations and specifications are a direct result of issue identification and resource concerns. This section is organized by resource.

Stipulations and specifications that apply to operations per this EA would be contained within the timber sale/permit contracts. As such, they are binding and enforceable. Project administrators would enforce stipulations and specifications relating to activities such as hazard reduction, site preparation, and planting, that may occur during or after the contract period.

The following stipulations and specifications would be incorporated into the selected Action Alternative to mitigate potential effects on resources.

Access and Roads

- Temporary roads are restricted to administrative use only.
- Temporary roads will be reclaimed following harvest and site preparation to meet BMPs and restrict future motorized use.

Aesthetics

- In several areas that are highly visible, root wads from blowdown trees would be tipped back onto the ground when practicable.
- Some areas near trails may have slash mulched to lessen fuel loading and improve aesthetics.
- Concentrations of slash within harvest units would be piled for burning.
- Winter harvest does lead to less environmental impact, however, it is not advisable to haul during icy conditions. Low volumes of harvest that can only be winter logged will be considered.
- Some units would be site-prepped exposing up to 30% mineral soil. This is necessary to establish regeneration within the units.
- Damaged residual vegetation will be slashed.
- The size and number of landings will be limited.
- Unburned portions of specified landings will be rebunched and burned or buried. Some landings will have topsoil redistributed over the site to improve the regrowth of native grasses and vegetation.
- Disturbed soil sites along road right-of-ways will be grass seeded.
- Landings would mostly be located in areas with limited visibility.
 - Temporary roads will be reclaimed after harvesting and site preparation. In areas where cable logging is required, the width of the cable corridor would be
 - Limited and a minimum distance between corridors would be required.

Air Quality

- To minimize effects during burning operations, burning would be done in compliance with and approved by the Montana/Idaho Airshed Group and DEQ, and any burning restrictions imposed in Airshed 2. This would only allow for burning during conditions of acceptable ventilation and smoke dispersion.
- Debris will be piled clean to allow ignition during fall and spring when ventilation is good and surrounding fuels are wet. The Forest Officer may require piles to be covered so they are drier, ignite easier, burn hotter, and extinguish sooner.
- Some large woody debris will be left on site to minimize the number of burn piles and reduce smoke production.
- Conduct test burn to verify good dispersal.
- Dust abatement on roads may be used as necessary.
- Slower speed limits may be included in contracts as necessary to reduce dust.

Archaeology

- A contract clause provides for suspending operations if cultural resources are discovered; operations in that area may only resume as directed by the Forest Officer following consultation with a DNRC Archeologist.
- If cultural resources were discovered, the Confederated Salish and Kootenai Tribes would be notified.

Forest Fuels

- Defensible space will be created around private residences on East Lakeshore Drive.
- All fuel reduction activities will meet the Hazard Reduction Law.
- All areas harvested within 1,000 feet of a structure and along open roads will meet the High Hazard Reduction Standards.

Log Hauling Traffic

- Signs will be posted making the public aware of log hauling traffic in the area.
- Log hauling will take place typically during the general “work week”, Monday-through Friday.
- If necessary, a slower speed limit may be imposed in the timber harvest contract.
- Log hauling on snow- or ice-packed roads would be discouraged.
- Pup trailers are prohibited on East Lakeshore Drive.
- Near open roadways the roads may be temporarily closed or flaggers would be utilized.

- Information on active logging and log hauling would be disseminated to the public through signage and other means of public notification such as postings in local newspapers, signage, and coordinating social media venues with WLP/City of Whitefish and Whitefish Disk Federation.

Noxious Weed Management

- All equipment used in road construction and off-road logging activity would be cleaned of noxious weeds prior to beginning project operations.
- Disturbed roadside sites will be promptly seeded with a native grass seed mix. Roads used and closed as part of this proposal will be reshaped and seeded.
- Herbicide treatment would continue along roadsides, landings, and any identified weed outbreaks.

Recreation

- Timing of logging contracts prioritize harvest to allow LULs to commence in the spring of 2021.
- Information such as additional disk golf closures and trail closures during active logging and log hauling would be disseminated to the public through signage and other means of public notification such as postings in local newspapers, signage, and coordinating social media venues with WLP/City of Whitefish and Whitefish Disk Federation.
- Utilizing cable yarding versus heavy machinery on steeper ground, in certain segments where the Whitefish Trail and disk golf course are located, would reduce impacts to trail tread.
- Logging skid trails would usually cross the trail system perpendicular to the tread. City of Whitefish and WLP have visited most sites and arrangements have been made on how to address damage caused by harvest operations.
- Only one skid trail would be utilized in crossing the Swift Creek Loop segment of the Whitefish Trail to access Units 11, 12, 14, and 15.
- Log landing locations and trail crossings would be designated by a Forest Officer in advance of logging operations. The focus would be to locate landings away from the trail system and disc golf course.
- Forest Officers would work with licensees to identify and flag locations of all improvements and trail corridors.
- Site preparation for regenerating new trees along with fuels reduction treatments would likely occur during summer and fall of 2021. Plans would be made to accomplish this work within one season following logging. These activities would not require road-use restrictions.
- No slash piles will be located closer than 66 feet from the trail corridor.

Soils

- Limit equipment operations to periods when soils are relatively dry, (less than 20 percent oven-dried weight), frozen, or snow-covered to minimize soil compaction and rutting and maintain drainage features. Check soil moisture conditions prior to equipment start-up.
- Tractor skidding should be limited to slopes of less than 40 percent unless the operation can be completed without causing excessive displacement or erosion. Based on site review, short, steep slopes may require a combination of mitigation measures, such as adverse skidding to a ridge or winchline, and skidding from more moderate slopes of less than 40 percent.
- Keep skid trails to 20 percent or less of the harvest unit acreage. Provide for drainage in skid trails and roads concurrently with operations.
- Skyline corridors shall be spaced not less than 75 feet apart. In the case of ridges where fan-shaped settings are required, the minimum distance at the widest divergence will be 150 feet. Clearing width for corridors to accommodate yarding should not exceed 12 feet. Where skyline is required, harvest would be by log-length skidding. Leading end of the logs would be carried free of the ground at all times except during lateral yarding. Erosion control, such as slashing or retaining tops, would be required within cable skidding corridors where excessive soil disturbance may be of an extent to cause erosion. The contract administrator would monitor conditions and recommend erosion control as needed.
- Slash disposal: Limit the combination of disturbance and scarification to 30 to 40 percent of the harvest units. No dozer piling on slopes over 35 percent; no excavator piling on slopes over 40 percent, unless the operation can be completed without causing excessive erosion. Consider lopping and scattering or jackpot burning on the steeper slopes. Consider disturbance incurred during skidding operations, to at least partially provide scarification for regeneration.
- Retain 12 to 25 tons of large woody debris and a feasible majority of all fine litter following harvesting operations. On units where whole tree harvesting is used, implement one of the following mitigations for nutrient cycling: 1) use in-woods processing equipment that leaves slash on site; 2) for whole-tree harvesting, return-skid slash and evenly distribute within the harvest area; or 3) cut tops from every third bundle of logs so that tops are dispersed as skidding progresses.

Water Resources and Fisheries

- Limit equipment operations to periods when soils are relatively dry, (less than 20 percent oven-dried weight), frozen, or snow-covered to in order to minimize soil compaction and rutting, and maintain drainage features. Check soil moisture conditions prior to equipment start-up.
- On ground-based units, especially on previously harvested areas, the logger and sale administrator would agree to a skidding plan prior to equipment operations. Skid-trail planning would identify which main trails to use and how many additional trails are needed. Trails that do not comply with BMPs (i.e. trails in draw bottoms) would not be used unless impacts can be adequately mitigated. Regardless of use, these trails may be closed with additional drainage installed, where needed, or grass-seeded to stabilize the site and control erosion.

- Tractor skidding should be limited to slopes of less than 40 percent unless the operation can be completed without causing excessive displacement or erosion. Based on site review, short, steep slopes may require a combination of mitigation measures, such as adverse skidding to a ridge or winchline, and skidding from more moderate slopes of less than 40 percent.
- Keep skid trails to 20 percent or less of the harvest unit acreage. Provide for drainage in skid trails and roads concurrently with operations.
- Slash disposal: Limit the combination of disturbance and scarification to 30 to 40 percent of the harvest units. No dozer piling on slopes over 35 percent; no excavator piling on slopes over 40 percent, unless the operation can be completed without causing excessive erosion. Consider lopping and scattering or jackpot burning on the steeper slopes. Consider disturbance incurred during skidding operations to, at least, partially provide scarification for regeneration.
- Follow all Forestry Best Management Practices for road construction and maintenance to minimize the risk of sediment delivery, including dewatering channels when installing or removing crossing structures.

Wildlife

- If a threatened or endangered species is encountered, consult a DNRC biologist immediately. Similarly, if undocumented nesting raptors or wolf dens are encountered within ½ mile of the Project Area contact a DNRC biologist.
- Prohibit contractors and purchasers conducting contract operations from carrying firearms while on duty as per *ARM 36.11.444(2)* and *GB-PR2 (USFWS and DNRC 2010)*.
- Contractors will adhere to food storage and sanitation requirements as described in the timber sale contract. Ensure that all attractants such as food, garbage, and petroleum products are stored in a bear-resistant manner.
- Restrict public access on restricted roads that are opened for harvesting activities. Effectively close all restricted roads following harvest completion.
- Prohibit motorized activities including commercial forest management from April 1-June 15 in EA Units 16 and 19-40 to provide seasonal security for grizzly bears as per *GB-NR3 (USFWS and DNRC 2010)*. Commercial forest management is allowed within 100-feet of open roads.
- Prohibit motorized activities from February 1 – July 15 in EA Unit 4 to reduce disturbance to nesting bald eagles.
- Retain visual screening along open roads to prevent human-wildlife conflict and increase security for bears and big game as per *GB-NR4 (USFWS and DNRC 2010)*.
- Retain patches of advanced regeneration of shade-tolerant trees as per *LY-HB4* in EA Units 3-5, 7-19, 25, 28, 30, 31, 34, and 35 (*USFWS and DNRC 2010*).

- Retain 1% of heavy blowdown (3 acres) to provide denning habitat for lynx as per LY-HB2(3) (*USFWS and DNRC 2010*).
- Retain at least 2 snags and 2 snag recruits per acre that are ≥ 21 inches diameter or the next largest available size class, favoring western larch and Douglas-fir for retention. Large downed logs may be substituted if standing trees are not available. If snags are cut for safety concerns, they must be left in the harvest unit.
- Retain coarse-woody debris according to *ARM 36.11.414* and emphasize retention of 15-inch diameter downed logs aiming for at least one 20-foot-long section per acre.