Environmental Assessment Checklist

Project Name: Colonite Creek Timber Sale
Proposed Implementation Date: June, 2015
Proponent: Libby Unit, Northwestern Land Office, Montana DNRC
County: Lincoln

Type and Purpose of Action

Description of Proposed Action:

The Department of Natural Resources and Conservation (DNRC), Libby Unit is proposing a commercial timber harvest in the Colonite Creek drainage. Under the proposed Colonite Creek Timber Sale, DNRC would harvest and sell approximately 2.59 million board feet (17,398 tons) of timber from 278 acres using both skyline and ground based logging equipment. This proposed action would produce an estimated $435,000 for the common schools trust (CS) at an estimated stumpage of $25.00 per ton. Additional activities would include the construction of approximately 2.6 miles of new road. Post timber harvest operations on harvested acres could include prescribed burning, planting, and slashing of logging damaged and undesirable regeneration. Logging slash would be treated to meet state laws and best management practices.

Beneficiary	Legal Description	Total Acres	Treated Acres
Common Schools	W/2 of section 36 T26N R29W	320	278

Objectives of the project include:

- Generate revenue for the Common School trust
- Improve forest health
- Capture value of recent mortality
- Create and improve transportation infrastructure to be used for land management and fire suppression on this trust parcel

Proposed activities include:

Action	Quantity
Proposed Harvest Activities	**ACRES**
Clearcut	**0**
Seed Tree	**278**
Shelterwood	**0**
Selection	**0**

Action	Quantity
Commercial Thinning	**0**
Salvage	**0**
Total Treatment Acres	278
Proposed Forest Improvement Treatment	**ACRES**
Pre-commercial Thinning	**278**
Planting	**0**
Proposed Road Activities	**MILES**
New permanent road construction	**2.6**
New temporary road construction	**0**
Road maintenance	**13.3**
Road reconstruction	**0**
Road abandoned	**0**
Road reclaimed	**0**

Duration of Activities:	**26 months**
Implementation Period:	**June 2015**

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 (DNRC 1996),
- Administrative Rules for Forest Management (ARM 36.11.401 through 471),
- and all other applicable state and federal laws.

Project Development

SCOPING:

- DATE:
  - July 31 – August 31, 2013
- PUBLIC SCOPED:
  - The scoping notice was posted on the DNRC Website: http://dnrc.mt.gov/PublicInterest/Notices/Default.asp
  - Mailings to adjacent landowners and DNRC standard scoping list (print and electronic)
  - Western News newspaper Public Notice ran 8/2, 8/9, 8/16, 8/23 & 8/30/2013

- AGENCIES SCOPED:
    - MT DNRC
    - MT DFWP
- COMMENTS RECEIVED:
    - How many: One
    - Concerns: Confederated Salish and Kootenai tribes of the Flathead Nation wrote to ensure that the trees removed are not Culturally Modified Trees and asked if there was an existing or planned inventory of the area for cultural resources.
    - Results (how were concerns addressed): Project leader replied to CSKT with DNRC archeologist input, passing along that DNRC will not be able to conduct a Class III cultural resource inventory, however a Class I inventory (map and database review) has been conducted and the DNRC has no indication of previously identified cultural or paleontologic resources in this project's area of potential effect.

DNRC specialists were consulted, including: Jeremy Rank, Tony Nelson, Leah Breidinger and Patrick Rennie.

Internal and external issues and concerns were incorporated into project planning and design and will be implemented in associated contracts.

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 www.dnrc.mt.gov/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.

ALTERNATIVES CONSIDERED:

No-Action: Under this alternative, no activities would be undertaken, No timber would be harvested, no road construction would occur. This would not generate revenue for the CS trust. Insect related tree mortality would continue as would the loss in value of the resource.

Action Alternative (Provide a brief description of all proposed activities): The action is described in the Type and Purpose of Action above. No other action alternatives were identified during project scoping or analysis. Mitigations were incorporated into the proposed action.

Impacts on the Physical Environment

Evaluation of the impacts on the No-Action and Action Alternatives including **direct, secondary, and cumulative** impacts on the Physical Environment.

VEGETATION:

Vegetation Existing Conditions: The project area is surrounded by intensively managed private timberland. The area being analyzed was historically characterized by infrequent, mixed severity wildfires prior to the early 1900's. Since the early 1900's, fire has been virtually eliminated from the project area. The current conditions have created dense, dead and live fuels from ground level to overstory crowns. This stand and fuel structure contributes to an increased risk of stand replacing fire hazard.

The project area has no threatened or endangered plant species according to the Montana Natural Heritage Program database. Stand Level Inventory (SLI) identified 166 acres of potential old growth in the project area, and after field verification none of these acres were found to meet the old growth minimum criteria according to Green et al. This was due largely to the heavy mortality of the oldest and largest of the Douglas-fir from bark beetles.

Logging activity has not occurred in the past on this parcel and the project area has naturally occurring stand conditions. The over mature condition of the unmanaged parcel exhibits poor quality, form class, overcrowding and a high incidence of disease and mortality. Measurements show 23 trees per acre over the entire range of size classes, are standing dead due largely to Douglas-fir beetle. Standing high quality wildlife snags are plentiful due to the high mortality and lack of road access to this section.

Vegetation	Impact												Can Impact Be Mitigated?	Comment Number
	Direct				Secondary				Cumulative					
	No	**Low**	**Mod**	**High**	**No**	**Low**	**Mod**	**High**	**No**	**Low**	**Mod**	**High**		
No-Action														
Noxious	x				x				x					
Rare Plants	x				x				x					
Vegetative	x				x				x					
Old Growth	x				x				x					

Vegetation	Impact												Can Impact Be Mitigated?	Comment Number
	Direct				Secondary				Cumulative					
	No	**Low**	**Mod**	**High**	**No**	**Low**	**Mod**	**High**	**No**	**Low**	**Mod**	**High**		
Action														
Noxious		x			x	x			x				Y	V-1
Rare Plants	x				x				x					
Vegetative			x		x	x				x			Y	V-2
Old Growth	x				x				x					

Comments:
V-1: Construction of new roads and operating logging equipment off road would likely open the site for the introduction of noxious weeds. Noxious weeds would be monitored and addressed through an integrated weed management program.

V-2: The proposed action alternative would harvest timber on 278 acres. The proposed harvest would capture value of recent dead and those trees susceptible to the beetle outbreak. Management activities would focus on the perpetuation of 18 acres in the Western larch/Douglas-fir cover type and 223 acres in the Ponderosa pine cover type and the conversion of 37 acres to preferred seral species. More detailed information for treatment of individual units can be found in Attachment D-1, Harvest Prescription. Year around road closure of new roads would help prevent the unauthorized removal of snags and snag recruits. The project area's vegetation community would be altered with regard to size class distribution, stocking levels and species composition. Fuel loading would be reduced by implementation of harvest prescriptions. Growth and vigor of the regenerated stand would increase.

Vegetation Mitigations:

- Larger diameter snags will be protected as needed to assure retention of 2 snags per acre in all units.
- Ponderosa pine, western larch and western white pine would be favored leave trees in all canopy levels.
- All trees impacted by Douglas-fir bark beetle would be removed.
- To deter further establishment of noxious weeds along roads, grass seed and fertilizer would be applied to areas with soil exposed during road construction and maintenance activities.
- To minimize noxious weed invasion away from roads, "off road" logging equipment would be inspected and required to be free of weed parts prior to moving onto the site.
- Grass seed would be applied or slash incorporated into heavily used skid trails to limit establishment of noxious weeds.

SOIL DISTURBANCE AND PRODUCTIVITY:

Soil Disturbance and Productivity Existing Conditions: The project area in the W ½ of section 36, T26N, R29W contains landform and soils characteristic of landtype 303, 352, & 353 from the Soil Survey of Kootenai National Forest Area, Montana and Idaho (USDA, 1995). Existing conditions of soil physical properties in the proposed project area are in an undisturbed condition. Stands within the proposed project area have not had any past timber management.

As a result, no skid trails or other impacts from yarding activities exist. There is a reach of existing road through the proposed project area that was built in order to access stands.

Soil Disturbance and Productivity	Impact												Can Impact Be Mitigated?	Comment Number
	Direct				Secondary				Cumulative					
	No	**Low**	**Mod**	**High**	**No**	**Low**	**Mod**	**High**	**No**	**Low**	**Mod**	**High**		
No-Action														
Physical Disturbance (Compaction and Displacement)	X				X				X					
Erosion	X				X				X					
Nutrient Cycling	X				X				X					
Slope Stability	X				X				X					
Soil Productivity	X				X				X					
Action														
Physical Disturbance (Compaction and Displacement)		X			X				X				Y	S-1
Erosion		X			X				X				Y	S-2
Nutrient Cycling	X				X				X					
Slope Stability	X				X				X					
Soil Productivity	X				X				X					

Comments:

S-1: Potential direct impacts to physical disturbance may occur on up to 12.2% of acres harvested through ground-based and skyline yarding methods. All expected impacts are projected to be well below the range analyzed for in the EXPECTED FUTURE CONDITIONS section of the SFLMP and are well within the 20-percent impacted area established as a level of concern in the SFLMP (DNRC, 1996).

S-2: Potential direct impacts from erosion would include areas in skyline corridors, on skid trails in ground-based areas, and on new roads. No delivery of eroded material is expected to a draw or stream with implementation of all applicable BMPs.

Soil Mitigations:

- Operation of ground-based equipment only on dry, frozen or snow-covered conditions.
- Leave a minimum of 15 tons of woody material 3-inches or greater in diameter on the site for nutrient cycling.

WATER QUALITY AND QUANTITY:

Evaluation of the impacts on the No-Action and Action Alternatives include **direct, secondary and cumulative** impacts on water quality and quantity.

Water Quality and Quantity Existing Conditions: Sediment delivery from in-channel sources was evaluated by a DNRC hydrologist in 2014. Stream channels in the proposed project area are primarily in good condition. No areas of down-cut channels were identified during field reconnaissance. Large woody debris was found in adequate supply to support channel form and function. Woody material in a stream provides traps for sediment storage and gradient breaks to reduce erosive energy and work as flow deflectors to reduce bank erosion.

Colonite Creek is stable and not actively eroding or down-cutting. As a result, annual water yield and peak flow increases resulting from past activities have not been sufficient to lead to de-stabilized channels in or below the project area.

Water Quality & Quantity	Impact												Can Impact Be Mitigated?	Comment Number
	Direct				Secondary				Cumulative					
	No	**Low**	**Mod**	**High**	**No**	**Low**	**Mod**	**High**	**No**	**Low**	**Mod**	**High**		
No-Action														
Water Quality	X				X				X					
Water Quantity	X				X				X					
Action														
Water Quality		X				X				X			Y	WQ-1
Water Quantity	X				X					X			Y	WQ-2

Comments:

WQ-1: Risk of direct, secondary or cumulative water quality impacts from sediment delivery to a draw or stream is low with implementation of all applicable BMPs.

WQ-2: Risk of cumulative impacts to water quantity is low based on well-drained soils absorbing excess runoff, stable stream channels and stable stream flows.

Water Quality & Quantity Mitigations:

- Follow standard Forestry BMPs for road drainage.

FISHERIES:

Evaluation of the impacts on the No-Action and Action Alternatives include **direct, secondary and cumulative** impacts on fisheries.

Fisheries Existing Conditions: Colonite Creek is currently fish habitat to a population of westslope cutthroat trout within the project area. Fish habitat in Colonite Creek is affected by sediment levels in spawning gravel. Levels of sediment delivery reported above are very low, and likely not a substantial risk of impacts to fish habitat in the proposed project area. No impacts to stream shading levels were apparent during field reconnaissance. Since no past

harvesting has occurred in the proposed project area, no alterations to the SMZ/RMZ stands and canopy have occurred. Large woody debris was found to be 139 pieces/1000 feet. Although existing condition is below reference reach averages, 139 pieces/1000 feet should be considered the baseline for Colonite Creek since this reach is unmanaged and levels are not affected by any management-related alteration.

No-Action: No direct or indirect impacts would occur to affected fish species or affected fisheries resources beyond those described in Fisheries Existing Conditions. Cumulative effects (other related past and present factors; other future, related actions; and any impacts described in Fisheries Existing Conditions) would continue to occur.

Action Alternative (see Fisheries table below):

Fisheries	Impact												Can Impact Be Mitigated?	Comment Number
	Direct				Secondary				Cumulative					
	No	**Low**	**Mod**	**High**	**No**	**Low**	**Mod**	**High**	**No**	**Low**	**Mod**	**High**		
Action														
Sediment		X				X				X			Y	F-1
Flow Regimes	X				X					X			Y	F-2
Woody Debris		X				X				X			Y	F-3
Stream Shading		X				X				X			Y	F-3
Stream		X				X				X			Y	F-3
Connectivity	X				X				X					
Populations	X				X				X					

Comments:

F-1: Risk of direct, secondary or cumulative impacts from sediment delivery to a draw or stream is low with implementation of all applicable BMPs.

F-2: Risk of cumulative impacts to flow regime is low based on well-drained soils absorbing excess runoff, stable stream channels and stable stream flows.

F-3: Based on HCP analysis and effectiveness monitoring, the project proposal, including RMZ harvesting, would have a low risk of low impacts to woody debris recruitment, stream shading or stream temperature.

Fisheries Mitigations:

- Follow all requirements of AQ-RM1&2, and AQ-SD1-5.

WILDLIFE:

Evaluation of the impacts of the No-Action and Action Alternatives including **direct, secondary, and cumulative** impacts on Wildlife (including unique, endangered, fragile, or limited environmental resources).

No-Action: No activities associated with the timber sale or road construction would occur. Thus no direct, indirect, or cumulative effects to terrestrial wildlife species would be anticipated.

<u>Action Alternative (see Wildlife table below)</u>:

Wildlife	Impact												Can Impact be Mitigated?	Comment Number
	Direct				Secondary				Cumulative					
	No	**Low**	**Mod**	**High**	**No**	**Low**	**Mod**	**High**	**No**	**Low**	**Mod**	**High**		
Threatened and Endangered Species														
Grizzly bear ***(Ursus arctos)*** **Habitat: Recovery areas, security from human activity**			X				X			X			Y	WI-1
Canada lynx (***Felix lynx)*** **Habitat: Subalpine fir habitat types, dense sapling, old forest, deep snow zone**	X				X				X					
Sensitive Species														
Bald eagle ***(Haliaeetus leucocephalus)*** **Habitat: Late-successional forest more than 1 mile from open water**	X				X				X					
Black-backed woodpecker ***(Picoides arcticus)*** **Habitat: Mature to old burned or beetle-infested forest**	X				X				X					
Coeur d'Alene salamander ***(Plethodon idahoensis)***	X				X				X					

Wildlife	Impact												Can Impact be Mitigated?	Comment Number
	Direct				Secondary				Cumulative					
	No	**Low**	**Mod**	**High**	**No**	**Low**	**Mod**	**High**	**No**	**Low**	**Mod**	**High**		
Habitat: Waterfall spray zones, talus near cascading streams														
Columbian sharp-tailed grouse ***(Tympanuchus Phasianellus columbianus)*** **Habitat: Grassland, shrubland, riparian, agriculture**	X				X				X					
Common loon ***(Gavia immer)*** **Habitat: Cold mountain lakes, nest in emergent vegetation**	X				X				X					
Fisher ***(Martes pennanti)*** **Habitat: Dense mature to old forest less than 6,000 feet in elevation and riparian**			X				X			X			Y	WI-2
Flammulated owl ***(Otus flammeolus)*** **Habitat: Late-successional ponderosa pine and Douglas-fir forest**		X				X				X			Y	W1-3
Gray Wolf ***(Canis lupus)***		X				X				X			Y	WI-4

Wildlife	Impact												Can Impact be Mitigated?	Comment Number
	Direct				Secondary				Cumulative					
	No	**Low**	**Mod**	**High**	**No**	**Low**	**Mod**	**High**	**No**	**Low**	**Mod**	**High**		
Habitat: Ample big game populations, security from human activities														
Harlequin duck ***(Histrionicus histrionicus)*** **Habitat: White-water streams, boulder and cobble substrates**	X				X				X					
Northern bog lemming ***(Synaptomys borealis)*** **Habitat: Sphagnum meadows, bogs, fens with thick moss mats**	X				X				X					
Peregrine falcon ***(Falco peregrinus)*** **Habitat: Cliff features near open foraging areas and/or wetlands**	X				X				X					
Pileated woodpecker ***(Dryocopus pileatus)*** **Habitat: Late-successional ponderosa pine and larch-fir forest**				X				X		X			Y	WI-5

Wildlife	Impact												Can Impact be Mitigated?	Comment Number
	Direct				Secondary				Cumulative					
	No	**Low**	**Mod**	**High**	**No**	**Low**	**Mod**	**High**	**No**	**Low**	**Mod**	**High**		
Townsend's big-eared bat ***(Plecotus townsendii)*** **Habitat: Caves, caverns, old mines**	X				X				X					
Wolverine ***(Gulo gulo)*** **Habitat: Alpine tundra, high-elevation forests, persistent spring snow**	X				X				X					
Big Game Species														
Elk			X				X			X			Y	WI-6
Whitetail			X				X			X			Y	WI-6
Mule Deer			X				X			X			Y	WI-6
Other														

Comments:

WI -1: The Project Area is considered grizzly bear non-recovery occupied associated with the CYE (*USFWS 1993*, *Wittinger 2002*). Grizzly bear cover would be reduced for 10-20 years on approximately 185 acres (82.0%) of the 226 acres of visual screening available in the Project Area. However, patches of cover would be retained such that no point in the harvest units would be greater than 600 feet to screening cover. Approximately 16 acres of riparian habitat would be harvested, but vegetation retention measures would apply to maintain minimal sight distances in these areas. Proposed harvesting would increase traffic on 0.5 miles of currently restricted road for up to 3 years; however, access by the general public would remain restricted on these road miles during and after project activities. Approximately 2.6 miles of restricted (gated) road would be constructed and would also have higher traffic levels, but open road density would not change. Spring timing restrictions would be enforced from April 1 – June 15 to provide security for grizzly bears in the spring.

WI-2: The proposed activities would affect 110 acres (76.4%) of the 144 acres of suitable fisher habitat present in the Project Area; however, these acres likely have a limited capacity to support fishers due to the dominance of dry ponderosa pine forest types (*Schwartz et al. 2013*).

Mature canopy cover would be reduced to 15-25% and retention of ponderosa pine would be emphasized, thus the structure of these stands would become unsuitable for substantial use by fishers, especially considering that open ponderosa pine stands are typically avoided by fishers. Approximately 12 acres of fisher riparian habitat are proposed for harvest. Half of these acres would remain suitable for fisher use post-harvest, while the remaining acres would retain too few large trees to be considered fisher habitat. Within riparian fisher habitat in the Project Area, 76.5% of the stands would contain moderate to well-stocked density of sawtimber size trees (*ARM 36.11.440(b)*). Retention of dead material and live snag recruitment trees would provide important habitat components for fishers (*ARM 36.11.411, ARM 26.11.414*) and connectivity across the Project Area would be retained along Colonite Creek.

WI-3: Timber harvest would occur in 277 of the 318 acres (87.1%) of preferred flammulated owl cover types available in the Project Area. The proposed activities would open stands to 15-25% canopy cover in these acres, improving stand structure suitability for flammulated owls. Additionally, the proposed harvest would favor leaving ponderosa pine and Douglas-fir while removing shade-tolerant trees, which is preferable for flammulated owls (*ARM 36.11.437(b)*). Some snags could be removed by the proposed harvest, but at least 2 large snag and 2 large snag recruitment tree per acre (>21 inches dbh) would be retained (*ARM 36.11.411*). Disturbance associated with harvesting could adversely affect flammulated owls for up to 3 years, should they be present in the Project Area

WI-4: The 2013 home range of the McGinnis Pack is located in the vicinity of the Project Area (*MFWP wolf pack data, 2013*). 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 (*ARM 33.11.430(1)(a)(b)*).

WI-5: The proposed activities would occur in 277 acres, 87.1% of the 318 acres of pileated woodpecker habitat available in the Project Area and 10.0% of the 2,767 acres of pileated woodpecker habitat available in a 9,059-acre Cumulative Effects Analysis Area. The proposed activities would open stands to 15-25% canopy cover causing the structure of these stands to become unsuitable for appreciable use by pileated woodpeckers post-harvest. 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*), providing potential nesting and foraging habitat.

WI-6: Big game winter range would be affected by the proposed activities. Canopy cover would be reduced in mature forested habitat to approximately 10-25% in 227 acres proposed for harvest, reducing the capacity of these acres to provide snow intercept and reduce wind velocity. To mitigate these impacts, regenerating conifers would be retained throughout the harvest units to provide needle-foraging opportunities and connectivity across the parcel would be retained along Colonite Creek.

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.
- To retain visual screening for grizzly bears, design harvest units such that vegetation or topographic breaks are no >600 feet from any point in the unit as per *GB-NR4* (*USFWS and DNRC 2010*).
- Prohibit all motorized activities behind gated roads in the Project Area, including driving a pick-up for administrative purposes, between April 1 – June 15 to provide security for grizzly bears in the spring as per *GB-CY3* (*USFWS and DNRC 2010*).
- Restrict public access at all times on restricted roads that are opened for harvesting activities.
- Retain at least 2 large (>21 inches) snags and 2 large snag recruits per acre, particularly favoring ponderosa pine and Douglas-fir for retention. If wildlife snags are cut for safety concerns, they must be left in the harvest unit. Retain 15 tons/acre of coarse-woody debris and emphasize the retention of downed logs ≥15 inches dbh where they occur.

Literature Cited:

Wittinger, W.T. 2002. Grizzly bear distribution outside of recovery zones. Unpublished memorandum on file at U.S. Forest Service, Region 1, Missoula, Montana.

USFWS. 1993. Grizzly bear recovery plan. Missoula, Montana. 181 pp.

USFWS and DNRC. 2010. Montana Department of Natural Resources and Conservation Forested Trust Lands Habitat Conservation Plan, Final Environmental Impact Statement, Volumes I and II. U.S. Department of Interior, Fish and Wildlife Service, Region 6, Denver, Colorado, and Montana Department of Natural Resources and Conservation, Missoula, MT. September 2010.

Schwartz, M.K., N.J. DeCesare, B.S. Jimenez, J.P. Copeland, and W.E. Melquist. 2013. Stand- and landscape-scale selection of large trees by fishers in the Rocky Mountains of Montana and Idaho. Forest Ecology and Management 305:103-111.

DFWP 2013. 2013 Montana wolf pack locations. Individual GIS data layer. Montana Fish, Wildlife and Parks. Helena, MT.

AIR QUALITY:

Air Quality	Impact												Can Impact Be Mitigated?	Comment Number
	Direct				Secondary				Cumulative					
	No	**Low**	**Mod**	**High**	**No**	**Low**	**Mod**	**High**	**No**	**Low**	**Mod**	**High**		
No-Action														
Smoke	x				x				x					
Dust	x				x				x					
Action														
Smoke		x			x				x				Y	A-1
Dust		x			x				x				Y	A-1

Comments:
A-1: The project area is located in Montana Airshed 1. Smoke would be generated from the burning of slash; however, adherence to the Montana/Idaho State Airshed Group regulations requires that burning occur during periods with adequate airshed ventilation. This would reduce the potential for excessive contributions of associated air pollutants. Dust may be created from log hauling on portions of native surface roads during summer and fall months. Due to the temporary nature of truck operations and burning operations with the proposed action, there would be a low risk of direct impacts.

Air Quality Mitigations:

- Abide by state airshed group regulations.

Will the No-Action or Action Alternatives 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														
Historical or Archaeological Sites	x				x				x					
Aesthetics	x				x				x					
Demands on Environmental Resources of Land, Water, or Energy	x				x				x					
Action														
Historical or Archaeological Sites	x				x				x					H-1
Aesthetics		x			x				x				N	H-2
Demands on Environmental Resources of Land, Water, or Energy	x				x				x					

Comments:

H-1: DNRC did not conduct a Class III cultural resource inventory, however a Class I inventory (map and database review) has been conducted and the DNRC has no indication of previously identified cultural or paleontologic resources in this project's area of potential effect.

H-2: The state land involved in this proposal does not provide unique or scenic qualities and would not be visible from populated areas.

OTHER ENVIRONMENTAL DOCUMENTS PERTINENT TO THE AREA: *List other studies, plans or projects on this tract. Determine cumulative impacts likely to occur as a result of current private, state or federal actions in the analysis area, and from future proposed state actions in the analysis area that are under MEPA review (scoped) or permitting review by any state agency.*

- There are no other projects under MEPA review on the tract listed in this EA.

Impacts on the Human Population

Evaluation of the impacts on the proposed action including **direct, secondary, and cumulative** impacts on the Human Population.

Will the No-Action or Action Alternatives 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					
Industrial, Commercial and Agricultural Activities and Production	x				x				x					
Quantity and Distribution of Employment	x				x				x					
Local Tax Base and Tax Revenues	x				x				x					
Demand for Government Services	x				x				x					
Access To and Quality of Recreational and Wilderness Activities	x				x				x					
Density and Distribution of population and housing	x				x				x					
Social Structures and Mores	x				x				x					

Will the No-Action or Action Alternatives 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**		
Cultural Uniqueness and Diversity	x				x				x					
Action														
Health and Human Safety		x			x				x					IHP-1
Industrial, Commercial and Agricultural Activities and Production		x			x				x					IHP-2
Quantity and Distribution of Employment		x			x				x					IHP-3
Local Tax Base and Tax Revenues	x				x				x					
Demand for Government Services	x				x				x					
Access To and Quality of Recreational and Wilderness Activities	x				x				x					
Density and Distribution of population and housing	x				x				x					
Social Structures and Mores	x				x				x					IHP-3
Cultural Uniqueness and Diversity	x				x				x					

Comments:
IHP-1: Normal risks involved with the operation of heavy equipment.

IHP-2: A consistent flow of timber contributes towards meeting the current and future demand of these construction materials.

IHP-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.

Locally Adopted Environmental Plans and Goals: *List State, County, City, USFS, BLM, Tribal, and other zoning or management plans, and identify how they would affect this project.*

- There are no zoning or other agency management plans affecting this project area.

Other Appropriate Social and Economic Circumstances:
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. The estimated stumpage is based on comparable sales analysis. This method compares recent sales to find a market value for stumpage. These sales have similar species, quality, average diameter, product mix, terrain, date of sale, distance from mills, road building and logging systems, terms of sale, or anything that could affect a buyer's willingness to pay.

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

Action: The sale of timber in the proposed project would generate additional revenue for the Common School Trust. The estimated return to the trust for the proposed harvest is $435,000.00 (based on an estimated stumpage of $25.00 per ton). 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.

References

DNRC 1996. State forest land management plan: final environmental impact statement (and appendixes). Montana Department of Natural Resources and Conservation, Forest Management Bureau, Missoula, Montana.

DNRC. 2010. Montana Department of Natural Resources and Conservation Forested State Trust Lands Habitat Conservation Plan: Final EIS, Volume II, Forest Management Bureau, Missoula, Montana.

Does the proposed action involve potential risks or adverse effects that are uncertain but extremely harmful if they were to occur?
None that are known or anticipated.

Does the proposed action have impacts that are individually minor, but cumulatively significant or potentially significant?
None that are known or anticipated.

Environmental Assessment Checklist Prepared By:

Name: Jeremy Rank
Title: Management Forester
Date: March 10, 2015

Finding

Alternative Selected

Upon review of the Checklist EA and appendices, I find that the action alternative as proposed meets the intent of the project objectives as stated on page 1, Type and Purpose of Action. It complies with all pertinent environmental laws, DNRC State Forest Land Management Plan, and a consensus of professional opinion on limits of acceptable environmental impact. The No Action Alternative does not meet the project objectives. For these reasons I have selected the Action Alternative for implementation on this project.

Significance of Potential Impacts

After a thorough review of the scoping documents, Department policies, standards, guidelines, and the State Forest Land Management Plan (SFLMP), I find all the identified resource management concerns have been fully addressed in this Checklist EA and its attachments. The action alternative provides for income to the school trust and promotes the development of a healthy, biologically diverse, and productive forest. It also provides the opportunity to improve access and road maintenance within the project area. I find there will be no significant impacts to the human environment as a result of implementing the action alternative. Specific project design features and various resource management specialist recommendations have been implemented to ensure that this project will fall within the limits of acceptable environmental change and result in no significant effects.

Need for Further Environmental Analysis

	EIS		More Detailed EA	X	No Further Analysis

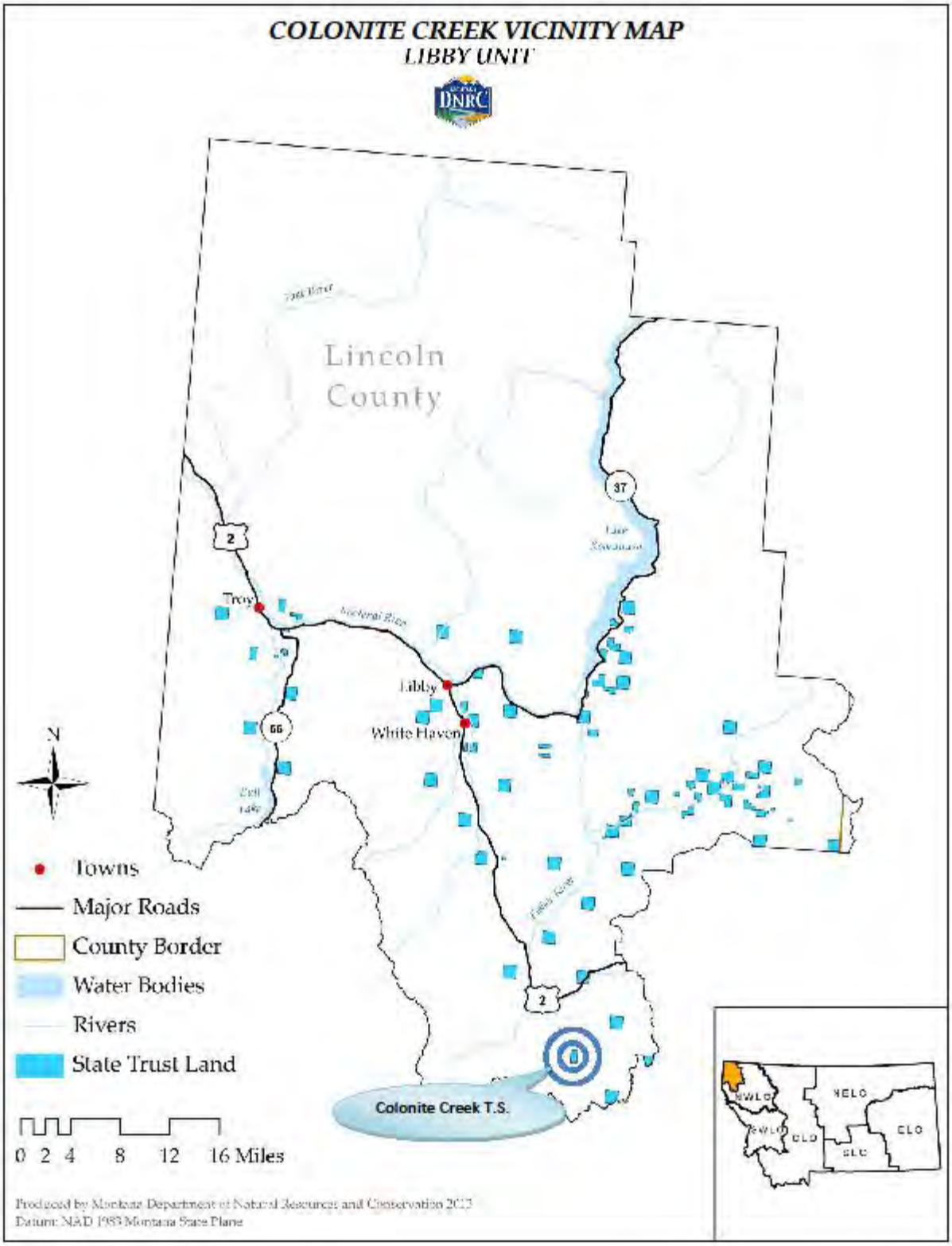
Environmental Assessment Checklist Approved By:

Name: Dave Marsh
Title: Forest Management Supervisor – Libby Unit
Date: March 16, 2015
Signature: \s\ Dave Marsh

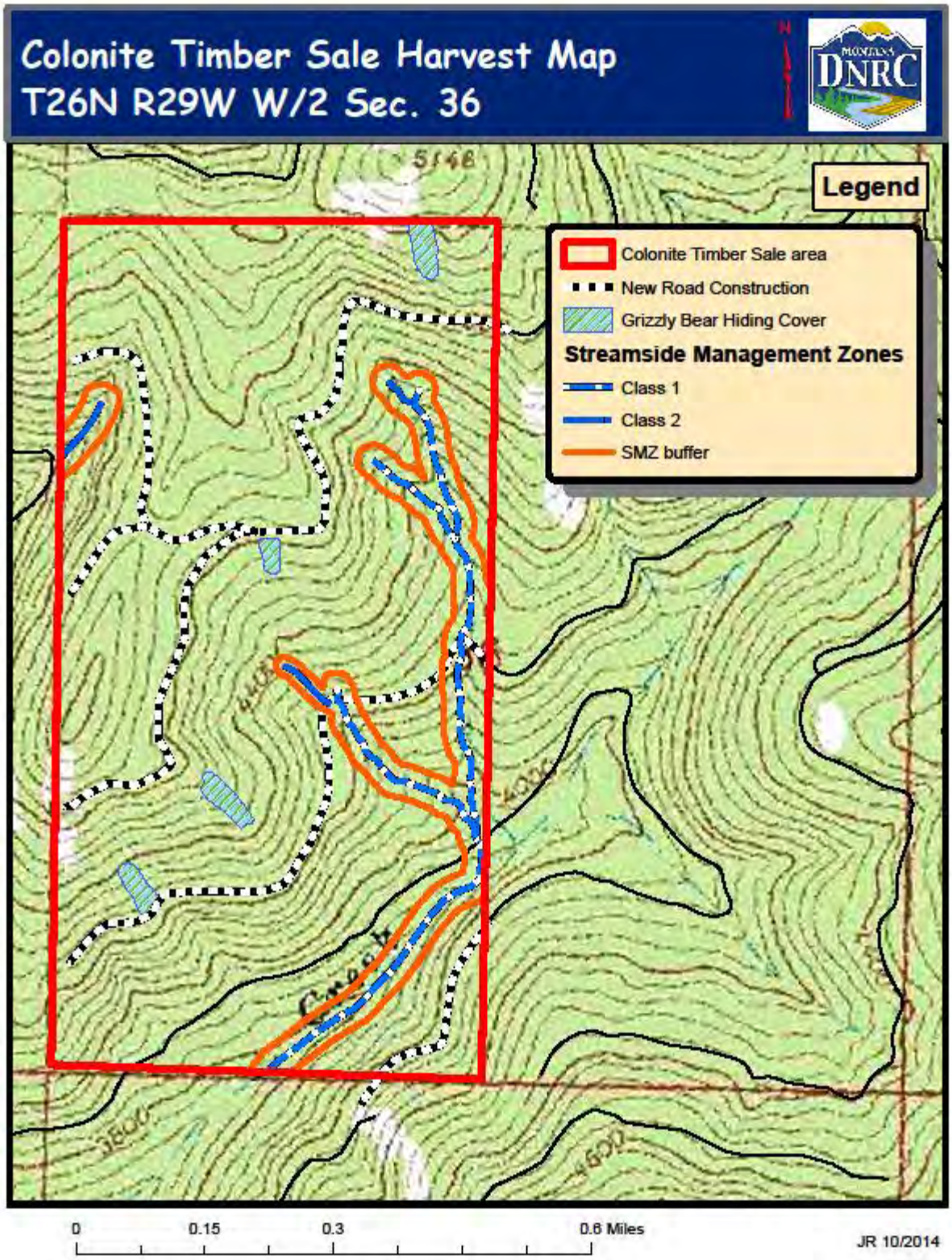
APPENDIX

Attachment A-1 Vicinity Map	pg. 21
Attachment A-2 Harvest Map	pg. 22
Attachment A-3 Yarding Map	pg. 23
Attachment A-4 Road Construction Map	pg. 24
Attachment B Soils Analysis	pg. 25
Attachment C Watershed and Hydrology Analysis	pg. 34
Attachment D-1 Vegetation Analysis	pg. 44
Attachment D-2 Silvicultural Prescription	pg. 47
Attachment E Wildlife Analysis	pg. 52

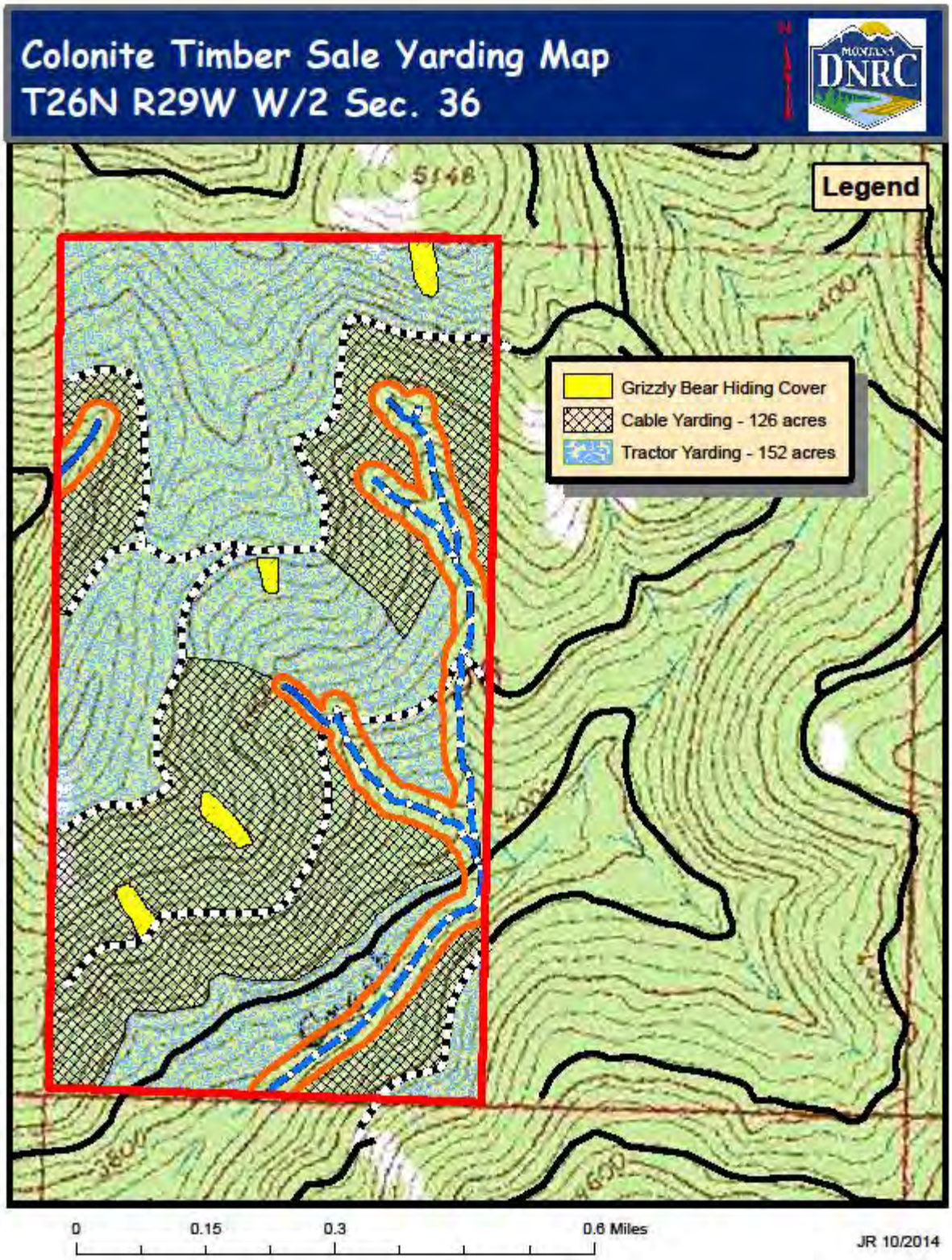
Attachment A-1 Vicinity Map



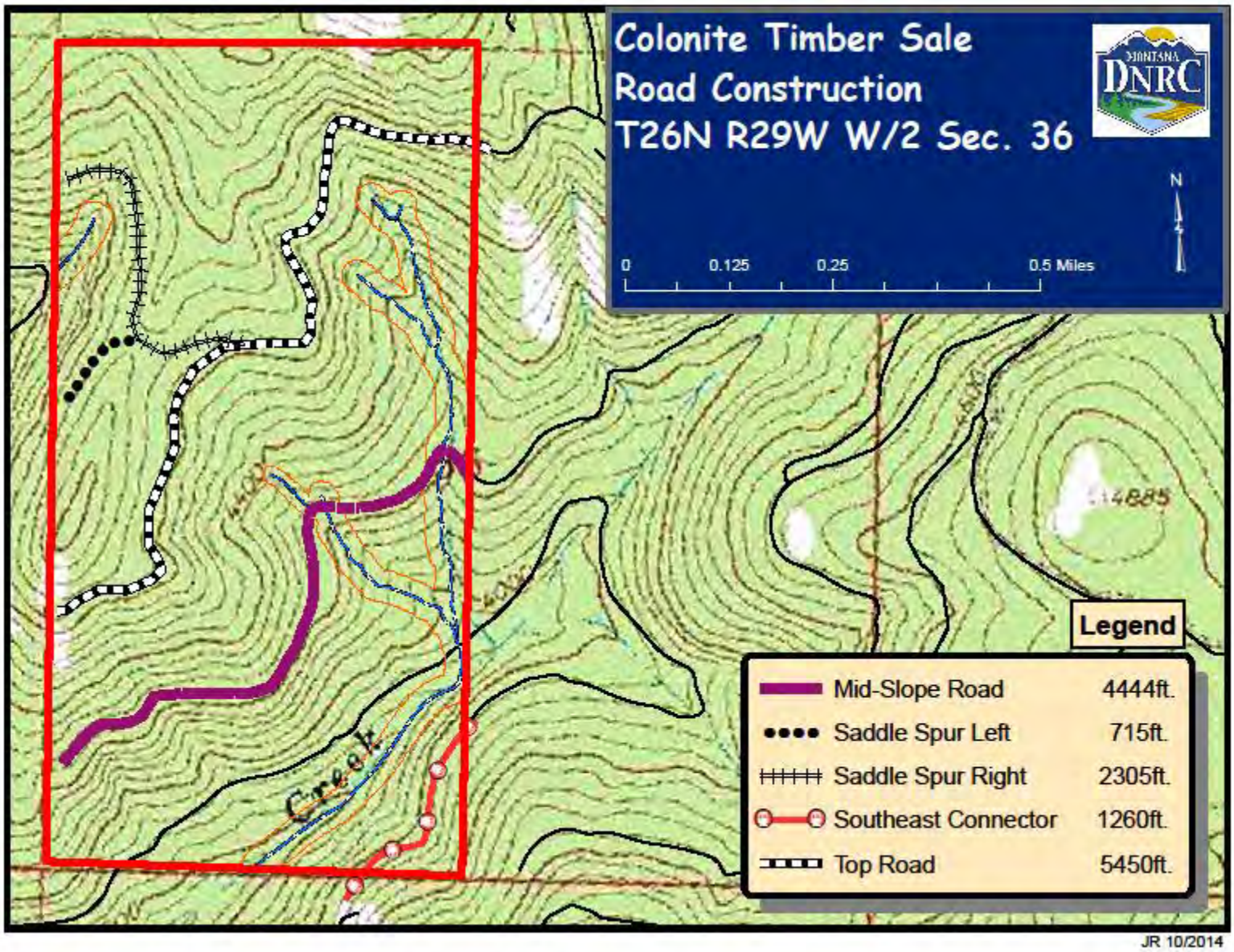
Attachment A-2 Harvest Map



Attachment A-3 Yarding Map



Attachment A-4 Road Construction Map



SOILS ANALYSIS

INTRODUCTION

Project Area and Project Activities

The gross project area is approximately 320 acres of Trust Lands near Libby, Montana. Landforms in the proposed project area include alluvial stream bottoms and glaciated mountain slopes. Proposed project activities would include ground based and cable yarding methods to harvest timber on approximately 278 acres within the project area.

Resource Description

Resources potentially at risk in the project area include landtypes with a volcanic ash-influenced loess surface layer. Changes in the physical properties of these landtypes can affect the ability of these landtypes to grow vegetation.

Issues and Measurement Criteria

The following issues encompass the specific issues and concerns raised through public comment and scoping of the proposed project. For a specific list of individual comments and concerns, please refer to the project file.

Soil Physical Properties
This analysis addresses the issue that timber harvesting and associated activities may affect soil physical properties in the proposed project area through ground-based activities, and through repeated entries to previously harvested areas. Operation of ground-based machinery can displace fertile layers of topsoil, which can lead to a decrease in vegetation growth. Ground-based machinery can also lead to compaction of the upper layers of soil. Compaction decreases pore space in soil, reduces its ability to absorb and retain water, and can increase runoff and overland flow. These conditions can also lead to a decrease in vegetation growth.

Measurement criteria: Impacts to soil physical properties will be analyzed by evaluating the current levels of soil disturbance in the proposed project area based on field review and aerial photo review of existing and proposed harvest units. Percent of area affected is determined through pace transects, measurement, aerial photo interpretation, or GIS to determine skid trail spacing and skid trail width. From this, skid trail density and percent of area impacted are determined. Estimated effects of proposed activities will be assessed based on findings of DNRC soil Monitoring.

Nutrient Cycling
Nutrient cycling, microbial habitat, moisture retention and protection from mineral erosion are provided by coarse and fine woody debris in forested environments (Harmon et al, 1986). Forest management can affect the volumes of fine and coarse woody debris through timber

harvesting and result in changes to potentially available nutrients for long-term forest production.

Nutrient cycling will be analyzed by disclosing existing levels of coarse woody debris from transects conducted during field reconnaissance. The method for quantifying the coarse woody debris is described in the *Handbook for Inventorying Downed Woody Material* (Brown, 1974). Potential impacts to nutrient cycling will be assessed by evaluating risks to nutrient pools and long-term site productivity from timber sale contract requirements and mitigation measures.

Slope Stability

Slope stability can be affected by timber management activities by removing stabilizing vegetation, concentrating runoff, or by increasing the soil moisture. The primary risk areas for slope stability problems include, but are not limited to, landtypes that are prone to soil mass movement, and soils on steep slopes (generally over 60 percent). None of the land types in the proposed project area are considered a high risk for instability or mass movement. As a result, slope stability will not be analyzed further in this document.

Analysis Area

Soil Physical Properties

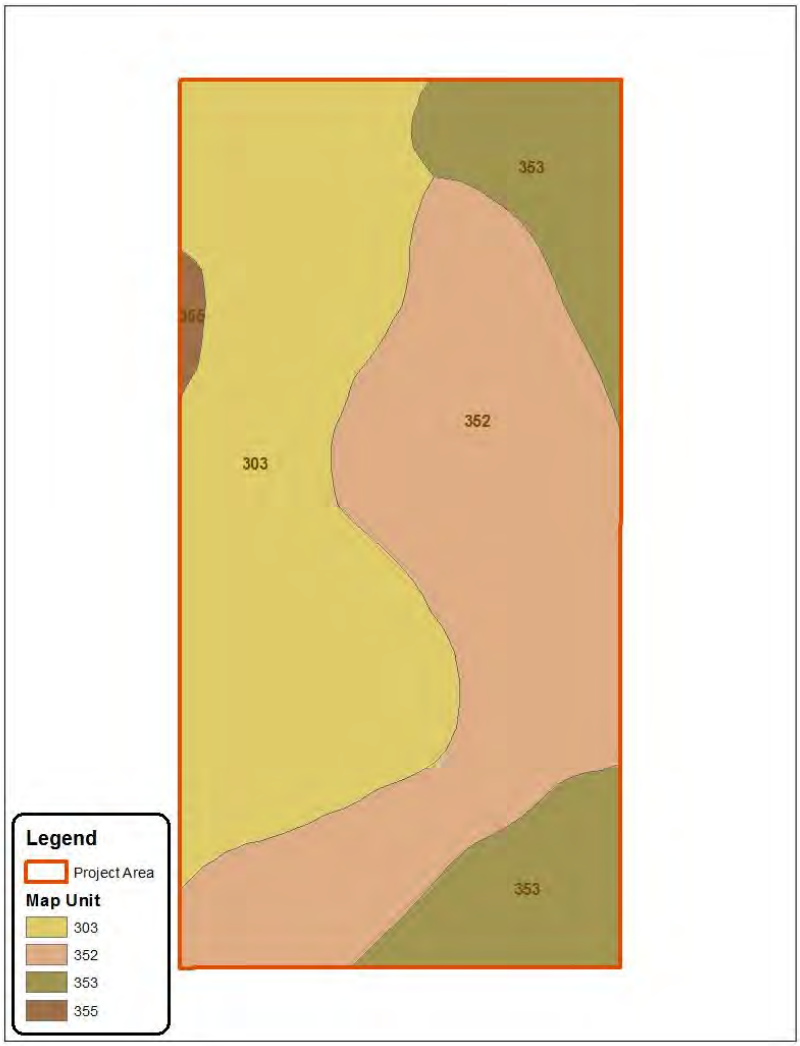
Analysis area for direct, indirect and cumulative effects to soil physical properties will be analyzed on all areas proposed for harvest within the project area.

Nutrient Cycling

Analysis area for direct, indirect and cumulative effects to nutrient cycling will be analyzed on all areas proposed for harvest within the project area.

EXISTING CONDITIONS

Figure S-1 *– Map of Landtypes in Colonite Project Area*



A list of the landtypes found in the proposed project area is found in ***Table S-2*** at the end of this analysis. This table contains some of the key management implications for the landtypes proposed for operation. A map of the landtypes within the proposed project area is found in ***Figure S-1***.

Soil Physical Properties

Existing conditions of soil physical properties in the proposed project area are in an undisturbed condition. Stands within the proposed project area have not had any past timber management. As a result, no skid trails or other impacts from yarding activities exist.

There is a reach of existing road through the proposed project area that was built in order to access stands managed by Plum Creek Timber Company. This road was brought up to applicable BMP standards during past entries. No active erosion or deposition was identified during inspection of the existing road system proposed for haul.

Nutrient Cycling

Existing conditions for nutrient cycling were assessed in the proposed project area by completing 7 transects to estimate the current levels of coarse woody debris. These transects were focused on proposed harvest units. The average coarse woody debris is 16.7 tons/acre, with a range of 0 to 40.6 tons/acre and a median of 9.3 tons/acre. These results are generally

within the recommended range discussed in Managing Coarse Woody Debris in Forests of the Rocky Mountains (Graham et al, 1994) on similar habitat types. Douglas-fir habitat types in Montana are recommended to have a range of 12 to 24 tons/acre to maintain forest productivity and nutrient cycling.

DIRECT AND INDIRECT EFFECTS

No Action Alternative

Direct and indirect effects to soil physical properties and nutrient cycling from the No Action alternative would be similar to those described under the existing conditions. No ground-based activity would take place under this alternative, which would leave the soil and coarse woody debris levels in the project area unchanged from the description in the Existing Conditions portion of this analysis.

Action Alternative

The proposed action alternative would harvest timber from approximately 278 acres and construct approximately 2.6 miles of new road. The following are the anticipated direct and indirect impacts:

Soil Physical Properties

Direct and indirect effects to soil physical properties could occur on up to 278 acres with the action alternative. Based on DNRC soil monitoring on soils and sites similar to those found in the project area, direct impacts would be expected on up to 34 of the total 278 acres, which amounts to 12.2% of the total area proposed for harvesting across all yarding methods. These values are summarized below in ***Table S-1***. Soil monitoring conducted on DNRC lands shows that sites harvested on DNRC lands statewide on similar soils with ground-based machinery had a range of impacts from 3.0 to 26.2 percent of the acres treated, with an average disturbance rate of 11.7% (DNRC, 2009). The low range of impacts includes operations on frozen or snow-covered soils, and the high range includes operations on moist soils during non-winter conditions. Soil monitoring conducted on DNRC lands shows that sites harvested on DNRC lands statewide on similar soils with cable yarding equipment had a range of impacts from 2.3 to 11.4 percent of the acres treated, with an average disturbance rate of 6.2% (DNRC, 2009). Based on these monitoring results, the extent of impacts expected would likely be similar to those reported by DNRC (2009), or approximately 3.0 to 26.2 percent of ground-based harvested acres, and approximately 2.3 to 11.4 percent of cable harvest acres. This level translates to a low risk of low direct and indirect impacts to soil physical properties. These impacts would likely persist for 20-40 years, depending on site specific conditions. In addition, BMPs and a combination of mitigation measures would be implemented to limit the area and degree of soil impacts as noted in ARM 36.11.422 and the SFLMP (DNRC, 1996).

Ground-based site preparation would be done on tractor units, and prescribed fire may be used for site preparation on portions of cable harvest units. These activities would also generate direct impacts to the soil physical properties. Site-preparation disturbance would be intentionally done, and these impacts are considered light and promote reforestation of the site.

Nutrient Cycling
Direct and indirect effects to nutrient cycling may include a slight decrease in coarse woody debris from the action alternative by removing standing timber. Some stands where woody debris levels are low may see in increase in large woody debris as a result of the proposed harvesting. In addition, this alternative would lead to an increase in fine woody material in the form of limbs and tree tops being left after harvest. Through the timber sale contract, a minimum of15 tons per acre of coarse woody material would be left on the ground following harvesting activities, as well as fine material for nutrient retention.

***TABLE S-1** – SUMMARY OF DIRECT EFFECTS OF ALTERNATIVES ON SOIL PHYSICAL PROPERTIES*

Description of Parameter	**No Action**	**Action Alternative**
Acres of Harvest	0	278
Acres of ground based yarding	0	152
Acres of ground based impacts[1]	0	**18**
Acres of skyline yarding	0	126
Acres of skyline impacts[2]	0	**8**
Miles of new roads	0	2.6
Acres of new roads[3]	0	**8**
Total estimated acres of impacts	0	**34**
Percent of harvest area with impacts	0%	12.2%

[1] 11.7% of tractor units based on average impacts found on similar soils and sites by DNRC soil monitoring
[2] 6.2% of skyline units affected by corridors based on DNRC soil monitoring
[3] Assuming an average width of 25 feet, roads are approximately 3 acres per mile

CUMULATIVE EFFECTS

No Action Alternative
Direct and indirect effects to soil physical properties from the No Action alternative would be similar to those described under the existing conditions. No soil would be disturbed and no re-entry of past harvest units would occur. All impacts from past management activities would continue to improve or degrade as dictated by natural and pre-existing conditions.

Action Alternative
The anticipated cumulative effects of the proposed action alternative are summarized below.

Soil Physical Properties
Cumulative effects to soil physical properties would be identical to those displayed in the Direct and Indirect Effects portion of this analysis since no past management activities have occurred within the project area. Cumulative impacts to soil physical properties under the Action Alternative would fall below the range analyzed for in the EXPECTED FUTURE CONDITIONS section of the SFLMP and are well within the 20-percent impacted area established as a level of concern in the SFLMP (DNRC, 1996).

Nutrient Cycling
Risk of cumulative effects to nutrient cycling from nutrient pool loss would be low. This alternative would follow research recommendations found in Graham (1994) for retention of coarse and fine woody debris through contract clauses and site-specific mitigation measures.

DNRC would minimize long-term soil impacts and adverse cumulative effects by implementing any or all of the following: 1) skid trails would be located away from low spots and areas that concentrate runoff, 2) mitigating the potential direct and indirect effects with soil moisture restrictions, season of operation, and method of harvest 3) retention of a portion of coarse woody debris and fine litter for nutrient cycling.

Table S-2 – Soil Map Unit Descriptions for the Colonite Project Area

Map Unit	Name	Soil & Vegetation Descriptions	Management Considerations			
			K_w/erosion potential***	**Timber**	**Roads**	**Comments**
303	Glaciated mountain ridges 15-35% slopes Elev: 3,500-4,700 ft	Soils in this landtype are formed mostly in material weathered from metasedimentary rocks with some glacial till overlying bedrock in some locations. Rock outcroppings are common. Surface soils are shallow in this landtype with bedrock typically present within 24 inches of the surface. Surface soils are a very cobbly sandy loam about 6 inches thick. Vegetation is typically Douglas-fir and lodgepolse pine interspersed with grasslands. Northern aspects generally have a higher productivity.	K_w = 0.10–0.15 Erosion risk is low	Potential Prod: very low Equipment: Tractor, although rock outcroppings limits operability. Regen: Can be limited by shallow soils and droughtiness.	Roads are difficult due to hard rock. Cut and fill material is extremely stony. Roads are rough due to the large stones and cobbles. Droughtiness limits revegetation.	Due to the amount of rock in this landtype, sediment delivery efficiency and erosion is limited. Surface drainage systems are very rare to non-existent.
352	Glaciated mountain slopes 20-60% slopes Elev: 2,200-5,600 ft	Compacted glacial till underlies a volcanic-ash influence loess surface layer up to 14 inches thick. The lower surface soils may have rock fragments that comprise up to 50% of the content. Vegetation is a mixed forest of western larch, Douglas-fir, lodgepole pine and grand fir. The understory is dominated by forbs and low-growing shrubs.	K_w = 0.17-0.20 Erosion risk is low	Potential Prod: High Equipment: Tractor and cable systems dependent upon slope.	Cutbanks formed during road construction can slough if too steep. Tread erosion of fine material will leave a rough cobbly surface. Crusted surface soils may limit revegetation after construction	Erosion hazard and sediment delivery efficiency is moderate. Trees are susceptible to windthrow due to the restricted root penetration into the compacted glacial till subsoils.
353	Glaciated Mountain Ridges, 15-35% Elev: 4,000-6,000 ft	Soils of this map unit are weathered from metasedimentary rocks. Vegetation is dry mixed forest of sub-alpine fir with forbs/shrub understory.	K_w = 0.05-0.43 Erosion risk is moderate	Potential Prod: High Equipment: Tractor/Cable Regen: Can be limited by grass competition	Roads perform well with standard location, construction and maintenance practices. Rock outcrops may hinder construction.	Productive surface layer is very thin, watch season of operation.

355	Glaciated Mountain Slopes, 20-50% Elev: 3,000 to 5,500 ft	Soils of this map unit are compacted glacial till formed from metasedimentary rocks. Vegetation is moist mixed forest and dry mixed forest with forbs/shrub understory.	K_w = 0.17-0.20 Erosion risk is low	Potential Prod: High Equipment: Tractor/Cable Regen: Can be limited by grass competition	Roads perform well with standard location, construction and maintenance practices. Rock outcrops may hinder construction.	Productive surface layer is very thin, watch season of operation.

REFERENCES

Brown, J. K. 1974. *Handbook for Inventorying Downed Woody Material*. In: USDA and Forest Service (editors). Ogden, Utah: Intermountain Forest and Range Experiment Station.

DNRC, 2009. *DNRC Compiled Soils Monitoring Report on Timber Harvest Projects*. Missoula, MT.

DNRC, 1996. *State Forest Land Management Plan*. Montana Department of Natural Resources and Conservation. Missoula, MT.

Graham, R. T., A. E. Harvey, M. F. Jurgensen, T. B. Jain, J. R. Tonn and D. S. Page-Dumroese. 1994. *Managing Coarse Woody Debris in Forests of the Rocky Mountains*. USDA Forest Service Research Paper. INT-RP-447. 13 pp.

NRCS, 1998. MT619-*Soil Survey of Flathead National Forest Area, Montana*. United States Department of Agriculture Natural Resources Conservation Service.

WATERSHED AND HYDROLOGY

INTRODUCTION

Project Area and Project Activities

The gross project area includes 320 acres of Trust Lands near Libby, Montana. The affected watershed is Colonite Creek, a perennial tributary to East Fisher Creek. This parcel is bordered by industrial private and Kootenai National Forest lands. Proposed project activities would include ground based and cable yarding methods to harvest timber on approximately 278 acres within the project area.

Resource Description

Water resources in and around the project area include perennial and intermittent streams. Colonite Creek supports a population of Westslope Cutthroat trout. In general, water resources are in good, stable condition. Water yield, sediment delivery and fish habitat will be assessed in this analysis. Water yield increases (WYI) can affect channel stability if dramatically altered, and sediment delivery from both in-channel and introduced sources is a primary component of overall water quality in a watershed.

Issues and Measurement Criteria

The following issues encompass the specific issues and concerns raised through public comment and internal scoping of the proposed project. For a specific list of individual comments and concerns, please refer to the project file.

Sediment Delivery

Sediment delivery and subsequent water quality impacts can be affected by timber harvesting and related activities, such as road construction, by increasing the production and delivery of fine sediment to streams. Construction of roads, skid trails, and landings can generate and deliver substantial amounts of sediment through the removal of vegetation and exposure of bare soil. In addition, removal of vegetation near stream channels reduces the sediment-filtering capacity and may reduce channel stability and the amounts of large woody material. Large woody debris is a very important component of stream dynamics, creating natural sediment traps and energy dissipaters to reduce the velocity and erosive power of stream flows. Other aspects of sediment analysis can also be found in the fisheries analysis portion of this document.

Measurement Criteria: Sediment from roads, harvesting activities and vegetative removal will be analyzed qualitatively through data collected during past statewide and DNRC internal BMP field reviews.

Water Yield

Water yield increases can result from timber harvesting and associated activities, which can affect the timing, distribution, and amount of water yield in a harvested watershed. Water yields increase proportionately to the percentage of canopy removal (*Haupt 1976*), because removal of live trees reduces the amount of water transpired, leaving more water available for soil saturation and runoff. Canopy removal also decreases interception of rain and snow and alters snowpack distribution and snowmelt, which lead to further water-yield increases. Higher water yields may lead to increases in peak flows and peak-flow duration, which can result in accelerated streambank erosion and sediment deposition. Vegetation removal can also reduce peak flows by changing the timing of snowmelt. Openings will melt earlier in the spring with solar radiation and have less

snow available in late spring when temperatures are warm. This effect can reduce the synchronization of snowmelt runoff and lower peak flows.

Measurement Criteria: The water yield increase for the project area streams was determined using field review and aerial photo interpretation. Visual inspection of the runoff patterns and stream channel stability within the Colonite project area were used to assess the impacts of past management to water yield. Aerial photo interpretation was used to determine the extent of past management in the watershed.

Fish Habitat

Fish habitat can be affected in three primary ways by timber harvesting through the following: 1) introduction of fine sediment to spawning habitat as a result of road construction and use, and ground-based equipment operation, 2) stream temperature can be increased if trees that provide shade to a stream are removed, and 3) large woody debris in streams can be reduced if trees are removed that have the potential to fall into or across a stream.

Measurement criteria: Qualitative discussion of potential risks to sediment delivery, stream shading and large woody debris.

ANALYSIS AREA

Sediment Delivery

Analysis area for direct, indirect and cumulative effects to sediment delivery will be analyzed on all existing roads in and leading to the proposed project area. Sediment delivery will be analyzed qualitatively where stream crossings exist within the proposed project area using visual inspection and lineal measurement to determine the road surface area delivering to a stream. Additional sites on proposed haul routes located outside the project area will be assessed qualitatively for their potential to affect downstream water.

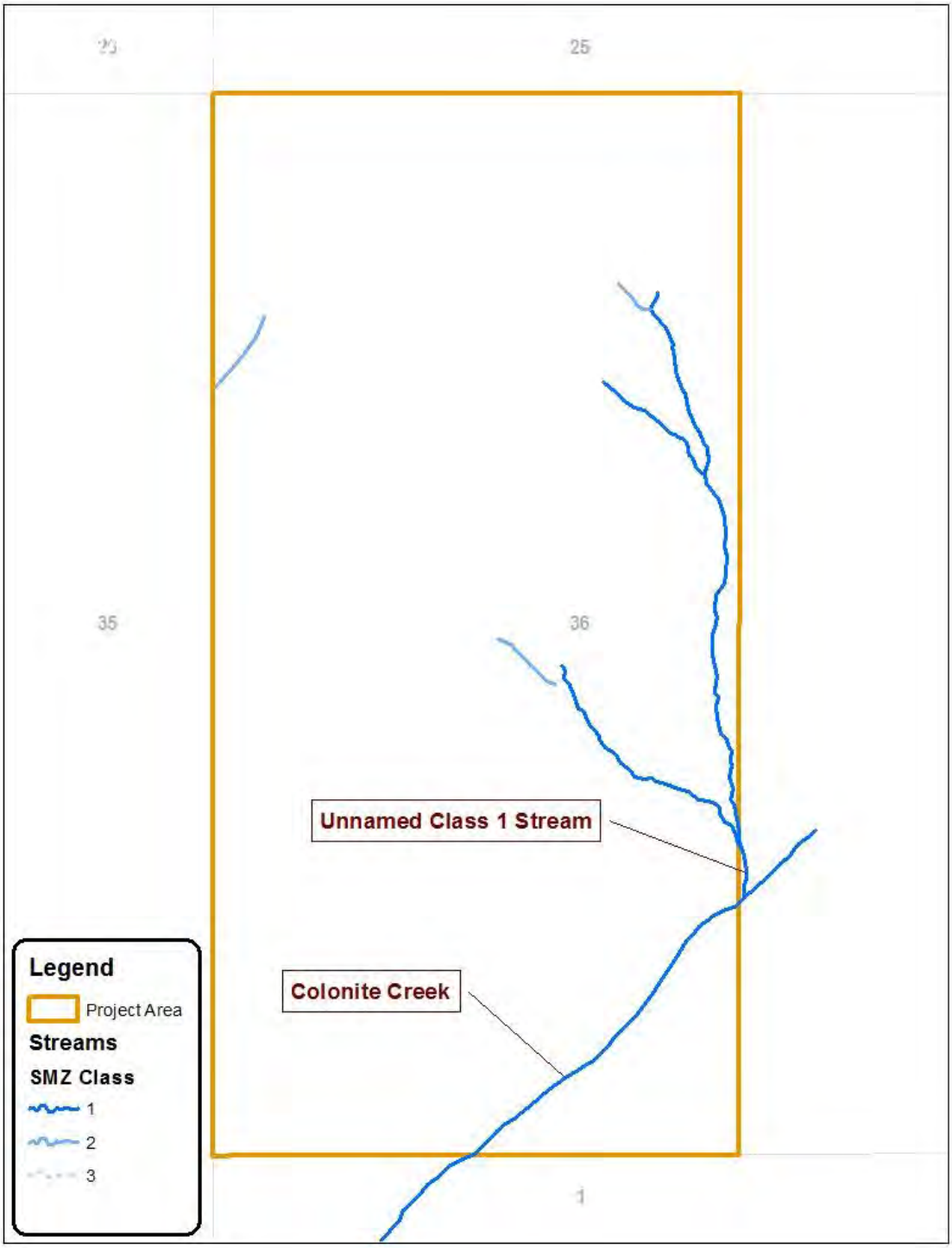
Water Yield

Direct, indirect and cumulative effects to water yield will be analyzed in the stream systems within the project area. A map of the project area and the streams found within the project area is found in ***Figure H-1***. All existing activities on all ownership and proposed activities related to the Colonite project will be analyzed using methods described above. These areas were chosen as an appropriate scale of analysis, and will effectively display the estimated impacts of proposed activities.

Fish Habitat

Direct, indirect and cumulative effects to fish habitat will be analyzed in the Colonite Creek watershed, specifically where proposed harvest areas may be adjacent to the main stem of Colonite Creek and its unnamed tributaries.

Figure H-1 – Project Area Streams



EXISTING CONDITIONS

Relevant Agreements, Laws, Plans, Rules, and Regulations

Montana Surface Water Quality Standards

According to the Montana Surface Water Quality Standards found in *ARM 17.30.609* (*1*)(*a*), this portion of the Kootenai River drainage, including Colonite Creek, is classified as B-1. Among other criteria for B-1 waters, no increases are allowed above naturally occurring levels of sediment, and minimal increases over natural turbidity. "Naturally occurring," as defined by *ARM 17.30.602* (*19*), includes conditions or materials present during runoff from developed land where all reasonable land, soil, and water conservation practices (commonly called Best Management Practices or BMPs) have been applied. Reasonable practices include methods, measures, or practices that protect present and reasonably anticipated beneficial uses. These practices include, but are not limited to, structural and nonstructural controls and operation and maintenance procedures. Appropriate practices may be applied before, during, or after completion of activities that could create impacts.

Designated beneficial water uses within the project area include cold-water fisheries and recreational use in the streams in the surrounding area. There are no existing surface water rights in Colonite Creek or the proposed project area.

Water-Quality-Limited Waterbodies

None of the streams in the proposed project area are currently listed as water-quality-limited waterbodies in the *2014 Montana 303*(*d*) list (DEQ, 2014).

Montana SMZ Law

By the definition in *ARM 36.11.312* (*3*), the majority of the stream reaches in the proposed project area are Class 1 streams. Colonite Creek is a perennial fish-bearing stream that contributes flow to East Fisher Creek. The three other stream segments identified in ***Figure H-1*** are class 2 (one flows more than 6 months per year and does not contribute surface flow to another body of water, the other two flow less than 6 months per year and contribute surface flow to another stream). According to ARM 36.11.312 (4), a Class 2 stream is a portion of a stream that is not a Class 1 or Class 3 stream segment.

Forest Management Rules

In 2003, DNRC drafted Administrative Rules for Forest Management. The portion of those rules applicable to watershed and hydrology resources include ARM 36.11.422 through 426. All applicable rules will be implemented if they are relevant to activities proposed with this project.

Habitat Conservation Plan

In 2011, DNRC adopted a habitat conservation plan (HCP) in coordination with the United States Fish and Wildlife Service. All applicable HCP riparian timber harvest and aquatic conservation strategies (USFWS & DNRC, 2010) would be implemented if they are relevant to activities proposed with this project.

EXISTING ENVIRONMENT

Introduction

All of the proposed project area is located within the Colonite Creek watershed. This drainage is a perennial tributary to East Fisher Creek. Precipitation for the entire project area parcel is 50 inches annually.

Sediment Delivery

Sediment delivery from in-channel sources was evaluated by a DNRC hydrologist in 2014. Stream channels in the proposed project area are primarily in good condition (*Rosgen 1996*). No areas of down-cut channels were identified during field reconnaissance. Large woody debris was found in adequate supply to support channel form and function. Woody material in a stream provides traps for sediment storage and gradient breaks to reduce erosive energy and work as flow deflectors to reduce bank erosion.

Most reaches of the unnamed tributaries in the proposed project area were rated as B4 channels using a classification system developed by *Rosgen* (*1996*). Channel types rated as "B" are typically in the 2- to 4-percent gradient range, and have a moderate degree of meander (sinuosity). Channel-bed materials in B4 types are mainly gravel. Given the cobble and gravel content and the gradient of these stream types, bed materials commonly move. Gravel bars have formed on point bars in these reaches (point bars are areas of natural deposition found on the inside of a meander bend). No past harvesting, including SMZ harvesting has occurred in the project area so no impacts from past skidding or yarding were identified.

Road System

No sediment delivery from the existing road system was identified on any of the proposed haul routes within or leading to the project area. The existing road system in the proposed project area is moderate standard native-surfaced road, and most reaches meet applicable best management practices for surface drainage and erosion control. Most road grades are generally under 8%. The road system was constructed to access timber harvesting by the Plum Creek Timber Company and the US Forest Service during past entries. Most of these roads are moderate standard, are built on gentle to moderate grades, and are not causing active erosion or sediment delivery to streams.

Much of the existing road system in and leading to the proposed project area meets applicable BMPs. Surface drainage and erosion control features were installed on the road systems during recent past project work by Plum Creek Timber Company.

Water Yield

No water yield impacts were identified from past activities in and around this portion of the Colonite Creek drainage. Past management activities include timber management and cattle grazing. These activities have led to reductions in forest canopy cover, and construction of roads.

Following field reconnaissance of the parcel, it was determined that a detailed water yield analysis would not be necessary for this project. The Colonite Creek watershed is approximately 1,378 acres. The ECA method, outlined in Haupt (1976), is designed for watersheds in the 5,000 to 50,000 acre range. All stream channels identified within the proposed project area were stable and showing no signs of impacts from water yield increases. None of the broad ephemeral draws within the proposed project area have any evidence of overland flow (channel scour, re-alignment of litter, definable banks). Colonite Creek is stable and not actively eroding or down-cutting. As a result, annual water yield and peak flow increases resulting from past activities have not been sufficient to lead to de-stabilized channels in or below the project area. After evaluating the watershed cumulative effects risks along with the current conditions in the Colonite project area, by ARM 36.11.423, a detailed quantitative watershed analysis is not needed in this parcel.

Fish Habitat

Colonite Creek is currently fish habitat to a population of westslope cutthroat trout within the project area. Westslope cutthroat trout are classified 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. The Department of Natural Resources and Conservation has also identified westslope cutthroat trout as a sensitive species (ARM 36.11.436).

Fish habitat in Colonite Creek is affected by sediment levels in spawning gravel. Levels of sediment delivery reported above are very low, and likely not a substantial risk of impacts to fish habitat in the proposed project area. No impacts to stream shading levels were apparent during field reconnaissance. Since no past harvesting has occurred in the proposed project area, no alterations to the SMZ/RMZ stands and canopy have occurred. Stream shading was measured in 2014 by a DNRC fisheries biologist. Results using solar pathfinder were: June – 81% angular canopy density (ACD), July – 84% ACD, August – 89% ACD and September – 91% ACD. In addition, stream temperature sensors were placed in Colonite Creek where it enters the project area and where it leaves the project area. Data analysis shows the existing condition in Colonite Creek is a 1.4^{o}C increase from the upstream end of the project area to the downstream end. Large woody debris was found to be 139 pieces/1000 feet. The average pieces per 1000 feet for this habitat type and stream type is 150. Although existing condition is below reference reach averages, 139 pieces/1000 feet should be considered the baseline for Colonite Creek since this reach is unmanaged and levels are not affected by any management-related alteration.

The primary threat to westslope cutthroat trout populations in the project area is from competitive displacement and hybridization by nonnative species, especially rainbow trout. The issue of displacement and hybridization of native westslope cutthroat trout by non-native species is an issue outside the scope of the project proposal, and will not be analyzed further in this analysis.

ENVIRONMENTAL EFFECTS

DIRECT AND INDIRECT EFFECTS

No-Action Alternative

Direct and indirect effects of the No Action alternative would be similar to the conditions described under the existing conditions for sediment delivery, water yield and fish habitat. The sediment delivery, water yield and fish habitat would be unaffected by the no action alternative, and streams and ephemeral draws in the proposed project area would continue to be affected by natural and pre-existing conditions.

Action Alternative

Sediment Delivery

There is a low risk of direct or indirect effects to sediment delivery to streams from the timber harvesting activities proposed in the Action Alternative. The SMZ law, Administrative Rules for Forest Management, Riparian Management Zones (RMZ), DNRC Habitat Conservation Plan, and applicable BMPs would be applied to all harvesting activities, which would minimize the risk of sediment delivery to draws and streams. The Montana BMP audit process has been used to evaluate the application and effectiveness of forest-

management BMPs since 1990; this process has also been used to evaluate the application and effectiveness of the SMZ Law since 1996. During that time, evaluation of ground-based-skidding practices near riparian areas has been rated 92-percent effective, and these same practices have been found effective over 99 percent of the time from 1998 to present (*DNRC 1990 through 2012*). Since 1996, effectiveness of the SMZ width has been rated over 99 percent (*DNRC 1990 through 2012*). As a result, with the application of BMPs, HCP conservation strategies and the SMZ Law, proposed activities are expected to have a low risk of low impacts to sediment delivery.

Road System

The action alternative would maintain and improve erosion control and surface drainage on all roads proposed for haul. In addition, the action alternative proposes to construct approximately 2.6 miles of new road. These proposed new roads would involve the installation of 3 new stream crossings. There is a high risk of low impacts to Project Area streams from construction of these stream crossings. The high risks of low impacts are related mainly to the exposure of bare soil on cut and fill slopes on and around the proposed crossings. As these sites re-vegetate in 2 to 3 years, these sites would become a low risk of low impacts to sediment delivery. Short-term risk of low levels of erosion and deposition would be increased for approximately 2 to 3 years after completion due to exposure of bare soil during road construction, surface drainage improvement and hauling activities. This risk would return to near current levels as road surfaces and cut and fill slopes re-vegetate. Throughout all proposed activities, water quality standards are expected to be met and there is a low risk of impacts to downstream beneficial uses.

Water Yield

No measurable direct or indirect impacts to water yield are anticipated in project area streams from the proposed harvesting for the following reasons: 1) The well-drained to excessively well-drained nature of the soils would absorb additional available moisture and not produce increased surface runoff, and would in turn produce little or no detectable change in water yield from upland sites, 2) Flows in project area streams are stable, the channels have not shown increased lateral or vertical erosion that could be attributed to increased flows, 3) The other streams and ephemeral draws within this parcel are stable and vegetated with a dense mat of grass and forbs vegetation, making them capable of handling potential water yield increases without destabilizing.

Fish Habitat

There is a low risk of low direct and indirect effects to fish habitat from this alternative. The proposal would harvest timber from approximately 278 acres within the project area and construct approximately 2.6 miles of new road. As described in the sediment delivery portion of this analysis, there is a low risk of direct or indirect impacts to in-channel sediment delivery and a high risk of low impacts to out-of-channel sources of sediment delivery. Overall, there is a low to moderate risk of low direct or indirect impacts to sediment levels in spawning gravels. Approximately 16 acres of harvesting are proposed within class 1 RMZs, including Colonite Creek. There is also expected to be a low risk of low impacts to stream shading/stream temperature or recruitment of large woody debris from this alternative as a result of harvesting within class 1 RMZs. According to AQ-RM1(5), Colonite Creek would have a maximum allowable increase in mean weekly temperature of 1°C above the current increase of 1.4oC. Based on HCP analysis and effectiveness monitoring, the project proposal, including RMZ harvesting, has a low risk of low impacts to stream temperature. There is a very low risk of low impacts to large woody debris from the proposed harvesting based on HCP analysis and effectiveness monitoring. Risk of adverse direct or indirect effects to fish habitat

from this alternative are expected to be minimized by implementation of all applicable BMPs, SMZ rules, and would satisfy ARM: 36.11.425(5) through 36.11.425(9).

CUMULATIVE EFFECTS

No-Action Alternative

Cumulative effects of the No Action alternative on sediment delivery and water yield would be similar to the situations described in the existing conditions. The sediment loading and water yield would be unaffected by the No Action alternative, and the streams and ephemeral draws in the proposed project area would continue to be affected by natural and pre-existing conditions.

Action Alternative

Sediment Delivery

Risk of sediment delivery and sediment loading to East Fisher Creek and waters downstream from the proposed project area would be very low, but slightly increased from current levels in the short term due to new road construction. Maintenance and improvement of existing erosion control and surface drainage on the existing road system would yield similar erosion rates to current levels. Overall, there is a low risk of short-term low-level increases in sediment loading for about 2-3 years. However, water quality standards are expected to be met and there is a low risk of impacts to beneficial uses.

Water Yield

There is a low risk of cumulative effects to water yield in this project area and downstream waters for the following reasons: 1) The well-drained to excessively well-drained nature of the soils would absorb additional available and not produce increased surface runoff, and would in turn produce little or no detectable change in water yield from upland sites, 2) Flows in project area streams and draws are stable, channels have not shown increased lateral or vertical erosion that could be attributed to increased flows, so any increases in water yield present a low risk of increased in-channel erosion or other channel adjustments, and 3) The other streams and ephemeral draws within this parcel are stable and vegetated with a dense mat of grass and forbs vegetation, making them capable of handling potential water yield increases without destabilizing.

Fish Habitat

There is a low risk of low cumulative effects to fish habitat from the proposed Action Alternative. As reported in the above section, there is a low risk of low direct and indirect impacts from the Action Alternative due to harvesting activities within the Colonite Creek watershed, including sediment delivery, stream temperature and large woody debris recruitment. When these potential impacts are combined with the existing conditions, there is a low risk of adverse cumulative impacts to fish habitat.

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VEGETATION ANALYSIS

INTRODUCTION

This analysis is designed to disclose the existing condition of the vegetative resource and display the anticipated effects that may result from each alternative of this proposal. During initial scoping, issues were developed both externally and internally regarding vegetative conditions. The following concerns were expressed regarding proposed timber harvesting and related activities:

- Concern for maximizing the return to the Common Schools Trust Fund by intensively managing for healthy and biologically diverse forests.
- Improve forest health. Minimize losses in timber value from mortality due to Douglas-fir bark beetle present within the sale area.
- Promote the continued presence and/or reestablishment of historically appropriate timber types on Trust Land included in this project.
- Reduce fire hazard and associated risks of loss to State of Montana, United States Forest Service, and privately owned lands in the area.
- Any culturally modified trees (CMT) be brought to the attention of the Confederated Salish and Kootenai Tribes.

ANALYSIS AREAS

This section is located 31 air miles south southeast of Libby, Montana, in Lincoln County. The analysis area for direct and indirect effects is the west half of state section 36 of T26N R29W. Cumulative impacts are considered at the scale of the Libby Unit and will adequately allow for the disclosure of existing conditions, direct, indirect, and cumulative impacts.

ANALYSIS METHODS

The Libby Unit typically prepares one to two timber sales per year. Each proposed project is evaluated for its potential effects on lands managed by the DNRC and the surrounding landscape. Methods used in the analysis included:

- review of stand level inventory (SLI) data,
- field visits,
- review of scientific literature,
- aerial photography,
- consultation with other professionals.

EXISTING CONDITION

Past and current events have changed the forest conditions on the proposed parcels involved in the project area from what would have been present historically according to Losensky's "Historical Vegetation of Montana" (1997). The area being analyzed was historically characterized by infrequent, mixed severity and stand replacing wildfires prior to the early 1900's. Since the early 1900's, fire has been virtually eliminated

from the project area. The current conditions have created dense, dead and live fuels from ground level to overstory crowns. This stand and fuel structure contributes to an increased risk of stand replacing fire hazard.

The project area has no threatened or endangered plant species according to the Montana Natural Heritage Program database. SLI identified 166 acres of potential old growth in the project area, and after field verification none of these acres were found to meet the old growth minimum criteria according to Green et al. This was due largely to the heavy mortality of the oldest and largest of the Douglas-fir from bark beetles.

Logging activity has not occurred in the past on this parcel and the project area has naturally occurring stand conditions, absent fire. The over mature condition of the unmanaged parcel exhibits poor quality, form class, overcrowding and a high incidence of disease and mortality. Measurements show 23 trees per acre over the entire range of size classes, are standing dead due largely to Douglas-fir beetle. Standing high quality wildlife snags are plentiful due to the high mortality and lack of road access to this section.

Table V-1: Current cover types and desired future conditions for harvest units in section 36 T26N R29W.

Cover Type for harvest units in Section 36	Current Cover Acres	Major Potential Vegetation Acres	Current minus MPV
Western larch/Douglas-fir	55	18	37 acre surplus
Ponderosa pine	223	260	37 acre deficit
Totals	278	278	

DIRECT AND INDIRECT EFFECTS

No-Action Alternative

No timber harvest or associated activities would occur under this alternative. Timber types would continue to advance towards climax conditions with shade tolerant trees continuing to out-compete seral species in the understory.

Action Alternative

The proposed action alternative would harvest timber on 278 acres. The proposed harvest would capture value of recent dead and those trees susceptible to the beetle outbreak. Management activities would focus on the perpetuation of 18 acres in the Western larch/Douglas-fir cover type and 223 acres in the Ponderosa pine cover type and the conversion of 37 acres to preferred seral species. More detailed information for treatment of individual units can be found in Attachment D-1, Harvest Prescription. Year around road closure of new roads would help prevent the unauthorized removal of snags and snag recruits. The project area would be altered with regard to size class distribution, stocking levels and species composition. Fuel loading would be reduced by implementation of harvest prescriptions. Growth and vigor of the regenerated stand would

increase. Noxious weeds would be monitored and addressed through the integrated weed management program.

CUMULATIVE EFFECTS

No-Action Alternative

Under this alternative, stand structure and species composition on state land across the Libby Unit will move towards a shade tolerant, climax condition. Fuel loadings are expected to increase due to tree mortality from insect outbreaks.

Action Alternative

The Libby Unit manages 30,218 acres. Across Libby Unit there would be a slight shift towards the Major Potential Vegetation Conditions. This proposed action, in addition to other timber sales on state land on the Libby Unit, are moving stands toward the major potential vegetation through the use of harvest treatments that generally favor the development of early seral cover types. Fuel loading, ladder fuels, insect and disease incidence would be reduced.

Colonite Timber Sale

STAND PRESCRIPTION

Name: Jeremy Rank **Date:** October 2014

Unit Number: 1 **Location:** T26N R29W w/2 section 36 **Acres:** 278

Elevation: 3800-5000ft **Slope:** 5-55% **Aspect(s):** generally SE facing

Habitat type: Douglas-fir/pinegrass both the kinnikinnick phase and pinegrass phase

Soils: The ridge tops in the NW portion of the unit is Rock outcrop – Lithic Ustochrepts complex, glaciated mountain ridges. To the south and east of this ridge top feature down to Colonite creek is Andic Dystrochrepts, glaciated mountain slopes. To the south of Colonite creek is Andic Cryochrepts – Rock outcrops – Lithic Cryochrepts complex, glaciated mountain ridges.

Description of stand(s):

These stands have no record or evidence of previous harvest activities. This unit is dominated by ponderosa pine, Douglas-fir, grand fir and western larch. Bark beetles have been very active in this parcel for the last 3-4 years and have killed approximately 20% of the Douglas-fir in the unit.

Treatment Objectives:

1. Produce a source of revenue to the Common School Trust.
2. Promote historic forest stand conditions and species compositions.
3. Reduce susceptibility to insects and disease.
4. Reduce susceptibility to stand replacement wildfire.

Prescribed Treatment:

2015-2016: Seed Tree Harvest:

Utilize conventional or mechanical harvesting with ground based and skyline based skidding systems, leaving approximately 13 green trees per acre plus snags. Treatment will focus on the retention of all ponderosa pine and western larch, this would retain about 7tpa of ponderosa pine with an average dbh of 21" and 4tpa of western larch with an average dbh of 16". All grand fir and lodgepole pine and approximately 98% of all Douglas-fir would be harvested. Western larch, Douglas-fir and ponderosa pine snags greater than 21" DBH will be retained. During this contract period, slashing of grand fir regeneration and thinning of Douglas-fir regeneration to approx. 14ft x 14ft spacing would occur.

GUIDELINES FOR HARVEST OF UNIT

Section Line / Ownership Boundary Markings:

Section lines are marked with red painted Xs at eye level and facing into the State ownership and facing monuments. These boundaries are also flagged with red and blue ribbon.

Grizzly Bear Hiding Cover:

Boundary flagged with blue ribbon. There will be no harvesting or equipment entry into these patches.

Streamside Management Zone Markings:

Streamside Management Zone boundaries are marked with 3 horizontal orange painted stripes at eye level and facing away from the stream and into the adjacent harvest unit as well as orange flagging stenciled with "STREAMSIDE MANAGEMENT ZONE". Trees are designated to be cut inside the SMZ by an orange horizontal paint mark at breast height.

Tree Marking:

No trees in this unit are marked.

Prescription:

The end result will be to achieve approximately 13 live leave trees per-acre on average and 2 wildlife snags. Leave tree selection will retain all ponderosa pine, western white pine, and western larch. Occasionally it will be necessary to leave a Douglas-fir from the mid or lower canopy level that has a conical crown that has a >50% live crown ratio, and has desirable form and vigor and totally free from evidence of bark beetle attack. This Douglas-fir would only be left when a ponderosa pine or western larch leave tree is greater than 70 feet away. The prescription would cut all grand fir, lodgepole pine and approximately 98% of the Douglas-fir.

After the felling and yarding operations are completed, it is also prescribed for all logging damaged submerch to be slashed, and the remaining regeneration to be pre-commercially thinned to a 14ft x 14ft spacing within the harvest unit.

Prescription Criteria:

1. Leave trees: All ponderosa pine, western white pine and western larch are prescribed as leave trees. Occasionally a select DF from mid or lower canopy level are prescribed to be left on 70 foot x 70 foot spacing where ponderosa pine, western white pine or western larch are not available. These select well-formed DF trees shall have a conical crown with >50% live crown ratio, have desirable form and vigor and be totally free from evidence of bark beetle attack.

2. Wildlife Snags: Leave all ponderosa pine, western larch and Douglas-fir snags that are equal to or greater than 21" DBH as is specified in the timber sale contract section VII.C.5. According to the cruise data, this will average 2+ per acre. Ensure a minimum of 2 snags per acre >21" DBH are left, if these are not available, retain the largest available.

3. Purchaser Do-FI: Machine piling and scarification will be conducted as needed to promote natural Ponderosa pine regeneration and treat slash.

4. Purchaser Do-FI: After felling and yarding activities are completed, the 278 acre unit is to have all logging damaged trees slashed and regeneration thinned. This is noted on the timber sale data sheet as a $20,850 purchaser do expense based on $75/acre cost over 278 acres. Thinning will be accomplished according to the following specifications:
    a. Only conifer trees taller than 24 inches in height shall be slashed. Conifer trees greater than 24 inches in height shall be thinned using the criteria shown in table 1.

Table 1 – REQUIREMENTS SPECIFIC TO THE PROJECT AREA			
PROJECT	UNIT	TARGET STOCKING TREES PER ACRE	AVERAGE SPACING*
Section 36, T. 26N., R.29W.	COLONITE	222	14 FEET WITH A 10 FOOT MINIMUM
* The average stem spacing should vary so that the best trees are retained. Two or more sides of the crown of the leave tree should have a minimum of 6 feet of open-air space between itself and the tips of the other tree crowns.			

    b. Tree quality selection criteria: The best trees of preferred species will be retained as leave trees according to the spacing shown in Table 1.
        1. First choice of leave trees should have the following qualifications: straight single stems, small branch diameter, crown to stem ratio (>50%), good crown coloration, good crown form, vigorous, freedom from insects, diseases, and physical and mechanical damages and a healthy, vigorous appearance.

2. Second choice leave trees should have the above specifications plus should be the dominant tree in the stand, and have the best present leader growth. Cut all trees that have visible defects or deformities such as broken tops, badly damaged stems, forked tops, severe stem sweep, crooked stems, insect or disease damage, or badly suppressed stems.
3. Indicators of undesirable trees include the following: multiple tops, poor crown ratios (<50%), poor crown form and coloration, crook or sweep in boles, dead or broken tops, large branch diameter, presence of insects, diseases or physical or mechanical damages, suppression, poor annual growth. These indicators shall determine the trees to be cut; slight defects may be acceptable for a leave tree if it is the best selection within a competitive group.

c. Species Preference: When selecting between individual trees with similar indicators of quality, the following order of preference will be used: 1- Western White Pine, 2 – Ponderosa Pine, 3 – Western Larch, 4 – Douglas-fir, 5- Grand fir, 6-other species.

WILDLIFE ANALYSIS

Prepared by: Leah Breidinger, Wildlife Biologist, Northwestern Land Office

INTRODUCTION

The wildlife analysis is designed to disclose the existing condition of wildlife resources and the anticipated direct, indirect, and cumulative effects that may result from implementing the No-Action and Action alternatives. The following issue statements were developed from concerns raised by DNRC specialists and public comments received during scoping and will be addressed in the following analysis:

- **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 forest.
- **Snags and coarse woody debris.** The proposed activities could reduce the availability of snags and coarse woody debris and increase human access for firewood harvesting, which could adversely affect the quality of wildlife habitat.
- **Grizzly bears.** The proposed activities could alter grizzly bear cover, reduce secure areas, and increase human access, which could adversely affect bears by displacing them from important habitats, 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.
- **Flammulated owls.** The proposed activities could alter the structure of flammulated owl preferred habitat, which could reduce habitat suitability for flammulated owls.
- **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.

ANALYSIS AREAS

Direct and Indirect Effects

The direct and indirect effects of the proposed activities on all species/issues were analyzed within the Project Area (FIGURE W-1 –ANALYSIS AREAS), which consists of 318 acres of DNRC-managed lands in Section 36 T26N, R29W.

Cumulative Effects

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 W-1 –ANALYSIS AREAS and FIGURE W-1 –ANALYSIS AREAS. Cumulative effects analysis areas (CEAAs) include the Project Area as well as lands managed by other agencies and private landowners. Detailed descriptions of each analysis area are located in the *EXISTING CONDITION* section for each issue or species evaluated (e.g., pileated woodpecker etc.).

TABLE W-1. ANALYSIS AREAS. *Descriptions of the Project Area and cumulative effects analysis areas for the Colonite Timber Sale.*

ANALYSIS AREA NAME	DESCRIPTION	TOTAL ACRES	ISSUE(S)/SPECIES ANALYZED
Project Area	DNRC managed lands in Section 36, T26N, R29W.	318	direct & indirect effects for all issues/species
Medium CEAA	Portions of the East Fisher Creek Subwatershed located east of East Fisher Creek.	9,095	mature forest cover & connectivity, snags & coarse-woody debris, pileated woodpeckers, flammulated owls, big game winter range
Large CEAA	Portions of the Silver Butte Fisher River and Pleasant Valley Fisher River Watersheds considered Cabinet-Yaak Ecosystem (CYE) non-recovery occupied habitat in the vicinity of the Project Area (*USFWS 1993*, *Wittinger* 2002).	30,784	Grizzly bears, fishers

ANALYSIS METHODS

Analysis methods are based on DNRC State Forest Land Management Rules, which are designed to promote biodiversity. The primary basis for this analysis included 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 wildlife professionals. The coarse-filter wildlife analysis section includes analyses of the direct, indirect and cumulative effects of the proposed alternatives on the connectivity of mature forest habitats and snags and coarse woody debris. Old-growth forest habitat does not occur in the Project Area. In the fine-filter analysis, individual species of concern are evaluated. Cumulative effects analyses account for known past and current activities, as well as planned future agency actions. No timber sales have occurred on DNRC lands in the Project Area in the past 20 years), although multiple small salvages have occurred throughout the area. No timber sales are proposed on USFS lands in the CEAAs (*USFS 2014*). Changes to forest structure resulting from all DNRC projects have been accounted for in SLI data used for this analysis. Timber sales that occurred on private lands and USFS lands are accounted for in analyses of aerial photographs.

RELEVANT AGREEMENTS, LAWS, PLANS, RULES, AND REGULATIONS

Various policy and procedural documents provide the foundation for management criteria pertaining to wildlife and their habitat on state lands. The documents most pertinent to this project include: *DNRC Forest Management Rule*s, *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*.

COARSE-FILTER WILDLIFE ANALYSIS

MATURE FOREST COVER AND CONNECTIVITY

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

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 events, 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 ≥40% canopy cover.

Analysis Areas

The analysis area for direct and indirect effects is the 318-acre Project Area (FIGURE W-1 – ANALYSIS AREAS). The analysis area for cumulative effects is the 9,095-acre Medium CEAA described in TABLE W-1 –ANALYSIS AREAS (FIGURE W-1 –ANALYSIS AREAS). The Medium CEAA is defined by geographic features including topography and streams and represents an area large enough to support a diversity of species that use mature forest habitat and/or require connected forest habitat.

Analysis Methods

Analysis methods for mature forest cover and landscape connectivity include field evaluations and Geographical Information System (GIS) analysis of aerial-photographs, DNRC stand level inventory data (SLI), and USFS canopy cover data (*VMap 11*). Mature forested habitat is defined here and in the remainder of the document as forest stands with ≥40% canopy cover comprised primarily of trees that are on average >9 inches dbh. Forested stands containing trees of at least this size and density were considered adequate for providing minimal conditions necessary to facilitate movements of many wildlife species that benefit from well-connected mature forest conditions across the landscape. Factors considered in the analysis include: 1) the degree of timber harvesting, 2) availability and patch size of mature forested habitat (≥40% canopy cover, trees >9 inches dbh average), 3) open and restricted road density, and 4) the availability of potential travel corridors.

Existing Conditions

The Project Area currently contains approximately 270 acres of mature stands composed primarily of mixed ponderosa pine and Douglas-fir stands with some western larch and grand fir (TABLE W-2 –MATURE FOREST). This habitat is continuous, thus connectivity of mature forests for wildlife is high. The remaining acres consist primarily of mature ponderosa stands containing <40% mature canopy cover. The Project Area does not occur in any particular area of documented importance for habitat connectivity; however, riparian habitat in the Project Area associated with Colonite Creek and other unnamed small streams likely facilitates wildlife movements between the Project Area and adjacent stands of mature forested habitat. Mature stands in the Project Area may facilitate connectivity of habitat in the Colonite Drainage to stands along East Fisher Creek, which is located south of the Project Area. The network of roads in the Project Area has reduced some landscape connectivity; however, total road density is low at 1.0 miles/square mile and open roads do not occur in the Project Area.

The Medium CEAA contains a moderate amount of mature forested habitat (TABLE W-2 – MATURE FOREST). The largest patches are found on state and federal lands in the vicinity of East Fisher Creek. Overall, connectivity of mature forested habitat is moderate due to the patchwork of federal lands and private lands, where timber harvest occurs frequently (FIGURE W-2 –MATURE FORESTED HABITAT AND CONNECTIVITY). The network of open roads has also reduced landscape connectivity for some wildlife species that avoid roads (1.1 miles/square mile open road density; 4.3miles/square mile total road density).

TABLE W-2 -MATURE FOREST. *Average patch size and acreage of mature forested habitat (≥40% canopy cover, >9 inches dbh) pre- and post-harvest in the Project Area and Medium CEAA for the Colonite 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	269 (84.6%)	42 (13.2%)	2,718 (30.3%)	2,489 (27.4%)
Average patch size (acres)	269	7	123	85
Number of patches	1	6	22	29

Environmental Effects

Direct and Indirect Effects of the No-Action Alternative on Mature Forested Habitats and Connectivity

None of the proposed forest management activities would occur. 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.

Direct and Indirect Effects of the Action Alternative on Mature Forested Habitats and Connectivity

The proposed activities would occur in 227 (84.4%) of the 269 acres of mature stands available in the Project Area. These stands would retain approximately 15-25% mature canopy cover post-harvest, reducing habitat availability and patch size for species that prefer dense mature stands (TABLE W-3 –MATURE FOREST). However, the desired future condition for these stands is ponderosa pine, which is typically a more open forest type and the harvest would remove encroaching Douglas-fir. Approximately 16 acres of riparian habitat associated with stream SMZs in the Project Area would be harvested, but vegetation retention measures would apply (*USFWS and DNRC 2010*; See WATER RESOURCES for additional information). Approximately 2.6 miles of roads would be constructed; these roads would be closed to the public as the road system is behind Plum Creek Timber Company gates. Connectivity of upland mature canopy forest within the proposed Project Area would be reduced, but travel corridors would remain along Colonite Creek and other small streams. Thus, since: 1) the abundance of mature forested habitat would decrease by 227 acres (84.4% of existing mature forest), creating an open conditions more typical of ponderosa pine stands; 2) mature forested habitat would be fragmented decreasing average patch size to 7 acres; 3) approximately 2.6 miles of roads that would be closed to the public are proposed for construction; and 4) approximately 16 acres of riparian habitats that may provide wildlife travel corridors would be harvested, but retention measures would apply and these areas would continue providing mature forested habitat post-harvest; moderate adverse direct or indirect effects to mature forested habitat abundance, suitability, or connectivity would be anticipated as a result of the Action Alternative.

Cumulative Effects of the No-Action Alternative on Mature Forested Habitats and Connectivity

None of the proposed forest management activities would occur. Mature forested habitat availability and stand characteristics would not be affected by the DNRC Colonite Timber Sale; however, mature forest stands may be affected by other projects on other ownerships in the Medium CEAA. In the short-term, no changes to the amounts, quality, or spatial arrangement of mature forested habitat would occur. In the long-term and in the absence of natural disturbance and forest management activities, the availability and connectivity of mature forested wildlife habitat may increase as stands age.

Cumulative Effects of the Action Alternative on Mature Forested Habitats and Connectivity

The proposed activities would affect 277 acres of the 2,718 acres (10.2%) of mature forested habitat available in the Medium CEAA. Post-harvest, these acres would not provide mature forested habitat for wildlife, causing average patch size to decrease (TABLE W-3 –MATURE FOREST). Reductions in the availability of suitable mature forested habitat would be additive to harvest activities that are proposed or ongoing in the Medium CEAA, although DNRC is unaware of any projects at this time. Approximately 16 acres of riparian habitat associated with stream SMZs in the Project Area would be harvested, but retention measures would apply (see WATER RESOURCES section in this document for additional information). Additionally, 2.6 miles of roads are proposed, potentially reducing connectivity. However, these roads would be behind locked gates and would not be open to the public. Overall, connectivity of upland mature forest within the Medium CEAA would be reduced; especially along ridgelines between the

Colonite and Owl Creek drainages. However, travel in the Colonite Drainage would still be feasible due to vegetation retention along Colonite Creek. Thus, since: 1) the abundance of mature forested habitat in the Medium CEAA would decrease by 277 acres (10.2% of existing mature forest); 2) average patch size of mature forested habitat would decrease by 38 acres; 3) 2.6 miles of roads restricted to the public would be constructed; and 4) 16 acres of riparian habitat would be harvested; minor adverse cumulative effects to mature forested habitat abundance, suitability, or connectivity would be anticipated as a result of the Action Alternative.

SNAGS AND COARSE WOODY DEBRIS

Issue: The proposed activities could reduce the availability of snags and coarse woody debris and increase human access for firewood harvesting, which could adversely affect the quality of wildlife habitat.

Introduction

Snags and coarse woody debris are important components of forest ecosystems (*Parks and Shaw 1996*). Coarse woody debris, snags, and defective trees (i.e., partially dead, spike top, broken top) are used by a wide variety of wildlife species for foraging, nesting, roosting, and cover. Woodpeckers excavate nesting and roosting cavities in snags. These cavities are used as nesting, roosting, and resting sites by a variety of secondary cavity users, including mammals and birds, which are unable to excavate their own cavities. The habitat value of snags varies according to tree species, diameter, and snag density. Thick-barked species (e.g., western larch and ponderosa pine) tend to provide high quality snag habitat. Snag diameter is also important because many species that nest in smaller diameter snags will also use large snags; however, the opposite is not true. Coarse woody debris habitat value varies according to size, length, decay, and distribution. Single, scattered downed trees may provide access under the snow for small mammals and weasels, while log piles may provide secure areas for snowshoe hares. Timber harvest may affect the abundance and spatial distribution of snags and coarse woody debris by direct removal for commercial value or for human safety purposes, or indirectly by increasing human access for firewood harvesting.

Analysis Areas

The analysis area for direct and indirect effects is the 318-acre Project Area (FIGURE W-1 – ANALYSIS AREAS). The analysis area for cumulative effects is the 9,095-acre Medium CEAA described in TABLE W-1 –ANALYSIS AREAS and depicted in FIGURE W-1 –ANALYSIS AREAS. The Medium CEAA is defined by geographic features and represents an area large enough to support a diversity of species that use coarse woody debris and snags.

Analysis Methods

The abundance of snags and coarse-woody debris was estimated in the Project Area using 7 randomly-placed fixed plots (each 100 feet x 66 feet). Coarse-woody debris tons/acre was estimated for material ≥3 in diameter where it intersected the 100-ft transect line according to methods described by Brown (*1974*). Snags per acre were estimated by recording all snags ≥8 in dbh and ≥6 feet tall located within in each plot. Factors considered in the analysis include: 1) the level of harvesting, 2) availability of snags and coarse woody debris, and 3) risk of firewood harvesting.

Existing Conditions

During field assessments, 26 snags/acre ≥ 8 inches dbh were observed (range: 0-66 snags/acre) and 4 snags ≥21 inches dbh occurred within study plots. Wildlife use of snags was observed throughout the Project Area. The majority of snags observed were Douglas-fir as well

as a few western larch, and lodgepole. Coarse woody debris levels ranged from 0 to 41 tons/acre across the Project Area, but averaged 17 tons/acre. Since according to DNRC records the parcel has not been logged and it is located behind locked gates limiting firewood cutting, ample snags are available for wildlife use.

In the Medium CEAA, snag and coarse woody debris levels on surrounding parcels vary widely depending on motorized access, harvest history, and natural disturbance history. Snag and coarse woody debris levels likely have a patchy distribution due mixed ownership of USFS and private lands. Snags and coarse woody debris are frequently collected for firewood in the Medium CEAA, especially near the Vermillion East Fisher County Road and open roads that occur along Bayhorse Creek. Overall, road density in the Medium CEAA is low (1.1 miles/square mile open road density, 4.3 miles/square mile total road density) providing limited accessibility for firewood cutting.
Environmental Effects

Direct and Indirect Effects of the No-Action Alternative on Snags and Coarse Woody Debris

None of the proposed forest management activities would occur. Existing snags would continue to provide wildlife habitat, and new snags would be recruited as trees die. Thus, since: 1) no timber harvesting would alter present or future snag or coarse woody debris abundance, and 2) no changes to human access for firewood harvesting would occur, no direct or indirect effects to snags and coarse woody debris availability or associated wildlife habitat quality would be anticipated as a result of the No-Action Alternative.

Direct and Indirect Effects of the Action Alternative on Snags and Coarse Woody Debris

Some existing snags and snag recruits would be removed from 277 acres (87.1% of Project Area) due to timber felling operations. Additional recruitment trees and snags may also be lost following timber harvest due to wind throw. Given operability and human safety constraints, existing non-merchantable snags would be left standing where possible or if they were cut, they would be left in the harvest unit. Across the Project Area, at least 2 large snags and 2 large recruitment trees (>21 inches dbh) per acre would be retained within DNRC harvest units (*ARM 36.11.411*). If such large trees and snags are absent, the largest available snags and/or recruitment trees would be retained. Additionally,15 tons/acre of coarse woody debris would be retained (*ARM 26.11.414*). Firewood cutting risk in the Project Area would not change following the proposed harvest because no additional open roads are proposed for construction. Thus, since: 1) the proposed actions would remove some snags and minimally influence the amount of coarse woody debris on 277 acres, 2) accessibility for firewood harvesting would not change, and 3) snags and coarse woody debris would be retained to meet DNRC Forest Management Rules (*ARM 36.11.411, ARM 26.11.414*), minor adverse direct and indirect effects to snags and coarse woody debris availability associated with wildlife habitat quality would be anticipated as a result of the Action Alternative.

Cumulative Effects of the No-Action Alternative on Snags and Coarse Woody Debris

None of the proposed forest management activities would occur. No changes in the availability of snags and coarse woody debris would be expected. Existing snags would continue to provide habitat attributes, and new snags would be recruited as trees die. Ongoing and proposed forest management activities may affect the availability of snags and coarse woody debris in the Medium CEAA; however, no changes would be expected within the Project Area under the No-Action alternative. Thus, since: 1) no timber harvesting on DNRC lands would alter present or future snag or coarse woody debris abundance, and 2) no changes to human access for firewood harvesting would occur, no cumulative effects to snags and coarse woody debris availability associated with wildlife habitat quality would be anticipated as a result of the No-Action Alternative.

Cumulative Effects of the Action Alternative on Snags and Coarse Woody Debris

Some existing snags and snag recruits would be removed from the 277 acres (9.0% of Medium CEAA), but retention measures would apply (*ARM 36.11.411, ARM 26.11.414*). Reductions in the availability of coarse woody debris and snags would be additive to any forest management activities occurring in the CEAA, although DNRC is unaware of an ongoing or proposed activities at this time. Firewood cutting risk in the Medium CEAA would not change due to DNRC activities under the Action Alternative because no additional open roads are proposed for construction. Thus, since: 1) proposed actions would be additive to any ongoing and proposed activities that would remove snags, snag recruits, and coarse woody debris; 2) accessibility for firewood harvesting would not change; and 3) snags and coarse woody debris would be retained in amounts required to meet DNRC Forest Management Rules (*ARM 36.11.411, ARM 26.11.414*); minor adverse cumulative effects to snags and coarse woody debris availability associated with wildlife habitat quality would be anticipated as a result of the Action Alternative.

FINE-FILTER WILDLIFE ANALYSIS

TABLE W-3 –FINE-FILTER. *Anticipated effects of the Colonite Timber Sale on wildlife species. For several species, more detailed analysis is provided below where indicated.*

SPECIES/HABITAT	EFFECTS ASSESSMENT
THREATENED & ENDANGERED SPECIES	
Canada lynx (*Felis lynx*) Habitat: Subalpine fir habitat types, dense sapling, old forest, deep snow zones	No suitable Canada lynx habitat occurs in the Project Area. Thus, no direct, indirect, or cumulative effects to Canada lynx would be expected to occur as a result of either alternative.
Grizzly bear (*Ursus arctos*) Habitat: Recovery areas, security from human activity	***Detailed Analysis Provided Below*** – The Project Area is considered grizzly bear non-recovery occupied habitat associated with the Cabinet-Yaak Ecosystem (CYE) (*USFWS 1993*, *Wittinger* 2002). The Silver Butte Grizzly Bear Subunit located 1 mile west of the Project Area and was occupied by a female with young as recently as 2010 (*Kasworm et al. 2011*).

SENSITIVE SPECIES	
Bald eagles (*Haliaeetus leucocephalus*) Habitat: Late-successional forest less than 1 mile from open water	No bald eagle nests occur within 2.5 miles of the Project Area and no lake habitat is located within 1 mile of the Project Area. Thus, no direct, indirect, or cumulative effects to bald eagles would be anticipated.
Black-backed woodpeckers (*Picoides arcticus*) Habitat: Mature to old burned or beetle-infested forest	No recently (<5 years) burned areas occur within 0.25 miles of the Project Area. Thus, no direct, indirect, or cumulative effects to black-backed woodpeckers would be expected to occur as a result of either alternative.
Coeur d'Alene salamanders (*Plethodon idahoensis*) Habitat: Waterfall spray zones, talus near cascading streams	No moist talus or streamside talus habitat occurs in the Project Area. Thus, no direct, indirect, or cumulative effects to Coeur d'Alene salamanders would be expected to occur as a result of either alternative.
Columbian sharp-tailed grouse (*Tympanuchus Phasianellus columbianus*) Habitat: Grassland, shrubland, riparian, agriculture	No suitable grassland communities occur in the Project Area. Thus, no direct, indirect, or cumulative effects to Columbian sharp-tailed grouse would be expected to occur as a result of either alternative.
Common loons (*Gavia immer*) Habitat: Cold mountain lakes, nest in emergent vegetation	No suitable lake habitat occurs within 500 feet of the Project Area. Thus, no direct, indirect, or cumulative effects to common loons would be expected to occur as a result of either alternative.
Fishers (*Martes pennanti*) Habitat: Dense mature to old forest less than 6,000 feet in elevation and riparian	***Detailed Analysis Provided Below*** – Approximately 144 acres of suitable fisher habitat occur within the Project Area.

Flammulated owls (*Otus flammeolus*) Habitat: Late-successional ponderosa pine and Douglas-fir forest	***Detailed Analysis Provided Below*** – Approximately 318 acres of flammulated owl habitat types occur in the Project Area.
Gray wolves (*Canis lupus*) Habitat: Ample big game populations, security from human activities	The 2013 home range of the McGinnis Pack is located in the vicinity of the Project Area (*MFWP wolf pack data, 2013*). 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 (*ARM 33.11.430(1)(a)(b)*). Thus, negligible adverse direct, indirect, or cumulative effects to wolves would be anticipated as a result of the Action Alternative. No direct, indirect, or cumulative effects would be anticipated as a result of the No Action Alternative.
Harlequin ducks (*Histrionicus histrionicus*) Habitat: White-water streams, boulder and cobble substrates	No suitable stream habitat occurs in the vicinity of the Project Area and harlequin ducks have not been observed in the area (*MNHP data, December 2, 2014*). Thus, no direct, indirect, or cumulative effects to harlequin ducks would be expected to occur as a result of either alternative.
Northern bog lemmings (*Synaptomys borealis*) Habitat: Sphagnum meadows, bogs, fens with thick moss mats	No suitable wetlands occur within the Project Area. Thus, no direct, indirect, or cumulative effects to northern bog lemmings would be expected to occur as a result of either alternative.
Peregrine falcons (*Falco peregrinus*) Habitat: Cliff features near open foraging areas and/or wetlands	Suitable cliffs/rock outcrops for nest sites were not observed in the Project Area or within 0.5 miles of the Project Area. Additionally, peregrine eyries have not been documented in the vicinity of the Project Area (*MNHP data, December 2, 2014*). Thus, no direct, indirect, or cumulative effects to peregrine falcons would be anticipated as a result of either alternative.
Pileated woodpeckers (*Dryocopus pileatus*) Habitat: Late-successional ponderosa pine and larch-fir forest	***Detailed Analysis Provided Below*** – Approximately 318 acres of pileated woodpecker habitat occur in the Project Area.

Townsend's big-eared bats (*Plecotus townsendii*) Habitat: Caves, caverns, old mines	No suitable caves or mine tunnels are known to occur in the Project Area. Thus, no direct, indirect or cumulative effects to Townsend's big-eared bats would be expected to occur as a result of either alternative.
Wolverine (*Gulo gulo*) Habitat: Alpine tundra and high-elevation boreal and mountain coniferous forests, areas that maintain deep persistent snow into late spring	No high-elevation habitat with persistent spring snowpack occurs in the Project Area. However, wolverines have been observed in the area in the past and may travel through the area at any time (*MNHP data, December 2,* 2014). Thus, negligible adverse direct, indirect or cumulative adverse effects to wolverines would be expected to occur under the proposed action. No direct, indirect, or cumulative effects would be anticipated as a result of the No Action Alternative.
BIG GAME	
Elk (*Cervus canadensis*)	***Detailed Analysis Provided Below*** – The Project Area contains potential elk, mule deer, and white-tailed deer winter range habitat as identified by DFWP (*2008*).
Mule Deer (*Odocoileus hemionus*)	
White-tailed Deer (*Odocoileus virginianus*)	

THREATENED AND ENDANGERED SPECIES

GRIZZLY BEAR

Issue: The proposed activities could alter grizzly bear cover, reduce secure areas, and increase human access, which could adversely affect bears by displacing them from important habitats, 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 (*Servheen 1983, McLellan and Hovey 2001*). Grizzly bears are federally listed as 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 periods when grizzly bears have important nutritional demands.

Analysis Areas

The analysis area for direct and indirect effects is the 318-acre Project Area (FIGURE W-1 – ANALYSIS AREAS). The analysis area for cumulative effects is the 32,478-acre Large CEAA as described in TABLE W-1 –ANALYSIS AREAS and depicted in FIGURE W-1 –ANALYSIS AREAS. The Large CEAA is defined by geographic features and approximates the home range size of a female grizzly bear in northwest Montana.

Analysis Methods

Analysis methods included field evaluations, GIS analysis of SLI data, and aerial photograph interpretation. These methods were used to identify potential visual screening cover, and estimate open and restricted road densities. 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. On non-DNRC lands the acreage of stands with ≥40% canopy cover provided by trees >9 inches dbh on average was queried to estimate the availability of visual screening cover. 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, and 4) open and restricted road densities.

Existing Conditions

The Project Area is considered grizzly bear non-recovery occupied associated with the CYE (*USFWS 1993*, *Wittinger* 2002). The Project Area does not occur in an important linkage zone for grizzly bears (*Servheen et al. 2003*). However, the Sliver Butte Grizzly Bear Subunit, which is located approximately 1 mile from the Project Area, was occupied by a female with young as recently as 2010 (*Kasworm et al. 2011*). Approximately 226 acres (71.1% of Project Area) possess cover in amounts capable of providing visual screening for grizzly bears, which would allow grizzly bears to travel freely in the Project Area, should they be present. Riparian habitat can provide important foraging areas for bears, especially in the spring (*Servheen 1983*), and is available along Colonite Creek and other small unnamed streams throughout the Project Area. Other important grizzly bear habitat including fire-mediated shrub fields and avalanche chutes are not present in the Project Area. The parcel is located at a low elevation, and is considered potential grizzly bear spring habitat. The land directly surrounding the Project Area is primarily managed for timber harvest with no residences, reducing the risk of human-bear conflicts. There are no open roads in the Project Area and total road density is low at 1.0 mile/square mile.

The Large CEAA contains a variety of age classes of forested habitat as well as some riparian habitat and wet meadows, which are primarily associated with the Pleasant Valley Fisher River, Silver Butte River, and East Fisher Creek. Ownership is mixed with 56.4% under private ownership (primarily Plum Creek Timber Company lands). The majority of federal and state lands, which contain more mature stands, are located in the southwest portion of the CEAA. At least 7,792 acres (26.3% Large CEAA) provide visual screening for grizzly bears, although more acres of hiding cover are likely provided by regenerating stands. The density of open roads in the Large CEAA is 1.9 miles/square mile and total road density is 4.5 miles/square mile.

Environmental Effects

Direct and Indirect Effects of the No-Action Alternative 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 remain the same. 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 or indirect effects associated with grizzly bear displacement or human-caused bear mortality risk would be anticipated as a result of the No-Action Alternative.

Direct and Indirect Effects of the Action Alternative on Grizzly Bears

Grizzly bear cover would be reduced for 10-20 years on approximately 185 acres (82.0%) of the 226 acres of visual screening available in the Project Area. Harvesting associated with the Action Alternative would increase sight distances within proposed harvest units. However, patches of cover would be retained such that no point in the harvest units would be greater than 600 feet to screening cover. Approximately 16 acres of riparian habitat would be harvested, but vegetation retention measures would apply to maintain minimal sight distances in these areas (see *WATER RESOURCES* analysis). Proposed harvesting would temporarily (1 to 3 years) increase traffic on 0.5 miles of currently restricted roads; however, access by the general public would remain restricted during and after project activities. No open roads are proposed for construction, but 2.6 miles of restricted road closed behind a gate would be constructed. If present in the vicinity of the Project Area, grizzly bears could be displaced from portions of the Project Area by forest management activities for up to 3 years; although spring timing restrictions would be enforced from April 1 – June 15 to provide security for grizzly bears in the spring. Thus, since: 1) canopy cover and shrubs providing visual screening and hiding cover would be removed, but the units are designed such that no point would be greater than 600 feet from cover; 2) temporary motorized disturbance would increase on 0.5 miles of currently restricted road and 2.6 miles of road that would be constructed; 3) total road density would increase following construction of 2.6 miles of road, but open road density would not change; and 4) riparian harvest would occur and bears could be temporarily displaced from these areas, but vegetation retention measures would apply; moderate 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.

Cumulative Effects of the No-Action Alternative on Grizzly Bears

None of the proposed forest management activities would occur. No changes to human-caused mortality risk, risk of displacement, or road density associated with the Colonite Timber Sale would occur, but ongoing and proposed forest management projects within the CEAA could affect these attributes. In the short-term no additional cumulative effects to visual screening would occur. However, in the long-term and in the absence of natural disturbance, the availability of visual screening may increase as stands age.

Cumulative Effects of the Action Alternative on Grizzly Bears

The proposed activities would affect 185 acres (2.4%) of the 7,826 acres of visual screening available in the Large CEAA. Harvesting associated with the Action Alternative would increase sight distances within proposed harvest units. However, cover patches would be retained such that no point in these units would be greater than 600 feet to screening cover. Approximately 16 acres of riparian habitat associated with small streams would be harvested, but vegetation retention measures would apply to maintain low sight distances in these areas. Proposed harvesting would increase traffic on 0.5 miles of currently restricted road for up to 3 years; however, access by the general public would remain restricted on these road miles during and after project activities. Approximately 2.6 miles of restricted (gated) road would be constructed

and would also have higher traffic levels, but open road density would not change. Reductions in visual screening and riparian habitat would be additive to any proposed or ongoing projects; however, DNRC is unaware of any proposed or ongoing projects at this time. Grizzly bears could be temporarily displaced by forest management activities associated with the proposed Colonite Timber Sale for up 3 years; however, activities would be restricted from April 1 – June 15 to protect bears in the spring. Thus, since: 1) canopy cover and shrubs providing visual screening would be removed from approximately 185 acres (2.4%) of potential visual screening in the Large CEAA; 2) temporary motorized disturbance would increase on 0.5 miles of currently restricted road as well as 2.6 miles of road that are proposed for construction; 3) total road density would increase by 2.6 miles, but open road density would be unaffected; and 4) riparian harvest would occur but vegetation retention measures would apply; 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 habitat suitability and increase trapping mortality.

Introduction

In the Rocky Mountains, fishers prefer mesic late-successional forests with complex vertical and horizontal structure, large-diameter trees, and relatively dense canopies (*Schwartz et al. 2013, Raley et al. 2012*). 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. Fisher 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 Areas

The analysis area for direct and indirect effects is the 318-acre Project Area (FIGURE W-1 – ANALYSIS AREAS). The analysis area for cumulative effects is the 30,784-acre Large CEAA described in TABLE W-I –ANALYSIS AREAS and depicted in FIGURE W-1 –ANALYSIS AREAS. The Large CEAA is centered on the Project Area and is defined according to geographic features and could support the home range of at least one male fisher and multiple female fishers, providing a reasonable analysis area for fishers that could be influenced by project-related activities.

Analysis Methods

Analysis methods include field evaluations, aerial photograph interpretation, and GIS analysis of travel corridors, preferred fisher cover types (*ARM 36.11.403(60)*), and habitat structure. Fisher habitat classifications considered in the analysis include: 1) upland fisher habitat, and 2) riparian fisher habitat, which are defined according to proximity of the stand 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. Potential fisher habitat (riparian, upland) on other ownerships was identified by examining mature forested habitat below 6,000 feet elevation and the proximity of mature forested habitat (≥40% cover, trees >9 inches dbh average) to perennial and intermittent streams. 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) human access.

Existing Conditions

Approximately 144 acres (45.1% of Project Area) of suitable fisher habitat occurs in the Project Area. Approximately 27 acres of riparian fisher habitat is present, all of which contains suitable structure for fisher use. Mature forested habitat is continuous in the Project Area and connectivity is high. Total road density is 1.0 miles/square mile with no open roads, providing limited accessibility for trapping.

The Large CEAA contains approximately 7,530 acres of fisher habitat (24.5% of Large CEAA), including 404 acres of suitable fisher habitat on DNRC-managed lands and an additional 7,125 acres of mature forested habitat on other ownerships located below 6,000 feet elevation. Of these acres of potential fisher habitat, approximately 564 acres are riparian fisher habitat. The remaining 23,254 acres in the Large CEAA consist primarily stands that do not have a high enough stocking density for fisher use. The distribution of potential fisher habitat is patchy due to ownership patters, with areas of connectivity along streams. The density of open roads within the Large CEAA is 1.9 miles/square mile, and the total road density is 4.5 miles/square mile, thus there is a moderate level of access that could facilitate trapping.

Environmental Effects

Direct and Indirect Effects of the No-Action Alternative on Fishers

None of the proposed forest management activities would occur. 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 Project Area. 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-dbh trees increases, and mature canopy cover increases.

Direct and Indirect Effects of the Action Alternative on Fishers

The proposed activities would affect 110 acres (76.4%) of the 144 acres of suitable fisher habitat present in the Project Area. Mature canopy cover would be reduced to 15-25% and retention of ponderosa pine would be emphasized, thus the structure of these stands would become unsuitable for substantial use by fishers, especially considering that open ponderosa pine stands are typically avoided by fishers (*Schwartz et al. 2013*). Approximately 12 acres of fisher riparian habitat are proposed for harvest. Half of these acres would remain suitable for fisher use post-harvest, while the remaining acres would retain too few large trees to be considered fisher habitat. Within riparian fisher habitat in the Project Area, 76.5% of the stands would moderate to well-stocked density of sawtimber size trees (*ARM 36.11.440(b)*). The availability of some 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 meet DNRC Forest Management Rules (*ARM 36.11.411, ARM 26.11.414*).

Approximately 2.6 miles of restricted roads (behind locked gates) are proposed for construction, thus trapping risk associated with human access would increase slightly. However, no open roads are proposed for construction. Connectivity of mature forested habitats suitable for fisher use would decrease under the Action Alternative, although travel across the parcel would still be possible via a riparian habitat along Colonite Creek. If present in the vicinity of the Project Area, fishers could be temporarily displaced by forest management activities for up 3 years. Thus, since: 1) habitat availability would be reduced by 110 acres (76.4%), but some snags and coarse woody debris would be retained (*ARM 36.11.411, ARM 26.11.414);* 2) harvest of 12 acres of riparian fisher habitat would occur, half of which would retain moderate to well-stocking density of sawtimber size class trees; 3) landscape connectivity would be reduced; 4) approximately 2.6 miles of restricted roads would be constructed, but open road density would not change; and 5) the area in general has a limited capacity to support fisher due to the dominance of dry ponderosa pine stand types in the Project Area; moderate adverse direct and indirect effects to fisher associated with habitat suitability and trapping risk would be anticipated as a result of the Action Alternative.

Cumulative Effects of the No-Action Alternative on Fishers

None of the proposed forest management activities would occur. Ongoing and proposed forest management projects within the Large CEAA may influence fisher habitat availability, habitat structure, and landscape connectivity. The level of motorized access would not change and no additional risk associated with trapping would be expected; thus, no cumulative effects would be anticipated. In the short term, no changes to fisher habitat availability or connectivity associated with the Colonite Timber Sale 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-dbh trees increases, and mature canopy cover increases.

Cumulative Effects of the Action Alternative on Fishers

The proposed activities would affect 110 acres (1.5%) of the 7,530 acres of potential fisher habitat available in the Large CEAA. Mature canopy cover would be reduced to 15-25% in these acres, thus the structure of these stands would become unsuitable for fishers. Approximately, 12 acres (2.1%) of the 564 acres of potential riparian fisher habitats available in the Large CEAA are proposed for harvest. However, cover and structure would be retained in amounts suitable for fisher use in half of these acres. The availability of some important habitat characteristics (i.e., snags, coarse woody debris) could be reduced by harvest activities; although retention of some dead material and live snag recruitment trees would be required to meet DNRC Forest Management Rules (*ARM 36.11.411, ARM 26.11.414*). Connectivity of fisher habitats would be reduced, but travel corridors associated with riparian habitat would be maintained. Approximately 2.6 miles of restricted roads would be constructed, increasing trapping risk. Any adverse affects to fisher would be additive to any proposed or ongoing sales in the Large CEAA, although DNRC is unaware of any such projects at this time. Fishers could be temporarily displaced by forest management activities associated with the proposed Colonite Timber Sale for up to 3 years. Thus, since: 1) habitat availability would decrease by 110 acres (1.5%), but snags and coarse woody debris would be retained (*ARM 36.11.411, ARM 26.11.414);* 2) harvest of 12 acres (2.1%) of riparian fisher habitat would occur, but half of these acres would retain moderate to well-stocking density of sawtimber size class trees; 3) landscape connectivity would be reduced in the vicinity of Colonite and Owl creeks; 4) approximately 2.6 miles of restricted roads would be constructed, but no long-term changes in open road density

would occur; and 5) the Large CEAA has a limited capacity to support fishers due to the prevalence of dry ponderosa pine habitat types; minor adverse cumulative effects to fisher associated with habitat suitability and trapping risk would be anticipated as a result of the Action Alternative.

FLAMMULATED OWLS

Issue: The proposed activities could alter the structure of flammulated owl preferred habitat, which could reduce habitat suitability for flammulated owls.

Introduction

Flammulated owls are small, migratory, insectivorous forest owls that inhabit mature, dry stands of ponderosa pine and Douglas-fir forests with an open physiognomy (*Linkhart* and *McCallum 2013*). Flammulated owls are secondary cavity nesters, and in Montana, typically nest in large-diameter ponderosa pine or Douglas-fir cavities excavated by pileated woodpeckers or northern flickers (*Seidensticker et. al 2013*). Forest management considerations for flammulated owls include providing open stands of ponderosa pine and Douglas-fir and retaining large snags for nesting. Timber harvest may affect the structure of timber stands and reduce the availability of snags, potentially reducing habitat suitability for flammulated owls.

Analysis Area

The analysis area for direct and indirect effects is the 318-acre Project Area (FIGURE W-1 – ANALYSIS AREAS). The analysis area for cumulative effects is the 9,095-acre Medium CEAA described in TABLE W-1 –ANALYSIS AREAS and depicted in FIGURE W-1 –ANALYSIS AREAS. The Medium CEAA is defined according to ridgelines and East Fisher Creek which provides a reasonable analysis area for local flammulated owls that could be affected by project-related activities.

Analysis Methods

Analysis methods include field evaluations, aerial photograph interpretation, and GIS analysis of available habitat. In the Project Area, SLI data were used to identify preferred flammulated owl habitat types (*ARM 36.11.403(28*)). Stands were considered suitable for flammulated owl use if the stocking density of trees >9 inches dbh was in the poorly-stocked class (10-39% canopy cover). On non-DNRC lands, data identifying suitable flammulated owl habitat are not readily available. Therefore, GIS analysis of aerial-photographs was used to identify stands containing 10-39% canopy cover that were composed primarily of trees >9 inches dbh below 6,000 feet. These stands are likely to contain habitat types preferred by flammulated owls as well as matrix habitat. Factors considered in the analysis include: 1) the degree of harvesting, and 2) the structure of flammulated owl preferred habitat.

Existing Conditions

The Project Area contains 318 acres (100.0% of Project Area) of cover types preferred by flammulated owls. This habitat is composed primarily of mixed Douglas-fir and ponderosa pine stands with some western larch. All of these stands are mature (> 9 inches dbh), but the stocking density is high and thus the stands are not likely to be used by flammulated owls. Snag density in the Project Area is currently high, providing many potential nesting trees in the Project Area (see **SNAGS AND COARSE WOODY DEBRIS** for additional information).

The Medium CEAA contains approximately 1,300 acres (14.3% of Medium CEAA) of mature open forested conditions (10-39% canopy cover, 9 inches dbh average), all of which is located on other ownerships. Stands on DNRC-managed lands contain too high a stocking density on

average to be used by flammulated owls. The remaining acres consist of approximately 4,636 acres of young stands composed of trees <9 inches dbh average (54.5% of analysis area), 2,718 acres (30.3% of analysis area) of mature forest that are too dense for appreciable flammulated owl use, and 123 (1.4% of analysis area) acres of open permanent non-forest areas. Open and road density in the Medium CEAA is low overall 1.1 miles/square mile limiting access for firewood cutting. Availability of nesting habitat is likely related to ownership and land management patterns. Flammulated owls may use the area at any time and indirect evidence of breeding has been documented on surrounding lands.
Environmental Effects

Direct and Indirect Effects of the No-Action Alternative on Flammulated Owls

None of the proposed forest management activities would occur. In the short-term, no change in the availability of flammulated owl habitat would occur. In the long-term and in the absence of natural disturbance, the suitability of flammulated owl habitat may decrease as stand density increases and Douglas-fir continues to grow in the understory.

Direct and Indirect Effects of the Action Alternative on Flammulated Owls

Timber harvest would occur in 277 of the 318 acres (87.1%) of preferred flammulated owl cover types available in the Project Area. The proposed activities would open stands to 15-25% canopy cover in these acres, improving stand structure suitability for flammulated owls. Additionally, the proposed harvest would favor leaving ponderosa pine and Douglas-fir while removing shade-tolerant trees, which is preferable for flammulated owls (*ARM 36.11.437(b)*). Some snags could be removed by the proposed harvest, but at least 2 large snag and 2 large snag recruitment tree per acre (>21 inches dbh) would be retained (*ARM 36.11.411*). Disturbance associated with harvesting could adversely affect flammulated owls for up to 3 years, should they be present in the Project Area. Thus, since: 1) changes in stand structure and cover type would generally increase flammulated owl habitat suitability, and 2) snags would be retained to meet DNRC administrative rules (*ARM 36.11.411*), minor beneficial direct and indirect effects to flammulated owl habitat suitability would be anticipated as a result of the Action Alternative

Cumulative Effects of the No-Action Alternative on Flammulated Owls

None of the proposed forest management activities would occur. Ongoing and proposed forest management projects within the Medium CEAA may affect the suitability of flammulated owl habitat; however, no adverse effects associated with the Colonite Timber Sale would occur. In the short-term, no change in the availability of flammulated owl habitat would occur. In the long-term and in the absence of natural disturbance, the availability of flammulated owl habitat may decrease as stand density increases and Douglas-fir continue to grow in the understory.

Cumulative Effects of the Action Alternative on Flammulated Owls

The proposed activities would occur in 277 acres of preferred flammulated owl cover types available in the Project Area. The proposed activities would open stands to 15-25% canopy cover, favor retention of ponderosa pine and Douglas-fir, and retain patches of regenerating conifers, improving stand structure suitability for flammulated owls (*ARM 36.11.437(b)*). The availability of suitable flammulated owl habitat is expected to increase by 277 acres, from 1,300 acres to 1,577 total acres of suitable flammulated owl habitat in the Medium CEAA (17.3% of

Medium CEAA). Changes in flammulated owl habitat suitability would be additive to proposed and ongoing activities occurring in the Medium CEAA, although DNRC is currently unaware of such projects. The proposed activities could disturb flammulated owls for up to 3 years should they be present in the vicinity of the Project Area. Thus, since 1) changes in structure and cover type would generally increase flammulated owl habitat suitability, and 2) snags would be retained to meet DNRC administrative rules (*ARM 36.11.411*), minor beneficial cumulative effects to flammulated owl habitat suitability would be anticipated as a result of the No-Action Alternative.

PILEATED WOODPECKER

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 because they excavate 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*). Carpenter ants, which are found in dead and dying trees, are an important part of the diet of pileated woodpeckers. Timber harvest may remove large-diameter trees necessary for nesting and fragmentation can make birds more vulnerable to predation as they fly 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 Areas

The analysis area for direct and indirect effects is the 318-acre Project Area (FIGURE W-1 – ANALYSIS AREAS). The analysis area for cumulative effects is the 9,095-acre Medium CEAA described in TABLE W-1 –ANALYSIS AREAS and depicted in FIGURE W-1 –ANALYSIS AREAS. The Medium CEAA is centered on the Project Area and defined according to geographic features and provides a reasonable analysis area for pileated woodpeckers that could be influenced by project-related activities. This scale provides a sufficient area to support multiple pairs of pileated woodpeckers (*Bull and Jackson 2011*).

Analysis Methods

Analysis methods include field evaluation, aerial photograph interpretation, and GIS analysis of available habitat. To assess potential pileated woodpecker habitat on DNRC-managed lands, sawtimber stands ≥100 years old within preferred pileated cover types (*ARM 36.11.403(58)*) with ≥40% or greater canopy closure were considered potential pileated woodpecker habitat. On non-DNRC lands, the stands considered potential habitat for pileated woodpeckers were mature forest stands (≥40% canopy cover, >9 inches dbh average) below 6,000 feet elevation. Factors considered in the analysis include: 1) the degree of harvesting and 2) the structure of pileated woodpecker preferred habitat types.

Existing Conditions

The Project Area contains 318 acres (100.0 % of Project Area) of suitable pileated woodpecker habitat. This habitat is composed of Douglas-fir, ponderosa pine, and some larch stands.

Pileated woodpeckers were not observed during field visits, but foraging on snags was observed and snag availability is high.

The Medium CEAA contains 2,767 acres (30.4% of Medium CEAA) of potential pileated woodpecker habitat, which includes 318 acres of DNRC-managed pileated woodpecker habitat and an additional 2,448 acres of mature forested habitat (<6,000 feet elevation) on other ownerships. Open road density in the Medium CEAA is 1.1 miles/square mile, limiting opportunities for firewood cutting. Considering the low open road density, and mixed land ownership patterns (57.7% of Medium CEAA is privately owned), and harvesting history, the distribution of snags and coarse-woody debris available for pileated woodpecker nesting and foraging is likely scattered and patchy in occurrence.
Environmental Effects

Direct and Indirect Effects of the No-Action Alternative on Pileated Woodpeckers

None of the proposed forest management activities would occur. 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.

Direct and Indirect Effects of the Action Alternative on Pileated Woodpeckers

The proposed activities would occur in 277 acres (87.1%) of the 318 acres of pileated woodpecker habitat available in the Project Area. The proposed activities would open stands to 15-25% canopy cover causing the structure of these stands to become unsuitable for appreciable use by pileated woodpeckers post-harvest. 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*). Disturbance associated with harvesting could adversely affect pileated woodpeckers on portions of the Project Area for up to 3 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 pileated woodpecker suitable habitat availability by 277 acres (87.1%); high adverse direct and indirect effects to pileated woodpecker habitat suitability in the Project Area would be anticipated as a result of the Action Alternative.

Cumulative Effects of the No-Action Alternative on Pileated Woodpeckers

None of the proposed forest management activities would occur. Ongoing and proposed forest management projects within the Medium CEAA could change pileated woodpecker habitat availability. Thus, since no change in the structure of pileated woodpecker habitat would occur, no cumulative effects to pileated woodpecker habitat suitability would be anticipated as a result of the No-Action Alternative.

Cumulative Effects of the Action Alternative on Pileated Woodpeckers

The proposed activities would occur in 277 acres (10.0%) of the 2,767 acres of potential pileated woodpecker habitat in the Medium CEAA. The proposed activities would open stands to 15-25% canopy cover, causing habitat structure to become unsuitable for pileated woodpecker use. 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, although DNRC is currently unaware of such projects. Disturbance associated with the proposed activities could adversely affect pileated woodpeckers in the vicinity of the Project Area for up to 3 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 277 acres (10.0%) 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 WINTER RANGE

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

Introduction

Big game, including 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 Areas

The analysis area for direct and indirect effects is the 318-acre Project Area (FIGURE W-1 – ANALYSIS AREAS). The analysis area for cumulative effects is the 9,095-acre Medium CEAA described in TABLE W-1 –ANALYSIS AREAS and depicted in FIGURE W-1 –ANALYSIS AREAS. The Medium CEAA includes the Project Area as well as low-elevation west- and southwest-facing slopes in the vicinity of the Project Area that are most likely to provide suitable conditions for big game winter range. The area is defined according to geographic features including watershed boundaries, which, provides a reasonable analysis area for local animals that could be influenced by project-related activities.

Analysis Methods

Analysis methods include field evaluations, aerial photograph interpretation, and GIS analysis of available big game winter range. The availability of mature forested habitat (≥40% canopy cover, >9 inch dbh average) was used to assess the quality of big game winter range in the Medium CEAA. Factors considered in the analysis include: 1) the degree of timber harvesting, and 2) the availability and structure of big game winter range.

Existing Conditions

The entire Project Area provides potential elk, mule deer, and white-tailed deer winter range (*DFWP 2008*). The Project Area is a part of a larger winter range extending northwest into the Fisher River Drainage and southeast into the Thompson River Drainage. Desirable winter range habitat attributes found in the Project Area include low elevation (3,800-5,000 feet), steep slopes, and appreciable amounts of canopy cover. Some south facing aspects occur, but the overall aspect of the Project Area is east. Approximately 270 acres (84.6% of Project Area) contain mature canopy cover (≥40% canopy cover, 9 inch dbh average) composed primarily of Douglas-fir, ponderosa pine, and some western larch. The Project Area contains approximately 298 acres of dense canopy cover (≥70% canopy cover). Big game trails and scat were

observed in the Project Area, but extensive foraging on young conifers was not observed. However, the area may still provide important winter range habitat.

The Medium CEAA contains elk, mule deer, and white-tailed deer winter range (*TABLE W-4 EXISTING WINTER RANGE*). Frequently used portions of the winter range are likely located in areas with high canopy cover on USFS and DNRC lands as well as the parcels located on southwest facing slopes. Areas with low elevations near McGinnis and Elk Creek may also provide important habitat. Desirable winter range habitat attributes that occur in this area include low elevation (3,200-5,000 feet), steep slopes, and south- and southwest-facing aspects. Approximately 2,718 acres (30.3% analysis area) of mature forested habitat (≥40% canopy cover, >9 inch dbh average) occur in the Medium CEAA and provides thermal protection for big game. The remaining habitat in the Medium CEAA consists of open mature stands and young regenerating stands due to the history of logging. Residential development is mostly absent from the Medium CEAA, which reduces the likelihood of big game displacement due to human activity (*Vore 2012*).

TABLE W-4 – EXISTING WINTER RANGE. *Existing big game winter range in the Project Area and Medium CEAA (DFWP 2008). Percentage of winter range in the analysis area is in parentheses.*

BIG GAME SPECIES	PROJECT AREA	MEDIUM CEAA
Elk	313 (100.0%)	8,289 (91.1%)
Mule deer	313 (100.0%)	8,289 (91.1%)
White-tailed deer	313 (100.0%)	7,753 (85.2%)

Environmental Effects

Direct and Indirect Effects of the No-Action Alternative on Big Game Winter Range

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.

Direct and Indirect Effects of the Action Alternative on Big Game Winter Range

Big game winter range would be affected by the proposed activities. Canopy cover would be reduced in mature forested habitat to approximately 10-25% in 227 acres proposed for harvest, reducing the capacity of these acres to provide snow intercept and reduce wind velocity. Considering that canopy cover would be reduced below 70% in these harvest units, white-tailed deer would likely not use the harvest units post-harvest when snow accumulation is high. However, elk and mule deer may continue using these areas, but, the availability of thermal cover would be reduced. Some regenerating conifers would be retained throughout the harvest units, providing some residual cover and needle-foraging opportunities. Winter logging may occur, but would not be required and wintering animals could be displaced for up to 3 winters by

the proposed activities. Thus, since: 1) canopy cover would be reduced on 227 acres, (84.4% of existing mature forested habitat); 2) regenerating conifers would be retained, 3) displacement of big game would be temporary (up to 3 years), 4) connectivity would be retained at a reduced level along riparian areas, moderate adverse direct and indirect effects to big game winter range quality and wintering animals would be anticipated as a result of the Action Alternative.

Cumulative Effects of the No-Action Alternative on Big Game Winter Range

None of the proposed forest management activities would occur. Ongoing and proposed forest management projects within the Medium CEAA may disturb wintering big game or reduce thermal cover availability; however, no adverse effects associated with the Colonite Timber Sale would occur. In the short term, no change in the availability of thermal cover associated with the Colonite Timber Sale would occur. In the long term and in the absence of natural disturbance, thermal cover may increase as stands age and canopy cover increases.

Cumulative Effects of the Action Alternative on Big Game Winter Range

Big game winter range would be affected by the proposed activities. The proposed harvest would reduce canopy cover to <40% within 227(8.4%) of the 2,718 acres of mature habitat available in the Medium CEAA. However, regenerating conifers and some canopy cover (15-25%) would be retained, providing residual cover. Reductions in thermal cover would be additive to any proposed and ongoing activities in the Medium CEAA, although DNRC is currently unaware of such projects. Winter logging may occur, but would not be required and wintering animals could be displaced for up to 3 winters by the proposed activities. Displacement would be additive to any displacement associated with other activity in the Medium CEAA. Connectivity would be reduced within the Project Area, but connectivity of mature canopy cover would be retained along riparian corridors. Thus, since: 1) 227 acres of mature forested habitat would be removed (8.4% of mature forested habitat); 2) regenerating conifers would be retained; 3) displacement of big game would additive to other sources of disturbance, but would occur for a short period of time (3 years); and 4) the proposed activities would retain a riparian travel corridor across winter range; minor adverse cumulative effects to big game winter range quality and wintering animals would be anticipated as a result of the Action Alternative.

LIST OF 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.
- To retain visual screening for grizzly bears, design harvest units such that vegetation or topographic breaks are no >600 feet from any point in the unit as per GB-NR4 (*USFWS and DNRC 2010*).

- Prohibit all motorized activities, including driving a pick-up for administrative purposes, between April 1 – June 15 to provide security for grizzly bears in the spring as per *GB-CY3* (*USFWS and DNRC 2010)*.
- Restrict public access at all times on restricted roads that are opened for harvesting activities.
- Retain at least 2 large (>21 inches) snags and 2 large snag recruits per acre, particularly favoring ponderosa pine and Douglas-fir for retention. If wildlife snags are cut for safety concerns, they must be left in the harvest unit. Retain 15 tons/acre of coarse-woody debris and emphasize the retention of downed logs ≥15 inches dbh where they occur.

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FIGURE W-1 –ANALYSIS AREAS. *Wildlife analysis areas for the proposed Colonite Timber Sale.*

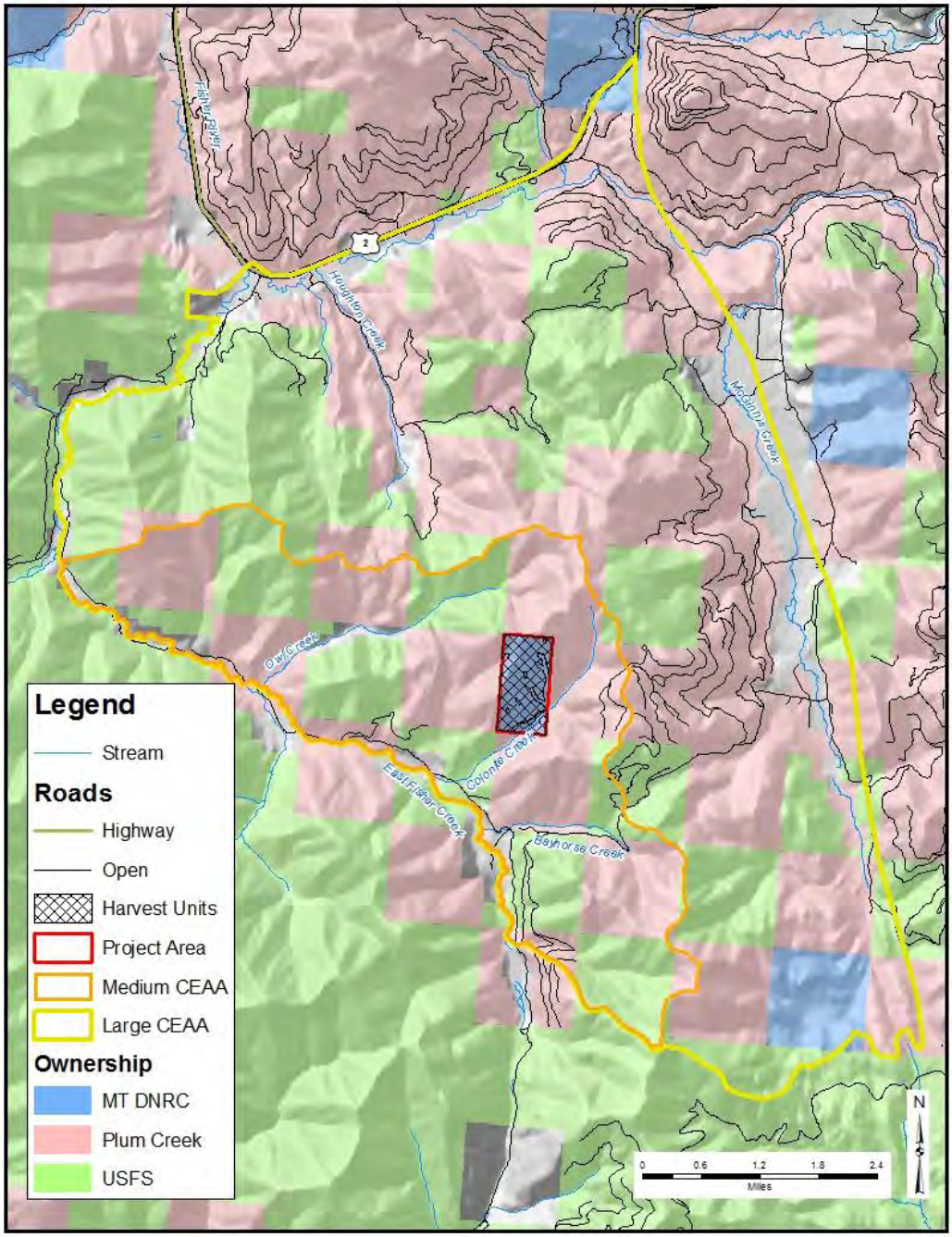
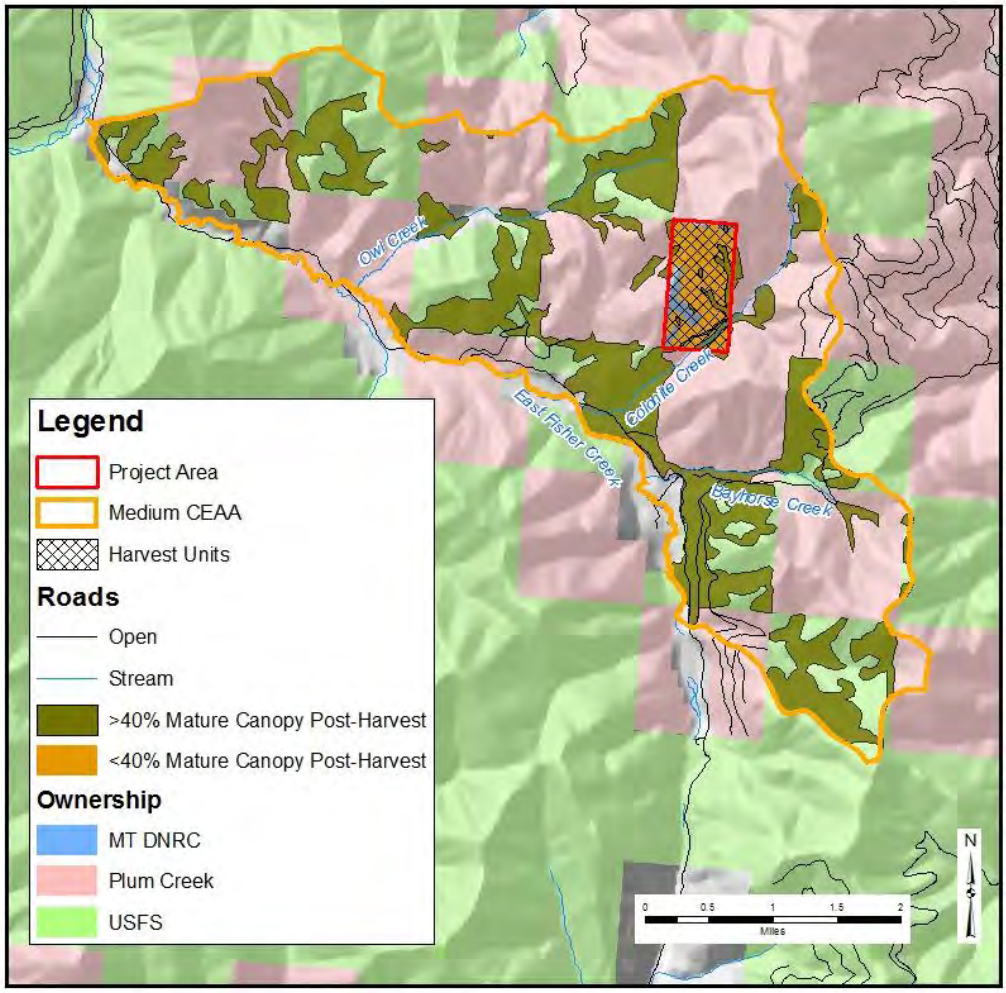
FIGURE W-2 – MATURE FORESTED HABITAT AND CONNECTIVITY. *Mature forested habitat landscape connectivity in the Project Area and Medium CEAA. Timber stands displayed as orange currently contain >40% mature canopy cover, but would contain <40% mature canopy cover post-harvest under the Colonite Action Alternative.*