BAD BEAVER TIMBER PERMIT

Checklist Environmental Assessment

MONTANA DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION
Central Land Office – Bozeman Unit
August 2019

Environmental Assessment Checklist

Project Name: Bad Beaver
Proposed Implementation Date: October 2019
Proponent: Bozeman Unit, Central Land Office, Montana DNRC
County: Park

Type and Purpose of Action

Description of Proposed Action:

The Bozeman Unit of the Montana Department of Natural Resources and Conservation (DNRC) is proposing the Bad Beaver Timber Permit. The project is located approximately 6.5 air miles southeast of Livingston, MT (refer to Attachments vicinity map A-**1** and project map A-**2**) and includes the following sections:

Beneficiary	Legal Description	Total Acres	Treated Acres
Common Schools	**E2SW4 & NW4SE4 Section 36, T02S, R10E**	**320**	**29.1**

Objectives of the project include:

- The primary objectives would be to generate revenue to the trust beneficiary and capture value from dead and dying timber while improving the health, vigor and productivity of the forest stands.
- The desired future condition of the forest stands is a Douglas-fir cover type.
- Regeneration would be expected to occur naturally.

Proposed activities include:

Action	Quantity
Proposed Harvest Activities	# Acres
Clearcut	6
Seed Tree	5.1
Shelterwood	4
Selection	4
Commercial Thinning	
Salvage	10
Total Treatment Acres	**29.1**
Proposed Forest Improvement Treatment	# Acres
Pre-commercial Thinning	
Planting	

Action	Quantity
Proposed Road Activities	# Miles
New permanent road construction	
New temporary road construction	0.2
Road maintenance	3.4
Road reconstruction	
Road abandoned	
Road reclaimed	0.2
Other Activities	

Duration of Activities:	12-15 months
Implementation Period:	October 2019 through October 2020

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),
- The Montana DNRC Forested State Trust Lands Habitat Conservation Plan (HCP) (DNRC 2010)
- and all other applicable state and federal laws.

Project Development

SCOPING:

- DATE:
  - April 30, 2019
- PUBLIC SCOPED:
  - The scoping notice was posted on the DNRC Website: http://dnrc.mt.gov/PublicInterest/Notices/Default.asp
  - Adjacent landowners, State lessee and interested parties.
- AGENCIES SCOPED:
  - MT FWP
  - USFS, Yellowstone Ranger District
  - Park County Commissioners
  - MT DNRC
- COMMENTS RECEIVED:
  - How many: One comment was received from MT FWP regarding Yellowstone Cutthroat Trout having been documented in Beaver Creek and advising to protect the headwaters of this stream.

- Results (how were concerns addressed): Where specific resource concerns were identified by the Project leader or DNRC specialists, those resources affected were analyzed and the effects are disclosed in the resources analysis within this document.

DNRC specialists were consulted, including: Patrick Rennie, Archaeologist; Jeff Schmalenberg, Resource Management and Planning Section; Ross Baty, Wildlife Biologist.

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 Alternative: Under the no-action alternative, no harvest would occur, no new road would be constructed and timber management for the proposed project area would be deferred indefinitely. An opportunity to access landlocked State land and generate revenue for the trust would be lost.

Action Alternative: Under the action alternative, a commercial harvest of an estimated 250 MBF of overstocked Douglas-fir and whitewood sawtimber from 29.1 acres would occur. The proposed project would utilize ~3 miles of existing road and construct 0.2 miles of temporary, new reclaimed road to access the harvest area. Shelterwood, selection, seed tree and clearcut

harvests, utilizing ground-based systems, would be utilized for timber stand treatments. Selected aspen stands would have all conifer sawtimber removed out to 75 feet from the aspen clones. Treatments would generate revenue to the Common Schools Trust and capture value from dead and dying timber while improving the health, vigor and productivity of the forest stands. At project closure, major skid trails and new road on the State land would be physically closed.

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 State parcel is located on the north edge of the Absaroka Range along the grassland interface and is dominated by Douglas-fir with limber pine, lodgepole pine, spruce, subalpine fir and aspen. The landscape to the north, east and west is scattered patches of timber, sagebrush/grasslands with some residential development. The landscape to the south is forested with higher elevations.

The cover type is Douglas-fir and the desired future condition of the conifer stand. The habitat type is Douglas fir/Ninebark and Douglas-fir/Snowberry. Douglas-fir is a moderately shade tolerant species and is the indicated climax species and vigorous seral for the habitat type. The stand is included in fire group six. The fire disturbance regime was likely low to moderate severity fires occurring at 40 to 45-year interval, maintaining mature stands in a more open condition with an occasional stand replacing fire occurring in denser, overstocked areas. The absence of fire, in combination with encroachment, has resulted in an overstocked and suppressed stand. These conditions have made the stand more susceptible to attack from insects and disease and created heavier fuel loadings than were historically present. There is recent selective harvesting on adjacent private lands to the west. Some old harvesting occurred ~50-75 years ago.

Stands are exhibiting poor vigor and growth due mainly to too many mature trees per acre competing for the same limited resources. Compounded by droughty conditions over the last decade and recurrent infestations of Western Spruce Budworm, Douglas fir beetle, Mountain Pine beetle, rot and stem rots, trees are stressed and in poor health. Some larger relic trees are scattered within the stands but there are not enough to meet the DNRC old growth minimum criteria. Age ranges from 120-165 years old, average dbh 15" with an average BA per acre of 160 sq. ft. Forest grasses, forbs and shrubs are moderate to well represented and conifer regeneration is negligible due to Western Spruce Budworm. No rare plants or cover types have been noted or observed within the project area. Some small aspen stands are found along riparian areas. The Douglas fir is encroaching into the aspen and would eventually replace most of the aspen clone.

Reducing the trees per acre by reducing the basal area in these stands would lessen the competition for resources while promoting a heathier environment and healthier trees more able to fend off attacks from insects and disease. Opening the crown canopy would create gaps to let in sunlight and aid in establishment of Douglas-fir regeneration. As the harvest unit is relatively small, adjacent stands would provide a supplementary source of seed. Additionally, reducing the trees per acre and creating space in the crown canopy would reduce fuel loadings within the stands and help reduce the intensity of a fire within the treated area.

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 Weeds	x				x				x					
Rare Plants	x				x				x					
Vegetative community			x				x				x		**No**	**1**
Old Growth	x				x				x					
Action														
Noxious Weeds		x				x				x			**Yes**	**2**
Rare Plants	x				x				x					
Vegetative community			x				x				x		**Yes**	**3**
Old Growth	x				x				x					

Comments:

1. All stands have Western Spruce Budworm, Douglas fir beetle, Mountain Pine beetle, root and stem rots. Stand overstocking would continue to reduce vigor and growth and leave stand at a greater risk to insect and disease attack and heavier fuel loadings and fire.
2. Mechanical treatment would increase ground disturbance and increase the potential spread of noxious weeds. In time, native species would be expected to out compete the invasive species and return the area to a more pre-harvest condition.
3. Shelterwood, selection, seed tree and clearcut treatments would remove ~60% to 75% (up to 100% in the more decedent areas) of the sawtimber basal area, improving the health, vigor, and productivity of the stands. Douglas-fir leave trees would provide a seed source for regeneration and new timber stands in the long-term. Aspen stand treatments would remove all merchantable conifers within 50-75' of aspen colonies to reduce conifer encroachment and promote restoration of the aspen stands.

Vegetation Mitigations:

- All road and logging equipment would be power washed and inspected prior to being brought on site.
- Project area would be monitored for noxious weeds during and following harvest and a weed treatment plan would be developed and implemented should noxious weed issues occur.
- All new roads would be reseeded with site adapted grass to reduce the threat of noxious weed spread. Grass seed disturbed sites (landings, slash piles, major skid trails) at the completion of the harvest units. Seed mix used would be appropriate for the site.

- Two large snags and snag recruits (≥21" dbh or next dbh class) per acre would be left where available. Cull live trees and cull snags would be retained where applicable. Sub-merchantable/non-merchantable trees and shrubs would be protected and retained where available. Retain visual screening cover in harvest units and riparian and wetland management zones. Emphasize the retention of downed logs of 15-inch diameter or larger where available. Retain live, healthy older trees and stand attributes suitable for old growth development where available and applicable.
- Implementation of Forestry Best Management Practices (BMP's), Streamside Management Zone (SMZ) laws, Montana DNRC Forested Trust Lands HCP and DNRC Forest Management Administrative Rules.

SOIL DISTURBANCE AND PRODUCTIVITY:

Soil Disturbance and Productivity Existing Conditions: Soils within the project area are very deep, well drained, moderate to slow permeability, clay to cobbly loams, formed in colluvium, alluvium and/or residuum derived from limestone, basalt and volcanic tuff or mixed rock. Erosion, compaction and rutting are moderate but certain features, i.e., slope and low soil strength, could develop unfavorable operating conditions.

Overall, soils are indicated as moderately suited for roads and for timber harvest. Soil rutting, compaction and erosion hazards are moderate. No areas of slope instability were observed within the project area during field review. Existing access road on private land shows moderate to moderately severe erosion due to steep grades and no erosion control features. Old harvest areas do not indicate any high hazards or adverse impacts.

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		Yes	1
Nutrient Cycling	x				x				x					
Slope Stability	x				x				x					
Soil Productivity	x				x				x					
Action														
Physical Disturbance (Compaction and Displacement)			x				x			x			Yes	2,3
Erosion			x				x			x			Yes	2,3
Nutrient Cycling			x				x			x			Yes	2,3
Slope Stability	x				x				x					
Soil Productivity		x				x				x			Yes	2,3

Soil Comments:

1. Existing access road on private lands is steep, not BMP compliant and has erosion problems. This road would be reshaped where practical and have rolling dips and waterbars installed to alleviate erosion issues.

2&3. Detrimental soil impacts resulting from compaction, displacement and erosion would be expected on approximately 15% or less of the harvest unit and would be localized to primary skid trails and log landing sites. Project area nutrient pools are not expected to be affected if 5-10 tons of fine and coarse woody material is retained onsite for long-term soil organic matter supply and nutrient cycling. Woody material retention and managing operating periods in conjunction with limiting disturbance is expected to maintain long-term productivity.

Previous harvest within the project area is limited with less than 2 percent detrimental soil disturbance. For an impact to soil resources to be cumulative they must overlap at least twice in both time and space. Considering this constraint, the proposed action presents a low-level risk of cumulative effects to soil resources in the project area.

Soil Mitigations:

- Limit equipment operations to periods when soils are dry (less than 20% soil moisture), frozen or snow covered (12 inches packed or 18 inches unconsolidated) to minimize soil compaction, rutting, vegetative disturbance and maintain drainage features. Control erosion by installing adequate drainage on roads and skid trails.
- Existing access road on private lands would have erosion controls installed to alleviate erosion issues.
- Retain all fine litter as feasible and 5-10 tons/acre of large woody debris >3" diameter including 1 large log (>15 inches dbh) per acre greater than 20 feet long as practicable.
- Minimize soil disturbance by general skid trail planning and limit sustained tractor skidding to slopes ≤45% throughout entire project. Limit scarification to 30-40% of the harvest area. Slash would be left in the harvest units where feasible, and distributed on skid trails upon completion of use, for nutrient cycling, to control erosion and to provide shade and moisture retention.
- The locations and spacing of skid trails and landings shall be designated and approved prior to operations and skid trails would not be spaced less than 50 feet apart.
- Install adequate road drainage to control erosion concurrent with harvest activities, road opening and new construction. Provide effective sediment filtration along drainage features near crossing sites. New construction and major skid trails on State lands would be closed with slash and debris and, and have adequate drainage provided. At sale closure, grass seed roads, skid trails (where needed) and landings with an appropriate seed mixture.
- Implementation of Forestry Best Management Practices (BMP's), Streamside Management Zone (SMZ) laws, Montana DNRC Forested Trust Lands HCP and applicable DNRC Forest Management Administrative Rules.

WATER QUALITY AND QUANTITY:

Water Quality and Quantity Existing Conditions: No streams are present within the harvest area. No existing road or new road crosses the unnamed drainage which is tributary to Beaver Creek, ~0.8 miles down the drainage. ~ 0.25 miles below the northeast boundary of the harvest unit is a spring head which is the beginning of perennial flow in the unnamed tributary. Beaver Creek is tributary to Mission Creek ~4.2 miles down-stream of the new road crossing. Existing access roads on private lands currently do not meet BMP's.

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				Yes	1,3
Water Quantity	X				X				X					2

Comments:

1. The primary concerns regarding water quality is the potential for increased levels of erosion and subsequent sediment delivery to streams from roads. A high level of BMP effectiveness can be expected during and after implementation of the proposed actions on roads. Any potential change in water quality is likely to be unmeasurable or unable to deliver to surface waters.

   Due to the silvicultural prescription, the location of the harvest units relative to stream channels, location of new road construction, and implementation of Forest Management BMP's within the project area there is a low risk of direct, secondary or cumulative water quality impacts.

2. Forest stands within the project area are not a major influence on the hydrology and flow regimes of the streams draining the proposed timber sale area. Much of the forest in the project area has been affected by Douglas fir beetle, Mountain Pine beetle, Spruce Budworm and root and stem rots. The proposed harvest is not expected to substantially decrease the levels of canopy interception or evapotranspiration potential over that likely to occur in these watersheds under no action. The levels of harvest proposed are also below those cumulative levels associated with detrimental increases in water yield. Due to these factors, no direct, secondary or cumulative impacts to water quantity are anticipated under the proposed action.

3. The upper reach of the unnamed drainage to Beaver Creek is a dry draw where only spring runoff occurs and would have an 80-foot RMZ established. No harvest within the RMZ is proposed. This, along with topographic shading, would provide adequate shade, woody debris recruitment and sediment filtration to protect adjacent and downstream

beneficial uses. ~ 0.25 miles below the northeast boundary of the harvest unit is a spring head which is the beginning of perennial flow.

Water Quality & Quantity Mitigations:

- Limit equipment operations to periods when soils are dry (less than 20% soil moisture), frozen or snow covered (12 inches packed or 18 inches unconsolidated).
- Upgrade existing roads on the State parcel and selected segments of the existing private road to meet Forestry Best Management Practices. New road on the State parcel would be reclaimed.
- Establish an 80-foot RMZ with no road or harvest activities within RMZ.
- Implementation of Forestry Best Management Practices (BMP's), Streamside Management Zone (SMZ) laws, Montana DNRC Forested Trust Lands HCP and applicable DNRC Forest Management Administrative Rules.

FISHERIES:

Fisheries Existing Conditions: No streams are present within the harvest area. No existing road or new road crosses the unnamed drainage which is tributary to Beaver Creek, ~0.8 miles down the drainage. ~ 0.25 miles below the northeast boundary of the harvest unit is a spring head which is the beginning of perennial flow in the unnamed tributary. Beaver Creek is reported to have Yellowstone Cutthroat Trout in its lowest reach ~2.4 miles down-stream of the harvest unit.

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		
No-Action														
Sediment	X				X				X					
Flow Regimes	X				X				X					
Woody Debris	X				X				X					
Stream Shading	X				X				X					
Stream Temperature	X				X				X					
Connectivity	X				X				X					
Populations	X				X				X					
Action														
Sediment	X				X				X					
Flow Regimes	X				X				X					
Woody Debris	X				X				X					
Stream Shading	X				X				X					

Fisheries	Impact												Can Impact Be Mitigated?	Comment Number
	Direct				Secondary				Cumulative					
	No	Low	Mod	High	No	Low	Mod	High	No	Low	Mod	High		
Stream Temperature	X				X				X					
Connectivity	X				X				X					
Populations	X				X				X					

Comments:

No direct, secondary or cumulative effects to fisheries resources are expected to occur due to the implementation of this project.

Fisheries Mitigations:

- No harvest of trees within the RMZ.
- Implementation of Forestry Best Management Practices (BMP's), Streamside Management Zone (SMZ) laws, Montana DNRC Forested Trust Lands HCP and applicable DNRC Forest Management Administrative Rules.

WILDLIFE:

Wildlife Existing Conditions: The project area is dominated by mature Douglas fir stands mixed with lodgepole pine, alpine fir, spruce and limber pine transitioning to Douglas fir and aspen groves at the bottom of the harvest unit. Much of the existing forested area on the project area is present due to range encroachment during the last 100 years. Large live trees and snags are found in the project area. Coarse woody debris amounts are generally low to moderate due to the mature age of stands and community types. The project area occurs along a forest grassland ecotone providing habitat for many native song birds, raptors, big game species, and predators. Several prominent limestone rock outcrop features occur in the project area. The Absaroka Beartooth Wilderness lies approximately one air mile south of the project area. Big game summer habitats exist in the project area.

No-Action: No potential for disturbance to wildlife would be anticipated. No timber management activities would be conducted, thus no appreciable changes to existing habitats would occur. No changes in snag or large live tree availability would be anticipated. Continued maturation within existing stands could improve hiding cover and thermal cover for elk and mule deer, and other wildlife species that use forest cover to meet their life requisites. No direct effects would occur and negligible indirect, or cumulative effects would occur.

Action Alternative (see Wildlife table below):

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)*		X			X				X				Y	1

Wildlife	Impact												Can Impact be Mitigated?	Comment Number
	Direct				Secondary				Cumulative					
	No	Low	Mod	High	No	Low	Mod	High	No	Low	Mod	High		
Habitat: Recovery areas, security from human activity														
Canada lynx (*Felix lynx*) Habitat: Subalpine fir habitat types, dense sapling, old forest, deep snow zone		X			X				X				Y	2
Wolverine *(Gulo gulo)*		X			X				X				Y	3
Sensitive Species														
Bald eagle *(Haliaeetus leucocephalus)* Habitat: Late-successional forest within 1 mile of open water	X				X				X					4
Black-backed woodpecker *(Picoides arcticus)* Habitat: Mature to old burned or beetle-infested forest	X				X				X					4
Black-tailed prairie dog (*Cynomys ludoviscianus*) Habitat: grasslands, short-grass prairie, sagebrush semi-desert	X				X				X					4
Flammulated owl *(Otus flammeolus)* Habitat: Late-successional ponderosa pine and Douglas-fir forest	X				X				X					4
Gray Wolf *(Canis lupus)* Habitat: Ample big game populations, security from human activities	X				X				X					5

Wildlife	Impact												Can Impact be Mitigated?	Comment Number
	Direct				Secondary				Cumulative					
	No	Low	Mod	High	No	Low	Mod	High	No	Low	Mod	High		
Harlequin duck *(Histrionicus histrionicus)* Habitat: White-water streams, boulder and cobble substrates	X				X				X					4
Northern bog lemming *(Synaptomys borealis)* Habitat: Sphagnum meadows, bogs, fens with thick moss mats	X				X				X					4
Mountain plover (*Charadrius montanus*) Habitat: short-grass prairie & prairie dog towns	X				X				X					4
Peregrine falcon *(Falco peregrinus)* Habitat: Cliff features near open foraging areas and/or wetlands	X				X				X					6
Pileated woodpecker *(Dryocopus pileatus)* Habitat: Late-successional ponderosa pine and larch-fir forest	X				X				X					4
Greater Sage grouse (*Centrocercus urophasianus*) Habitat: sagebrush semi-desert	X				X				X					7
Townsend's big-eared bat *(Plecotus townsendii)* Habitat: Caves, caverns, old mines	X				X				X					4
Big Game Species														
Elk		X				X				X			Y	8

Wildlife	Impact												Can Impact be Mitigated?	Comment Number
	Direct				Secondary				Cumulative					
	No	Low	Mod	High	No	Low	Mod	High	No	Low	Mod	High		
Mule Deer		X				X				X			Y	8
Black Bear		X				X				X			Y	8
Other Species or Issues														
Snags		X				X				X			Y	9
Large Live Trees		X				X				X			Y	9

Comments:

1. The project area lies approximately 25 miles due north of the GYE grizzly bear recovery zone and occurs at the northerly edge of the occupied habitat boundary. Potential habitat for grizzly bears is present within the project area and it is likely that a few grizzly bears may periodically use the general area as part of their home ranges. ~0.2 miles of new road would be constructed to minimum standard to access the proposed harvest units. All new road on State lands would be physically closed at the completion of all proposed activities. Stand density in harvest unit would be reduced by 60-75% with patchy cover retained for visual screening. The potential for any measurable increases in bear-human conflicts following the project activities are expected to be low. Adverse direct, secondary and cumulative impacts to grizzly bears as a result of this project are expected to be minor.

2. The project area occurs outside of any Critical Habitat boundary. While some of the current forest cover types within the project area is considered suitable for use by lynx, most typically do not contain the high horizontal cover comprised of subalpine and spruce bows that provide habitat for snowshoe hares or coarse woody debris that is preferred for denning. Most habitat in the project area is likely best suited as travel habitat or matrix habitat that would facilitate movement, linkage, and provide habitat for secondary prey species such as red squirrels. Considering preferred lynx habitat is marginal within the proposed project area due to the lack of highly desirable habitat conditions for lynx and their primary prey, snowshoe hares, adverse direct, indirect or cumulative impacts to lynx as a result of this project are expected to be minor.

3. The proposed project area falls within the range of wolverines and periodic or transient use of the proposed project area could occur. High elevation areas greater than 7200 feet that maintain persistent snow late into the spring do occur in the project area but not the harvest areas. Due to the size, nature, duration and location of the proposed project, activities associated with this proposal are expected to have minimal effect on wolverines.

4. The project area is either out of the range of the normal distribution for this species or suitable habitat and/or key habitat structures are not present (eg. documented nest sites or roosting structures etc.). No direct, indirect, or cumulative effects would be anticipated.

5. No known den or rendezvous sites occur in the project area, however, wolves may occasionally use the project area and sightings have been noted in the area (S. Titeca, local rancher, pers. comm. 7/7/2015). Some use of the project area by wolves could occasionally occur for breeding, hunting, or other life requirements. Big game species exist in the vicinity of the project area much of the year and some winter range exists in the project area. Any wolves using the area could be disturbed by proposed activities and are most sensitive at den and rendezvous sites, which are not known to occur in the project area or within 1 mile of the project area. Should either a den or rendezvous site be identified within 1 mile of the project area, a DNRC biologist would be consulted to determine if additional mitigations would be necessary. In the short-term, the proposed activities could lead to slight shifts in big game use, which could lead to a shift in wolf use of the area should they be present. Proposed activities would alter canopy closure, summer big game habitat, and big game winter range habitat, which could alter some big game use of the area but would not be expected to alter wolf prey abundance.

6. Potential for peregrine falcon habitat exists in the project area. Some suitable habitats exist in the project area, including limestone cliffs. However, there are no known peregrine falcon nesting sites in the harvest area. The proposed activities would have negligible effects on peregrine falcons.

7. The project area does not occur within "core" or "general habitat" areas identified by the Montana Sage Grouse Habitat Conservation Program. No occurrence records for greater sage grouse exist for the area. Also, extensive stands of sagebrush community types do not occur within or near the project area. Activities would be restricted to the forested portions of the section. Given the type and location of the project, no direct, indirect or cumulative effects to sage grouse would be anticipated.

8. The project area falls within the distribution of elk, mule deer and black bear. ~0.2 miles of minimum standard new road would be constructed and the duration of logging and road activities would be <12 months. Hiding and thermal cover would be affected on approximately 29 acres, and logging disturbance could disturb and displace elk, deer and black bear, however, displacement would likely be short term. Moderate quality thermal cover/snow intercept is present in most of the project area due to the moderate density of large, mature trees. As the State does not have legal access to the parcel, access to the public is limited to adjacent landowners and to those they may grant access to. No appreciable changes in long-term use of the project area by any of the species would be expected. Due to the scale and short duration of the proposed activities and implementation of mitigations measures, minor adverse direct, indirect, and cumulative effects to elk, deer and black bear would be anticipated.

9. Numerous large live trees and snags exist in the project area. While the action alternative would represent a reduction in available large trees and snags on about 29 acres in the project area, the proposed activities would retain approximately 4-12 trees per acre greater than 15" in diameter where present; the continued presence of these resources in the project area could facilitate continued use by those wildlife species that use large trees and snags.

Wildlife Mitigations:

- A DNRC biologist would be consulted if a threatened or endangered species is encountered to determine if additional mitigations that are consistent with the administrative rules for managing threatened and endangered species (ARM 36.11.428 through 36.11.435) are needed.
- If a wolf den is found within 1 mile of active harvest units or within 0.5 miles of a rendezvous site, cease operations and consult a DNRC wildlife biologist for appropriate site-specific mitigations before resuming activities.
- Proposed project activities would not occur from November 30 - June 30.
- Prohibit contractors and purchasers conducting contract operations from carrying firearms while on duty.
- Contractors would adhere to food storage and sanitation requirements.
- Snags, snag recruits, and coarse woody debris would be managed according to ARM 36.11.411 through 36.11.414. Retain at least one large down log >15 inches dbh (or largest size available) and >20 feet long per acre where available. Sub-merchantable and non-merchantable trees and shrubs would be protected and retained for visual screening.
- Design harvest units such that no point within the unit would be more than 600 feet from visual screening or topographic breaks that would hide a bear.
- All new roads and major skid trails would be physically closed within the project area on the State parcel at the completion of proposed activities. Existing restricted roads on State lands would remain closed to motorized public access.
- Implementation of Forestry Best Management Practices (BMP's), Streamside Management Zone (SMZ) laws, Montana DNRC Forested Trust Lands HCP and applicable DNRC Forest Management Administrative Rules.

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			Yes	1
Dust		X				X				X			Yes	2

Comments:

1. Slash consisting of tree limbs and tops and other vegetative debris would be piled at landing areas during harvesting. Slash would ultimately be burned after harvesting operations have been completed. Burning would introduce particulate matter into the local airshed, temporarily affecting local air quality. Project area is located in Airshed 8B.

2. Dust may be created from logging operations and log hauling while on native surface roads. Due to minor amount of dust particulate, remoteness and short duration of project no mitigations for dust would be implemented.

Air Quality Mitigations:

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

ARCHAEOLOGICAL SITES / AESTHETICS / DEMANDS ON ENVIRONMENTAL RESOURCES:

Will Alternative result in potential impacts to:	Impact												Can Impact Be Mitigated?	Comment Number
	Direct				Secondary				Cumulative					
	No	Low	Mod	High	No	Low	Mod	High	No	Low	Mod	High		
No-Action														
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					1
Aesthetics	X				X				X					
Demands on Environmental Resources of Land, Water, or Energy	X				X				X					

Comments:

1. A Class I (literature review) level review was conducted by the DNRC staff archaeologist for the area of potential effect (APE). This entailed inspection of project maps, DNRC's sites/site leads database, land use records, General Land Office Survey Plats, and control cards. The Class I search revealed that no cultural or paleontological resources have been identified in the APE. No additional archaeological investigative work will be conducted in response to this proposed permit because there is a low potential for adversely effecting Heritage Properties.

Mitigations:

- If unknown cultural or paleontological materials are identified during project related activities, all work will cease until a professional assessment of such resources can be made.

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.*

- State Forest Land Management Plan, 1996.
- Gone Beaver timber permit CatEx, 2016.
- Litl Dry timber sale EAC, 2017.

Impacts on the Human Population

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

Will Alternative result in potential impacts to:	Impact												Can Impact Be Mitigated?	Comment Number
	Direct				Secondary				Cumulative					
	No	Low	Mod	High	No	Low	Mod	High	No	Low	Mod	High		
No-Action														
Health and Human Safety	X				X				X					
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					
Cultural Uniqueness and Diversity														
Action														
Health and Human Safety	X				X				X					
Industrial, Commercial and	X				X				X					

Will Alternative result in potential impacts to:	Impact												Can Impact Be Mitigated?	Comment Number
	Direct				Secondary				Cumulative					
	No	Low	Mod	High	No	Low	Mod	High	No	Low	Mod	High		
Agricultural Activities and Production														
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					
Cultural Uniqueness and Diversity	X				X				X					

Comments: N/A

Mitigations: N/A

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.*

- NONE

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 transactional data. This method uses current stumpage prices for delivered sawtimber and associated sawtimber harvest costs to find a market value for the sawtimber stumpage to be sold.

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

Action: The timber harvest would generate additional revenue for the Common Schools Trust. The estimated return to the trust for the proposed harvest is $24,220.50 based on an estimated harvest of 250 thousand board feet (1675 tons) and an overall stumpage value of $14.46 per ton. The estimated return to Forest Improvement for the proposed harvest is $904.50 based on an estimated harvest of 1675 tons and an FI fee of $0.54 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.

DNRC, 2011. DNRC compiled soils monitoring report on timber harvest projects, 2006-2010, 1st Edition. Department of Natural Resources and Conservation, Forest Management Bureau, Missoula, MT.

DNRC, 2016. Montana DNRC Trust Lands Forest Management Old Growth Handbook, 2016 revision. Department of Natural Resources and Conservation, Forest Management Bureau, Missoula, MT.

Pfister, Robert D., Kovalchic, Bernard L., Arno, Stephen F., Presby, Richard C. Forest Habitat Types of Montana, USDA Forest Service General Technical Report INT-34 Ogden Utah 1977

MNHP. 2019. Montana Natural Heritage Program Environmental Summary Query and Species Occurrence Report. March 2019.

Does the proposed action involve potential risks or adverse effects that are uncertain but extremely harmful if they were to occur?

No

Does the proposed action have impacts that are individually minor, but cumulatively significant or potentially significant?

No

Environmental Assessment Checklist Prepared By:

Name: Chuck Barone
Title: Bozeman Unit Forester
Date: 08/07/2019

Finding

MEASURES RECOMMENDED TO MITIGATE POTENTIAL IMPACTS

1) Implementation of Forestry Best Management Practices (BMP's), Streamside Management Zone (SMZ) laws, Montana DNRC Forested Trust Lands HCP and applicable DNRC Forest Management Administrative Rules.
2) When working off of established roads, limit equipment operations to periods when soils are dry (less than 20% soil moisture), frozen to a depth of 4 inches or a depth that will support machine operations (whichever is greater) or snow covered to a depth of 18 inches or a depth that will prevent compaction, rutting, or displacement (whichever is greater) to minimize soil compaction, rutting, vegetative disturbance and maintain drainage features. Control erosion by installing adequate drainage on roads and skid trails.
3) The Forest Officer shall approve a plan for felling, yarding and landing location in each harvest unit prior to the start of operations in the unit. The locations and spacing of skid trails and landings shall be designated and approved by the Forest Officer prior to operations and skid trails will not be spaced less than 50 feet. Retain all fine litter as feasible and 5-10 tons/acre of large woody debris >3" diameter. Minimize soil disturbance by general skid trail planning and limit sustained tractor skidding to slopes ≤45%. Limit scarification to 30-40% of the harvest area. Slash would be left in the harvest units where feasible and distributed on main skid trails upon completion of use, for nutrient cycling, to control erosion and to provide shade and protection for seedlings.
4) Install adequate road drainage to control erosion concurrent with harvest activities. Provide effective sediment filtration along drainage features near crossing sites. New roads and major skid trails on State lands would be closed with slash and debris and/or barriers, and have adequate drainage provided.
5) All road and logging equipment would be power washed and inspected prior to being brought on site. Sale area would be monitored for weeds following harvest and a treatment plan would be developed should noxious weed issues occur.
6) At sale closure, grass seed roads, skid trails (where needed) and landings with an appropriate seed mixture.
7) Two snags and two snag recruits per acre, of the largest diameter class, would be retained where available and applicable. Cull live trees and cull snags would be retained where applicable.
8) Sub-merchantable and non-merchantable trees and shrubs would be protected and retained where applicable. Retain patches of advanced regeneration of shade-tolerant trees (grand fir, subalpine fir, and spruce), as a component of commercial harvest prescriptions. Cover of the retained patches should not exceed 10 percent of the stand area.
9) Emphasize the retention of downed logs of 15-inch diameter and 20-feet long or larger per acre where available.

10) On blowdown salvage projects, 1 percent of the blowdown area would be left unsalvaged. The material would preferably be retained in a nonlinear patch or patches.
11) Retain live, healthy older trees and stand attributes suitable for old growth development where available and applicable.
12) Contact DNRC wildlife biologist should any threatened or endangered species be encountered within the proposed project area. If a wolf den is found within 1 mile of active harvest units or within 0.5 miles of a rendezvous site, cease operations and consult a DNRC wildlife biologist for appropriate site-specific mitigations before resuming activities.
13) Human or pet food, livestock food, garbage, and other attractants would be stored in a bear resistant manner. Burnable attractants (such as food leftovers or bacon grease) would not be buried, discarded, or burned in an open campfire. Written brochures that describe risks and concerns regarding humans living and working in bear habitat would be provided to contractors and their employees conducting forest management activities prior to start of operations.
14) Clearcut and seed tree cutting units would be designed in a manner that requires any point within a unit to be within 600 feet of visual screening cover in at least one direction.
15) Forest management activities would be prohibited during the spring period of March 1 through June 30 to minimize risk of disturbance to grizzly bears, calving areas and nesting birds.
16) DNRC employees and contractors and their employees would be prohibited from carrying firearms while on duty, unless the person is specifically authorized to carry a firearm under DNRC Policy 3-0621.

Alternative Selected

Action Alternative: Under the action alternative, a commercial harvest of an estimated 250 MBF of overstocked Douglas-fir and whitewood sawtimber from 29.1 acres would occur. The proposed project would utilize ~3 miles of existing road and construct 0.2 miles of temporary, new reclaimed road to access the harvest area. Shelterwood, selection, seed tree and clearcut harvests, utilizing ground-based systems, would be utilized for timber stand treatments. Selected aspen stands would have all conifer sawtimber removed out to 75 feet from the aspen clones. Treatments would generate revenue to the Common Schools Trust and capture value from dead and dying timber while improving the health, vigor and productivity of the forest stands. At project closure, major skid trails and new road on the State land would be physically closed.

Significance of Potential Impacts

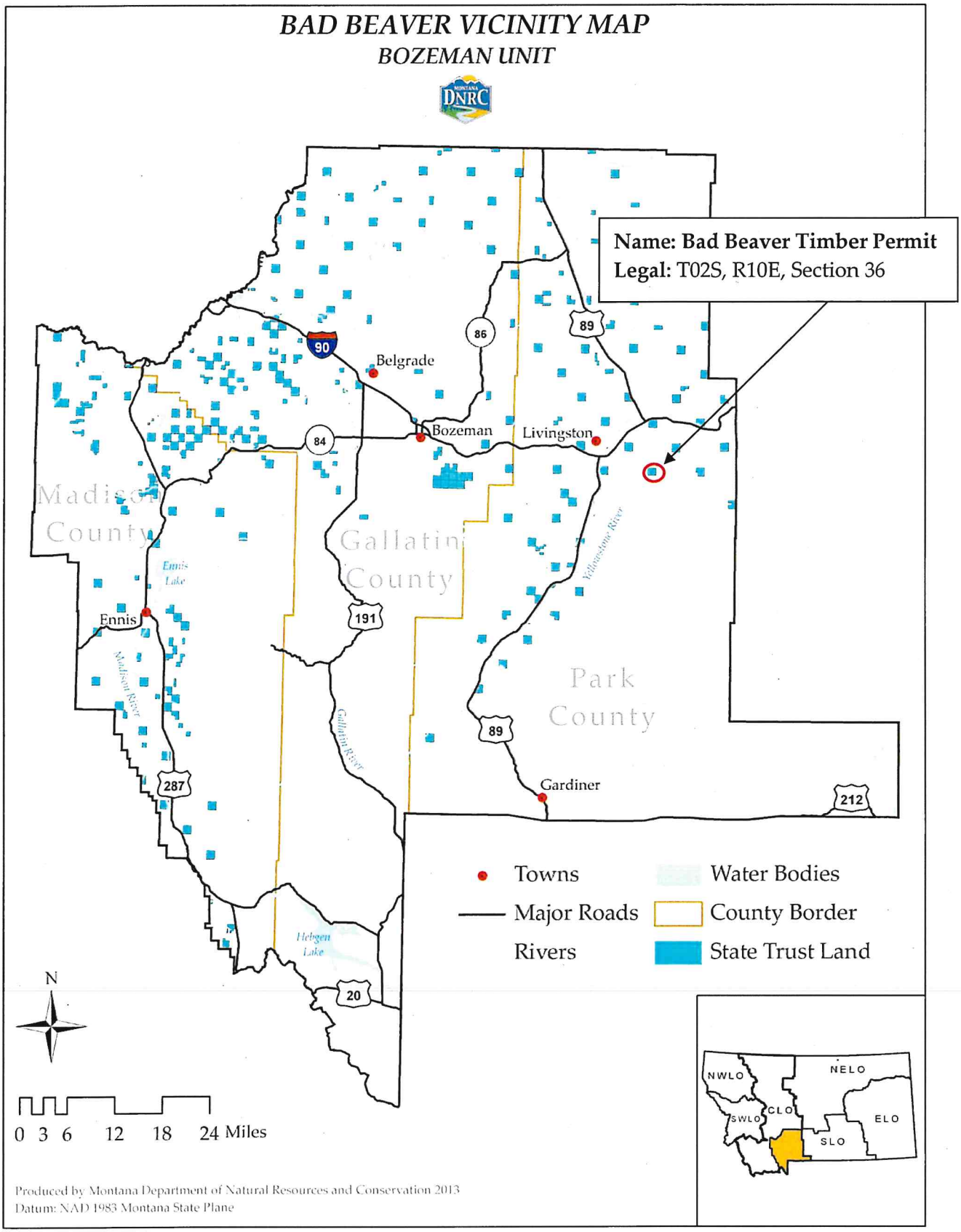
I have determined that none of the anticipated environmental impacts outlined in the EA are significant according to the criteria outlined in *ARM 36.2.524.* I find that no impacts are regarded as severe, enduring, geographically widespread, or frequent. Further, I find that the quantity and quality of various resources, including any that may be considered unique or fragile, will not be adversely affected to a significant degree. I find no precedent for future actions that would cause significant impacts, and I find no conflict with local, State, or Federal laws, requirements, or formal plans. In summary, I find that the identified adverse impacts will be avoided, controlled, or mitigated by the design of the project to the extent that the impacts are not significant.

Need for Further Environmental Analysis

☐	EIS	☐	More Detailed EA	X	No Further Analysis

Environmental Assessment Checklist Approved By:
Name: Craig Campbell
Title: Bozeman Unit Manager
Date: August 9, 2019
Signature:Craig Campbell /s/

A-1: Timber Permit Vicinity Map



A-2: Timber Permit Harvest Units