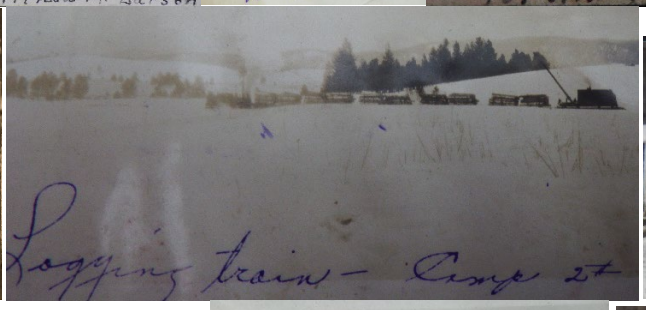
COYOTE GREENOUGH PROJECTS

ENVIRONMENTAL ASSESSMENT



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Clearwater Unit
Southwest Land Office
Montana Department of Natural Resources and Conservation
April 2023

Environmental Assessment Checklist

Project Name: Coyote Greenough Projects
Proposed Implementation Date: June 2023
Proponent: Clearwater, Southwest Land Office, Montana DNRC
County: Missoula

Type and Purpose of Action

Description of Proposed Action:

The Clearwater Unit of the Montana Department of Natural Resources and Conservation (DNRC) is proposing the Coyote Greenough Projects. These projects are located approximately five miles east of Potomac, Montana, and portions are within 0.75 miles west of Greenough, Montana (refer to Attachments: **vicinity map A-1** and **project map A-2** and **A-3**) and includes the following sections:

Beneficiary	Legal Description	Total Acres	Treated Acres
Common Schools	**Sec. 22 T13N R15W Sec. 36 T14N R15W**	**175**	**169**
Public Buildings	**Sec. 18 T13N R14W Sec. 14 T13N R15W Sec. 22 T13N R15W Sec. 23 T13N R15W Sec. 24 T13N R15W**	**2,077**	**1,599**
MSU 2nd Grant			
MSU Morrill			
Eastern College-MSU/Western College-U of M			
Montana Tech			
University of Montana			
School for the Deaf and Blind			
Pine Hills School	**Sec. 22 T13N R15W**	**10**	**10**
Veterans Home			
Public Land Trust			
Acquired Land			

Objectives of the project include:

- Maximize revenue over the long-term for the trust accounts (Public Buildings, Common School, and Pine Hills Permanent) from the timber resources and provide a sufficient amount of sawlog volume to contribute to the DNRC's sustained yield as mandated by State Statute *77-5-222, MCA*.
- Improve stand growth and vigor and reduce the threat of future losses to fire, insects, and disease.

- Manage the identified parcels intensively for healthy and biologically diverse forests to provide long-term income for the Trusts (ARM 36.11.405).
- Bring stands closer to historic conditions.
- Improve access and BMP compliance with new construction and road maintenance activities.
- Decrease visual impacts to the aesthetics of the area when viewed from areas around this sale.

Proposed activities include:

Action	Quantity
Proposed Harvest Activities	# Acres
Clearcut	
Seed Tree	
Shelterwood	1,127
Selection	499
Old Growth Maintenance/**Restoration**	117
Commercial Thinning	35
Salvage (Sanitation)	
Total Treatment Acres	**1,778**
Proposed Forest Improvement Treatment	# Acres
Pre-commercial Thinning	**700**
Site preparation/scarification	
Planting	
Proposed Road Activities	# Miles
New permanent road construction	8.1
New temporary road construction	
Road maintenance	14.3
Road reconstruction	1.81
Road abandoned	
Road reclaimed	1.3
Other Activities	

Duration of Activities:	8 years
Implementation Period:	Summer 2023 – Winter 2031

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:
  - August 2022
- PUBLIC SCOPED:
  - The scoping notice was posted on the DNRC Website: http://dnrc.mt.gov/public-interest/public-notices
  - 77 individuals, agencies, and other organizations that have expressed interest in DNRC's management activities. It was also posted on the DNRC website.
- AGENCIES SCOPED:
  - Montana Department of Fish, Wildlife and Parks (FWP)
  - Montana Forest and Conservation Experimental Forest (U. of Montana)
  - United States Bureau of Land Management, Missoula Field Office
  - Montana Tribal Nations
- COMMENTS RECEIVED:
  - How many: Three separate comments were received from Janice Sutherland, Samantha Westfahl, and Dave Kline.
  - Concerns: General information about the projects, curious of the effects upon the projects regarding deer and elk, aesthetics of the projects, and questions about forest stocking and spacing of trees.
  - Results: Some of these concerns were also raised by the specialists consulted. Others were answered within the EA.

DNRC interdisciplinary team:

- Project Leader: **Craig V. Nelson**
- Archeologist: **Patrick Rennie**
- Wildlife Biologist**: Garrett Schairer**
- Hydrologist & Soil Scientist: **Andrea Stanley**
- Fisheries Biologist: **Mike Anderson**
- MEPA Planner: **Emilia Grzesik**

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 http://dnrc.mt.gov/divisions/trust/forest-management/hcp.

- **Montana Department of Environmental Quality (DEQ)-** DNRC is classified as a major open burner by DEQ and is issued a permit from DEQ to conduct burning activities on state lands managed by DNRC. As a major open-burning permit holder, DNRC agrees to comply with the limitations and conditions of the permit.

- **Montana/Idaho Airshed Group-** The DNRC is a member of the Montana/Idaho Airshed Group which was formed to minimize or prevent smoke impacts while using fire to accomplish land management objectives and/or fuel hazard reduction (Montana/Idaho Airshed Group 2010). As a member, DNRC must submit a list of planned burns to the Airshed Group's Smoke Monitoring Unit describing the type of burn to be conducted, the size of the burn in acres, the estimated fuel loading in tons/acre, and the location and elevation of each burn site. The Smoke Monitoring Unit provides timely restriction messages by airshed. DNRC is required to abide by those restrictions and burn only when granted approval by the Smoke Monitoring Unit when forecasted conditions are conducive to good smoke dispersion.

- **Montana Department of Fish, Wildlife and Parks (DFWP)-** A Stream Protection Act Permit (124 Permit) is required from DFWP for activities that may affect the natural shape and form of a stream's channel, banks, or tributaries. Such activities include:
    - **Installation of 2 new crossings and maintenance of existing CMP's**

ALTERNATIVES CONSIDERED:

No-Action Alternative:

- The proposed harvest, road building, planting, and pre-commercial thinning would not occur.
- Stands would remain at overstocked levels and are currently under possible insect and disease threats.
- Road systems would not be improved and meet BMP's and drainage would not be improved.
- Concerns regarding overstocked stands and associated fire danger would continue.
- All pre-commercial stands would continue to grow with decreased vigor and would show continue losses within the stand, no planting would take place.
- No money would be received by the included Trust funds from activities of this project.
- These stands would not be directed toward Desired Future Condition (DFC) (ARM 36.11.405).

Action Alternative:

- This proposal includes timber harvest under several sales on approximately 1,778 acres removing an estimated 5.5 MMBF (million board feet).
- Stands could have stocking levels decreased, infected trees could be reduced, and insect and disease losses could be salvaged.
- Road systems would be improved and meet BMP's and drainage would be improved.
- Treatments would assist DNRC in addressing the risk of fire growth, and it would be lessened across DNRC lands in this area.

- Pre-commercial thinning would also occur under this EA on a proposed 700 acres with a plan to increase vigor and reduce overstocking.
- Money would be received by the Public Buildings, Pine Hills Permanent, and Common School Trusts.
- These stands would be directed toward Desired Future Condition.

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:

Stand History/Past Management:
This area falls within climatic section 332B and was historically 79% forested (Losensky, 1997). This area includes valley bottoms as well as high elevations in the Bitterroot and Blackfoot region. The project area ranges in elevation from 3,700'-5,240'. These areas were historically dominated by large, mature ponderosa pine and western larch / Douglas-fir stands.

Fire played a large role in shaping these stands. Much of this proposed sale area (1,984 ac.) is classified as fire group six (Fisher and Bradley 1987). These sites characteristically were "shaped" by wildfire and had a Mean Fire Interval of 42 years. Throughout the sale area there is evidence of both infrequent stand replacing fires and light ground fires. Evidence (fire scars on 200+ year old western larch, ponderosa pine, and Douglas-fir occasional trees and primarily stumps from previous harvests) found during field reconnaissance indicates that these fires burned in the 1800s through their harvest date. It is certainly believable that this fire occurrence proceeded that date. In many cases, the climax species such as subalpine fir and Douglas-fir have started to dominate the stands. Often, regeneration present is predominantly climax species and much of the seedling and pole classes are similar.

Although fire has shaped these stands prior to the arriving of European settlers, much of this area has been treated by timber harvesting. Given the location of these stands adjacent to towns such as Greenough and Potomac, the Blackfoot River, and an extensive railroad system at the time of this harvest, harvest has occurred in this area since the late 1880's. Previous treatments were not necessarily done with the same ideals as they are currently. As a result, some stands regenerated to a different tree species than the expected appropriate condition.

In 1925 a timber sale was sold in four of these sections. It removed 19.65 MMBF. The largest percentage of these trees were large ponderosa pine, western larch, and Douglas-fir. In the 1980's a portion of section 14 was harvested under an agreement with the University of Montana (Lubrecht Experimental Forest) and the U.S. Forest Service Experiment Station and was the Lubrecht Timber Sale. This sale harvested around 420 MBF. (thousand board feet). In 2000, approximately 2.6 MMBF were removed as part of the West Lubrecht EA (West Lubrecht Timber Sale and Greenough Timber Sale). Small sales (permits) have occurred over the years.

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

- The present timber stand species mixes do not meet the Desired Future Condition (DFC).
- Tree mortality from insects and disease is above acceptable levels.
- Shade tolerant species would continue to out-compete seral species, removing stands from their historic cover type and species distribution.
- Young stands are currently overstocked.
- Forest fuel loadings are at moderate to high levels, increasing risk of intense wildfire.
- Timber harvest and road building may result in introduction of new weeds or increased spread of noxious weeds.
- There is a concern proposed project activities could negatively impact populations of threatened, endangered, or sensitive plant species.

Vegetation Existing Conditions:

Current and appropriate cover type for the Coyote Greenough Projects Area.

Cover Type	Current Acres	Current Percent of Project Area	Desired Future Condition (DFC)	
			Acres	Percent
Douglas-fir	264.8	12.9	-	-
Ponderosa pine	623.3	30.3	1,603.2	73.8
Western larch/Douglas-fir	793.5	38.6	568.2	26.2
Western Larch	367	12.2	-	-
Mixed Conifer	112.9	5.5	-	-
Non-stocked	9.9	0.5	-	-
Total:	***2,171.4***	***100%***	***2,171.4***	***100%***

Acres in table include acreage of roads within cover types.

Given the information above, it is obvious that the current forest cover and the DFC are far from each other. The existing stands are not very close to meeting the two main classes of ponderosa pine and western larch/Douglas-fir. Many of the stands within this area contain the correct “building blocks” of the two major DFC stands. However, the amount of the Douglas-fir “pushes” many stands into the Douglas-fir or western larch / Douglas-fir Cover Types. Most of the project area contains higher amounts of smaller Douglas-fir and a understory that is primarily very heavy to Douglas-fir. Obviously, this makes regeneration of ponderosa pine almost impossible.

Most of the stands in the project area are sawlog quality, with exception of two areas within section 14 T13N R15W that were treated with overstory removals or clearcutting. The eastern stands (east of the Garnet Range Road) were logged under the Lubrecht Timber Sale The northern unit was a clearcut where all material was piled in several piles within the center of the unit. It was later planted with ponderosa pine and lodgepole pine. The second area is south of the older clearcut unit. There is a vegetative “buffer” that is 200 feet wide between these treatments. The prescription for this stand was overstory removal. This was designed to remove all trees greater than 9” at diameter at breast height (DBH) and all Douglas-fir between 5”-9” DBH and thinning of western larch and ponderosa pine.

A timber stand adjacent to east side of Highway 200 was harvested in the 1990's. It used a clearcut prescription and was later planted to ponderosa pine.

Given this silvicultural history, it would not be treated in the same fashion as the remainder of the project area as all larger trees have been removed during the past harvest. These stands are proposed to be treated with a commercial thin prescription.

The largest portion of the timber stands within section 14 are either Douglas-fir or Douglas fir / western larch stands. Some stands are typed as ponderosa pine. These can accurately be described of having moderate to heavy cover. These stands are dominated by moderate to larger size trees.

Within sections 22 and 23 T13N R15W, the major stand type is a ponderosa pine. Many of these stands are reproducing with Douglas-fir and meeting the need to meet the old growth stands and typing in the future. To meet those needs, the Douglas-fir must be removed from the stands.

In section 24 T13N R15W, the effect of elevation and available precipitation changes many of these stands to be Douglas-fir / western larch. Western larch or Douglas-fir typed stands that make up the largest part of the remainder, with one small area that is typed as ponderosa pine. A majority of the areas are different from the current cover type, but the changes will not be too great.

Section 18 T13N R14W is primarily Douglas-fir / western larch and ponderosa pine. The Standard Level Inventory (DNRC uses this for stand records) states the DFC is ponderosa pine. Given some of the changes that would need to happen to change these stands to ponderosa pine, it is unlikely we would achieve it under treatment at this time.

The largest portion of section 36 T14N R15W is ponderosa pine. The remainder is Douglas-fir / western larch. There is an old growth stand (ponderosa pine) that meets the DNRC Old Growth Management and under Green *et. al*. (1992) study.

Many of the stands are overstocked with Douglas-fir regeneration and the usual management tool used in these situations is a pre-commercial thinning. Some of the project area stands might require planting and potential other site preparation to remain productive.

Stand	Habitat Group	Fire Regime	Current Cover Type	Age Class (years)	DFC	Prescription	Acres
Sec. 14 T13N R15W	Moderately warm and dry (westside)	Low-to-mixed	Western Larch/Douglas Fir	100-149	Western Larch/Douglas Fir	Shelterwood Harvest	104
Sec. 14 T13N R15W	Moderately warm and dry (westside)	Low-to-mixed	Western Larch/Douglas Fir	100-149	Ponderosa Pine	Shelterwood Harvest	345
Sec. 14 T13N R15W	Moderately warm and dry (westside)	Low-to-mixed	Douglas Fir	100-149	Ponderosa Pine	Shelterwood Harvest	153
Sec. 14 T13N R15W	Moderately warm and dry (westside)	Low-to-mixed	Ponderosa Pine	40-99	Ponderosa Pine	Commercial Thinning	37
Sec. 14 T13N R15W	Moderately warm and dry (westside)	Low-to-mixed	Ponderosa Pine	100-149	Ponderosa Pine	Individual/Select Tree Harvest	43
Sec. 22 T13N R15W	Moderately warm and dry (westside)	Low-to-mixed	Ponderosa Pine	100-149	Ponderosa Pine	Individual/Select Tree Harvest	310
Sec. 23 T13N R15W	Moderately warm and dry (westside)	Low-to-mixed	Ponderosa Pine	100-149	Ponderosa Pine	Individual/Select Tree Harvest	20
Sec. 24 T13N R15W	Moderately warm and dry (westside)	Low-to-mixed	Western Larch/Douglas Fir	100-149	Western Larch/Douglas Fir	Shelterwood Harvest	288.8
Sec. 24 T13N R15W	Moderately warm and dry (westside)	Low-to-mixed	Ponderosa Pine	150-199	Ponderosa Pine	Individual/Select Tree Harvest	8.6
Sec. 24 T13N R15W	Moderately warm and dry (westside)	Low-to-mixed	Douglas Fir	100-149	Western Larch/Douglas Fir	Shelterwood Harvest	85.8
Sec. 24 T13N R15W	Moderately warm and dry (westside)	Low-to-mixed	Douglas Fir	40-99	Ponderosa Pine	Shelterwood Harvest	38.8
Sec. 24 T13N R15W	Moderately warm and dry (westside)	Low-to-mixed	Western Larch/Douglas Fir	100-149	Ponderosa Pine	Shelterwood Harvest	218
Sec. 24 T13N R15W	Moderately warm and dry (westside)	Low-to-mixed	Western Larch/Douglas Fir	100-149	Western Larch/Douglas Fir	Shelterwood Harvest	288.8
Sec. 18 T13N R14W	Moderately warm and dry (westside)	Low-to-mixed	Western Larch/Douglas Fir	100-149	Western Larch/Douglas Fir	Shelterwood Harvest	90
Sec. 18 T13N R14W	Moderately warm and dry (westside)	Low-to-mixed	Western Larch/Douglas Fir	100-149	Ponderosa Pine	Shelterwood Harvest	127.3
Sec. 18 T13N R14W	Moderately warm and dry (westside)	Mixed	Mixed Conifer	100-149	Ponderosa Pine	Shelterwood Harvest	265
Sec. 36 T14N R15W	Moderately warm and dry (westside)	Low-to-mixed	Ponderosa Pine	Old Growth	Ponderosa Pine	Old Growth Restoration	117.4
Sec. 36 T14N R15W	Moderately warm and dry (westside)	Low-to-mixed	Ponderosa Pine	40-99	Ponderosa Pine	Individual/Select Tree Harvest	20.1
Sec. 36 T14N R15W	Moderately warm and dry (westside)	Low-to-mixed	Western Larch/Douglas Fir	40-99	Ponderosa Pine	Shelterwood Harvest	25.6

**Errors can be found in this graph given SLI typing of stands as "western larch" (not western larch/Douglas-fir) and non-stocked stands not being entered under this EA.*

Silvicultural Treatments:

Shelterwood: Shelterwood harvest is a traditional prescription that is a "regenerative" harvest. This is designed to produce regeneration of a preferred tree species that has been chosen and has been left as a "shelter" above the regeneration. These are quality trees and are from the dominant or codominant members of the stand. This overstory layer is later removed (within regulations of the landowner). These stands within the project area are generally a mix of Douglas-fir, western larch, and ponderosa pine. Often these stands have some areas of regeneration that could be managed.

Spacing after harvest is predicted to be variable and would be based upon the individual tree characteristics. However, it could range between 30 feet between trees (45 trees per acre) and 54 feet between trees (15 trees per acre). A target residual basal area per acre is proposed to be around 14-42 square feet of and a resulting volume harvested of 3-9 thousand board feet per acre. The reduction of the overstory and treatment of the existing pole size and understory trees generally causes a stand to produce regeneration of the remaining overstory. The decrease of the total Douglas-fir numbers of the overstory, and a percentage increase of other species (ponderosa pine and western larch) would promote a stand closer to pre-settlement times (DFC). The proposed stand density would make limited resources (light, water, and nutrients) more plentiful for the residual overstory trees and potential regeneration. These changes would continue the progression toward the DNRC appropriate condition.

Fuel management after harvest will include landing piles and machine piles within the harvest unit or scattered as approved.

Selection Harvest: Selection harvest is also termed Individual-Tree Selection. It is a method of uneven-aged harvest. This simply means a harvest method leading to establishment and management of several size and age classes at the same time.

In many cases, it may look like the proceeding mentioned shelterwood harvest. However, the difference will begin to show itself after future harvest with regards to the overstory remaining after harvest.

General spacing can vary but the average application will average 22 trees per acre to 65 trees per acre. The typical application would look at leaving 40 to 80 square feet of basal area. During the harvest preparation, regeneration and saplings are not considered for management. Although it is a treatment that favors ponderosa pine, Douglas-fir and western larch are also left in the management strategy.

Fuel management after harvest will include landing piles and machine piles within the harvest unit or scattered and broadcast burned as needed.

Old Growth Management: As described earlier, there is one stand that qualifies for Old Growth under the DNRC organizational management (Green *et. al.*). This stand is in section 36 T14N R15W. It is 117 acres in size. Treatment of these stands (restoration) are very similar to individual tree selection. DNRC requirements state that 60 square feet of basal area must be left behind. These trees left behind must be 21” in diameter and a minimum of 10 trees per acre.

Fuel management after harvest will include landing piles and machine piles within the harvest unit or scattered as approved.

Commercial Thinning: Commercial thinning is an intermediate treatment. Although regeneration does occur after the commercial thin, it is not a main goal of the harvest. It is typically prescribed in younger stands and improves growth compared to a natural stand. This is due to the harvest as opposed to natural stand etiolation. Thereby, it shows continued growth without the “stall” often seen as biological stand progress.

This is a harvest treatment that is designed to improve growth of the residual stand, enhance stand vigor, make variances with species composition within the stand,

enhance tree and stand quality, and reduces the stand density. This is done prior to a future regeneration harvest. The general prescription for this sale is based upon promotion of seral species and reduction of standing stems density to release resources for tree growth.

Spacing after harvest would range on this project from 25 feet between trees (70 trees per acre) to 27 feet between trees (60 trees per acre). A target basal area per acre would range between 10-27 square feet. The resulting volume harvested is minimal.

Fuel management after harvest will include landing piles and machine piles within the harvest unit or scattered as approved.

Pre-Commercial Thinning: The treatment of pre-commercial thinning is defined as removing small trees not for monetary benefit but to reduce stand stocking, release of limited nutrients (water, light, and nutrients), and improve growth of desired trees. It has also proven to decrease the loss of deterioration through death and poor growth over a longer time-period, especially on poor sites. Smaller trees (less than 6" diameter at breast height) are the target of this silvicultural prescription. This treatment often follows harvest treatment when quality regeneration is present.

Given the presence of spruce budworm, stands treated with pre-commercial thinning will undoubtably have larger openings and greater spacing than is usual. A typical spacing of pre-commercial thinning in this area ranges between 15 feet between trees (194 trees per acre) and 12 feet between trees (302 trees per acre).

Fuels treatment after the pre-commercial will be done using slashing of felled trees to a level less than 18" from the ground level or hand piled and burned in the future.

Road Construction, Maintenance, and Closure: This project plans to use roads within the area for all silvicultural uses. Some of the transportation is proposed to be abandoned (i.e. poor location, poor grade, SMZ concerns) while others are suggested to be constructed (i.e. better access, lower grades, less concerns over roadside erosion and deposition). All roads that would be part of these proposed actions would be addressed by the forester, the soils scientist, the hydrologist, and potentially the wildlife biologist. Primarily, roads proposed for use under this EA are behind locked travel gates. The Garnet Range Road is discussed in Impacts on the Human Populations section of this Environmental Assessment.

Fire Hazard/Fuels:
Most of the timber stands within the project area are showing effects of a history of past logging and fire suppression. Often the traditional overstory has been removed. The fire suppression standards of the past and today, especially in these lower elevation sites adjacent to residences, continues to enable Douglas-fir regeneration and allows it to grow to the stands that occur. In upper elevation stands the Douglas-fir, lodgepole pine, and sub-alpine fir are filling the understory like the stands in lower elevation parcels.

Generally, the lower stands would experience less intense wildfire when traditionally the stands would see fires 5-45 years. This obviously decreased fuels and fire intensity. Given the conditions that exist today, they have much higher levels of fuels than in pre-settlement conditions. This would allow higher severity fires. This will increase the fire risk within an area that is slowly becoming a wildland-urban interface.

A majority of the project area is of a fire group that can exhibit a little higher fire intensity. Often, this can be a stand replacement fire. As the fuel level is increased, the fire intensity has increased, and the fire severity has increased also.

More intense fires, even on a smaller scale, can create hydrophobic soil (unable to let water break the surface tension on the soil). This can lead to erosion and can increase the sediment delivery to local streams.

Insects and Diseases:
The project area has seen several insect outbreaks in the past 50 years. These have increased as the stands have gotten older. Since the 1980's, western spruce budworm (*Choristoneura occidentalis*) has had several cycles. The most recent epidemic outbreak was in the early 2000's. It has decreased, but, is still very prevalent as the amount of Douglas-fir overstory and understory are present.

Over the same time-period, mountain pine beetle (*Dendroctonus ponderosae*) also was present. There were several endemic outbreaks. In the late 1990's, a large outbreak began in the lodgepole pine in the greater western Montana area. Many of the lodgepole pine stands near the project area (Seeley Lake for example) were attacked and the trees were killed. As the outbreak continue, available lodgepole pine stands were killed, the mountain pine beetle moved to younger ponderosa pine. Several small sales within the project area were harvested during this time. The population has again decreased to endemic levels. Potential increases are likely given overstocked ponderosa pine stands.

Sensitive/Rare Plants:
The Montana Natural Heritage Program (MNHP) has identified two rare vascular plants that are known to exist within the general proximity of the project area. None of the plants were discovered within the project area, however the following plant species may exist in the surrounding area based on data from MNHP.

- **Howell's Gumweed** (*Grindelia howellii*)
- **Elfin Crisp Moss** (*Tortula acaulon*)

Howell's Gumweed may also occur in disturbed areas possibly in open areas as roadsides. The MNHP website states:

> *Most populations are small and many occur on roadsides or other similarly disturbed habitat. This habitat preference in conjunction with the short-lived nature of the species means occurrences may drift from place to place or from year to year and as a result many occurrences may be ephemeral. These attributes make determination of population numbers as well as the number of extant populations at any given time difficult to assess. Invasive weeds are a threat to many occurrences, as the habitat occupied by* G. howellii *is also favorable for many weedy species. Application of herbicides to control these weeds, especially along roadsides may also have a direct, negative impact.*

Elfin Crisp Moss has been found on Lubrecht Experimental Forest. MNHP states that the habitat is "Soil, lawns, fields, and soil banks, often among grasses or shrubs in open areas." These plants are very small (approximately 1-2 millimeters in height and occur in small collections. It was found in "clayey (soil), pine stand". The recovery site was near the entrance to Lubrecht Camp in 2003. No other occurrences have been made since that point in time.

Noxious Weeds:
Noxious weeds occurring in the project area consist mainly of spotted knapweed (*Centaurea maculosa*), houndstongue (*Cynoglossum officinale L*), oxeye daisy (*Leucantheum vulgare),* and Canada thistle (*Cirsium arvense*). Recently, orange hawkweed (*Hieracium aurantiacum*) was found in section 24 T13N R15W.

Knapweed is moderate throughout the area, primarily along roads, old log landings and the drier forested portions of the project area. Moist sites with well-established surface vegetation provide a competitive advantage over noxious weed establishment. Reseeding of roadcuts followed by roadside spot herbicide treatments has been used on noxious weeds on portions of the project area. This has helped reduce the spread of noxious weeds.

Orange hawkweed is “newer” to the area but is also found within many areas of western Montana. It has the ability to take over vegetative areas given horizontal runners. As the case with many of the weeds described, herbicide can be a very effective treatment.

Introduction and continual spread of noxious weeds comes from past timber harvest activities and hauling, soil disturbance from fire, recreational use such as horseback riding, wildlife grazing and off-road vehicles carrying seed along roads, and old skid trails.

Environmental Effects:

No-Action Alternative:
The No-Action alternative would not change the current existing conditions within the proposed project area. The proposed management activities—including commercial harvest, pre-commercial harvest, site-prep, planting, weed management, road maintenance and road construction—would not occur. These stands would often remain at overstocked levels and at greater susceptibility to insects and disease. Insect and disease outbreaks in these stands would continue to exist and could spread.

Concerns of potential hazardous fuel concerns would not be treated. All pre-commercial stands would continue to grow with decreased vigor and would show increased mortality. As a result, there would be low to moderate risk of direct impacts, and no to low impacts in the secondary, and cumulative impacts to the vegetative community under the No-Action alternative.

Rare plants and noxious weeds would be unaffected, although, treatment of noxious weeds would likely be treated under another project if necessary.

Action Alternative:
This proposal includes timber harvest under on approximately 1,778 acres removing an estimated 5.5 million board feet. Pre-commercial thinning will also occur under this EA on a proposed 800 acres. The DNRC would try to address the concerns within the Existing Conditions on these acres by using the proceeding silvicultural treatments. In many situations under this project, treatment may change from shelterwood to selection several times within a harvest unit. This is a result of past treatments and stand conditions.
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At minimum, two snags and two snag recruitments per acre will be left. Some of these trees will be left in groups, if possible, on the stand level. These snags and snag recruitments may be found in the following harvest prescriptions.

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														
Current Cover/DFCs		**X**			**X**				**X**				**Y**	**1**
Age Class			**X**		**X**				**X**				**Y**	**1**
Old Growth		**X**			**X**				**X**					
Fire/Fuels			**X**			**X**				**X**			**Y**	**3**
Insects/Disease			**X**			**X**				**X**			**Y**	**4**
Rare Plants	**X**				**X**				**X**					
Noxious Weeds	**X**				**X**				**X**					
Action														
Current Cover/DFCs			**X**		**X**				**X**				**Y**	**1**
Age Class			**X**		**X**				**X**				**Y**	**1**
Old Growth		**X**			**X**				**X**				**Y**	**2**
Fire/Fuels			**X**			**X**				**X**			**Y**	**3**
Insects/Disease			**X**			**X**				**X**			**Y**	**4**
Rare Plants		**X**			**X**				**X**				**Y**	
Noxious Weeds		**X**			**X**				**X**				**Y**	

Comments:

1. Given the previously mentioned existing environmental conditions, it is likely that a change will come to the current cover type given vegetative conditions and potential wildfire or the proposed action.
2. The State's Stand Level Inventory (SLI) identified 117 acres of the Project Area as "Old Growth" (as defined by Green, et. al.). The action alternative intends to harvest these acres using Old Growth Management. Both the Action and No-Action show an estimated "low" effect.
3. Given the previously mentioned fire hazard and fuels segment, it is likely that the existing fuels could help create a large fire within the project area. This potential wildfire could burn at an intensity that would change fuel conditions and fire hazards. Similarly, the proposed actions also would have a direct effect on the fire hazard and fuels.
4. Please see the previous portions that describe the conditions.

Vegetation Mitigations:

Recommended Mitigation Measures for Vegetation

- Favor ponderosa pine and western larch in harvest areas and pre-commercial thinning to shift species represented toward the accepted Desired Future Condition.
- Harvests should emulate natural disturbance historically present on the landscape.
- Old growth maintenance will be done to meet DNRC definition.
- Wash equipment prior to harvest to limit weed seed dispersal.
- Spray weeds along roadsides to limit spread of existing weed, while preventing weed spraying within Howell's gumweed populations.
- Be aware of possible Elfin Crisp Moss in the northeast quarter of section 14 T13N R15W. Manage the population if it's found.

- Plant grass on newly disturbed road surfaces to limit the resources available for weeds to become established.
- Plant western larch and ponderosa pine in planting blocks to shift species represented toward the accepted Desired Future Condition.

Recommended Mitigations and Adjustments of Treatments for the Benefit of Other Resources

- Snags, snag recruits, and coarse woody debris will be managed according to *ARM 36.11.411* through *36.11.414*, particularly favoring western larch and ponderosa pine. Clumps of existing snags could be maintained where they exist to offset areas without sufficient snags. Coarse woody debris retention would emphasize retention of downed logs of 15-inch diameter or larger.

Vegetative References:

MT DNRC , Environmental Assessments of the past DNRC timber sales including; West Lubrecht TS (1997), Greenough TS (1996), Potomac TS (1998), and minor salvage permits, Clearwater Unit and Missoula Unit, Southwestern Land Office.

Green, P., J. Joy, D. Sirucek, W. Hann, A. Zack, and B. Naumann. 1992. *Old-growth forest types of the Northern Region*. R-1 SES. Unpublished report on file at US Forest Service, Northern Region, Missoula, MT.

Gruell, G.E., 1983. *Fire and vegetative trends in the northern Rockies: interpretations from 1871-1982 photographs*. U.S. Dept. of Agric., For. Serv., Gen Tech. Rep. INT-158. 117 pp.

Montana Natural Heritage Program (MTNHP). 2023. Plant species of concern report. Available online at: http://mtnhp.org/SpeciesOfConcern/?AorP=p. Last accessed February 9, 2023.

Pfister, R. D., B. L. Kovalchik, S. F. Arno, and R. C. Presby. 1977. *Forest habitat types of Montana*. U.S. Department of Agriculture, Forest Service, Intermountain Forest and Range Experiment Station, Ogden, Utah.

Smith, D.M., B.C. Larson, M.J. Kelty, P. M.S. Ashton, 1997. *The practice of silviculture, applied forest ecology. 9th edition*. John Wiley& Sons, Inc. 537 pp.

**** GIVEN MINIMAL CONCERNS WITH THE PROJECT, EITHER ISSUES AND CONCERNS WERE NOT PUT FORWARD IN THIS DOCUMENT OR MEET THE "WHOLE" PORTIONS THROUGH THE WRITING AND TABLE INFORMATION.***

SOIL DISTURBANCE AND PRODUCTIVITY:

***Soil Disturbance and Productivity Existing Conditions*:**

The project is located in the northern foothills of the Garnet Range and east of the Potomac Valley. No unstable or unique geologic features were observed in the sale area. Slopes are generally stable. Indicators of slope instability (e.g., scarps, debris fans, tilted or pistol-butted trees) have not been observed in the project area. Bare earth surface properties were also reviewed for evidence of slope instability using aerial lidar data collected for the area in 2005 and 2006.

Elevations range between 3,760 and 5,200 feet. Underlying geology and exposed rocks consist of Middle Proterozouic quartzite and argillite (red to green/gray in color) and tertiary sediments and sedimentary rocks.

Upper elevations, midslopes and ridges (generally >4,200 feet) have mainly Winkler, Tevis, and Evaro series gravelly loam soils which are well to excessively-well drained and droughty. These soils are well suited for ground-based harvesting and yarding equipment. Main soil concern is potential displacement with operations on steeper slopes. These soils have a long season of use. Erosivity is moderate to low and material quality is good for road construction.

More sensitive soils occur at lower elevations (generally <4,200 feet and mainly in Sections 22, 23, 14, and the east half of Section 36) within the project areas, such as foot-slopes and mid-slopes. These soils have higher clay content and are Crow clay loams, Greenough silt loams, and Bignell gravelly loams. Soil sensitivity includes poor bearing strength which increases risk of compaction and displacement with equipment operation, especially when soils are wet. Infiltration rates are slower with these more sensitive soils. Although these soils are mainly well drained, they remain moist late into the spring season and may not adequately dry out for ground-based equipment operations until late June.

Ground cover includes grasses, shrubs, and riparian vegetation. Deciduous trees (cottonwood and aspen), shrubs, and sedges occur in low-lying areas within the project area such as the bottom of draws adjacent to streams and above channel initiation.

Further descriptions of existing conditions and past disturbances are listed below by project section:

Section 22 and 23 project areas:
Slopes within the proposed harvest units are mostly mild and mostly less than 30%. Soils are more sensitive and dry later in the season in these areas. This area is leased/licensed for seasonal grazing. Riparian areas are heavily used. Noxious weeds include houndstongue and are present along roads in areas of disturbance. Understory is primarily shrubs (snowberry, huckleberry, and bearberry).

Section 14 project area:
Slopes within the proposed harvest units are mostly mild and mostly less than 30%. Soils are more sensitive and dry later in the season in these areas. Noxious weeds are present but minimal (knapweed and houndstongue) and are located along roads and in disturbed areas such as log decks and landings.

Section 24 project area:

- Slopes within the proposed harvest units are mostly mild and less than 45%. Steeper areas are located within the two draws draining to the north in the north half of the section and adjacent to the Class 1 stream located in the south half of the section. These steeper areas are excluded from the harvest areas.

- Past disturbances in this area are evident in lidar data, especially the “Jammer roads” in section 24.

- Noxious species include whitetop, knapweed, orange hawkweed, and houndstongue. Limited to roads and disturbed areas.

- Riparian areas are used significantly by livestock and wildlife. The woody species are browsed extensively – with some observed mortality. Livestock water at the stream – with no off-stream watering developed.

Section 18 project area:

- Slopes within the proposed harvest units are mostly mild and less than 45%. Steeper areas are located within the two draws that cross the section and are excluded from the proposed harvest areas.

- This area is leased/licensed for seasonal grazing and is used only moderately to slightly.

Section 36 project area:

Slopes are mild and are generally 30% or less. Soils are more sensitive and remain wet later in the season in this area. A former gravel pit is located in the northeast corner of the section. Section 36 is not currently licensed for grazing.

Existing and past disturbances

The project area has the following recorded existing and past disturbances:

- West Lubrecht Timber Sale (2001)
- Greenough Timber Sale (2004)
- Greenough P.O. Projects Pre-Commercial Thin (2011)
- Disturbances associated with grazing and use by recreation.

Visual review of existing coarse woody debris (CWD) within the harvest areas completed in Summer 2022 appear to be at or just below the range appropriate for the landscape and forest type (at least 12 tons/acre) per Graham et al. (1994).

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**				**NA**	**1**
Erosion	**X**				**X**				**X**				**NA**	**1**
Nutrient Cycling	**X**				**X**				**X**				**NA**	**1**
Slope Stability	**X**				**X**				**X**				**NA**	**1**
Soil Productivity	**X**				**X**				**X**				**NA**	**1**
Action														
Physical Disturbance (Compaction and Displacement)		**X**				**X**				**X**			**Y**	**2 - 5**
Erosion		**X**				**X**				**X**			**Y**	**2 – 5**
Nutrient Cycling		**X**				**X**				**X**			**Y**	**6**
Slope Stability			**X**				**X**			**X**				**7**
Soil Productivity		**X**				**X**				**X**			**Y**	**2 - 7**

Comments:

1. Implementation of the No-Action Alternative would result in no new soil resource impacts in the project area. Soil resource conditions would remain similar to those currently at the site.

2. Soil and vegetation disturbances from harvest activities would result in temporary increased risk of erosion. This risk can be mainly overcome by strategic skid trail planning and road design.

3. Soil disturbance and erosion risk increases with slope and slopes in the project area exceed 45% in some places.

4. Direct impacts by physical disturbance would likely occur by ground-based yarding. All expected impacts are expected to be less than 12.2% and would be minimized by use of existing and temporary roads, and existing skid trails. This disturbance rate estimate is based off previous soil disturbance monitoring of timber sales completed by the DNRC (DNRC, 2011).

5. Applicable state plans, rules, and practices have guided project planning and would be implemented during project activities, including the Montana Code Annotated (specifically Title 77, Chapter 5), the Administrative Rules of Montana (specifically Rule Chapter 36.11), the Montana Forest Best Management Practices (BMPs), the DNRC Trust Lands Habitat Conservation Plan, and the State Forest Land Management Plan.

6. According to Graham et al. (1994), a minimum of 12 tons/acre of coarse woody debris (CWD) would be a desired post-harvest condition to maintain forest productivity for this forest habitat type. The action alternative would include increasing or maintaining CWD concentrations per mitigation described below.

7. Existing unstable slopes were not observed on site. Slopes within the proposed harvest areas are generally mild (<45%). Some risk would occur with proposed road construction in the south half of Section 24. Where the new road alignment will approach the new crossing on the unnamed tributary to Washoe Creek from the north. The south-facing slopes adjacent to Washoe Creek are generally steep and excavation work may cause some slope instability. This will be mitigated through adherence to cut slope and fill slope ratio requirements associated with DNRC general specifications included in Timber Sale Contracts. Slope stability risk will also be mitigated through avoidance associated with field-layout of the p-line. The project is anticipated to have a moderate risk to slope stability considering the proposed road construction at this specific site.

Additional Soil Mitigations:

- The Contractor and Sale Administrator should agree to a general skidding plan prior to equipment operations. Use of existing skid trail disturbances from past harvests will be encouraged over creating new disturbances. Skid trails would be mitigated following harvesting and yarding operations with water bars and/or slash.

- To prevent soil compaction ground-based mechanical felling and yarding would be restricted to one or more of the following conditions:
    - Soil moisture content at 4-inch depth less than 20% oven-dry weight.
    - Minimum frost depth of 4 inches.
    - Minimum snow depth of 18 inches of loose snow or 12 inches packed snow.

- An average minimum of 12 tons/acre of coarse and fine woody debris would be maintained within harvest areas to meet the concentration for the DF/CARU habitat type recommended by Graham et al (1994). Any existing CWD shall be left in place. See comment 6 above.

Soil References:

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.

Graham, R.T., Harvey, A.E., Jorgensen, M.F., Jain, T.B., and Page-Dumrose, D.S., 1994, Managing Course Woody Debris in Forests of the Rocky Mountains. U.S., Forest Service Research Paper INT-RP-477. Intermountain Research Station. 16p.

WATER QUALITY AND QUANTITY:

Water Quality and Quantity Existing Conditions:

The project is located mostly in the Elk Creek watershed, and partially in the Union Creek and Washoe watersheds. All these watersheds are tributary to the Blackfoot River. The proposed harvest areas are located at least ½ mile from these creeks. The proposed haul route does not cross any of these features until it joins with a state-maintained paved road (Highway 200).

The proposed project involves construction of a culvert crossing at an existing ford, and construction of a new culvert crossing. Both these sites are on a class 1 perennial stream that is tributary to Washoe Creek. This creek is not fish-bearing.

The area is grazed seasonally. Wet areas such as wetlands and stream banks show signs of grazing and hoof shear.

Lower Elk Creek (below the confluence with Stinkwater Creek) is classified as a B-1 stream[1] and is listed as impaired for not fully supporting aquatic life due to riparian grazing and streambank modifications/destabilization. Impairments to aquatic life uses are due to temperature, stream alteration, and sedimentation/siltation. Recommended conservation in the Total Maximum Daily Loads and Water Quality Improvement Plan (Water Quality Plan) for this watershed that would affect the proposed project include the application of upland BMPs (MT DEQ, 2009).

Washoe Creek (headwater to mouth) is classified as a B-1 stream and is listed as impaired for not fully supporting aquatic life and primary contact recreation. Impairments include Sedimentation/Siltation, Chloropyll-a, Nitrate/Nitrite, Total Nitrogen, and Total Phosphorous. Identified probable sources include silviculture harvesting, septic and human waste, livestock, mining, and natural sources. Recommended conservation in the Water Quality Plan for this watershed that would affect the proposed project include the application of upland BMPs (MT DEQ, 2009).

[1] B-1 use class includes drinking, culinary and food processing after conventional treatment; bathing, swimming and recreation; growth and propagation of salmonid fishes and associated aquatic life, waterfowl and furbearers; and agricultural and industrial water supply.

Descriptions of water features within the project areas are listed below:

- Section 22 and 23: No streams
- Section 14: A Class 3 stream in S ¼ of the section & isolated wetlands at draw bottoms.
- Section 24: Class 1 stream in S ½ of sec. Class 3 stream in draw in the NW ¼.
- Section 18: Two Class 3 streams.
- Section 36: Class 3 stream in the far NW corner of section.

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**					**1**
Water Quantity	**X**				**X**				**X**					**1**
Action														
Water Quality		**X**				**X**				**X**			**Y**	**2 – 4**
Water Quantity		**X**				**X**				**X**			**Y**	**5**

Comments:

1. With no action, no timber harvesting or related activities would occur. Water quality conditions would likely continue under its current condition. Similarly, no risk of change of current fluctuations in water yield or stream flow would result.
2. Applicable state plans, rules, practices, and commitments have guided project planning and would be implemented during project activities, including the Montana Code Annotated (specifically Title 77, Chapter 5), the Administrative Rules of Montana (specifically Rule Chapter 36.11), the Montana Forest Best Management Practices, the DNRC Habitat Conservation Plan (2010), and the State Forest Land Management Plan.
3. The action alternative would involve placing pipe crossings at two locations on an unnamed perennial tributary to Washoe Creek. One of the crossings is an existing ford crossing and the other would be a new crossing. Effects to water quality would be minimized by timing with seasonal low-flow conditions, limiting disturbance, and revegetating with grass seed. Design and measures to minimize impacts are listed in the 124 Permit issued by Montana FWP for the project.
4. Tree harvest and equipment operations will comply with the Montana Streamside Management Zone (SMZ) Law and Rules.
5. Changes to steam flow hydrology (water quantity or water flow) would likely not be detectible with the Action Alternative. Studies correlating vegetation harvest and treatment with streamflow yield suggest at least 20% of the watershed vegetation must be harvested to have a measurable increase in water yield in similar mountain environments (Stednick, 1996; Brown et al., 2005; Adams et al, 2012). Observable water yield effects are not expected due to several factors including mainly the size of the harvest area compared to the affected watersheds.

Water Quality & Quantity Mitigations:

No additional project-specific mitigations are necessary beyond the project design and commitments listed earlier in this analysis.

Water Resources References:

Adams, H.D., C.H. Luce, D.D. Breshears, C.D. Allen, M. Weiler, V.C. Hale, A.M. Smith, and T.E. Huxman. 2012. Ecohydrological consequences of drought-and infestation-triggered tree die-off: Insights and hypotheses. Ecohydrology 5:145–159.

Brown, A.E., L. Zhang, T.A. McMahon, A.W. Western, and R.A. Vertessy. 2005. A review of paired catchment studies for determining changes in water yield resulting from alterations in vegetation. J. Hydrol. 310:28–61.

Montana Department of Environmental Quality (MT DEQ). 2009. Lower Blackfoot Total Maximum Daily Loads and Water Quality Improvement Plan: Sediment, Trace metal and Temperature. C03-TMDL-03. 380p. https://deq.mt.gov/Files/Water/WQPB/CWAIC/TMDL/C03-TMDL-03a.pdf

Stednick, J.D. 1996. Monitoring the effects of timber harvest on annual water yield. J. Hydrology 176:79-95

FISHERIES:

The nearest waterbody with fish is Washoe Creek and is outside the project area. Streams within the project were field-verified by the DNRC fisheries biologist in July 2022 and included electrofishing the unnamed tributary to Washoe Creek located in section 24 of T13N R15W.

No streams within the project areas carry fish.

No foreseeable direct, indirect, or cumulative effects to fisheries resources are anticipated with an action or no-action alternative. This finding is due to the distance of proposed Action Alternative to fish-bearing water bodies, and no expected measurable change in streamflow.

Fisheries Mitigations:
No additional project-specific mitigations are necessary beyond the project design and communications.

Water Resources References:

Adams, H.D., C.H. Luce, D.D. Breshears, C.D. Allen, M. Weiler, V.C. Hale, A.M. Smith, and T.E. Huxman. 2012. Ecohydrological consequences of drought-and infestation-triggered tree die-off: Insights and hypotheses. Ecohydrology 5:145–159.

Brown, A.E., L. Zhang, T.A. McMahon, A.W. Western, and R.A. Vertessy. 2005. A review of paired catchment studies for determining changes in water yield resulting from alterations in vegetation. J. Hydrol. 310:28–61.

Stednick, J.D. 1996. Monitoring the effects of timber harvest on annual water yield. J. Hydrology 176:79-95

WILDLIFE:

Evaluation of the impacts of the No-Action and Action Alternatives including **direct, indirect, and cumulative** effects on Wildlife.

***Wildlife Existing Conditions*:** The project area is a mix of forested Douglas-fir, Douglas-fir/western larch, western larch, and ponderosa pine stands. Grizzly bears likely use the vicinity of the project area. There are roughly 231 acres of suitable Canada lynx habitats in the project area, which includes 10 acres of winter foraging habitats and 221 acres of 'other suitable' habitats. Portions of the project area are within the home range associated with the Ninemile Prairie bald eagle territory. Potential habitat exists for fisher, flammulated owls, fringed myotis, hoary bats, and pileated woodpeckers in the project area. Big game summer range as well as white-tailed deer and elk winter ranges exists in the project area. Habitats in the project area contribute to big game security habitats in the vicinity. The proposed Morrison project on DNRC-managed lands is in the cumulative effects analysis area and could affect many of these same species.

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. Continued maturation could improve grizzly bear, Canada lynx, fisher, pileated woodpecker habitats, and big game winter and summer range attributes, but could reduce habitat quality for flammulated owls and big game forage attributes over the long term. Generally, negligible direct, indirect, or cumulative effects to wildlife would occur.

Action Alternative (see Wildlife table below):
In general, habitats for those species adapted to more-open forest conditions similar to areas that historically experienced low-intensity, under burns would increase in the project area. No changes in legal motorized public access would occur in the project area. Contract stipulations would minimize the presence of human-related attractants for the duration of the proposed activities.

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**	**1**
Canada lynx (*Felix lynx)* Habitat: Subalpine fir habitat types, dense sapling, old forest, deep snow zone		**X**				**X**				**X**			**Y**	**2**
Yellow-Billed Cuckoo (*Coccyzus americanus*) Habitat: Deciduous forest stands of 25 acres or more with dense understories and in Montana these areas are generally found in large river bottoms	**X**				**X**				**X**					**3**

Wildlife	Impact												Can Impact be Mitigated?	Comment Number
	Direct				Secondary				Cumulative					
	No	Low	Mod	High	No	Low	Mod	High	No	Low	Mod	High		
Sensitive Species														
Bald eagle *(Haliaeetus leucocephalus)* Habitat: Late-successional forest within 1 mile of open water		**X**				**X**				**X**			**Y**	**4**
Black-backed woodpecker *(Picoides arcticus)* Habitat: Mature to old burned or beetle-infested forest	**X**				**X**				**X**					**3**
Common loon *(Gavia immer)* Habitat: Cold mountain lakes, nest in emergent vegetation	**X**				**X**				**X**					**3**
Fisher *(Martes pennanti)* Habitat: Dense mature to old forest less than 6,000 feet in elevation and riparian		**X**				**X**				**X**				**5**
Flammulated owl *(Otus flammeolus)* Habitat: Late-successional ponderosa pine and Douglas-fir forest		**X**				**X**				**X**			**Y**	**6**
Fringed myotis (*Myotis thysanodes*) Habitat: low elevation ponderosa pine, Douglas-fir and riparian forest with diverse roost sites including outcrops, caves, mines		**X**				**X**				**X**			**Y**	**7**
Hoary bat (*Lasiurus cinereus*) Habitat: coniferous and deciduous forests and roost on foliage		**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		
in trees, under bark, in snags, bridges														
Peregrine falcon *(Falco peregrinus)* Habitat: Cliff features near open foraging areas and/or wetlands	**X**				**X**				**X**					**3**
Pileated woodpecker *(Dryocopus pileatus)* Habitat: Late-successional ponderosa pine and larch-fir forest		**X**				**X**				**X**			**Y**	**9**
Townsend's big-eared bat *(Plecotus townsendii)* Habitat: Caves, caverns, old mines	**X**				**X**				**X**					**3**
Wolverine *(Gulo gulo)* Habitat: Alpine tundra and high-elevation boreal forests that maintain deep persistent snow into late spring		**X**				**X**				**X**				**10**
Other Species														
Red-tailed hawk *(Buteo jamaicensis) Habitat: Open habitats, including agricultural, grasslands, woodlands, and meadows*		**X**				**X**				**X**			**Y**	**11**
Big Game Species														
Elk		**X**				**X**				**X**			**Y**	**12**
Whitetail Deer		**X**				**X**				**X**			**Y**	**12**
Mule Deer		**X**				**X**				**X**			**Y**	**12**
Bighorn Sheep	**X**				**X**				**X**					**3**
Other														

Comments:

W-1 The project area is 16 miles southwest of the Northern Continental Divide Ecosystem grizzly bear recovery area, and less than 1 mile from `occupied' grizzly bear habitat as mapped by grizzly bear researchers and managers to address increased sightings and encounters of grizzly bears in habitats outside of recovery zones (Wittinger et al. 2002). Individual animals likely use the project area throughout the non-denning period, and they could be displaced by project-related disturbance if they are in the area during proposed activities. The project area contains several open roads (2.0 mi./sq. mi., simple linear calculation) and exists in close proximity to numerous forms of human disturbance.

Grizzly bears could be affected directly through increased road traffic, noise, and human activity, and indirectly by altering the amount of hiding cover and forage resources in the project area. Proposed activities could occur during the denning period or the non-denning period. Proposed activities conducted in the denning period would not be expected to disturb grizzly bears; some disturbance to grizzly bears would be possible with proposed activities that may occur during the non-denning period. Overall, the proposed activities would occur in areas where low levels of grizzly bear use would be anticipated, thus minor potential for disturbance and displacement of grizzly bears would be anticipated.

About 8.5 miles of new, restricted roads would be constructed with the proposed activities. No changes in open road density or motorized public access would be anticipated. Negligible changes to non-motorized public access could occur, thus no appreciable changes in contact between humans and grizzly bears would occur. Hiding cover would be reduced on most of the 1,607 acres (81%) of hiding cover proposed to receive treatments, some potential hiding cover could be retained in those stands proposed to receive commercial thinning and/or individual tree selection treatments depending on the density of trees retained. Meanwhile, proposed activities in habitats that are not presently providing hiding cover (166 acres) would slow the development of those attributes into the future. Some hiding cover in the form of brush, shrubs, and sub-merchantable trees would persist in several of the units, albeit at a reduced level from the existing condition; hiding cover would increase through time as young trees and shrub regeneration proceeds over the next 5 to 10 years. Additional reductions in grizzly bear hiding cover would occur with the proposed pre-commercial thinning. Generally, reductions in hiding cover would occur on the edge of the area contributing to the larger blocks of potential security habitats that extend beyond the project area. Although hiding cover would be reduced, no appreciable changes to security habitat would occur given the small area that would be altered, the location of those changes, and the lack of changes in open roads in the project area. Any unnatural bear foods or attractants (such as garbage) would be kept in a bear resistant manner. Any added risk to grizzly bears associated with unnatural bear foods or attractants would be minimal. Continued use of the project area and cumulative effects analysis area by grizzly bears would be anticipated at levels similar to present.

W-2 The project area ranges from approximately 3,760 to 5,280 feet in elevation and is dominated by Douglas-fir, Douglas-fir/western larch, ponderosa pine, and western larch. Approximately 231 acres (10%) of lynx habitat occur in the project area, which includes 221 acres (10%) of other suitable habitats (largely forested lands that provide cover to facilitate movement), and 10 acres (<1%) of winter foraging habitats. Collectively the majority of the project area does not contain suitable types for Canada lynx. Portions of the project area, including all mapped lynx habitats in the project area, are in DNRC's Garnet Lynx Management Area (LMA), which has historically supported a small population of lynx, however more recently the area does not appear to be supporting a reproductive population of Canada lynx (USFWS

2017). Past timber management has altered connectivity in the project area; existing lynx habitats are reasonably connected, but some unsuitable types are intermixed with those suitable habitats. Generally, due to the large amount of unsuitable habitats and the limited amounts of suitable habitats that are only partially connected, overall limited use by Canada lynx of the project area would be anticipated.

Within the cumulative effects analysis area, roughly 186 acres (29% of lynx habitats) of winter lynx foraging habitats, 422 acres (65% of lynx habitats) of other suitable habitats, 38 acres (6% of lynx habitats) of summer foraging habitats, and 6 acres (1% of lynx habitats) of temporary non-suitable habitats exist on DNRC-managed lands. On other ownerships, there are roughly 17,770 acres (65% of non-DNRC lands) of forested stands with a reasonably closed canopy across the cumulative effects analysis area; a portion of those stands would likely be suitable lynx habitats and probably include some winter foraging habitats. Additionally, summer foraging habitats likely exists on a portion of the 7,457 acres (27% of non-DNRC lands) of sparsely stocked and young forest stands on other ownerships; no lynx habitats likely exist on the 2,319 acres (8% of non-DNRC lands) of shrubs, herbaceous, water, and non-forested types on other ownerships in the cumulative effects analysis area. Connectivity of lynx habitats within the cumulative effects analysis area is somewhat limited due to ownership, past timber management, human developments, agricultural fields, the existing mixture of suitable habitats with warmer, drier habitats, and the natural openness of certain habitats in the cumulative effects analysis area. Ongoing timber management in the cumulative effects analysis area could continue affecting Canada lynx habitats; similarly ongoing tree mortality within both the project and cumulative effects analysis areas would continue to affect Canada lynx habitats. In the Garnet LMA, roughly 83% of the total potential lynx habitats on DNRC-managed lands are in the various suitable habitat classes and 17% are in the temporary non-suitable habitat category. The LMA is dominated by winter foraging habitats (41% of the LMA), followed by other suitable (37% of the LMA), with lesser amounts of temporary non-suitable (17% of the LMA) and summer foraging (5% of the LMA).

Most of the proposed activities would not occur in mapped lynx habitats (1,618 acres; 91% of proposed units) and would not be expected to appreciably affect lynx. Approximately 156 acres of proposed harvesting would occur in mapped lynx habitats, which includes 148 acres (95%) of other suitable habitats and 8 acres (5%) of winter foraging habitats. The majority (99%) of these habitats would receive a shelterwood-type treatment, which would convert existing habitats to temporary non-suitable habitats. Generally, these reductions in winter foraging and other suitable habitats could have negligible effects on Canada lynx in the project area given the limited habitats affected and the landscape matrix within which they are found. Following proposed treatments, roughly 156 acres (67%) of potential lynx habitats in the project area would be in temporary non-suitable habitats. Trace amounts (<1%) of the project area would be in foraging habitats and 32% would be in “other suitable” habitats following proposed treatments. The retention of patches of advanced regeneration of shade-tolerant trees, such as sub-alpine fir and Engelmann spruce in foraging habitats, would break-up sight distances, provide horizontal cover, and provide forest structural attributes preferred by snowshoe hares and lynx. Coarse woody debris would be retained (emphasizing retention of some logs 15 inches dbh and larger) to provide some horizontal cover and security structure for lynx. In the short-term, slight shifts in lynx use of a small portion of the project area could occur. Proposed activities would further reduce forested connectivity in the area but would avoid some habitats perceived to be useful for lynx; some connectivity would be retained along riparian areas and through unharvested patches between harvested units. Similarly, the proposed pre-commercial thinning would largely not be expected to affect Canada lynx habitats since the majority occur in non-lynx habitats; any proposed precommercial thinning in Canada lynx habitats would alter

stand densities, but would retain a total canopy closure in excess of 40% so that they would continue to be considered suitable for lynx and small shade tolerant trees (such as sub-alpine fir and spruce) would be retained where possible to provide potential habitat structure for snowshoe hares by increasing the levels of horizontal cover and accelerating the development of multi-storied stands. Furthermore, in the LMA, DNRC is committed to retaining 20% of potential thinning units in lynx habitats unthinned to provide to provide some areas of denser stocking that would provide higher quality habitat for snowshoe hares and thus foraging habitats for lynx.

Within the cumulative-effects analysis area, roughly 156 acres of lynx habitats on DNRC-managed lands (24% of DNRC-managed lynx habitats) would be modified, with most of these acres being converted to temporary non-suitable habitats. The reductions in winter foraging (8 acres) and other suitable habitats (148 acres) on a small portion of the cumulative effects analysis area would have negligible effects on the quality of the lynx habitats in the larger cumulative effects analysis area. In the near-term, slight increases in the amounts of summer foraging habitats available in a small portion of the cumulative effects analysis area would occur. Anticipated reductions in lynx habitats would be additive to past losses from timber harvesting and any ongoing modifications in the cumulative-effects analysis area. Likewise, increases in temporary non-suitable lynx habitats would be additive to habitats that have been recently converted due to timber harvesting and other forms of human disturbance. No appreciable changes to the suitable lynx habitats on other ownerships would be anticipated. Forest connectivity would be negligibly altered in the project area, but these reductions in connectivity would not appreciably alter connectivity in the cumulative effects analysis area. Connectivity of suitable lynx habitats along RMZs and associated riparian habitats would partially persist and overall negligible changes to connectivity across the cumulative effects analysis area would be anticipated. Following proposed treatments, approximately 849 acres (4% increase) of all DNRC lands in the LMA would be in the temporary non-suitable habitat category; overall 79% of the total potential lynx habitats in the LMA would be in the various suitable habitat classes and 21% of the LMA would be in the temporary non-suitable habitat category.

W-3 The project area is either out of the range of the normal distribution for this species or suitable habitat is not present. Thus, no direct, indirect, or cumulative effects would be anticipated.

W-4 A small portion of the project area is within the home range associated with the Ninemile Prairie bald eagle territory. Proposed activities could occur when soils are dry, frozen, or snow covered. Thus, the proposed activities could occur during the bald eagle nesting season or the non-nesting season. Negligible disturbance to bald eagles could occur for any activities that could be conducted during the nesting period in the home range. Conversely, no disturbance to bald eagles would be anticipated should those activities be conducted during the non-nesting period. Minor reductions in the availability of large snags or emergent trees that could be used as nest or perch trees could occur in the home range. No changes to human access to the home range would occur, thereby limiting potential for introducing additional human disturbance to the territory. No appreciable changes to bald eagle habitats would be anticipated with the proposed pre-commercial thinning.

W-5 Roughly 1,400 acres (62%) of potential upland fisher habitats and 25 acres (1%) of potential riparian fisher habitats exist in the project area. Generally, habitats in the project area and the cumulative effects analysis area are somewhat disconnected and of lower quality for fisher. Human disturbance, developments, and ongoing timber management in the vicinity have

likely limited fisher use of the project area. Proposed activities could introduce more, short-duration disturbance in the upland habitats. Alterations to roughly 1,057 acres (76%) of potential upland habitats would occur, but activities would avoid riparian habitats commonly used by fisher. Proposed treatments in upland habitats would reduce canopy closure and resultant stands would likely be too open to be used by fisher. No changes in open roads would be anticipated; trapping pressure and the potential for fisher mortality would not change. Proposed pre-commercial thinning in fisher habitats could improve future fisher habitats by decreasing the time until those stands provide structural attributes needed by fisher. Reductions in upland habitats would further reduce the amount of suitable upland fisher habitats in the cumulative effects analysis area.

W-6 Roughly 2,004 acres (89%) of potential flammulated owl habitats exist in the project area in dry Douglas-fir, Douglas-fir/western larch, western larch, and ponderosa pine stands. There are roughly 5,604 acres of potential flammulated owl habitats on dry Douglas-fir, Douglas-fir/western larch, and ponderosa pine stands on DNRC-managed lands within the cumulative effects analysis area. Some suitable habitats likely exist on a portion of the 24,724 acres (90% of non-DNRC-managed lands) of open and closed forested habitats on other ownerships in the cumulative effects analysis area; however, like the project area, portions of these forested areas are not likely preferred flammulated owl habitat types. Elsewhere in the cumulative effects analysis area, some of the forested habitats have been harvested in the recent past, potentially improving flammulated owl habitat by creating foraging areas and reversing a portion of the Douglas-fir encroachment and opening up stands of ponderosa pine; however, retention of large ponderosa pine and/or Douglas-fir was not necessarily a consideration in some of these harvest units, thereby minimizing the benefits to flammulated owls. Flammulated owls can be tolerant of human disturbance (McCallum 1994), however the elevated disturbance levels associated with proposed activities could negatively affect flammulated owls should activities occur when flammulated owls are present.

Proposed activities could overlap the nestling and fledgling periods, which has the potential to disturb nesting flammulated owls. Since some snags and large trees would be retained, loss of nest trees would be expected to be minimal. Proposed activities on 1,608 acres of potential flammulated owl habitats (80% of the habitats in the project area) would open the canopy while favoring ponderosa pine, western larch, and Douglas-fir. The proposed treatments would reduce canopy closure and improve foraging habitats. Negligible changes to flammulated owl foraging habitats would be anticipated with the proposed pre-commercial thinning. The more open stand conditions, the retention of fire adapted tree species, and the maintenance of existing snags would move the project area toward historical conditions, which is preferred flammulated owl habitat.

W-7 Fringed Myotis are year-round residents of Montana that use a variety of habitats, including deserts, shrublands, sagebrush-grasslands, and forested habitats. They overwinter in caves, mines, crevices, or human structures. Fringed myotis forage near the ground or near vegetation. No known caves, mines, crevices, or other structures used for roosting occur in the project area or immediate vicinity. Fringed myotis have been documented in the vicinity of the project area. Proposed activities could disturb fringed myotis should they be in the area. Changes in vegetation structural attributes could change overall prey availability, but considerable foraging habitats would persist in the project and cumulative effects analysis areas. Overall, no appreciable changes to fringed myotis use of the project area or cumulative effects analysis areas would be anticipated.

W-8 Hoary bats are summer residents (June-September) across a variety of forested habitats in Montana. Hoary bats frequently forage over water sources near forested habitats. Hoary bats are generally thought to roost alone, primarily in trees, but will use also use caves, other nests, and human structures. Some use of the project area by Hoary bats would be possible given the varied habitats present and the proximity to the Blackfoot River and numerous other smaller streams and wetlands. Individual trees and snags in the existing forested habitats could be used for roosting. No known caves or other structures used for roosting occur in the project area or immediate vicinity. Hoary bats have been documented in the vicinity of the project area. Proposed activities could disturb hoary bats should they be in the area. Loss of potential roosting habitats could occur, but considerable amounts of trees would persist in the project and cumulative effects analysis areas. No changes in foraging habitats would be anticipated. Overall, no appreciable changes to hoary bat use of the project area or cumulative effects analysis areas would be anticipated.

W-9 Roughly 1,622 acres (72%) of pileated woodpecker nesting habitat exist in the project area; another 593 acres (26%) of potential foraging habitats exist in the project area. In the cumulative effects analysis area, roughly 3,733 acres (56%) of pileated woodpecker habitats exist on DNRC-managed lands dominated by Douglas-fir, Douglas-fir/western larch, ponderosa pine and western larch. An additional 1,554 acres (23%) of potential feeding habitats exist on DNRC managed lands within the cumulative effects analysis area. Some suitable habitats likely exist on a portion of the 17,770 acres of forested habitats on other ownerships in the cumulative effects analysis area (65% of non-DNRC lands). Much of the 9,775 acres (35%) of shrubs, herbaceous areas, poorly stocked forested stands, and recently harvested stands on other ownerships in the cumulative effects analysis area is likely too open to be useful to pileated woodpeckers.

Pileated woodpeckers can be tolerant of human activities (Bull and Jackson 1995), but might be temporarily displaced by any proposed activities that could occur during the nesting period. Roughly 1,329 acres (82%) of the potential nesting habitat along with 416 acres (70%) of potential foraging habitats would be harvested. Most of these stands proposed for treatment would be temporarily unsuitable for pileated woodpeckers due to the openness of the stands following proposed treatments, but some use could occur depending on the density of trees retained. Overall quality of these potential pileated woodpecker habitats would be reduced for 20-40 years. Elements of the forest structure important for nesting pileated woodpeckers, including snags, coarse woody debris, numerous leave trees, and snag recruits would be retained in the proposed harvest areas. No appreciable changes to pileated woodpecker habitats would be anticipated with the proposed pre-commercial thinning. Since pileated woodpecker density is positively correlated with the amount of dead and/or dying wood in a stand (McClelland 1979), pileated woodpecker densities in the project area would be expected to be reduced on 1,773 acres proposed for treatment. In the cumulative effects analysis area, the reduction in quality on 1,329 acres of potential nesting habitats and 416 acres of foraging habitats would further reduce available habitats and reduce the overall quality of the cumulative effects analysis area for pileated woodpeckers. Overall, a reduction in the quality of pileated woodpecker habitats in the cumulative effects analysis area would be anticipated, but continued use would be expected.

W-10 Generally wolverines are found in sparsely inhabited remote areas near treeline characterized by cool to cold temperatures year-round and rather deep and persistent snow well into the spring (Copeland et al. 2010). The availability and distribution of food is likely the primary factor in the large home range sizes of wolverines (Banci 1994). The project area is generally below the elevations where wolverines tend to be located. No areas of potentially

deep persistent spring snow occur in the vicinity. Individual animals could occasionally use lands in the project area while dispersing or possibly foraging, and they could be displaced by project-related disturbance if they are in the area during proposed activities. However, given their large home range sizes (~150 sq. mi. -- Hornocker and Hash 1981) and the manner in which they use a broad range of forested and non-forested habitats, the proposed activities and alterations of forest vegetation on the project area would have negligible influence on wolverines.

W-11 During numerous field visits to the project area, a territorial red-tailed hawk was observed during the nesting season and a probable red-tailed nest was located in section 18. Thus, it is likely that the project area contains nesting red-tailed hawks. The stands in the project area likely provide suitable nesting structure and habitats for a suite of potential prey species using forested habitats, semi-forested habitats, and young forest habitats. A variety of potential habitats exist in the project area, including on approximately 833 acres (37%) of moderately to poorly stocked stands in a variety of age classes. Similarly, within the cumulative effects a variety of habitats exist on DNRC-managed lands, including roughly 3,010 acres (45%) of moderately to poorly stocked stands that likely provide habitats for a variety of red-tailed hawk prey species. In the cumulative effects analysis area habitats for red-tailed hawks likely exists on some of the 7,457 acres of moderately stocked forested stands (27% of non-DNRC lands) and much of the 2,319 acres (8%) of shrubs, herbaceous areas, poorly stocked forested stands, and recently harvested stands on other ownerships in the cumulative effects analysis area. Proposed activities could occur during the nesting or non-nesting seasons. No disturbance to red-tailed hawks would occur with any proposed activities during the non-nesting period; proposed activities could disturb red-tailed hawks should they occur during the nesting season. Red-tailed hawks are sensitive to human disturbance during the breeding season and are known to change their home ranges to accommodate the disturbance (Andersen et al. 1990). Should the probable nest tree be used, or another nest be identified in the project area, that nest tree and several perch trees within 100 yards of the nest tree would not be harvested and a seasonal restriction limiting activities during the nesting season (April 1 - August 1) would be implemented for areas within 0.25 miles of the nest during years when the nest is active. Proposed timber harvest on 1,773 acres (79%) would open the canopy while favoring ponderosa pine, western larch, and Douglas-fir, which could improve red-tailed hawk foraging habitats in the project area. Proposed pre-commercial thinning could further alter foraging habitats for red-tailed hawks but would not affect nesting habitats. Proposed harvesting would increase the amount of the cumulative-effects analysis area that has been recently harvested. Overall, a slight improvement in habitat quality at the cumulative-effects analysis level could be realized with this alternative.

W-12 White-tailed deer (97 acres, 41%) and elk (878 acres, 39%) winter ranges exist in the project area. Approximately 2,194 acres of the project area (98%) appear to have sufficient canopy closure to be providing snow intercept and thermal cover attributes for big game. Evidence of non-winter use by deer and elk was noted during field visits. Within the cumulative-effects analysis area, big game species are fairly common and winter range for deer and elk are fairly widespread in the lower elevation areas along the Highway 200 corridor and the Blackfoot River. Roughly 4,900 acres (14%) of white-tailed deer, 2,419 acres (7%) of mule deer, 7,760 acres (23%) of elk, and 3,329 acres (10%) of moose winter ranges exist in the cumulative effects analysis area. There are roughly 5,541 acres (83%) of stands dominated by Douglas-fir, Douglas-fir/western larch, and ponderosa pine on DNRC-managed lands in the cumulative effects analysis area that appear to be providing snow intercept and thermal cover attributes for big game; approximately 17,770 acres (65%) of forested habitats on other ownerships in the cumulative effects analysis area appear to have sufficient canopy closure to provide thermal

cover and snow intercept for big game. Human disturbance within the winter range is associated with residential development, agricultural activities, recreational snowmobile use, commercial timber management, and several roads.

Hiding cover is rather abundant in the project area. There are roughly 7 miles of open roads (2.0 mi./sq. mi., simple linear calculation) in the project area. Non-motorized access to the project area exists given the location of the open roads and the 18.8 miles of restricted roads (5.4 mi./sq. mi., simple linear calculation) in the project area. Considerable non-motorized access to the project area exists given the open roads and the 18.8 miles of restricted roads in the project area. A portion of the project area does not contain big game security habitats due to the proximity to open roads, however roughly 597 acres (27% of project area) are distant enough and contain sufficient cover to be able to contribute to 2 larger blocks of potential security habitat that extend beyond the project area. In the cumulative effects analysis area, access for recreational hunting is relatively high, with many open roads (at least 78 miles, 1.5 miles/sq. mile) that facilitate access and numerous restricted roads (at least 71 miles; 1.3 miles/sq. mile) that could be used for non-motorized use. Within the cumulative effects analysis area, 4 patches (total of 10,871 acres; 32%) of potential security habitat exist. Two of patches extend beyond the cumulative effects analysis area and contribute to larger blocks of potential security habitats that extend beyond the cumulative effects analysis area.

Proposed activities could occur during the winter or non-winter periods. Some potential for disturbance to wintering big game could occur with any activities that may occur during the winter period. Proposed activities conducted during the non-winter period would not disturb wintering big game but could disturb big game species using the project area during the non-winter period, however given the time of the year and the availability of other habitats in the vicinity, the potential effect to big game would be minor. Proposed activities would occur on roughly 95 acres (98%) of white-tailed deer winter range and 664 acres (76%) of elk winter range; proposed activities would reduce canopy closure and potential winter use by big game on roughly 1,726 acres (79%) that likely have attributes facilitating considerable winter use by big game. Following proposed activities, canopy densities in these stands providing snow intercept and thermal cover would be reduced, reducing habitat quality for wintering big game. In general, it could take 30 to 50 years for these stands to regenerate and attain a size capable of providing thermal cover for big game. Potential disturbance to wintering big game would be additive in the cumulative effects analysis area to other forms of disturbance, including timber management, numerous open roads, and a variety of human developments. Further reductions in thermal cover and snow intercept would be additive to losses from recent timber management, residential land clearing, and other disturbances in the cumulative effects analysis area. Continued use of the larger winter ranges would be anticipated at levels similar to present levels following proposed treatments.

Tree density within proposed units would be reduced on approximately 1,773 acres, including roughly 457 acres (77%) of forested stands in the project area contributing to big game security habitat. Hiding cover would be reduced within the proposed units but would improve as trees and shrubs become reestablished in the openings over the next 10-20 years. The retention of structure within proposed units and unharvested areas between the various units, including riparian habitats would reduce the potential effects of the hiding cover reductions. Some increases in sight distance would be anticipated. These increases in sight distances could increase big game vulnerability to hunting mortality as hunters would be able to detect big game at longer distances in proposed units. Increases in forage production in proposed units could benefit big game in the short-term. No changes in open roads or motorized access for the general public would occur. During all phases of the project, any roads opened with project

activities would be restricted to the public and closed after the completion of project activities. Minor increases in non-motorized access would occur with the proposed construction of approximately 8.5 miles of new, restricted roads. Numerous contract stipulations would minimize the effect on the existing big game security habitat by prohibiting contractors from carrying firearms while conducting contract operations and prohibiting contractors from accessing restricted areas for other purposes, such as hunting. Alterations of cover could reduce the quality of big game security habitat in a small portion of the cumulative effects analysis area and would be additive to past reductions in the cumulative effects analysis area. No changes in public, motorized access or non-motorized access would be expected, which would not affect big game vulnerability in the cumulative effects analysis area. Hiding cover on a small amount (457 acres) of potential big game security habitats would be altered, but given the prescriptions, some level of cover would persist following proposed treatments. Overall negligible effects to big game security habitats would be expected given the small amount of area that would be altered, the location of those changes, and the lack of changes in open roads in the project area; big game security habitats would persist in the cumulative effects. Negligible effects to big game survival would be anticipated.

Any pre-commercial thinning would not appreciably alter winter range attributes but could shorten the time before some of these stands provide these attributes to big game in the future; conversely proposed pre-commercial thinning could further reduce hiding cover quality for big game, but cover would be expected to persist.

Wildlife Mitigations:

- A DNRC biologist will 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 36.11.443) are needed.

- Motorized public access will be restricted at all times on restricted roads that are opened for harvesting activities; signs will be used during active periods and a physical closure (gate, barriers, equipment, etc.) will be used during inactive periods (nights, weekends, etc.). These roads and skid trails would be reclosed to reduce the potential for unauthorized motor vehicle use.

- Snags, snag recruits, and coarse woody debris will be managed according to ARM 36.11.411 through 36.11.413, particularly favoring western larch and ponderosa pine. Clumps of existing snags could be maintained where they exist to offset areas without sufficient snags. Coarse woody debris retention would emphasize retention of downed logs of 15-inch diameter or larger.
- Contractors and purchasers conducting contract operations will be prohibited from carrying firearms while on duty.

- Food, garbage, and other attractants will be stored in a bear-resistant manner.

- Should a raptor nest be identified in or near project activities, activities will cease and a DNRC biologist will be contacted. Site-specific measures will be developed and implemented to protect the nest and birds prior to re-starting activities.

- Retention of patches of advanced regeneration of shade-tolerant trees in mapped Canada lynx habitats would break-up sight distances, provide horizontal cover, and provide forest structural attributes preferred by snowshoe hares and lynx.

- In pre-commercial thinning units, retain small shade tolerant trees (such as sub-alpine fire and spruce to provide potential habitat structure for snowshoe hares by increasing the levels of horizontal cover and accelerating the development of multi-storied stands.

- Retain a minimum of 20% of lynx habitats in the pre-commercial thinning units in the Garnet Lynx Management Area unthinned to provide denser stands for snowshoe hares, targeting stands with higher existing densities.

- A DNRC biologist will be consulted before initiating any pre-commercial thinning in the LMA.

Wildlife References

Andersen, D. E., O. J. Rongstad, and W. R. Mytton. 1990. Home-range changes in raptors exposed to increased human activity levels in southeastern Colorado. Wildlife Society Bulletin 18:134-142.

Banci, V. 1994. Wolverine. Pp 99-127 in L. F. Ruggiero, K. B. Aubry, S. W. Buskirk, L. J. Lyon, and W. J. Zielinksi, editors. The scientific basis for conserving forest carnivores: American marten, fisher, lynx, and wolverine in the western United States. USDA Forest Service Rocky Mountain Forest and Range Experiment Station, General Tech. Report RM-254, Fort Collins, Colorado, USA.

Bull, E. L., and J. A. Jackson. 1995. Pileated woodpecker: Dryocopus pileatus. American Ornithologists' Union. Washington DC. 24pp.

Copeland, J. P., K.S. McKelvey, K.B. Aubry, A. Landa, J. Persson, R.M. Inman, J. Krebs, E. Lofroth, H. Golden, J.R. Squires, A. Magoun, M.K. Schwartz, J. Wilmot, C.L. Copeland, R.E. Yates, I. Kojola, and R. May. 2010. The bioclimatic envelope of the wolverine (Gulo gulo): do climatic constraints limit its geographic distribution? Can. J. Zool. 88: 233-246.

Hornocker, M. and H. Hash. 1981. Ecology of the wolverine in northwestern Montana. Journal of Wildlife Management 44(3):1286-1301.

McCallum, D. A. 1994. Review of technical knowledge: flammulated owls. Pages 14-46 in G. D. Hayward and J. Verner, tech eds. Flammulated, boreal, and great gray owls in the United States: a technical conservation assessment. USDA Forest Service Gen. Tech. Rep. RM-253. Fort Collins, Colorado.

McClelland, B.R. 1979. The pileated woodpecker in forests of the Northern Rocky Mountains. Pages 283-299 in Role of insectivorous birds in forest ecosystems. Academic Press.

U.S. Fish and Wildlife Service. 2017. Species Status Assessment for the Canada lynx (Lynx canadensis) Contiguous United States Distinct Population Segment. Version 1.0, October, 2017. Lakewood, Colorado.

Wittinger, W.T. 2002. Grizzly bear distribution outside of recovery zones. Unpublished memorandum on file at USDA Forest Service, Region 1. Missoula, Montana.2pp.

AIR QUALITY:

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

- Smoke will be produced during pile burning.
- Smoke may adversely affect the Greenough and Potomac Area.
- Dust will be produced during harvesting and hauling activities.

Existing Conditions

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

The project area is located within Montana Airsheds 3a and 3b, which encompasses portions of Missoula County. Currently, this Airshed does contain an impact zone.

*Recommended Mitigation Measures for Air Quality***-** The analysis and levels of effects to air quality are based on implementation of the following mitigation measures:

- Only burn on days approved by the Montana/Idaho Airshed group, Missoula County, and DEQ.
- Conduct test burn to verify good dispersal.
- Dust abatement may be used as necessary.

SLASH BURNING

No-Action Alternative:

No slash would be burned within the project area. Other burning by other individuals may occur within the airshed. Thus, there would be no effects to air quality within the local vicinity and throughout Airsheds 3a and 3b from project-related activities but there may be minimal impacts from other uses.

Action Alternative: Direct and Secondary Effects

Slash consisting of tree limbs and tops and other vegetative debris would be piled throughout the project area during harvesting. Slash would ultimately be burned after harvesting operations have been completed. Burning would introduce particulate matter into the local airshed, temporarily affecting local air quality. Over 70% of emissions emitted from prescribed burning are less than 2.5 microns (National Ambient Air Quality PM 2.5). High, short-term levels of PM 2.5 may be hazardous. Within the typical column of biomass burning, the chemical toxics are: Formaldehyde, Acrolein, Acetaldehyde, 1, 4 Butadiene, and Polycyclic Organic Matter.

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

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

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

DUST
No-Action Alternative:
No dust related to harvesting operations would be generated within the project area. Other dust-generating activities such as recreation may occur. Thus, there is not expected to be dust-related effects to air quality within the local vicinity and throughout Airsheds 3a and 3b from project-related activities. However, there may be minimal impacts from other uses.

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

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

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**				
Dust		**X**				**X**				**X**				

Comments: N/A

Air Quality Mitigations: N/A

ARCHAEOLOGICAL SITES / AESTHETICS / DEMANDS ON ENVIRONMENTAL RESOURCES:

HISTORICAL AND ARCHEOLOGICAL SITES*:*

The tribes were scoped but none identified a specific cultural resource concern. 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 results revealed that no cultural or paleontological resources have been identified in the APE, but it should be noted that Class III level inventory work has not been conducted there to date.

Because the topographic setting and geology suggest a low to moderate likelihood of the presence of cultural or paleontologic resources, proposed timber harvest activities are expected to have No Effect to Antiquities. Stone fragments that could be used for making stone tools was found. No apparent manufacturing of stone tools was noticed and no mining sites were found. No additional archaeological investigative work will be conducted in response to this proposed development. However, if previously unknown cultural or paleontological materials are identified during project related activities, all work will cease until a professional assessment of such resources can be made.

Two older cabins exist in the southwest quarter of section 24 T13N R15W. These are historic buildings and are recorded by the DNRC.

There is sign of older logging systems. Signs of older logging railroad systems in bottom lands such as sections 14 and 22 T13N R15W still exist to this day. Older “jammer logging” systems and road systems are found today through section 24 T13N R15W. These are historic features of past management.

Therefore, the proposed action alternative would not be expected to have any direct, secondary, or cumulative effect on historical or archaeological resources.

AESTHETICS

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

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

- There are concerns that the proposed projects and roadbuilding would impact the aesthetics of the area, especially from Greenough, Potomac, and Highway 200.

Existing Conditions

The landscapes in the greater area are influenced by glaciation (such as Seeley Lake or areas near Ovando, Montana) with steep glaciated peaks and lower rolling ridges; or have been carved and formed by the Blackfoot and Clearwater Rivers. The landscape within the project area is mountainous with deep canyons formed by the streams that still occupy the bottom areas. Benches created by the streams, are traditionally moderately to heavily timbered. A primary road system is present. Any changes within the area from these alternatives would be in addition to past harvests, road building, and other uses within the area.

Recommended Mitigation Measures for Aesthetics- The analysis and levels of effects to aesthetics are based on implementation of the following mitigation measures.

- Use topography, openings, and other changes on the ground to make harvest and pre-commercial thinning units less visibly obtrusive.
- Varying densities and using "clumpy" spacing reduces the changes to the scenic integrity of the site.

No-Action:
The risk of direct effects would be expected to be low. Over time, tree growth would be expected to fill in current, naturally occurring openings. Due to the long period of time involved, this effect would be expected to be low. The risk of secondary effects would be expected to be insignificant.

Past forest management activity and fires on surrounding lands, would contribute to the cumulative visual effects to project area landscape. The risk of cumulative effects would be expected to be low as disturbances from past forest management activities have mostly revegetated. A minimal amount of cumulative effects would be expected from the continued increase in vegetative growth due to the long period of time involved.

Action Alternative:
The proposed harvest units would be partially visible from Greenough, Potomac, and nearby road systems. Some of the areas could be blocked from long distance viewing due to topographic changes or potentially flatter land that would be harvested. An experienced observer or someone who resides in the area would notice the changes to the other stands, mostly this would occur due to the decrease in stand density.

Where possible, much of the proposed project would be light to moderate in intensity, especially from a distant observation sentence. Usually of the largest trees could be left, and a random, natural spacing would be used. This would show a decrease contrast in form, line, color, and texture between treated and untreated stands. Silvicultural treatments would borrow extensively from the natural grassy openings, existing harvest on neighboring properties, and only slightly affect the texture of the seen areas. Likewise, silvicultural treatments could decrease the hard edge that occurs when comparing DNRC harvest from former industry ground within the same area.

Harvest units would be less dense than the existing stands. As hillsides become steeper, it becomes easier to notice changes in the vegetation. The plan for these proposed harvest units is to work with topographical features, openings on the hillside, and to make unit boundaries that aren't constant straight lines. This area would show moderate visual impacts in the short-term. Other areas would likely see low to moderate impacts to the aesthetics.

Any change to the scenery in the area from these alternatives would be in addition to past timber harvests, road building, wildfires, and vegetation management (grazing, pre-commercial thinning, etc.) within the project area. This analysis includes all past and present effects. Generally, slash disappears from the site within five years, and is often covered by other vegetation within three years. Due to slash and the initial color contrasts of the slash and limited road improvement work, there would be an expected short-term impact. Cumulative effects would be expected to be low given the revegetation of the older harvests nearby, and the time-period of the proposed actions.

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

There would be no measurable direct, indirect, and cumulative impacts related to environmental resources of land, water, air, and energy due to the relatively small size of this project.

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**					
Aesthetics			**X**			**X**				**X**			**Y**	
Demands on Environmental Resources of Land, Water, or Energy	**X**				**X**				**X**					

Comments: N/A

Mitigations:

- Use topography, openings, and other changes on the ground to make harvest and pre-commercial thinning units less visibly obtrusive.
- Varying densities and using “clumpy” spacing reduces the changes to the scenic integrity of the site.

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, DNRC 1996, sets the strategy that guides DNRC management decisions statewide.
- 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 (HCP). 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.

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	X				X				X					
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					1
Local Tax Base and Tax Revenues	X				X				X					
Demand for Government Services	X				X				X					
Access To and Quality of	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		
Recreational and Wilderness Activities														
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:

- According to the Montana Bureau of Business and Economic Research, a general rule of thumb is that for every million board feet of sawtimber harvested in Montana, ten person-years of employment occur in the forest products industry.

  This harvest is viewed as a continuation of a sustained yield and as such would not create any new jobs but rather sustain approximately 55 person-years of employment in the forest products industry. A few short-term jobs would also be created/sustained by issuing pre-commercial thinning and planting contracts following harvest. Additionally, local businesses, such as hotels, grocery stores, and gas stations would likely receive additional revenues from personnel working on the proposed project. This would be a positive low impact to quantity and distribution of employment in the area.

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.*

- The Garnet Range Road is managed by the Bureau of Land Management (BLM). The DNRC has rights across the road when it crosses State (or University of Montana) parcels. Both DNRC and the BLM have agreed to work together regarding use of this road to benefit both parties.

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

Action Alternative: The timber harvest would generate additional revenue for the Public Buildings, Pine Hills, and Common School Trust. The estimated return to the trust for the proposed harvest is $606,900.00 based on an estimated harvest of 5.5 million board feet (35,700 tons) and an overall stumpage value of $17.00 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?
No

Does the proposed action have impacts that are individually minor, but cumulatively significant or potentially significant?
No

Environmental Assessment Checklist Prepared By:

Name: Craig V. Nelson
Title: Clearwater Forest Management Supervisor
Date: April 19, 2023

Finding

Alternative Selected

After thorough review of the Coyote Greenough Projects Environmental Assessment (EA), project file, and public scoping as well as all applicable rules, plans, and laws, the decision has been made to select the Action Alternative.

The Action Alternative meets the intent of the project objectives as stated in *Type and Purpose of Action* listed on pages 2 and 3 of the EA. Specifically, the proposed project is expected to:

1) Maximize revenue over the long-term for the Common Schools trust account through net revenue generation as well as contribute to the DNRC's sustained yield through the harvest of approximately 5.5 million board feet (MMBF).

2) Salvage sawtimber impacted by insects and disease; improve stand growth and vigor; and reduce the threat of future losses to fire, insects, and disease; manage for healthy and biologically diverse forests; and bring stands closer to historic conditions through the harvest on approximately 1,778 acres, and pre-commercial thin of approximately 700 acres.

3) Improve access and BMP compliance with new construction and road maintenance activities through A) new construction of 8.1 miles of road, B) maintenance of 14.3 miles of road, C) reconstruction of 1.81 miles, D) reclamation of 1.3 miles; some of which do not currently meet BMPs or DNRC guidelines.

4) Decrease visual impacts to the aesthetics of the area through use of topography, openings, and other changes on the ground to make harvests and pre-commercial thinning units less visibly obtrusive as well as use of varying densities and uneven spacing to reduce changes to the scenic integrity of the site.

Significance of Potential Impacts

The EA addressed the identified potential resource issues through proposed mitigation measures which incorporate all the applicable rules, plans, guidelines, and laws.

This approach resulted in a project in which potential effects to several resources were expected to be negligible, minimal, minor, or low. These resources will not be discussed in further detail.

Others resulted in moderate expected effects. Specifically,

Vegetation: Current Cover/DFCs, Age Class, Fire/Fuels, and Insects/Disease – Direct effects are expected to be moderate. These effects reflect mitigations and harvest plans designed to benefit forest conditions through promotion of increased stand health and diversity, decreased

residual mortality and fuel loading, and movement towards historic/desired future conditions (p. 14).

Soils: Slope Stability – Direct and Secondary effects are expected to be moderate risk considering the proposed road construction at a specific site. As noted within the analysis, these risks would be mitigated through adherence to cut slope and fill slope ratio requirements associated with DNRC general specifications included in Timber Sale Contracts (p.18).

Wildlife: Pileated woodpecker – Secondary effects are expected to be moderate due to a reduction in the habitat quality and because pileated woodpecker densities in the project area would be expected to be reduced. But as also noted, continued use would be expected (p. 24 & 29).

Aesthetics – Direct effects are expected to be moderate. Proposed mitigations are expected to lessen the potential visual impacts and the visual impacts are expected to lessen or soften over time (p. 38).

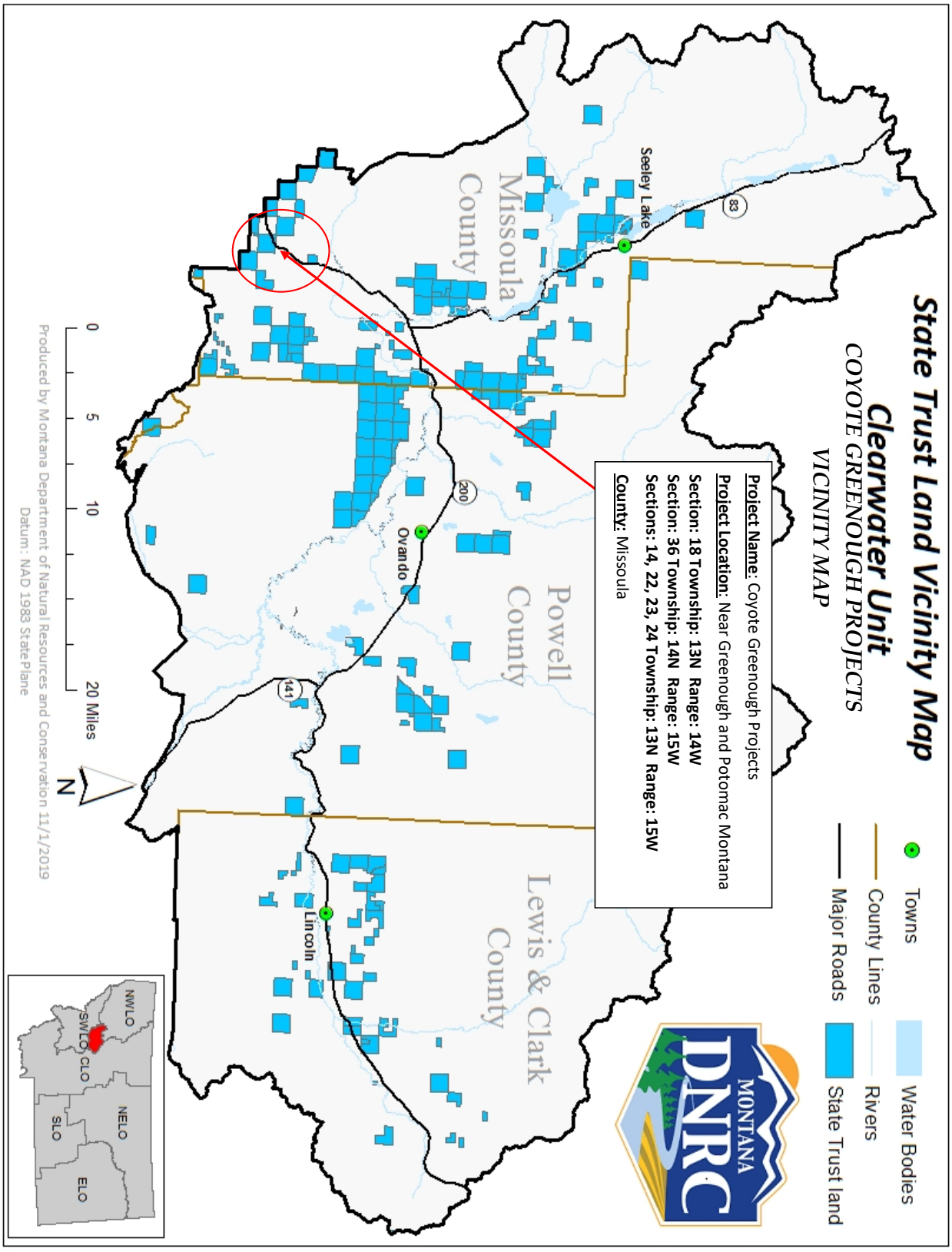
Given the expected effects, rationale, mitigations, and overall project benefits, no significant impacts are expected with the selection of the Action Alternative.

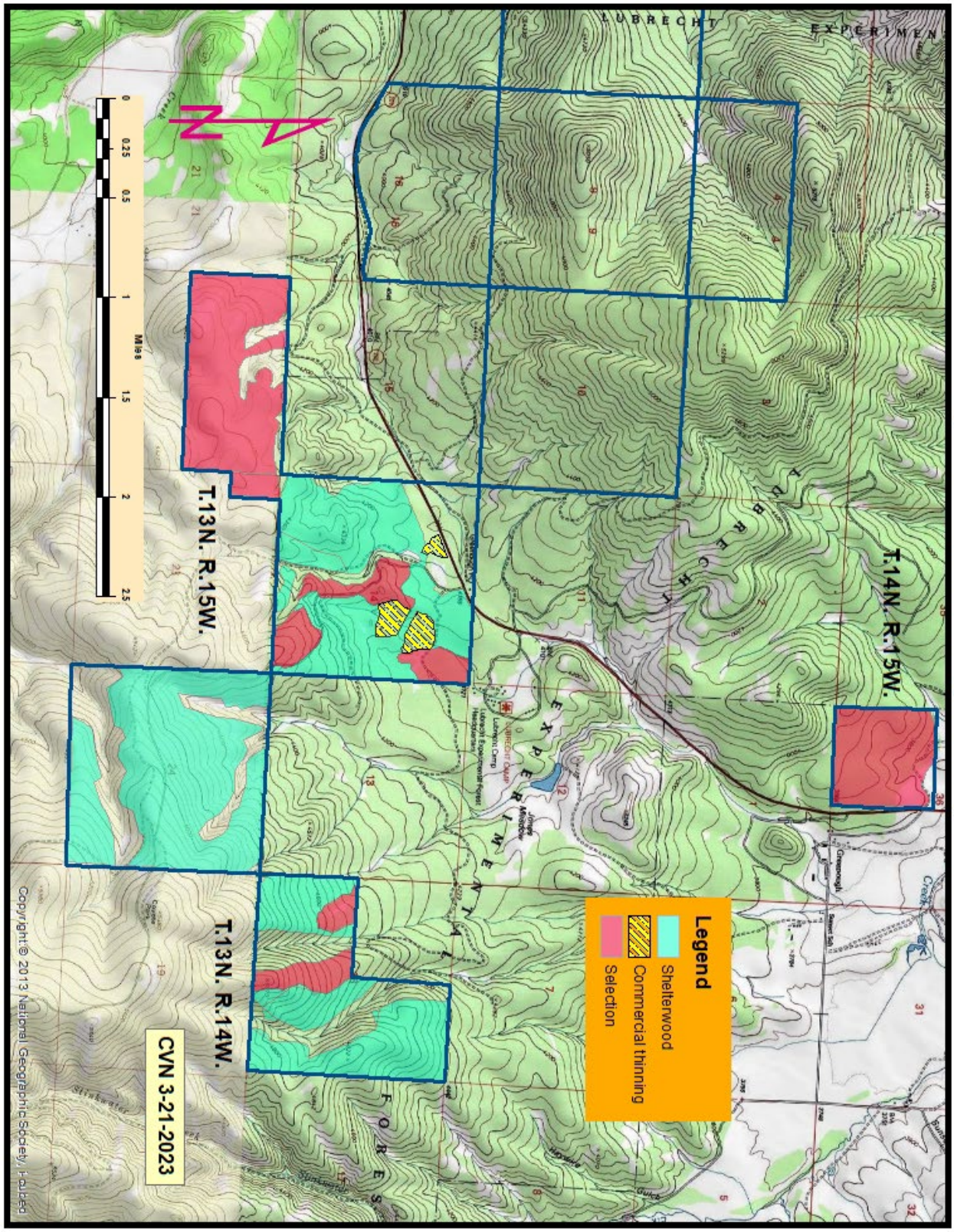
Need for Further Environmental Analysis

☐	EIS	☐	More Detailed EA	☒	No Further Analysis

Environmental Assessment Checklist Approved By:

Name: Kristen Baker-Dickinson
Title: Clearwater Unit Manager
Date: April 25, 2023
Signature: ***/s/ K. Baker-Dickinson***


State Trust Land Vicinity Map
Clearwater Unit
COYOTE GREENOUGH PROJECTS
VICINITY MAP
Towns
Water Bodies
County Lines
Rivers
Major Roads
State Trust land
Project Name: Coyote Greenough Projects
Project Location: Near Greenough and Potomac Montana
Section: 18 Township: 13N Range: 14W
Section: 36 Township: 14N Range: 15W
Sections: 14, 22, 23, 24 Township: 13N Range: 15W
County: Missoula
Seeley Lake
Missoula County
Ovando
Powell County
Lewis & Clark County
Lincoln
83
200
141
0 5 10 20 Miles
N
Produced by Montana Department of Natural Resources and Conservation 11/1/2019
Datum: NAD 1983 StatePlane
NWLO
SWLO
CLO
NELO
SLO
ELO
MONTANA
DNRC


Coyote Greenough Projects
T.14N. R.15W.
T.13N. R.15W.
T.13N. R.14W.
Legend
Shelterwood
Commercial thinning
Selection
CVN 3-21-2023
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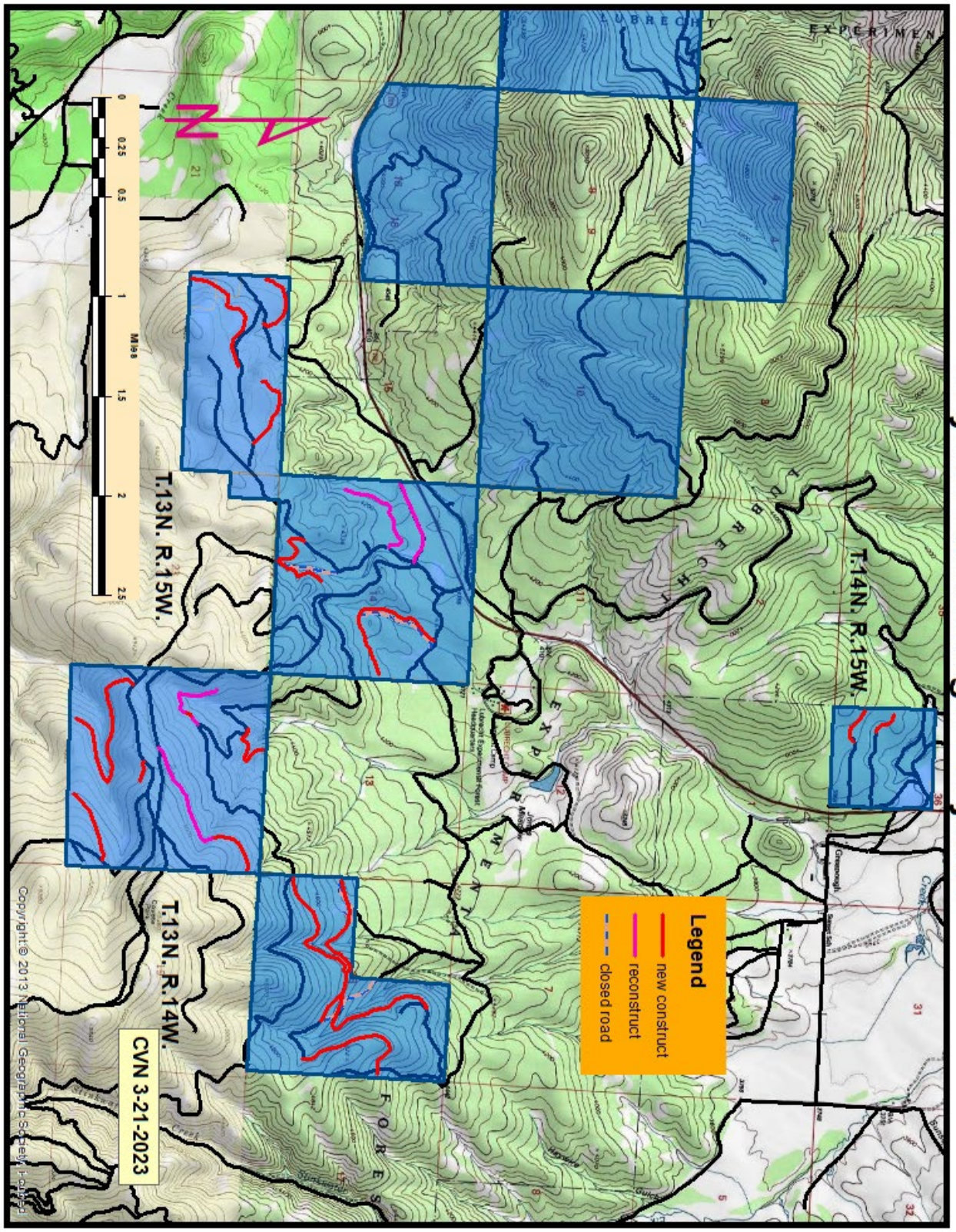
Coyote Greenough Projects
T.14N. R.15W.
T.13N. R.15W.
T.13N. R.14W.
Legend
new construct
reconstruct
closed road
CVN 3-21-2023
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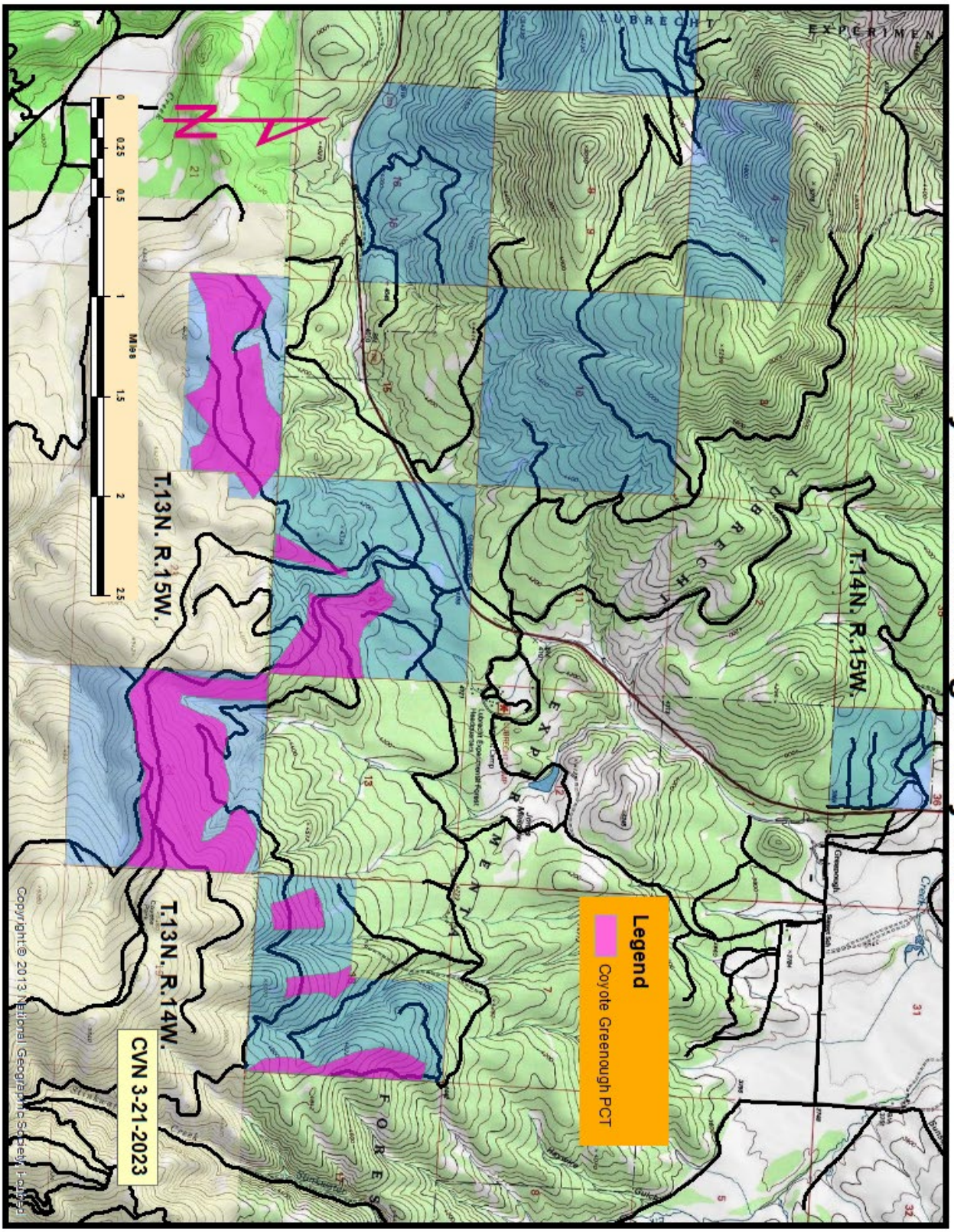
Coyote Greenough Projects
T.14N. R.15W.
T.13N. R.15W.
T.13N. R.14W.
Legend
Coyote Greenough PCT
CVN 3-21-2023
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0
0.25
0.5
1
1.5
2
2.5
Miles