WEST AND PIECES PROJECTS

ENVIRONMENTAL ASSESSMENT

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

Environmental Assessment Checklist

Project Name: West and Pieces Projects
Proposed Implementation Date: June 2023
Proponent: Clearwater, Southwestern 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 West and Pieces Projects. These projects are located approximately four miles southwest of Seeley Lake (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. 36 T16N R16W**	**640**	**246**
Public Buildings			
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			
Veterans Home			
Public Land Trust			
Acquired Land			

Objectives of the project include:

- Maximize revenue over the long-term for the trust account (Common School) 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*.
- Salvage the value of Douglas-fir sawtimber recently impacted by Douglas-fir bark beetle (*Dendroctonus pseudotsugae*), western spruce budworm (*Choristoneura occidentalis*), Douglas-fir tussock moth (*Orgyia pseudotsugata*), Douglas-fir dwarf mistletoe (*Arceuthobium douglasii*) and root rots (*Armillaria ostoyea* etc.).
- 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 (**overstory removal**)	83
Seed Tree	23
Shelterwood	84
Selection	
Old Growth Maintenance/Restoration	15
Commercial Thinning	
Salvage (Sanitation)	41
Total Treatment Acres	**246**
Proposed Forest Improvement Treatment	# Acres
Pre-commercial Thinning	**100**
Site preparation/scarification	
Planting	**50**
Proposed Road Activities	# Miles
New permanent road construction	0.16
New temporary road construction	
Road maintenance	7.24
Road reconstruction	
Road abandoned	
Road reclaimed	
Other Activities	

Duration of Activities:	5 years
Implementation Period:	Summer 2023 – Winter 2029

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
  - 63 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)
  - United States Forest Service, Seeley Lake Ranger District
  - Montana Tribal Nations
- COMMENTS RECEIVED:
  - How many: One comment was received (Michael Biggins)
  - Concerns: Aesthetics of the projects, road amounts and needs, adjacent streams and concerns of potential effects of the projects, and lynx concerns with the projects.
  - 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:
    - **Replacement of 3 existing CMP crossings**

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 including: Douglas-fir bark beetle (*Dendroctonus pseudotsugae*), western spruce budworm (*Choristoneura occidentalis*), Douglas-fir tussock moth (*Orgyia pseudotsugata*), Douglas-fir dwarf mistletoe (*Arceuthobium douglasii*) and various root rots (*Armillaria ostoyea* etc.).
- 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 Common School Trust fund 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 246 acres removing an estimated 1.0 MMBF.
- 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 100 acres with a plan to increase vigor and reduce overstocking, 50 acres of planting would take place using species and stock suitable for this site.
- Money would be received by the Common Schools Trust.
- 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 climatic section 333C. Section 332B was historically 79% forested while section 333C was historically 99% forested (Losensky, 1997). Climatic Section 332B includes valley bottoms as well as high elevations in the Bitterrroot and Blackfoot region. The project area ranges in elevation from 4,500'-5,100'. 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 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 trees and stumps from previous harvests) found during field reconnaissance indicates that these fires burned in the 1800s through today. 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 Seeley Lake and the many water sources nearby, harvest has occurred in this area since the late 1880's. Signs of this can easily be found driving the Placid Lake Road and viewing the "high-stumps" within the area. 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 1957, a timber sale was sold in this section. It removed 2.1 million board feet (MMBF). The largest percentage of these trees were western larch. Later logging generally removed Douglas-fir, lodgepole pine, and subalpine fir, which partially emulated the effects of intermittent, moderate intensity fire. In 1977, approximately 2.8 MMBF were removed as part of the Boles Creek Timber Sale. Soil disturbance caused during the logging provided an adequate seedbed for regeneration, and many areas are covered with dense regeneration dominated by western larch. In 1998, the Quiet Stems Timber Sale sold 2.6 MMBF in a project based on the east side of the section.

Small sales (permits) have occurred over the years. Records of these cannot be found prior to the 1990's. Since then, 5 permits have been sold selling 497 thousand board feet (mbf.).

Portions of the Jocko Lakes fire occurred within of this section. On the west side of Boles Creek, it stayed south of section 36. It did enter this project area in the southwest portion of the section and burned approximately 50 acres.

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.
- Forest management activities may adversely affect Old Growth stands.
- 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:

Currently, Douglas-fir within the project area is often being impacted by Douglas-fir bark beetle, western spruce budworm (primarily on poles down to seedlings), Douglas-fir tussock moth, Douglas-fir mistletoe, and several root rots. Many of these stands have Douglas-fir as dominant or co-dominant size. Also in these stands, they are smaller in size (intermediate, poles, and saplings). With the exception of Douglas-fir bark beetle, all will impact all sizes of trees. Douglas-fir bark beetle only effects sawlog size trees. Many of the stems have been killed or are in poor quality. A majority of lodgepole pine that have died from mountain pine beetle (*Dendroctonus ponderosae*) within the recent past. Given the situations named in the beginning of the paragraph, many of the stands are "falling apart". The stands are often showing their last stage of "life". The next probable step is a wildfire to begin the stand anew.

Harvest Unit	Habitat Group	Fire Regime	Current Cover Type	Age Class (years)	DFC	Prescription	Acres
1	Moderately warm and dry (westside)	Mixed	Douglas Fir	150-199	Western Larch/Douglas Fir	Sanitation	28
2	Moderately warm and dry (westside)	Mixed	Douglas Fir	150-199	Western Larch/Douglas Fir	Shelterwood Harvest	13
3	Moderately warm and dry (westside)	Mixed	Douglas Fir	Old Growth	Western Larch/Douglas Fir	Old Growth Management	13
3	Cold and moderately dry (westside)	Mixed	Douglas Fir	200+	Mixed Conifer	Shelterwood Harvest	36
4	Cold and moderately dry (westside)	Mixed	Douglas Fir	200+	Western Larch/Douglas Fir	Overstory Removal	82
5	Cold and moderately dry (westside)	Mixed	Douglas Fir	150-199	Western Larch/Douglas Fir	Shelterwood Harvest	26
6	Cold and moderately dry (westside)	Mixed	Douglas Fir	150-199	Western Larch/Douglas Fir	Sanitation	13
7	Cold and moderately dry (westside)	Mixed	Douglas Fir	100-149	Western Larch/Douglas Fir	Seed Tree	23
8	Cold and moderately dry (westside)	Mixed	Douglas Fir	150-199	Western Larch/Douglas Fir	Shelterwood Harvest	7
8	Cold and moderately dry (westside)	Mixed	Douglas Fir	Old Growth	Western Larch/Douglas Fir	Old Growth Management	2

Current and appropriate cover type for the West and Pieces Projects Area.

Cover Type	Current Acres	Current Percent of Project Area	Desired Future Condition (DFC)	
			Acres	Percent
Douglas-fir	565.3	88.4%	40.9	6.4%
Lodgepole pine	34.8	5.4%	-	-
Ponderosa pine	-	-	76.6	12%
Western larch/Douglas-fir	5.7	0.9%	516.9	80.7%
Western Larch	34.2	5.3%	-	-
Mixed Conifer	-	-	5.6	0.9%
Non-forest	-	-	-	-
Total:	***640***	***100%***	***640***	***100%***

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 western larch/Douglas-fir, however the amount of the Douglas-fir "pushes" into the Douglas-fir Cover Type. Most of the project area contains higher amounts of Douglas-fir and lodgepole pine. This lodgepole is of older age. These stands are all sawlog stands. The tree species within the DFC types are on site. Often, the existing "regeneration" is older in age and are Douglas-fir. These have been affected by western spruce budworm and overstocking. These stands would need a pre-commercial thinning. Some of the project may require planting and potential other site preparation.

Fire Hazard/Fuels:
As described previously, many of the stands within the project area appear to be in the last stage in this stand's lifespan. Fire hazard on the western portions of this section is generally high. As time goes on, more lodgepole and insect killed sub-alpine fir with die and fall down. This increase to the fuel load will create a higher fuel hazard and could possibly cause damage to the soil. This could cause a longer span until regeneration fills the project sites.

The eastern portion of the section will generally have a moderate to high fire risk. A major reason for this is the more recent Quiet Stems Timber Sale that reduced the stand stocking and removed a large portion of standing stems and increase the crown spacing that would not allow a "crown fire" to develop.

More intense fires, even on a smaller scale, can become hydrophobic (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.

It is obvious what a larger fire would do in this project area given the Jocko Lakes Fire of 2007. Given the fire scar of that fire to the south and west of the section, and the management in the east portion of section 36 and former industrial lands to the east and north, it is believable that a potential fire would likely be much smaller given changes in the larger area.

Insects and Diseases:
The condition of the stands has been described in Vegetative Existing Conditions. The largest number of trees affected by the insects and diseases are Douglas-fir.

Sensitive/Rare Plants:
The Montana Natural Heritage Program (MNHP) has identified three 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*)
- **Beck Water-Marigold** (*Bidens beckii*)
- **Western Quillwort** (*Isoetes occidentalis*)

Most of these plants prefer wet sites and would typically occur in protected riparian areas. However, Howell's Gumweed may also occur in disturbed areas such 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.*

Noxious Weeds:
Noxious weeds occurring in the project area consist mainly of spotted knapweed (*Centaurea maculosa*), houndstongue (*Cynoglossum officinale L*), common tansy (*Tanacetum* vulgare), Oxeye Daisy (*Leucantheum vulgare),* and Canada thistle (*Cirsium arvense*).

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 reduced the spread of noxious weeds.

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 – Direct, Secondary, and Cumulative Effects:
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 remain at overstocked levels and at greater susceptibility to insects and disease. Douglas-fir bark beetle, western spruce budworm, Douglas-fir tussock moth, Douglas-fir mistletoe, and several root rots 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 – Direct, Secondary, and Cumulative Effects:
This proposal includes timber harvest under on approximately 246 acres removing an estimated 1.0 million board feet. Pre-commercial thinning will also occur under this EA on a proposed 50 acres. The DNRC would try to address the concerns within the Existing Conditions on these acres by using the following silvicultural treatments. In many situations under this project, treatment may change from shelterwood to seed tree 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.

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. This overstory stand is later removed (within regulations of the landowner). These stands within the project area are generally higher percentage of Douglas-fir and may not have an understory that could be managed after harvest. Generally, these areas are in pockets.

Spacing after harvest is predicted to be variable and would be based upon the individual tree characteristics. However, it could range between 33 feet between trees (40 trees per acre) and 54 feet between trees (15 trees per acre). A target residual basal area per acre is proposed to be around 24-63 square feet of and a resulting volume harvested of 3-8 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 reduction of the total Douglas-fir number 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.

Overstory Removal: Overstory removal is the silviculture practice of harvesting the upper level of trees to promote the growth of the understory levels. Under this proposed project, this prescription would be used to remove the overstory from an older seed tree unit. Currently, this stand has 6 to 20 overstory trees per acre. The proposal would remove all but the four reserve snag replacements per acre required under the HCP. This stand would be pre-commercially thinned to promote growth of reserved understory.

Fuel management after the harvest would include burning landing piles. The felled trees would likely be processed at the landing. Slash within the unit will be lopped to 18" from the ground or less.

Seed Tree: This is a harvest prescription that calls for the removal of the trees in the stand. A small number of trees, between 4 to 15 trees per acre, would be left for seed production. Given satisfactory site preparation, a new age class will be started.

General spacing could be between 54 feet to 93 feet resulting from the expected trees per acre of 15 trees per acre to 5 trees per acre. The estimated basal area within this treatment could be between 7 square feet and 21 square feet per acre. Much like the shelterwood prescription, the trees reserved from harvest would push the stand toward DFC as it would include western larch and ponderosa pine.

Fuel management would vary between the treatments for shelterwood and overstory removal.

Sanitation: This prescription is the removal of trees to improve stand health by stopping or reducing the actual or anticipated spread and effects of insects and disease.

Within this project area, the need for this treatment has been discussed in previous locations within this document. It would have the intent to treat stands where the Douglas-fir has seen the largest decrease of health and vigor, and damage to the stand has been greatest.

Given the harvest, predicting the spacing, trees per acre, basal area, and diameter of the reserve trees is very difficult. The stand would be extremely variable. The best estimates show the general spacing could be around 80 feet between reserve trees. The projected leave trees would have 14" to 15" diameter at breast height. In stands treated with this prescription, the amount of snag and snag recruit trees would be over the standard required amount.

Fuel management would be like proposed seed tree prescriptions.

Old Growth Maintenance: This treatment, obviously involves treatment of old growth stands within the proposed project area. There are two treatments that the DNRC uses: old growth maintenance and old growth restoration. Within this project, only old growth maintenance is proposed.

This treatment is designed to emulate the effects of mixed-severity fire in an old growth stand that retains the stand's old growth characteristics. Generally, it is easier to meet the standard definition that reserves more climax species. In this project area, it is difficult to reserve a high amount given the mentioned insects and disease effecting Douglas-fir as well as subalpine fir.

The proposed treatment could result with approximately 80 square feet per acre of overstory trees (primarily western larch) with an estimated 23" in diameter at breast height (DBH). The existing understory has approximately 540 trees per acre and an estimated basal area of 12 square feet. The sapling members of the stand would have an estimated 10 square feet. The current stand has 4-7 snags 17" in DBH.

Fuel management would be like the shelterwood prescription. Piles of material within the unit would assist the establishment of regeneration.

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.

Planting: Within this proposed project, it is recognized that planting of trees may be necessary. It is estimated that 50 acres may need this treatment after harvest is completed. If planting is needed, the DNRC has a seed bank with species that could be planted on this project area. Site preparation, such as: dispersed skidding, unit pile burning, equipment scarification, and broadcast burning, may proceed the proposed planting.

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 proposed action would be expected to result in low to moderate direct, indirect, and cumulative impacts on forest vegetation beyond those projected for the No Action alternative.

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 81.1 acres of the Project Area as "Old Growth" (as defined by Green, et. al.). The action alternative intends to harvest 15 acres of the total of 81.1 acres, but many large old trees would remain. Both the Action and No-Action show an estimated "low" effect. A majority of the old growth acres in the project area is within the SMZ's.
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 existing conditions regarding insect and disease and the obvious result of the increased populations. Like above comments, the proposed action would remove the portions of the stand that have been described earlier. As a result, it would also show a moderate effect in Action and Non-Action conditions.

Vegetation Mitigations:

Recommended Mitigation Measures for Vegetation

- Favor western larch and ponderosa pine 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.
- 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.
- No harvest would occur near Boles Creek.

MT DNRC , Environmental Assessments of the past DNRC timber sales including; Boles Creek TS (1977), Quiet Stems TS (1996), and minor salvage permits, Clearwater 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). 2015. Plant species of concern report. Available online at: http://mtnhp.org/SpeciesOfConcern/?AorP=p. Last accessed January 30, 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.

SOIL DISTURBANCE AND PRODUCTIVITY:

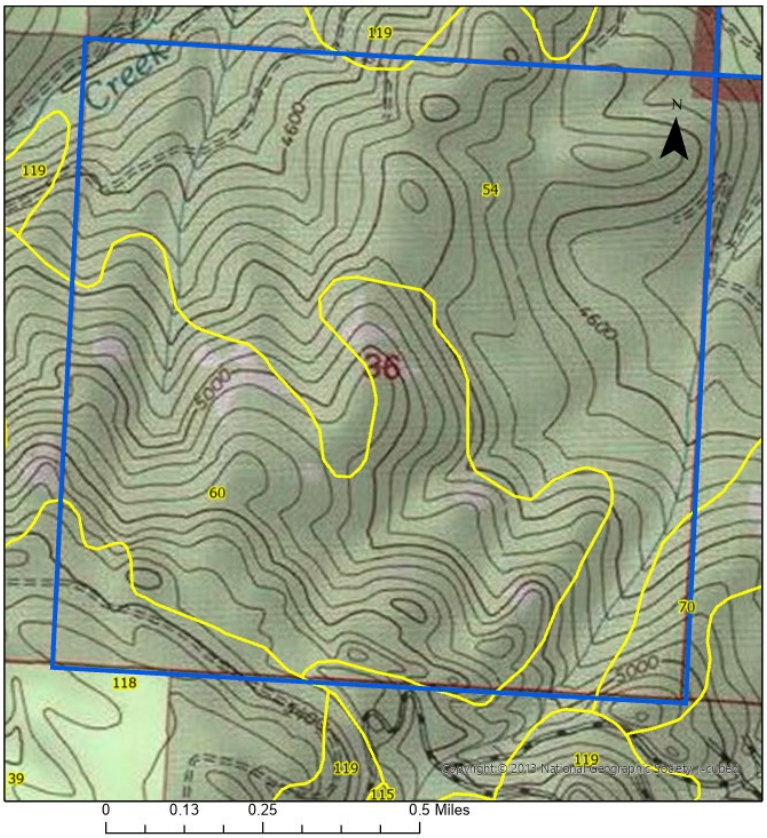
Soil Disturbance and Productivity Existing Conditions:

The project is located in the northeastern foothills of the Rattlesnake Mountains southwest of Placid Lake. Bedrock outcrops occur within the project area, mainly in the upper elevations of the project area. Indicators of slope instability (e.g., scarps, debris fans, tilted or pistol-butted trees) were not observed. LiDAR is not expected to be available for this area until summer/fall 2023.

Soils in the lower elevations of the project area are Hollandlake-Bata complex gravelly loams (unit 54 in map below) on slopes 4-30%. These soils are deep gravelly loams formed in alpine till with volcanic ash near the top of the profile. Underlying geology are glacial moraines

composed of boulders, cobbles, pebbles, and sand. These soils are well drained but have a moderate erosion risk. The high sand and low clay content increase rutting and erosion risk. These soils dry out quickly and have a long season of use.

Soils in the upper elevations of the project area are Holloway-Rock outcrop complex gravelly ashy silt loam (unit 60 and pink in the map below) on slopes 0-80%. These soils are shallow to moderate depth with common rock outcrops. Underlying geology are Belt Series (Precambrian) sedimentary rocks, mainly quartzites and argillites. Short steep slopes have high displacement potential and will require cable, winchline, or designated skid trails to avoid soil impacts. Main soil concern is potential displacement of the shallow topsoil. These soils have a long season of use. Erosion risk is moderate.



No unique or unstable terrain were observed within the project area.

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.

Existing and past disturbances

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

- Boles Seed Letter Permit (2022)
- 7/10 Split Timber Permit (2007)
- Boles Full of Jelly and Run with Boles Timber Permits (2004)
- Quiet Stems Timber Sale (1998)

- Hulett Packard Timber Permit (1996)
- Boles Creek Timber Sale (1977)
- Fire History: The SW 1/8th of section 36 burned in the Jacko Lakes Fire (2007)
- This area is not used for cattle grazing.

Visual review of existing coarse woody debris (CWD) within the harvest areas completed in Summer 2022 appear to be within the range appropriate for the landscape and forest type (10 to 15 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 may result in temporary increased risk of erosion. Risk would be moderate immediately following project-related disturbances. However, these risks would be mitigated with implementation of Forestry BMPs – including erosion control with slash or water bars and grass seeding.

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 10 and up to 15 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. Unstable slopes were not observed on site. The project is anticipated to have no risk to slope stability.

Additional Soil Mitigations:

- The Contractor and Sale Administrator should agree to a general skidding plan prior to equipment operations. 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 10 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 southwest of Placid Lake. Approximately half of the proposed harvest areas is in the Boles Creek watershed and the other half is in an area draining towards Placid Creek and Lake.

Boles Creek passes through the NW-most corner of the project section, but is not adjacent to the proposed harvest areas. The creek is occupied by fish including Bull Trout and Westslope Cutthroat Trout.

An unnamed Class 2 stream drains most of the western half of the project area towards Boles Creek but does not have surface connection to Boles Creek (i.e., surface connection and scour ends near the section line boundary). The stream qualifies as a class 2 stream due to seasonal flow and no downstream connection.

An unnamed Class 2 stream drains most of the eastern half of the project area towards Placid Lake and Placid Creek but does not have a surface connection to these streams. That is, the channel discharges to a large, forested, wetland complex and there is no direct channel delivery to Placid Creek or Placid Lake. Wetlands (isolated and adjacent) occur more frequently in the eastern half of the project area.

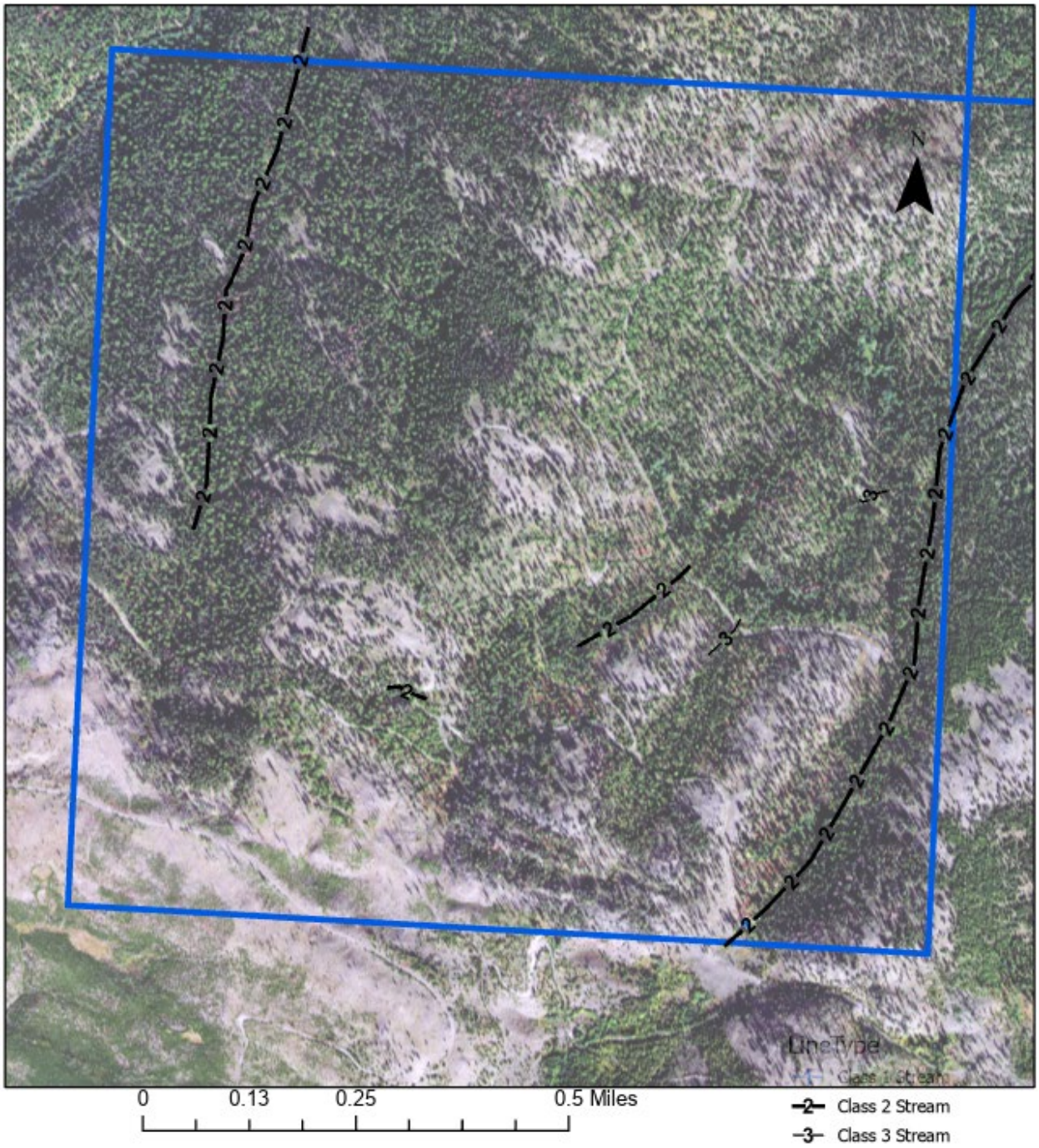


Figure 1: Observed streams within proposed project area. The blue boundary is the boundary of the collected data and the project section (Sec 36 of T16N R16W). Map includes aerial imagery (NAIP 2021).

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. By complying with these plans, rules, practices, and commitments – risks to water quality such as sedimentation from disturbed areas or roads are avoided or minimized. Due to the distance of proposed harvest areas from Boles Creek and the implementation of SMZ harvest and equipment restrictions on the Class 2 streams within the project area – the risk of increased sedimentation from logging or road building is low to none.
3. The action alternative would involve replacing pipes at three existing stream crossings: two on the Class 2 tributary to Boles Creek and another on an isolated Class 2 stream in the eastern half of the project area. Effects to water quality will be minimized by timing with seasonal low or no-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 (Boles Creek and Placid Creek and Lake). The proposed sale area is split between these two watersheds and due to the size of these watersheds, the harvest areas would be much less than the 20% vegetated area removal needed to have a measurable effect.

Water Quality & Quantity Mitigations:

No additional project-specific mitigations 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.

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 Boles Creek and is outside the project area. In addition to other species, Boles Creek carries Bull Trout and Westslope Cutthroat Trout. Bull trout are currently listed as a threatened species under the Endangered Species Act and Westslope Cutthroat Trout is a sensitive species. The proposed haul route would not cross Boles Creek. Harvest areas would be greater than 800 feet from Boles Creek, and nearly 1 mile from Placid Lake.

According to conversations with the FWP fisheries biologist for the area, the unnamed Class 2 stream/watershed of the western portion of the project area is considered an important source of cold water to Boles Creek.

No streams within the project section carry fish. This was determined based on observations including channel size, lack of pools/habitat, low seasonal discharge (<1cfs or dry), stream gradient and/or no downstream connection.

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 necessary beyond the project design and commitments listed earlier in the water resources analysis.

WILDLIFE:

The following sections disclose the anticipated direct, indirect, and cumulative effects to wildlife resources from the proposed action in the project area and cumulative-effects analysis areas described for each resource category. Past and ongoing activities on all ownerships, as well as planned future agency actions, have been taken into account in each cumulative-effects analysis for each resource topic.

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

- Proposed activities could alter mature forested habitats and/or landscape connectivity, which could affect species that rely on these mature forested habitats, and/or alter connectivity and the ability of wildlife requiring corridors to move through the landscape.

- Proposed activities could alter cover, reduce secure areas, and increase access, which could affect grizzly bears by displacing them from important habitats and/or increasing risk to bears of human-caused mortality.
- Proposed activities could negatively affect Canada lynx by altering lynx winter foraging habitat, summer foraging habitat, and other suitable habitat, rendering these habitats unsuitable for supporting lynx.
- Proposed activities could negatively affect bald eagles by reducing nesting and perching structures and/or disturbing nesting bald eagles.
- Proposed activities could reduce the amount and/or quality of fisher habitats, which could alter fisher use of the area.
- Proposed activities may alter flammulated owl habitat by reducing canopy closure and increasing tree spacing, while potentially removing snags needed by flammulated owls for nesting.
- Proposed activities could reduce suitable nesting and foraging habitat for pileated woodpeckers, which could alter pileated woodpecker use of the area.
- Proposed activities could disturb nesting red-tailed hawks and/or modify nesting habitats for red-tailed hawks.
- Proposed activities could remove big game security cover, which could affect hunter opportunity and local quality of recreational hunting.

Regulatory Framework

Various legal documents dictate or recommend management direction for terrestrial wildlife species and their habitats on state trust lands. The documents most pertinent to this project include DNRC Forest Management Rules, DNRC Forested Trust Lands Final Environmental Impact Statement and Habitat Conservation Plan (USFWS and DNRC 2010), the Endangered Species Act, the Migratory Bird Treaty Act, and the Bald and Golden Eagle Protection Act.

Analysis Areas

The discussions of existing conditions and environmental effects within each subsection pertain to land areas of 2 different scales. The first scale of analysis is the Project Area (640 acres), which includes the DNRC-managed lands in section 36 in T16N, R16W where activities are being proposed. The second scale is the cumulative-effects analysis area, which refers to a broader surrounding landscape useful for assessing cumulative effects to wildlife and habitat. For this proposed project, two distinct cumulative-effects analysis areas were identified. The first cumulative effects analysis area includes the project area and those lands within 1 mile of the project area (5,361 acres). This area includes 994 acres (19%) that are managed by DNRC, 1,814 acres (34%) that are managed by US Forest Service, 2,274 acres (42%) that are managed by The Nature Conservancy (TNC), 152 acres (3%) that are privately owned, and 127 acres (2%) that are in water. The second cumulative effects analysis area is DNRC‘s Seeley Lake Lynx Management Area (LMA). This is roughly 51,338 acres and includes an area between Buck Creek, Sawyer Creek, Mountain Creek, Lost Creek, Woodworth Road, Vaughn Creek, Boles Creek, and Finley Creek. This cumulative-effects analysis area contains sizeable areas managed by US Forest Service (17,495 acres; 34%), DNRC (13,129 acres; 26%), TNC (7,315 acres, 14%) and private ownership (13,157 acres; 26%) with smaller amounts (<1%) managed by Montana FWP, local government, MT Department of Transportation, and Montana University System.

Analysis Methods

Analysis methods are based on DNRC State Forest Land Management Rules, which are designed to promote biodiversity. The primary basis for this analysis includes information obtained by: field visits, review of scientific literature, Montana Natural Heritage Program (MNHP) data queries, DNRC Stand Level Inventory (SLI) data analysis, aerial photograph analysis, United States Forest Service Vegetation Mapping Project (VMAP) data, and consultation with other professionals.

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

Coarse Filter Wildlife Analysis

Issue

Proposed activities could alter mature forested habitats and/or landscape connectivity, which could affect species that rely on these mature forested habitats, and/or alter connectivity and the ability of wildlife requiring corridors to move through the landscape.

Introduction

A variety of wildlife species rely on mature to old stands for some or all life requirements. Mature forests, generally characterized by abundant large diameter trees and dense canopy cover, play an important role in providing food, shelter, breeding sites, resting areas, and/or travel corridors for certain animals. Wildlife use of older, mature forests is species-specific; some species use this habitat exclusively, other species only temporarily or seasonally, and some species avoid mature forests altogether. Several species known to be strongly associated with mature and old forests include American marten (*Martes americana*), northern goshawk (*Accipter gentilis*), and winter wrens (*Troglodytes troglodytes*).

Forested landscapes in the western United States were historically shaped by natural disturbance events; primarily wildfire, blowdown, and pest outbreaks. Resulting broad landscape patterns were a mosaic of forest patches varying in age, composition and development. Timber harvest, like stand-replacement fire and blowdown, is a disturbance event that can create open, non-forested patches that over time develop into young, conifer forests. Patch size, age, shape, abundance, and distance to similar patches (connectivity) can be factors influencing wildlife use. The way through which patch characteristics influence wildlife use and distribution are dependent upon the particular species and its habitat requirements. Temporary non-forested openings, patches, and forest edges created by timber harvest and associated roads may be avoided by certain wildlife species adapted to mature, well-stocked forest. In contrast, other wildlife species flourish in early seral habitats created by disturbance. Connectivity under historical fire regimes within forest types found in the vicinity of the project area was likely relatively high as fire differentially burned various habitats across the landscape (Fischer and Bradley 1987).

Analysis Area

Direct and indirect effects were analyzed for activities conducted in the 640-acre project area. Cumulative effects were analyzed on a 51,338-acre area described above in the Analysis Areas portion of this analysis. This scale of analysis would be large enough to support a diversity of species that use mature forested habitats and/or require connected forested habitats.

Affected Environment

The project area currently contains approximately 326 acres (50% of project area) of mature stands (100-plus years in age) of Douglas-fir and Douglas-fir/western larch stands that have a reasonably closed canopy. Currently, forested areas cover most of the project area, facilitating some use by those species requiring connected-forested conditions and/or forested-interior habitats. Ongoing tree mortality within the project area is altering existing forested cover, forested-interior habitats, and landscape connectivity; portions of the project area that burned in the recent past are starting to reestablish seedling and saplings that will contribute to forested cover in the future in the project area.

Roughly 6,208 acres of mature stands of Douglas-fir, Douglas-fir/western larch, western larch, ponderosa pine, and mixed conifer exist on DNRC-managed lands within the cumulative effects analysis area. A portion of the 15,735 acres (41% non-DNRC lands) of forested habitats and some of the 7,641 acres (20% non-DNRC lands) of moderately stocked forested stands on other ownerships in the cumulative effects analysis area are likely also providing habitat for those species requiring mature, forested habitats and/or forested connectivity. Conversely, much of the 15,456 acres (40% of non-DNRC lands) of shrubs, herbaceous areas, poorly stocked forested stands, recently burned, and recently harvested stands on other ownerships in the cumulative effects analysis area is likely too open to be useful for these species requiring forested habitats. Ongoing tree mortality within the cumulative effects analysis area is altering existing forested cover, forested-interior habitats, and landscape connectivity. Past timber management, human developments, recent wildfires, roads, and the natural openness of certain habitats in the cumulative effects analysis area has influenced landscape-level connectivity in the cumulative effects analysis area; ongoing activities associated with the Kozy Korner Timber project are continuing to alter quality of forested cover and landscape connectivity on DNRC managed lands in the cumulative effects analysis area. Considerable human developments, including human residences, many roads, numerous population centers, and a variety of other human disturbances has had considerable effects on landscape connectivity in the cumulative effects analysis area.

Environmental Effects- Mature Forested Habitats and Landscape Connectivity

No-Action Alternative: Direct and Indirect Effects

No appreciable changes to existing stands would be anticipated. Stands providing forested cover that may be functioning as corridors, including riparian areas, saddles, and ridgelines, would not be altered. Continued tree mortality would further alter existing forested cover, forested-interior habitats, and landscape connectivity. No changes in human developments, motorized access, or visual screening would occur. No changes in wildlife use would be expected. Thus, no direct or indirect effects to mature forested habitats and landscape connectivity would be expected since: 1) no further changes to existing stands would occur; 2) no changes to human developments, motorized access, or visual screening would occur, and 3) no alterations to existing corridors would be anticipated

.

No-Action Alternative: Cumulative Effects

No appreciable changes to existing stands would be anticipated. Stands providing forested cover that may be functioning as corridors, including riparian areas, saddles, and ridgelines, would not be altered. Ongoing tree mortality within the cumulative effects analysis area is altering existing forested cover, forested-interior habitats, and landscape connectivity. Past harvesting and recent wildfires have reduced the amount of mature, forested habitats in a portion of the cumulative effects analysis area; however, continued successional advances across the cumulative effects analysis area are moving stands toward mature forests. This alternative would not alter the amount of mature forested stands in the cumulative-effects

analysis area. No changes in human developments, motorized access, or visual screening would occur. No changes in wildlife use would be expected. Thus, no cumulative effects to mature forested habitats and landscape connectivity would be expected since: 1) no further changes to existing stands would occur; 2) no changes to human developments, motorized access, or visual screening would occur; and 3) no alterations to existing corridors would be anticipated.

Action Alternative: Direct and Indirect Effects

Approximately 246 acres (75%) of existing mature Douglas-fir and Douglas-fir/western larch stands with a reasonably closed canopy would be harvested. In general, habitats for those species adapted to more-open forest conditions would increase in the project area, meanwhile habitats for wildlife species that prefer dense, mature forest conditions would be reduced in the project area. Although proposed harvesting on 248 acres (38% of the project area) would create more open stands that may be less suitable for wildlife species that use mature stands to move through the landscape, corridors, particularly along riparian features, would be retained. No changes in legal motorized public access would occur in the project area. Additionally, the only permanent human development constructed would be roughly 0.16 miles of new, restricted roads; however, these new roads could increase non-motorized human activity in the project area beyond the proposed timber management activities. Contract stipulations would minimize the presence of human-related attractants for the duration of the proposed activities. Some changes in visual screening would occur within individual units, but the combination of irregular-shaped units, topography, un-harvested patches throughout the project area, and distance from open roads would minimize the effects of the reductions in visual screening. Thus, a minor risk of adverse direct and indirect effects to mature forested habitats and landscape connectivity would be expected since: 1) proposed activities could reduce forested cover in a portion of the project area (38%) including a sizable amount of the mature stands with a reasonably closed canopy (75%), but corridors would be retained; 2) increased human developments in the form of restricted roads, could concentrate human activity, but no changes in human-related attractants would occur; 3) no changes to legal motorized public access would occur, but increases in non-motorized access could facilitate increased human use of the project area; and 4) visual screening in portions of the project area would be reduced, but some visual screening would be retained across the project area.

Action Alternative: Cumulative Effects

Modifications to mature, forested habitats associated with this alternative would be additive to losses associated with past harvesting activities and recent wildfires in the cumulative effects analysis area. Across the cumulative effects analysis area, a variety of stands are providing for wildlife movements. Minor increases in human developments would occur with the proposed construction of roughly 0.16 miles of new, restricted roads. No changes in the presence of human-related attractants would occur. No changes to legal motorized public access to the cumulative effects analysis area would occur. Minor reductions in visual screening in a small portion of the cumulative effects analysis area would be anticipated. Thus, a minor risk of adverse cumulative effects to mature forested habitats and landscape connectivity would be expected since: 1) proposed activities could reduce forested cover in a small portion of the cumulative effects analysis area, but corridors would exist; 2) minor increases in human developments that could concentrate human activities would occur, but no changes in human-related attractants would occur; 3) no changes to motorized public access would occur; and 4) visual screening in a small portion of the cumulative effects analysis area would be reduced, but considerable visual screening would persist across the cumulative effects analysis area.

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
Lynx (*Felis lynx*) Habitat: mosaics--dense sapling and old forest >5,000 ft. elev.		X				X				X			Y	2
Yellow-billed cuckoo (*Coccyzus americanus*) Habitat: open cottonwood riparian forest with dense brush understories (Missoula and Ravalli counties)	X				X				X					
Sensitive Species														
Bald eagle *(Haliaeetus leucocephalus)* Habitat: Late-successional forest within 1 mile of open water		X				X				X			Y	3
Wolverine (*Gulo gulo*) Habitat: high elevation areas that retain high snow levels in late spring		X				X				X			Y	
Black-backed woodpecker *(Picoides arcticus)* Habitat: Mature to old burned or beetle-infested forest	X				X				X					
Common loon *(Gavia immer)* Habitat: Cold mountain lakes, nest in emergent vegetation	X				X				X					
Fisher *(Martes pennanti)* Habitat: Dense mature to old forest less than 6,000 feet in elevation and riparian		X				X				X			Y	4
Flammulated owl *(Otus flammeolus)* Habitat: Late-successional ponderosa pine and Douglas-fir forest		X				X				X			Y	5
Peregrine falcon *(Falco peregrinus)*	X				X				X					

Wildlife	Impact												Can Impact be Mitigated?	Comment Number
	Direct				Secondary				Cumulative					
	No	Low	Mod	High	No	Low	Mod	High	No	Low	Mod	High		
Habitat: Cliff features near open foraging areas and/or wetlands														
Pileated woodpecker *(Dryocopus pileatus)* Habitat: Late-successional ponderosa pine and larch-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**					
Hoary bat (*Lasiurus cinereus*) Habitat: coniferous and deciduous forests and roost on foliage in trees, under bark, in snags, bridges	**X**				**X**				**X**					
Townsend's big-eared bat (*Plecotus townsendii*) Habitat: caves, caverns, old mines	**X**				**X**				**X**					
Big Game Species														
Elk		**X**				**X**				**X**			**Y**	**7**
Whitetail		**X**				**X**				**X**			**Y**	**7**
Mule Deer		**X**				**X**				**X**			**Y**	**7**
Moose		**X**				**X**				**X**			**Y**	**7**
Other species: Red-tailed hawk *(Buteo jamaicensis caluris)* Habitat: Forest and openings		**X**											**Y**	**8**

**The complete report is within the Unit files.*

Comments:

1. This alternative might affect grizzly bears 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 harvesting could occur during the denning period or the non-denning period, but, would avoid the spring period (April 1-June 15) when grizzly bears are more sensitive to human disturbance. 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. Grizzly bears would be expected to still use the area during the remaining portion of the non-denning period (June 16 - November 15) after the spring closure, but would be able to access considerable other habitats in the vicinity, which would limit any potential disturbance to bears. Overall, the proposed

activities would occur in areas where moderate levels of grizzly bear use would be anticipated but would occur during a time period when habitat availability would not be limited, thus minor potential for disturbance and displacement of grizzly bears would be anticipated. 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. Thus, a minor risk of adverse direct and secondary effects to grizzly bears would be anticipated since: 1) minor disturbance and displacement would be possible; 2) hiding cover would be reduced in a portion of the project area, but would remain in portions of the project area, and would be expected to recover in the short-term; 3) habitats in potential security habitat would be modified, but no changes in the availability of security habitats would occur; 4) no changes to long-term open road density would be anticipated; and 5) negligible increases in the availability of unnatural bear foods or attractants would be anticipated. A minor risk of adverse cumulative effects to grizzly bears would be anticipated since: 1) increases in human disturbance levels in the short-term could occur in a small portion of the cumulative effects analysis area; 2) hiding cover would be removed in the short-term on 90 acres and impeded on another 158 acres in the cumulative effects analysis area; 3) no changes in long-term open road density would occur, 4) quality of security habitats would be reduced on a minor amount of existing habitats, but would persist into the future; and 5) negligible increases in the availability of unnatural bear foods or attractants would be anticipated.

2. Most of the proposed activities would not occur in mapped lynx habitats (125 acres; 50% of proposed units) and would not be expected to appreciably affect lynx. Approximately 122 acres of proposed harvesting would occur in mapped lynx habitats, which includes 104 acres (42%) in temporary non suitable habitats, 11 acres (5%) of other suitable habitats, and 7 acres (3%) of winter foraging habitats. The proposed treatments in temporary non-suitable habitats would not be expected to appreciably affect Canada lynx since these areas are not currently suitable for lynx use. The reductions in winter foraging and other suitable habitats would have negligible effects on Canada lynx in the project area given the small size and scattered nature of the proposed reductions. Following proposed treatments, the amount of temporary non-suitable habitats would increase to 192 acres (3% increase) in the project area. Roughly 14% of the project area would be in foraging habitats and 19% 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 the project area could occur. Proposed activities would further reduce forested connectivity in the area, but would largely avoid habitats perceived to be useful for lynx; some connectivity would be retained along riparian areas and through unharvested patches between harvested units. Collectively, a minor risk of adverse direct and secondary effects to Canada lynx would be expected since: 1) the majority of winter foraging habitats (92%) would be retained; 2) summer foraging habitats would continue to be largely absent in the project area; 3) the amount of the project area in the temporary non-suitable lynx habitat category would increase 3% to 30%; and 4) connectivity could be altered, but some connectivity would be maintained along riparian areas and through unharvested patches between units.

Within the cumulative-effects analysis area, roughly 122 acres of lynx habitats on DNRC-managed lands (2% of DNRC-managed lynx habitats) would be modified, with most of these acres being in the temporary non-suitable category. Following proposed treatments, approximately 1,102 acres (0.2% increase) of all DNRC lands in the LMA would be in the temporary non-suitable habitat category. The reductions in winter foraging (7 acres) and other suitable habitats (11 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. Near-term increases in summer foraging habitats could occur with the proposed harvesting within a portion of the cumulative effects analysis area; some summer foraging habitats or other suitable habitats would likely develop in the recent fire area in the next 5-10 years. Anticipated reductions in lynx habitats would be additive to past losses from timber harvesting, recent wildfires, 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 wildfire. 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 be maintained and overall negligible changes to connectivity across the cumulative effects analysis area would be anticipated. Following proposed treatments, 82% of the total potential lynx habitats on DNRC-managed lands in the LMA and 79% of HCP covered lands would be in the various suitable habitat classes and 18% of all DNRC lands in the LMA and 21% on HCP covered lands in the LMA would be in the temporary non-suitable habitat category. Thus, a minor risk of adverse cumulative effects to Canada lynx would be expected since: 1) winter foraging habitats would persist; 2) summer foraging habitats would continue developing for the next 10 to 30 years across the cumulative effects analysis area; 3) a minor amount of lynx habitats would be in the temporary non-suitable habitat category; and 4) negligible alterations in landscape connectivity would not prevent lynx movements.

3. No activities would occur in the nest area or primary use areas for the bald eagle territory. Proposed harvesting on 248 acres would occur in the home range associated with the bald eagle territory. Proposed activities could occur when soils are dry, frozen, or snow covered and would not occur between April 1 and June 15. Thus, the proposed activities could occur during the very early- (Feb 1- Mar 31) or later- (June 16-Aug 15) portions of the bald eagle nesting season, or the non-nesting (August 16-February 1) season. Minor 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. Thus, a negligible risk of direct, secondary, and cummulative effects to bald eagles would be anticipated since: 1) disturbance could be slightly elevated within the home range during operations, should they occur during the nesting period; 2) no appreciable change in human access within the project area would occur; and 3) minor reductions in the availability of large, emergent trees could occur in the home range.

4. No riparian habitats within 100 feet of class 1 streams or 50 feet of class 2 streams would be altered with the proposed activities. Approximately 10 acres (29%) of upland fisher habitats in the project area would receive treatments that would reduce canopy closure and would likely be too open to be used by fisher. No changes in open roads would be anticipated; a slight increase in non-motorized access could occur with the proposed construction of 0.16 miles of new, restricted road. Trapping pressure and the potential for fisher mortality could remain similar to present levels. Minor reductions in landscape connectivity could occur with the proposed activities, but activities would avoid riparian areas commonly used by fisher. Thus, a minor risk of adverse direct and secondary effects to fisher would be anticipated since: 1) harvesting would avoid riparian areas, but would modify a small amount of upland fisher habitats; 2) minor reductions in landscape connectivity would occur, but those areas associated with riparian areas would remain unaffected; 3) harvesting would reduce snags and snag-recruitment trees while increasing coarse woody debris levels; however, some of these resources would be retained; and 4) no changes in legal motorized human-access levels would be anticipated.

   Thus, a minor risk of adverse cumulative effects to fisher would be anticipated since: 1) harvesting would modify some upland fisher habitats, but upland habitats would persist; 2) no appreciable changes in landscape connectivity would be anticipated and connectivity in riparian areas would not be altered; 3) harvesting in a relatively small portion of the cumulative-effects analysis area would partially reduce snags and snag recruits, while increasing the coarse woody debris levels, largely in the smaller-sized pieces; and 4) no changes to legal, motorized public access would occur.

5. 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 would not occur between April 1 and June 15, but could overlap the nestling and fledgling periods after June 15. Since some snags and large trees would be retained, loss of nest trees would be expected to be minimal. Proposed activities on 125 acres of potential flammulated owl habitats (52% 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, which would allow more sunlight to reach the forest floor, which could stimulate grass and shrub growth, providing habitat for moths and other flying insects that provide food for flammulated owls. Elements of the forest structure important for nesting flammulated owls, including snags, coarse woody debris, numerous leave trees, and snag recruits would be retained in the proposed units. The more open stand conditions, the retention of fire adapted tree species, and the maintenance of limited existing snags would move the project area toward historical conditions, which is preferred flammulated owl habitat. Thus, a minor risk of adverse direct and secondary effects would be expected to flammulated owls since: 1) the potential exists to disturb flammulated owls; and 2) proposed harvesting would open denser stands up while retaining elements of forest structure used for foraging and nesting by flammulated owl, improving overall flammulated owl habitat conditions in the project area.

   A negligible risk of adverse cumulative effects to flammulated owls would be expected since: 1) harvesting could disturb flammulated owls in a small portion of the cumulative effects analysis area should activities occur during the period when flammulated owls are in the vicinity; and 2) harvesting would improve the quality and sustainability of

flammulated owl habitat on a portion of the cumulative effects analysis area by making this area more representative of historic conditions.

6. 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. Proposed activities would not occur between April 1 and June 15, which would prevent potential disturbance during the early nesting season, but activities could disturb pileated woodpeckers should they occur during the later parts of the nesting season. Harvesting would reduce forested habitats for pileated woodpeckers in the project area. Roughly 90 acres (31%) of the potential nesting habitat along with 18 acres (18%) 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. Quality of these potential pileated woodpecker habitats would be reduced for 20-40 years, depending on the density of trees retained. 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. 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 248 acres. The silvicultural prescriptions would retain healthy ponderosa pine, western larch, and Douglas-fir while promoting the growth and/or regeneration of many of these same species, which would benefit pileated woodpeckers in the future by providing nesting, roosting, and foraging habitats. Thus, a minor risk of adverse direct, secondary, and cummulative effects to pileated woodpeckers would be anticipated since: 1) harvesting would reduce the amount of continuous-forested habitats available; 2) potential nesting habitats and foraging habitats would be removed; 3) snags and snag recruits would be removed; however, mitigation measures to retain some snags and snag recruits would be included, and 4) proposed treatments would promote seral species in the project area.

7. Tree density within proposed units would be reduced on approximately 248 acres, including roughly 245 acres 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 distance could increase big game vulnerability to hunting mortality as hunters would be able to detect big game at longer distances in 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. Negligible increases in non-motorized access would occur with the proposed construction of approximately 0.16 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. Collectively, a minor risk of adverse direct and secondary effects to big game security habitat would be anticipated since: 1) reductions to existing hiding cover would reduce the quality of the big game security habitat in the project area; 2) no changes in open roads, motorized

access, or non-motorized access for the general public would be anticipated that could alter hunter access; and 3) negligible changes in big game survival would be anticipated.

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. Thus, a minor risk of adverse cumulative effects to big game security habitat would be anticipated since: 1) quality of hiding cover in a small portion of the cumulative effects analysis area would be reduced, which would reduce the quality of the big game security habitat, but security habitat and hiding cover would persist in the cumulative-effects analysis area; 2) no changes in open roads, motorized access , or non-motorized access for the general public would be expected that would alter hunter access; and 3) negligible changes in big game survival would be anticipated.

8. Proposed activities would not occur between April 1 and June 15, which would prevent potential disturbance during the early nesting season, but activities could disturb red-tailed hawks should they occur during the later parts of 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). Proposed timber harvest on 246 acres 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. Should a nest tree be identified in the vicinity, that 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. Thus, minor positive direct, secondary, and cummulative effects would be expected to red-tailed hawks since: 1) harvesting would open denser stands up, improving foraging habitats; 2) proposed activities would revert succession-related declines in habitat quality; 3) nest trees and several perch trees would be retained; and 4) timing restrictions would attempt to minimize potential disturbance in the vicinity of the nest during the nesting season.

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 36.11.435) are needed.
- Minimize potential for disturbance to grizzly bears and numerous avian species by restricting activities between April 1 and June 15.
- 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 *36.11.414*, 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.

- 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.
- Retention of patches of advanced regeneration of shade-tolerant trees, such as sub-alpine-fir and spruce, in units in lynx habitats would break-up sight distances, provide horizontal cover, and provide forest structural attributes preferred by snowshoe hares and lynx.
- Provide connectivity for fisher, Canada lynx, and a host of other species by maintaining corridors of unharvested and/or lighter harvested areas along riparian areas, ridge tops, and saddles.
- Retain any red-tailed hawk nest trees that are identified as well as several perch trees within 100 yards of the nest. In any year when the nest is active, restrict harvesting within 0.25 miles of the nest to the non-nesting period (August 1 – April 1) to minimize potential for disturbing the nesting pair.

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 Placid Lake 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 Airshed 3b, which encompasses portions of Missoula County. Currently, this Airshed does contain the Seeley Lake 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: Direct, Secondary, and Cumulative Effects

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 Airshed 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.

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: Direct, Secondary, and Cumulative Effects

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 Airshed 3B or the Seeley Lake Impact Zone from project-related activities. However, there may be minimal impacts from other uses.

Action Alternative: Direct, Secondary, and Cumulative Effects

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. 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.

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 Placid Lake.

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 Alternative Direct, Secondary, and Cumulative Effects
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: Direct, Secondary, and Cumulative Effects
The proposed harvest units would be partially visible from Placid Lake and nearby road systems. Potential changes would often appear to be "an extension" of other older cutting units or burned areas of the Jocko Lakes fire from the recent past. 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 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.*

- Boles Seed L-15,393 (2022)
- Boles Snickety PCT (unsigned 2023)
- 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					

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		
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 Recreational and Wilderness Activities	X				X				X					
Density and Distribution of population and housing	X				X				X					
Social Structures and Mores	X				X				X					
Cultural Uniqueness and Diversity	X				X				X					

Comments:

- 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 40 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.*

- None

Other Appropriate Social and Economic Circumstances:
Costs, revenues and estimates of return are estimates intended for relative comparison of alternatives. They are not intended to be used as absolute estimates of return. The estimated stumpage is based on comparable sales analysis. This method compares recent sales to find a market value for stumpage. These sales have similar species, quality, average diameter, product mix, terrain, date of sale, distance from mills, road building and logging systems, terms of sale, or anything that could affect a buyer's willingness to pay.

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

Action: The timber harvest would generate additional revenue for the Common Schools Trust. The estimated return to the trust for the proposed harvest is $105,000 based on an estimated harvest of one million board feet (7000 tons) and an overall stumpage value of $15.00 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: February 15, 2023

Finding

Alternative Selected

After thorough review of the West and Pieces 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 page 4 of the EA. Specifically, the proposed project is expected to:

1) Maximize revenue over the long-term for the Common Schools trust account through generation of an estimated $105,000 of net revenue as well as contribute to the DNRC's sustained yield through the harvest of approximately one million board feet.

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 of up to 246 acres, pre-commercial thin of up to 100 acres, and planting on up to 50 acres.

3) Improve access and BMP compliance with new construction and road maintenance activities through A) new construction of 0.16 miles of road and B) maintenance of 7.24 miles of road, 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. 14-15).

Soils: Erosion – Direct effects are expected to be moderate immediately following project-related disturbances. As noted within the analysis, these risks would be mitigated with implementation of Forestry BMPs (p.17).

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

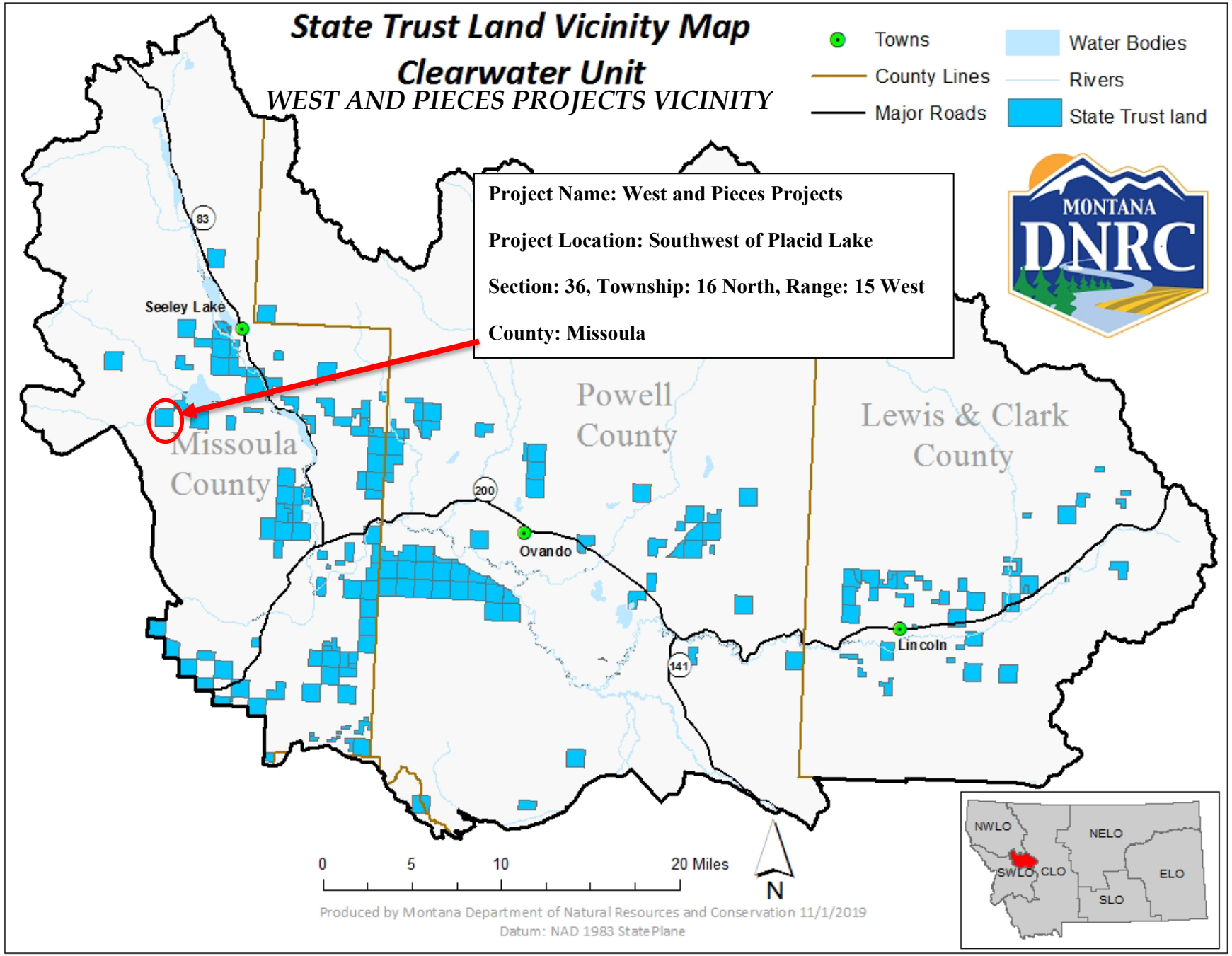
☐	EIS	☐	More Detailed EA	☒	No Further Analysis

Environmental Assessment Checklist Approved By:

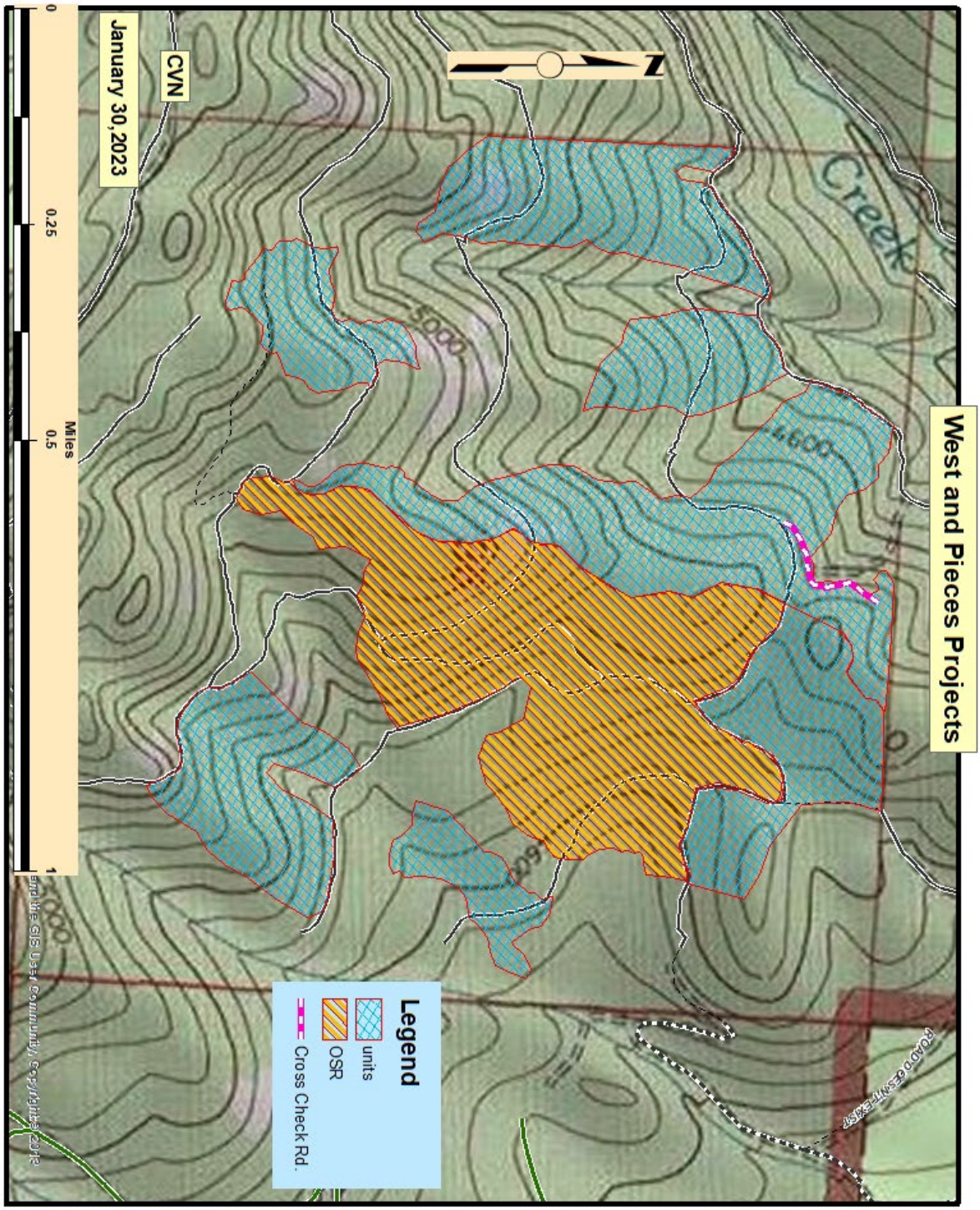
Name: Kristen S. Baker-Dickinson
Title: Clearwater Unit Manager
Date: March 27, 2023
Signature: /s/ ***K. Baker-Dickinson***

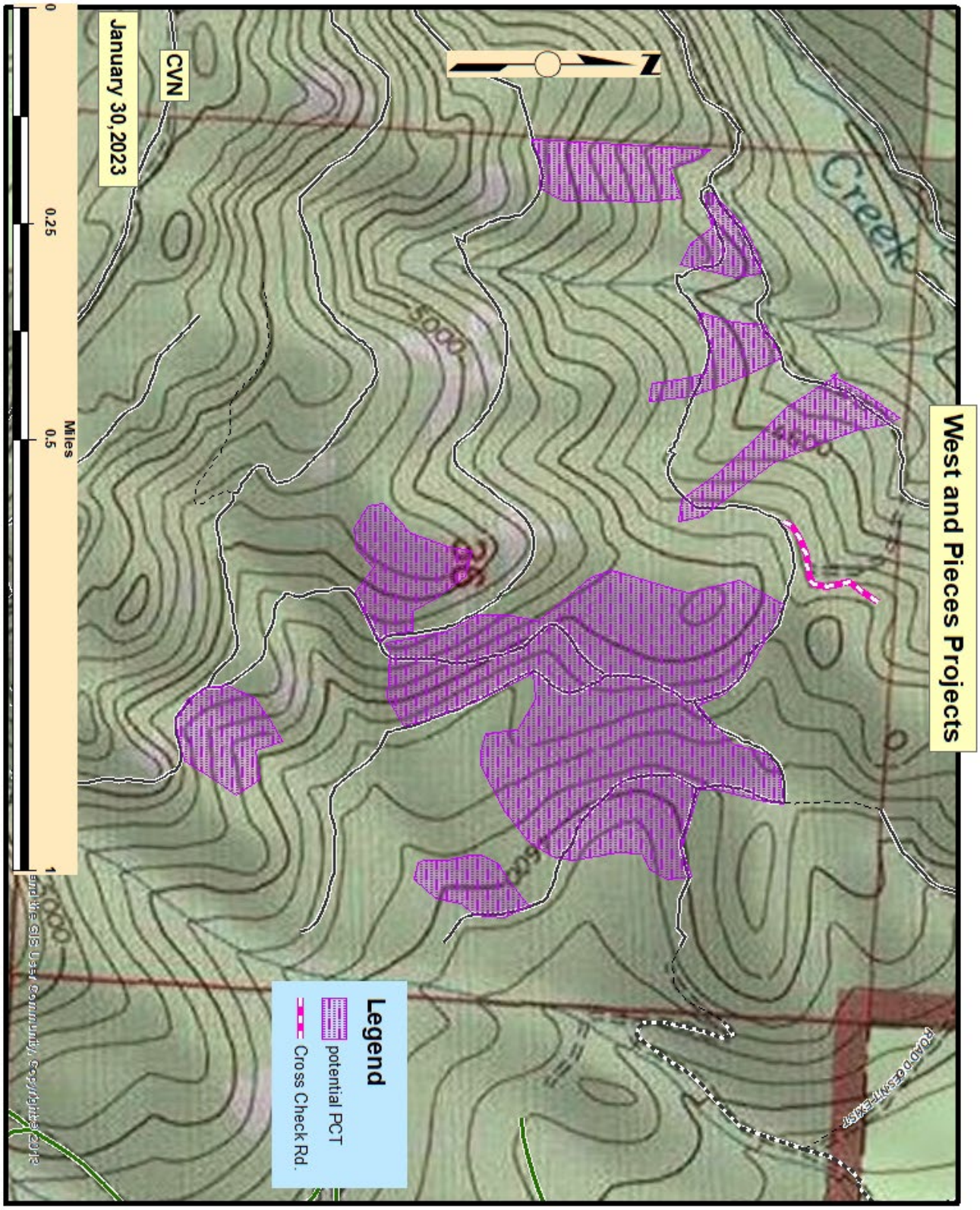
Attachment A - Maps

A-1: Timber Sale Vicinity Map



A-2: Timber Sale Harvest Units




West and Pieces Projects
Legend
potential PCT
Cross Check Rd.
January 30,2023
CVN
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Miles
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