Trego Portal Timber Sale
Environmental Assessment

Stillwater Unit
Northwest Land Office
Montana Department of Natural Resources and Conservation
March 2015

Trego Portal Environmental Assessment

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Environmental Assessment

Project Name: Trego Portal Timber Sale
Proposed Implementation Date: Summer 2015
Proponent: Stillwater Unit, Northwest Land Office, Montana DNRC
County: Lincoln

Type and Purpose of Action

Description of Proposed Action:

The Stillwater Unit of the Montana Department of Natural Resources and Conservation (DNRC) is proposing the Trego Portal Timber Sale. The project is located 10 miles southwest of Trego (refer to Attachments vicinity map A-**1** and project map A-**2**) and includes the following sections:

Beneficiary	Legal Description	Total Acres	Treated Acres
Common Schools			
Public Buildings	T33N R26W Sec. 33, 34	**255**	**143**
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:

1. Harvest between 1.5 and 2.5 million board feet of timber.
2. Bring portions of the project closer to the state's Desired Future Conditions.
3. Regenerate new stands of healthy trees while improving vigor and growth of remaining trees in the forest for the purpose of benefiting future trust actions.
4. Generate revenue for the Public Buildings Trust.

Proposed activities include:

Action	Quantity
Proposed Harvest Activities	# Acres
Clearcut	0
Seed Tree	83
Shelterwood	0
Selection	55
Commercial Thin	5
Salvage	0
Total Treatment Acres	**143**

Proposed Forest Improvement Treatment	# Acres
Pre-commercial Thinning	**0**
Planting	**0**

Proposed Road Activities	# Miles
New permanent road construction	0
New temporary road construction	0
Road maintenance	5.2
Road reconstruction	0
Road abandoned	0
Road reclaimed	0

Duration of Activities:	4 years
Implementation Period:	07/01/2015-09/30/2019

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:
  - 10/29/2014-11/28/2014 (30-day comment period)
- PUBLIC SCOPED:
  - The scoping notice was posted on the DNRC Website: http://dnrc.mt.gov/PublicInterest/Notices/Default.asp
  - Adjacent landowners, statewide scoping list, other interested parties.
  - Notice was posted at the Olney Post Office and in the Tobacco Valley News.
- AGENCIES SCOPED:
  - Montana Fish Wildlife & Parks, Montana tribal organizations, US Forest Service, US Fish & Wildlife Service, State of Montana
- COMMENTS RECEIVED:
  - How many: 1
  - Concerns: Silvicultural management treatments, incorporation of uneven-aged management, species diversity, and the economic ramifications of incorporating skyline logging into harvest unit design.
  - Results: Concerns were addressed through silvicultural prescriptions and in the overall timber sale design.

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

INTERDISCIPLINARY TEAM (ID):

- Project Leaders: Zack Miller and Brad French
- Archeologist: Patrick Rennie
- Wildlife Biologist: Chris Forristal
- Hydrologist/Soil Specialist: Marc Vessar
- Economist: Jordan Larson
- Silviculturist: Mike McMahon

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 Habitat Conservation Plan (HCP) and the associated Incidental Take Permit that was issued by the United States Fish & Wildlife Service (USFWS) in February of 2012 under Section 10 of the Endangered Species Act. The HCP identifies specific conservation strategies for managing the habitats of grizzly bear, Canada lynx, and three fish species: bull trout, westslope cutthroat trout, and Columbia redband trout. This project complies with the HCP. The HCP can be found at www.dnrc.mt.gov/HCP.

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

- **Montana/Idaho Airshed Group -** The DNRC is a member of the Montana/Idaho Airshed Group which was formed to minimize or prevent smoke impacts while using fire to accomplish land management objectives and/or fuel hazard reduction (Montana/Idaho Airshed Group 2006). The Group determines the delineation of airsheds and impact zones throughout Idaho and Montana. Airsheds describe those geographical areas that have similar atmospheric conditions, while impact zones describe any area in Montana or Idaho that the Group deems smoke sensitive and/or having an existing air quality problem (Montana/Idaho Airshed Group 2006). As a member of the Airshed Group, DNRC agrees to burn only on days approved for good smoke dispersion as determined by the Smoke Management Unit.

- **United States Forest Service (USFS) -** Commercial log hauling on FS Road # 36 requires a temporary road use permit from the Fortine Ranger District, Kootenai National Forest (KNF). Commercial hauling on USFS Road 3531 is covered under an existing cost share agreement.

ALTERNATIVES CONSIDERED:

No-Action Alternative: Under this alternative, no timber would be harvested and therefore no revenue would be generated from the project area for the Public Buildings Trust at this time. Salvage logging, firewood gathering, recreational use, fire suppression, noxious-weed control, additional requests for permits and easements, and ongoing management requests may still occur. Natural events, such as plant succession, tree mortality due to insects and diseases, windthrow, down fuel accumulation, in-growth of ladder fuels, and wildfires, would continue to occur.

Action Alternative: A commercial timber harvest would take place to remove between 1.5 and 2.5 million board feet of timber. Timber would be harvested using ground-based methods on 143 acres.

This action would also call for mechanical site preparation on 98 of the total harvest area, thus promoting the establishment of natural regeneration.

This action will also reduce established noxious weed populations through weed spraying of existing populations and grass seeding of exposed surfaces.

Impacts on the Physical Environment

VEGETATION:

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

- Disturbance may lead to an increased presence of noxious weeds.
- Incorporate the use of uneven aged management into silivicultural prescriptions.
- Current cover types do not match DNRC's desired future conditions.
- Live crown ratios are diminishing, reducing growth potential within some areas on co-dominate trees and leading to mortality in understory trees.
- The high probability of fire ignition in the dense timber stands located in close proximity to the Burlington Northern Santa Fe Railroad and open roadways.

Issues dismissed from further review
Initially, there was concern the proposed project could negatively impact old growth or populations of threatened, endangered, or sensitive plant species.

There is no old growth identified within the project area (field verified and current SLI data sources). Therefore no direct, indirect, or cumulative impacts would be expected under either alternative.

Using the Natural Heritage Program database, no sensitive, threatened, or endangered plant species have been documented within any of the proposed harvest units. Therefore no direct, indirect, or cumulative impacts would be expected under either alternative.

Recommended Mitigation Measures for Vegetation- The analysis and levels of effects to vegetation resources are based on implementation of the following mitigation measures:

- Monitor and treat weed populations through the use of chemical herbicides, vehicle washing, and by grass-seeding roads immediately following harvest.
- Implement uneven-aged management on 30 acres where vegetation and habitat types are favorable to this type of treatment.
- Move 91 acres of mixed conifer stands towards the desired future condition of western larch / Douglas-fir.
- Reduce competition for resources by reducing stocking density on 143 acres.
- Space out dense canopies to reduce possibility of crown fire.

FOR COMPLETE VEGETATION ANALYSIS SEE ATTACHMENT C.

SOILS:

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

- Ground based harvest techniques can displace and compact soils which can adversely affect the hydrologic function, soil structure and long-term productivity of the impacted area.
- Reduced infiltration capacity of an impacted soil can result in overland flow and off site erosion, typically localized to main skid trails and log landing sites.
- Removal of both coarse and fine woody material off site during timber harvest operations can reduce nutrient pools required for future forest stands and can affect the long-term productivity of the site.

Recommended Mitigation Measures for Soils- The analysis and levels of effects to soils resources are based on implementation of the following mitigation measures:

- Limit equipment operations to periods when soils are relatively dry, (less than 20 percent or 18 percent for Unit 1), frozen, or snow-covered in order to minimize soil compaction and rutting, and maintain drainage features.
- A general skidding plan would be proposed and agreed upon prior to equipment operations.
- Retain 12 to 25 tons of large woody debris and a feasible majority of all fine litter following harvesting operations.

FOR COMPLETE SOILS ANALYSIS SEE ATTACHMENT D.

WATER RESOURCES:

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

- Timber harvesting and road construction activities may increase sediment delivery into streams and affect water quality.

Recommended Mitigation Measures for Water Resources- The analysis and levels of effects to water resources are based on implementation of the following mitigation measures:

- No harvesting would occur within 88 feet of Fortine Creek, a Class 1 fish-bearing stream. For Class 2 streams within the parcel, approximately 50 percent of the merchantable trees would be removed as long as the canopy cover remains above 40 percent.

- Existing roads would have drainage improvements and BMP upgrades implemented.

FOR COMPLETE WATER ANALYSIS SEE ATTACHMENT E.

FISHERIES ***(including unique, federally listed as threatened or endangered, sensitive, and/or species of special concern):***

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

- Timber-harvesting activities may affect water quality and fisheries habitat by reducing shade and increasing stream temperatures.

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

- No harvesting would occur within 88 feet of Fortine Creek, a Class 1 fish-bearing stream.

FOR COMPLETE FISHERIES ANALYSIS SEE ATTACHMENT E.

WILDLIFE ***(terrestrial & avian including unique, federally listed as threatened or endangered, sensitive, and/or species of special concern):***

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

- Mature forest cover and connectivity. The proposed activities could decrease forested cover, which may reduce habitat connectivity and suitability for wildlife species associated with mature and old-growth forest.
- Canada lynx. The proposed activities could result in the modification of habitat preferred by Canada lynx (*Felis lynx*) and decrease the area's suitability for lynx.
- Grizzly bears. The proposed activities could alter grizzly bear (*Ursus arctos*) cover, reduce secure areas, and increase human access, which could adversely affect bears by displacing them from important habitats and/or increase risk of human-caused bear mortality.
- Fishers. The proposed activities could decrease habitat suitability for fishers (*Martes pennanti*) by decreasing canopy cover in mature forest stands, decreasing abundance of snags and coarse woody debris, and by increasing roads, which could elevate risk of trapping mortality.
- Pileated woodpeckers. The proposed activities could reduce tree density and alter the structure of mature forest stands, which could reduce habitat suitability for pileated woodpeckers (*Dryocopus pileatus*).
- Big game. The proposed activities could reduce habitat quality for big game, especially during the fall hunting and winter seasons, by removing forest cover, increasing roads in secure areas, and disturbing animals.

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

- If a threatened or endangered species is encountered, consult a DNRC biologist immediately. Similarly, if undocumented nesting raptors or wolf dens are encountered within ½ mile of the Project Area contact a DNRC biologist.
- Commercial forest management activities are prohibited from April 1 through June 15 as per *GB-NR3* (*USFWS and DNRC 2010)*.
- Prohibit contractors and purchasers conducting contract operations from carrying firearms while on duty as per *ARM 36.11.444(2)* and *GB-PR2* (*USFWS and DNRC 2010)*.
- Contractors will adhere to food storage and sanitation requirements as described in the timber sale contract. Ensure that all attractants such as food, garbage, and petroleum products are stored in a bear-resistant manner.
- Restrict public access at all times on restricted roads that are opened for harvesting activities. Effectively close all restricted roads following harvest completion.
- Close roads and trails to the extent possible following the proposed activities to reduce the potential for unauthorized motor vehicle use and/or loss of snags to firewood gathering.
- Retain patches of advanced regeneration of shade-tolerant trees within harvest units as per *LY-HB4* (*USFWS and DNRC 2010*).
- Retain visual screening along roads where possible to increase security for wildlife.
- Retain at least 2 snags and 2 snag recruits per acre, particularly favoring western larch, ponderosa pine and Douglas-fir for retention. If designated snags are cut for safety concerns, leave them in the harvest unit. Retain 12-25 tons/acre of coarse-woody debris as described in the *SOILS ANALYSIS* in this document.

FOR COMPLETE WILDLIFE ANALYSIS SEE ATTACHMENT F.

AESTHETICS:

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

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

- Timber harvest reduces the amount of trees in the project, increasing views into harvested stands as well as creating piles of logging slash and debris.
- Timber harvesting operations create noise levels that can be distracting or disturbing.

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

- Areas of dense regeneration and roadside vegetation along open roads would be protected in seed tree units to reduce sight distance.
- Pile and burn concentrations of dense logging slash post-harvest.

Existing Conditions

Past timber management in the project area and surrounding areas has left a mosaic of openings, dense regeneration, and mature timber on the landscape. Roadside vegetation and dense stands of timber currently limit sight to approximately 100 to 200 feet away from open roads. Some recent harvest areas that are lacking regeneration have a longer sight distance

from open roads. Current conditions are only temporary for a few more years until regeneration becomes tall and dense enough to obstruct line of sight.

Throughout the sale area the Burlington Northern Santa Fe (BNSF) railway can be heard multiple times daily when trains pass through. The sound of the train tunnel ventilation fan is very noticeable when in operation.

Environmental Effects

-VISUAL QUALITY

No-Action Alternative:

Under this alternative, no timber harvesting or related activities would occur. No direct, secondary, and cumulative effects changes in visual aesthetics would occur outside of natural events.

Action Alternative:

Direct, Secondary, and Cumulative Effects
The project area is not located on a prominent topographic area or visible from a densely populated area but portions of the project's harvest units would be visible from open roads within the project area. Evidence of logging would be present but diminishing each year. Larger concentrations of slash would be piled and burned. Besides the reduction of overstory tree crown closure, signs of logging would be minimal around a decade post-harvest.

-NOISE

No-Action Alternative:
Under this alternative, no timber harvesting or related activities would occur. No direct, secondary, and cumulative effects changes in noise would occur related to timber harvesting.

Action Alternative:
Direct, Secondary, and Cumulative Effects
Proposed timber harvest units border or are in close proximity to the main BNSF railway and the entrance / exit of a train tunnel with large exhaust fans. There is a great deal of noise associated with the railway and tunnel. Even though harvesting operations would be quite audible, and, depending upon air conditions, equipment could be heard many miles from their location, noise from harvesting operations would not be expected to be an issue.

Based on the anticipated operating periods, current noise levels associated with the railway and the short duration of the timber sale, direct, secondary, the effects of noise would be low. Cumulatively, timber sale generated noise would be added to the noise associated with railroad operations.

HISTORICAL AND ARCHEOLOGICAL SITES:

A Class I (literature review) level review was conducted. This entailed inspection the DNRC's sites/site leads database, land use records, General Land Office maps, and control cards for potential cultural resources in the proposed project area. That series of searches indicated that site 24LN1766 (an abandoned small-scale sawmill site) is situated in the project's area of potential effect. A current inspection of the site locality shows very little associated cultural

material and no intact features. Although the site is not considered to be a Heritage Property, DNRC would avoid the resource with proposed timber harvest activities. No additional archaeological investigative is recommended.

If any further historical or archaeological sites are discovered during the course of the project, they would be protected, operations suspended, and a DNRC archaeologist would be notified immediately.

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

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

OTHER ENVIRONMENTAL DOCUMENTS PERTINENT TO THE AREA:

- Jim Beaver Checklist Environmental Assessment (EAC) (December 2009)
- Barnaby Lake Fuels Reduction and Timber Project (EAC) (January 2015)
- Trego-Portal Alternative Practice (DNRC) (February 2015) see Attachment G

Impacts on the Human Population

HUMAN HEALTH AND SAFETY:

Air Quality

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

The project area is located within Montana Airshed 1, which encompasses portions of Lincoln and Sanders Counties. Currently, this project is not in or near any impact zones.

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

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

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 and DEQ.
- Conduct test burn to verify good dispersal.
- Slower speed limits may be included in contracts as necessary to reduce dust.
- Dust abatement on USFS Road #3531 may be required depending on season of haul, timing of haul operations, and various other weather related conditions.

Environmental Effects

-SLASH BURNING

No-Action Alternative:
No slash would be burned within the project areas. Thus, there would be no additional effects to air quality within the local vicinity or throughout Airshed 1.

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 site preparation operations. 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 particulate matter less than 2.5 may be hazardous to human health.

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

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

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

-DUST

No-Action Alternative:
No increased dust would be produced as a result of the proposed timber sale. Current levels of dust would continue to be produced in the area.

Action Alternative:

Direct, Secondary, and Cumulative Effects
Harvesting operations would be short in duration. Dust may be created from log hauling on portions of FS Rd. # 3531 during summer and fall months, the remainder of the haul route is on paved roads. If the USFS and DNRC agree, dust abatement may be required.

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

RECREATION *(including access to and quality of recreational and wilderness activities):*

The area is used for hiking, hunting, cross-country skiing, snowmobiling and general recreating. There would be no change in road closure status and the selection of either alternative would not affect the ability of people to recreate on this parcel or the access of nearby areas.

There would be no change from existing conditions. Therefore, there would be no measurable direct, secondary, or cumulative impacts on recreation from this proposed action.

OTHER IMPACTS ON THE HUMAN POPULATION:

Will the Alternative result in potential impacts to:	Impact												Can Impact Be Mitigated?	Comment Number
	Direct				Secondary				Cumulative					
	No	Low	Mod	High	No	Low	Mod	High	No	Low	Mod	High		
No-Action														
Health and Human Safety	X				X				X					
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					
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			yes	1
Industrial, Commercial, and Agricultural Activities and Production	X				X				X					

Will the Alternative result in potential impacts to:	Impact												Can Impact Be Mitigated?	Comment Number
	Direct				Secondary				Cumulative					
	No	Low	Mod	High	No	Low	Mod	High	No	Low	Mod	High		
Quantity and Distribution of Employment		X				X				X			yes	2
Local Tax Base and Tax Revenues	X				X				X					
Demand for Government Services	X				X				X					
Density and Distribution of Population and Housing	x				X				X					
Social Structures and Mores	X				X				X					
Cultural Uniqueness and Diversity	X				X				X					

Comment Number 1:

Impact
Log truck traffic in the area would increase for the duration of the timber sale, which could cause a low risk to human safety. Roads are narrow and shared with BNSF and USFS generated traffic (mainly trucks).

Mitigations:
- *Signs would be posted indicating that log truck traffic is present in the area.*
- *If necessary, a slower speed limit may also be imposed in the timber harvest contract.*
- *Most log hauling would take place Monday through Friday.*

Comment Number 2:

Impact
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 20 person years of employment in the forest products industry. A few short-term jobs would also be created/sustained by issuing 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:
- *This impact would be positive and mitigations would not be necessary.*

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

No locally adopted environmental plans and goals are associated with the timber sale.

OTHER APPROPRIATE SOCIAL AND ECONOMIC CIRCUMSTANCES:

The timber harvest would generate approximately $446,705 for the Public Buildings Trust, and approximately $50,260 in Forest Improvement (FI) fees would be collected for FI projects. This is based on a stumpage rate of $39.92 per ton, multiplied by the estimated volume of 11,190 tons. This stumpage rate was derived by comparing attributes of the proposed timber sale with the attributes and results of other DNRC timber sales recently advertised for bid. Costs related to the administration of the timber sale program are only tracked at the Northwestern Land Office (NWLO) and Statewide level. DNRC does not track project-level costs for individual timber sales. An annual cash flow analysis is conducted on the DNRC forest product sales program. Revenue and costs are calculated Statewide and by Land Office. A recent revenue-to-cost ratio of the Northwestern Land Office was 2.6. This means that, on average, for every $1.00 spent in costs, $2.6 in revenue was generated. Costs, revenues, and estimates of return are estimates intended for relative comparison of alternatives. They are not intended to be used as absolute estimates of return.

Environmental Assessment Prepared By:

Name: Brad French and Zachary Miller
Title: Management Foresters
Date: March 22, 2015

Finding

A Department of Natural Resources and Conservation (DNRC) Interdisciplinary Team (ID Team) has completed the Environmental Assessment (EA) for the proposed Trego Portal Timber Sale Project. The project is located 10 miles southwest of Trego in portions of sections, 33 & 34, T33N R26W. The Public Buildings Trust would be the beneficiary of income generated by this project.

The Stillwater Unit staff and the ID Team conducted extensive data collection and reconnaissance of the project area. The ID Team is comprised of a wildlife biologist, a hydrologist, silviculturist, Archeologist, Economist and several foresters. DNRC initiated the public scoping process for this project with a scoping notice posted on the DNRC Website, in the Tobacco Valley News, and at the Olney Post Office. Adjacent landowners, individuals on the Statewide scoping list, natural resource agencies and other interested parties were also included in the scoping effort. The scoping period was open for 30 days. Public input received consisted of one response. The issues and concerns identified through public scoping, and ID Team work were summarized and used to further refine the project.

After a thorough review of the EA, project file, public correspondence, Montana Statutes, Montana DNRC Forested State Trust Lands Habitat Conservation Plan (HCP), State Forest Land Management Plan (SFLMP), and adopted rules, I have made the following 3 decisions:

Alternative Selected

Two alternatives are presented and were fully analyzed in the EA:

- The *No-Action Alternative* allows for existing activities, but does not include this timber harvest.
- The *Action Alternative* involves harvesting approximately 2 million board feet (MMbf) of timber from approximately 143 acres. This alternative includes 15 harvest units. All timber would be harvested using conventional ground-based equipment. Approximately 5.2 miles of existing road would be maintained or have minor drainage improvements installed as necessary to protect water quality and to ensure compliance with Best Management Practices (BMPs).

On behalf of the DNRC I have selected the Action Alternative.

Rationale for Decision

I have selected the Action Alternative with considerations to the following rationale:

- The Action Alternative meets the *PURPOSE OF PROPOSED ACTION* and *OBJECTIVES OF PROPOSED ACTION;* as stated in the EA *(page 1 and 2*).
- The lands involved in this project are held by the State of Montana in trust for the support of specific beneficiary institutions. DNRC is required by law to administer these trust lands to produce the largest measure of reasonable and legitimate return over the long run *(Enabling Act of February 22, 1889; 1972 Montana Constitution, Article X, Section 11;* and *77-1-202, Montana Codes Annotated [MCA])*. The SFLMP and associated rules provide the management philosophy and framework to evaluate which alternative would maximize real income while sustaining the production of long-term income.
- This project was designed to provide revenue to the trust beneficiaries. An estimated $446,705 in revenue would be earned for the Public Building trust. In addition, approximately $50,260 would be deposited in the Forest Improvement account.
- On March 13, 2003, DNRC adopted *Administrative Rules for Forest Management (Forest Management Rules ARM 36.11.401 through 456).* This project is designed in accordance with these rules.
- In December 2011, the Land Board approved the Record of Decision (ROD) for the Montana DNRC Forested State Trust Lands HCP. This project was designed to be in compliance with the HCP.
- The proposed timber sale project contributes to harvest levels mandated by state statute (*MCA 77-5-222).*
- DNRC is required to salvage timber damaged by insects, diseases, fires, or wind before it loses value to decay, provided such harvesting is economically warranted (*MCA 77-5-207*).
- The analyses of identified issues did not reveal information to persuade DNRC to choose the No-Action Alternative.

How the Chosen Alternative Addresses Concerns and Issues

The Action Alternative includes activities to address the concerns expressed by the public and DNRC specialists, which include, but are not limited to, the following:

- The effects to water quality, fisheries, and soils would be reduced by:
  - meeting or exceeding all applicable Streamside Management Zone (SMZ) rules and following the Forest Management Rules and HCP;
  - adding erosion-control measures that will reduce sediment delivery to streams over the long-term*;* and
  - minimizing the area of adverse soil impacts through the implementation of BMPs that include planning skid-trail systems and limiting the landing size. Woody debris would be retained for nutrient cycling and long-term soil productivity.
- This alternative was designed to retain important wildlife habitat components such as snags, coarse woody debris, visual screens, and seasonal security.
  - In consideration of grizzly bear habitat, visual screening along open roads would be maintained (where present) and would reduce the likelihood of bear detection or accidental/intentional bear mortality. Overall levels of hiding cover would improve over time as shrub and tree regeneration proceeds.
  - Contractors will adhere to food storage and sanitation requirements as described in the timber sale contract, and ensure that all attractants such as food, garbage, and petroleum products are stored in a bear-resistant manner.
  - Retain patches of advanced regeneration of shade-tolerant trees within harvest units as per *LY-HB4* (*USFWS and DNRC 2010*).

This alternative is designed to perpetuate tree species that are considered appropriate for the sites being harvested, and to address concerns regarding the effects to forest revegetation by:

- retaining large, phenotypically-superior western larch, Douglas-fir, and ponderosa pine to provide seed for natural regeneration in harvest units;
- including regeneration (seed tree), commercial thinning and selection treatments in harvest prescriptions, which will result in both even aged and uneven aged stand conditions as well a mosaic of timber stands with structural and species diversity;
- trending cover type towards desired future conditions on approximately 91 acres of mixed conifer stands that will be converted to Western Larch/ Douglas fir covertype; and
- limiting noxious weed spread by washing equipment prior to being allowed on site, grass seeding roads and disturbed areas, and applying herbicides along roadsides and on site-specific weed infestations.

Significance of Potential Impacts

For the following reasons, I find that the Action Alternative will not have significant impacts on the human environment, as:

- no impacts are regarded as severe, geographically widespread, or frequent;

- the quantity and quality of various resources, including any that may be considered unique or fragile, will not be adversely affected to a significant degree;
- there is no precedent for future actions that would cause significant impacts; and
- there is no conflict with local, State, or Federal laws, requirements, or formal plans.

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

Need for Further Environmental Analysis

Based on the following considerations, I find an EIS does not need to be prepared, as:

- The EA adequately addresses the issues identified during project development and displays the information needed to make the decisions.
- Evaluation of the potential impacts of the Trego Portal Timber Sale Project indicates no significant impacts would occur.
- The ID Team provided adequate opportunities for public review and comment. Concerns received from the public as well as those identified by the resource specialists involved were addressed in project design and the analysis of impacts.

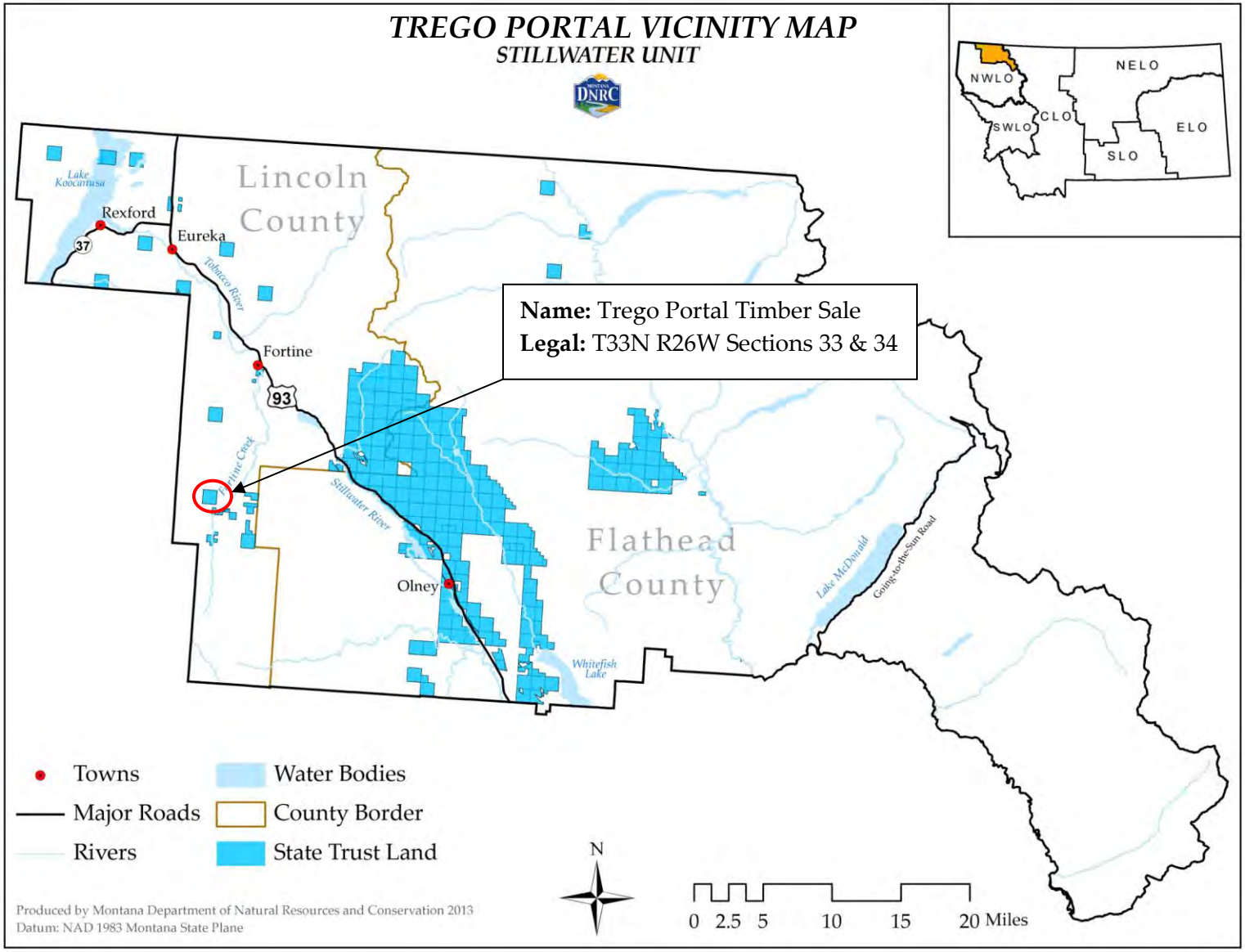
	EIS		More Detailed EA	**X**	No Further Analysis

Environmental Assessment Approved By:

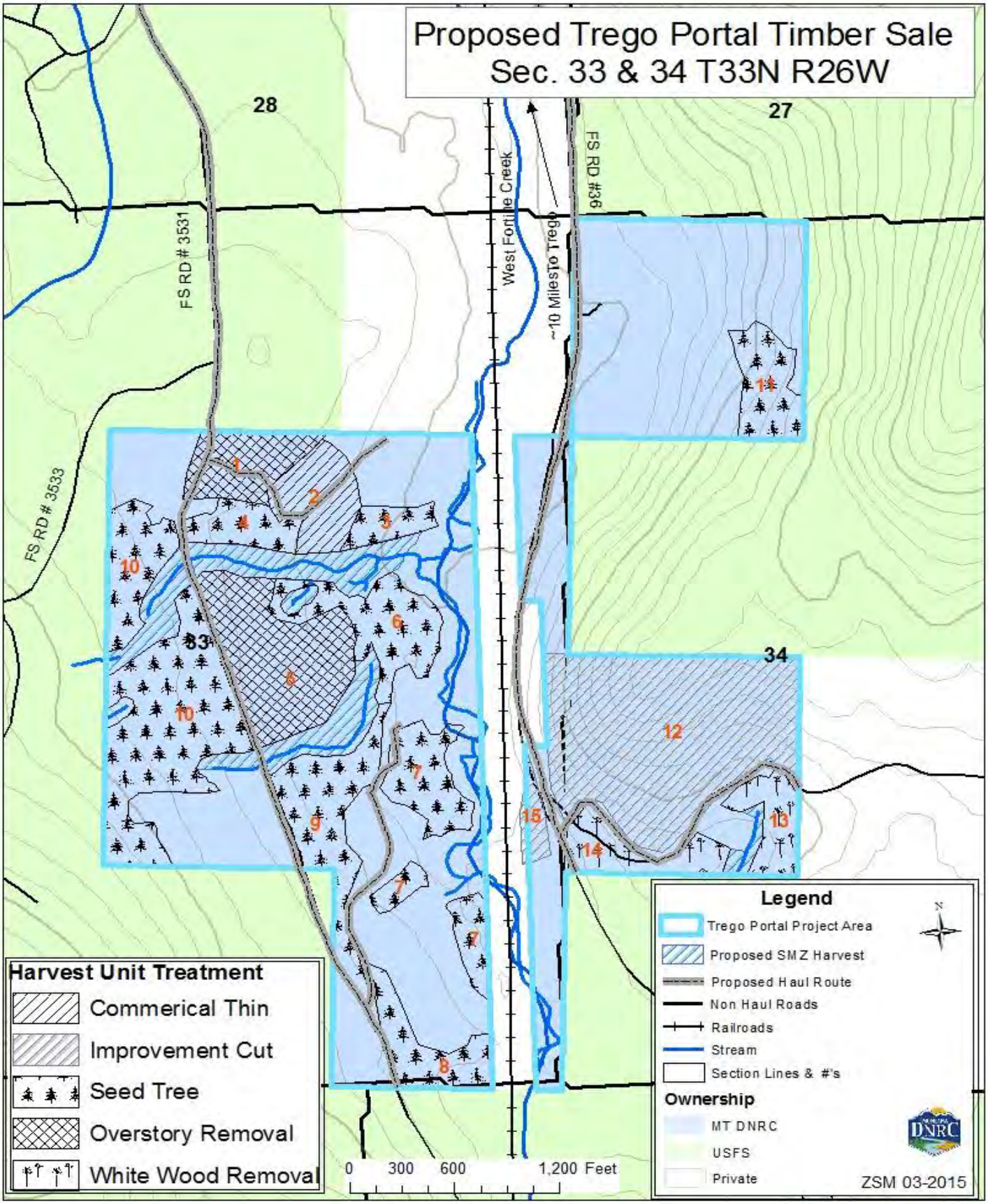
Name: Brian Manning
Title: Unit Manager
Date: May 20, 2015
Signature: *\/s\/ Brian Manning*

Attachment A - MAPS

A-1: Trego Portal Timber Sale Vicinity Map



A-2: Trego Portal Timber Sale Harvest Units



Attachment B – PRESCRIPTION TABLE

Prescription Table

Unit Number	Acres MBF/Acre Unit MBF	Prescription	Marking guides	Particulars involved in unit(s)**	Notes
1	6 acres 8 Mbf/ac 50 Mbf	Overstory Removal	- Leave tree marked, retaining the 4-6 largest trees with the best crowns per acre.	- Tractor harvest unit. - Thin advanced regeneration to a 14' spacing favoring western larch and Douglas-fir. - Soil moisture restrictions of 18% or less.	- Unit borders Forest Service. - Harvest during very dry soil conditions would allow dispersed skidding resulting in scarification needed for site prep.
2	5 acres 5 Mbf/ac 28 Mbf	Commercial Thin	- Leave tree marked at a 25-35' spacing, retaining WL and DF with crowns >40% per acre.	- Tractor harvest unit. - Minimize mechanical damage to remaining overstory.	- 3-6 large diameter (40"+) western larch wildlife trees are in unit and would not be harvested.
3	3 acres 24 Mbf/ac 70 Mbf	Seed Tree	- Leave tree marked, retaining 6-10 large diameter WL and DF with crowns >40% per acre.	- Tractor harvest unit. - Unit borders Class 2 SMZ. - Slash scattered sub merchantable regeneration; retain the most dense areas. - Winching may be required for northern part of unit.	- Harvest during very dry soil conditions would allow dispersed skidding resulting in scarification needed for site prep.
4	3 acres 24 Mbf/ac 70 Mbf	Seed Tree	- Leave tree marked retaining 6-10 large diameter WL and DF with crowns >40% per acre.	- Tractor harvest unit. - Unit borders Class 2 SMZ. - Slash sub merchantable regeneration.	- Harvest during very dry soil conditions would allow dispersed skidding resulting in scarification needed for site prep.

5	13 acres 9 Mbf/ac 117 Mbf	Overstory Removal	- Leave tree marked, retaining the 4-6 largest trees with the best crowns per acre. - Intermediate DF with full crowns are also desired leave trees.	- Tractor harvest unit. - Thin advanced regeneration to a 14' spacing favoring western larch and Douglas-fir. - Class 2 SMZ harvest borders majority of unit. - Maintain roadside visual buffer.	- A short existing road prism enters unit at south end.
6	8 acres 24 Mbf/ac 190 Mbf	Seed Tree	- Leave tree marked, retaining 6-10 large-diameter WL and DF with crowns >40% per acre.	- Tractor harvest unit. - Slash advanced regeneration. - Class 2 SMZ harvest borders majority of unit.	
7	9 acres 16 Mbf/ac 144 Mbf	Seed Tree	- Leave tree marked, retaining 6-10 large diameter WL and DF with crowns >40% per acre.	- Tractor harvest unit. - Slash advanced regeneration. - Southern part of unit contains 200' portion of RMZ harvest off tributary Class 1 stream.	
8	5 acres 16 Mbf/ac 80 Mbf	Seed Tree	- Leave tree marked, retaining 6-10 large diameter WL and DF with crowns >40% per acre.	- Tractor harvest unit. - Slash advanced regeneration.	- Borders Forest Service.
9	9 acres 16 Mbf/ac 145 Mbf	Seed Tree	- Leave tree marked, retaining 6-10 large diameter WL and DF with crowns >40% per acre.	- Tractor harvest unit. - Maintain roadside visual buffer. - Class 2 SMZ harvest borders north edge of unit.	- Borders Forest Service.

10	23 acres 27 Mbf/ac 630 Mbf	Seed Tree	- Leave tree marked, retaining 6-10 large diameter WL and DF with crowns >40% per acre.	- Tractor harvest unit. - Slope break provided visual buffer along some segments of open road – otherwise a visual buffer would be left. - Utilize existing skid trails. - A 50-100' wildlife corridor exists between two SMZ's within the unit. - Leave dense clumps of shade tolerant advanced regeneration, otherwise slash advanced regeneration when scattered.	- Borders Forest Service. - Harvest during very dry soil conditions would allow dispersed skidding resulting in scarification needed for site prep.
11	5 acres 12 Mbf/ac 60 Mbf	Seed Tree	- Leave tree marked, retaining 6-10 large diameter WL and DF with crowns >40% per acre.	- Tractor harvest unit. - Access unit via an established skid trail with grades >30%. - Average skid distance is 1000'. - Weeds need to be sprayed prior to logging.	- Borders Forest Service. - Harvest during very dry soil conditions would allow dispersed skidding resulting in scarification needed for site prep.
12	30 acres 8 Mbf/ac 240 Mbf	Improvement Harvest	- Leave tree marked, maintaining uneven-aged management by retaining multiple canopy layers of different age classes.	- Tractor harvest unit. - 3 acres of unit optional for harvest due to operability of traditional ground based equipment. - Thin advanced regeneration, favoring leaving trees with >40% crown.	- Borders private land and Forest Service.
13	4 acres 8 Mbf/ac 30 Mbf	White Wood Removal	- Cut tree marked with species designated to cut = ES, LPP, AF and few WL / DF with poor crowns and form.	- Tractor harvest unit. - Unit borders Forest Service old-growth stand which has directed silvicultural treatment. - Unit borders Class 2 SMZ harvest.	- Harvest during very dry soil conditions would allow dispersed skidding resulting in scarification needed for site prep.

14	4 acres 12 Mbf/ac 48 Mbf	White Wood Removal	- Cut tree marked with species designated to cut = ES, LPP, AF and few WL / DF with poor crowns and form.	- Tractor harvest unit. - Unit borders Forest Service old-growth stand which has directed silvicultural treatment. - Unit borders Class 2 SMZ harvest.	
15	1 acre 8 Mbf/ac 8 Mbf	White Wood Removal	- Cut tree marked with species designated to cut = ES, LPP, AF and few WL / DF with poor crowns and form.	- Tractor harvest unit. - An excavated skid trail most likely needed. - Operability would be limited due to spacing of leave trees; minimize mechanical damage. - Slash advanced shade tolerant regeneration.	
SMZ Harvest	15 acres 2 Mbf/ac 30 Mbf	Individual Tree Selection	- All harvest would take place in class 2 or 3 SMZs. - Cut tree marked with an emphasis on cutting larger diameter ES susceptible to wind throw. -Maintain 40% canopy cover.	- No machinery allowed within 50' of high water mark. - Exercise caution when cutting to protect residual tree canopies.	- An Alternative Practice was obtained for the removal of Engelmann spruce in higher percentages than other species in the SMZ.
	143 acres (~2.0 MMbf)				

** *Snag/Snag Recruit Guidelines: All harvest areas shall have a minimum of 2 snags and 2 snag-recruits over 21 inches dbh, or the next largest size class available. Additional large-diameter recruitment trees may be left if sufficient large snags are not present. These snags and recruitment trees may be clumped or evenly distributed throughout the harvest units.*

NOTES:
AF = Alpine fir
BMP = Best Management Practices
DBH = Diameter at Breast Height
DF = Douglas-fir
ERZ = Equipment Restriction Zone
ES = Englemann spruce
LPP = Lodgepole pine
RMZ = Riparian Management Zone
SMZ = Streamside Management Zone
WL = Western larch

Attachment C – VEGETATION ANALYSIS

Vegetation Analysis

Analysis Prepared By
Name: Zachary Miller and Brad French
Title: Management Foresters, Montana DNRC Stillwater Unit

Introduction

The vegetation section describes present conditions and components of the forest as well as the anticipated effects of both the No-Action and the Action Alternatives.

Issues and Measurement Criteria

- Disturbance may lead to an increased presence of noxious weeds.
- Incorporate the use of uneven aged management into silivicultural prescriptions.
- Current cover types do not match DNRC's desired future conditions.
- Live crown ratios are diminishing, reducing growth potential within some areas on co-dominate trees and leading to mortality in understory trees.
- The high probability of fire ignition in the dense timber stands located in close proximity to the BNSF railroad and open roadways.

Issues dismissed from further review:
Initially, there was concern that the proposed project could negatively impact old growth or populations of threatened, endangered, or sensitive plant species.

There is no old growth identified within the project area. Old growth is identified and analyzed using criteria outlined in Green et.al. (1992). Stand Level Inventories (SLI) of the project area were queried to identify potential old growth and old-growth stands. Old-growth plots were taken in these stands to verify classification.

Therefore no direct, indirect, or cumulative impacts would be expected under either alternative.

Using the Natural Heritage Program database, no sensitive, threatened, or endangered plant species have been documented within any of the proposed harvest units. Therefore no direct, indirect, or cumulative impacts would be expected under either alternative.

Regulatory Framework

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

State Forest Land Management Plan (SFLMP)
DNRC developed the SFLMP to "provide field personnel with consistent policy, direction, and guidance for the management of state forested lands" (DNRC 1996: Executive Summary). The SFLMP provides the

philosophical basis, technical rationale, and direction for DNRC's forest management program. The SFLMP is premised on the philosophy that the best way to produce long-term income for the trust beneficiaries is to manage intensively for healthy and biologically diverse forests. In the foreseeable future, timber management would continue to be the primary source of revenue and primary tool for achieving biodiversity objectives on DNRC forested state trust lands.

DNRC Forest Management Rules
DNRC Forest Management Rules (*ARM 36.11.401 through 456*) are the specific legal resource management standards and measures under which DNRC implements the SFLMP and subsequently its forest management program. The Forest Management Rules were adopted in March 2003 and provide the legal framework for DNRC project-level decisions and provide field personnel with consistent policy and direction for managing forested state trust lands. Project design considerations and mitigations developed for this project must comply with applicable Forest Management Rules.

Montana Best Management Practices (BMPs) for Forestry
Montana BMPs consist of forest stewardship practices that reduce forest management impacts to water quality and forest soils. The implementation of BMPs by DNRC is required under *ARM 36.11.422*. Key forestry BMP elements include: streamside management; road design and planning; timber harvesting and site preparation; stream crossing design and installation; winter logging; and hazardous substances storage, handling, and application.

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

Analysis Areas

Direct and Secondary Effects Analysis Area
The proposed project area: 255 acres (treatment area:143 acres)

Cumulative Effects Analysis Area
The proposed project area: 255 acres of T33N R26W Sections 33 and 34

The Stillwater Unit administrative area is a cumulative effects area for age class and cover types.

Existing Conditions

Noxious Weeds
Noxious weeds currently identified within the road systems within the project area are spotted knapweed, Canadian thistle, oxeye daisy, and orange hawkweed. Harvest areas entered within the last few decades contain small populations of the weeds mentioned above.

Standard Vegetative Community

- **Stand History/Past Management**

Stands within the project area have seen a multiple entries over the years, with the most well noted being the removal of large western larch in the early 1900s. The most recent entries within the project area were implemented in 1997 and 1987.

Previous forest management in select parts of project area has led to a lot of variation in stand structure. Thirty-two (32) acres of the project area were moved towards uneven-aged management in 1997. Fifty-five (55) acres of the project area has been previously managed as seed tree cuts that have been fully regenerated. Other areas of the project area have not seen noticeable entry since the early 1900s. In these areas, shade tolerant species have developed under the larger overstory of western larch and Douglas-fir. Engelmann spruce can be found throughout the sale area, being more established at the bottom of slopes and amongst streams and wet areas. Western larch and Douglas-fir are found throughout the sale area, being more present at the mid-to-top of the slopes and in well drained areas. Subalpine fir and some lodgepole pine are also mixed throughout the proposed sale area.

- **Current Stand Conditions**

A portion of the project area is comprised of intermediate, shade tolerant trees 100 to 180 years old which have an average height in the 80 foot range. Many of these trees exhibit low crown ratio percentages from resource competition (sunlight, moisture, nutrients, etc.). The overstory trees found within the proposed sale area range from 120 to 250 years old and have an average height in the 95 to 110 foot range. These trees typically are healthy and well established, with occasional scars from past logging entries. Root rot pockets have been found in small patches on some drier Douglas-fir sites.

The SLFMP and associated Forest Management Rules direct DNRC to promote biodiversity by taking a coarse-filter approach that favors an appropriate mix of stand structures and composition on state lands (ARM 36.11.404). Cover type refers to the dominant tree species that currently occupy a forested area. The two cover types present within the proposed project area are: mixed conifer (141 acres), and western larch/Douglas-fir (114 acres). The desired future cover type identified for the project area is: western larch/Douglas-fir. Therefore, compared to the cumulative Stillwater Unit's desired future conditions, there is currently an excess of mixed conifer cover types, and a deficiency in the western larch/Douglas-fir cover types (see Table V-1).

Stands within the project area have been void from fire for the last 100 years. Past management has kept the fuel loadings low in harvest units, however untreated stands exhibit closely spaced crowns that would be susceptible to a running crown fire. There is an active BNSF railway and two open public roads that run through the project area.

Section 33 has been lightly grazed by range cattle for over 20 years and tracks and browsing sign can be seen in riparian areas and along the few cattle trails.

Table V-1 – Current and appropriate cover types for the Trego Portal Project Area.

Cover Type	Current Acres	Current Percent of Project Area	Desired Future Condition (DFC)	
			Acres	Percent
Subalpine fir	0	0%	0	0%
Douglas-fir	0	0%	0	0%
Lodgepole pine	0	0%	0	0%
Mixed conifer	141	55%	0	0%
Ponderosa pine	0	0%	0	0%
Western larch/Douglas-fir	114	45%	255	100%
Western white pine	0	0%	0	0%
Non-stocked	0	0%	0	0%

Non-forest	0	0%	0	0%
Other (specify)	0	0%	0	0%
Total:	255	100%	255	100%

Environmental Effects

No-Action Alternative: Direct, Secondary and Cumulative Effects

Under the No-Action Alternative, timber harvesting would not occur at this time. Neither cover types nor age class distributions would be directly or indirectly affected. Stocking levels of shade-tolerant trees and downed woody debris would increase within those stands over time. Various factors, such as insects, diseases, and weather events, would eventually cause more snags to occupy portions of the stands. This, in turn, would increase the potential and/or severity of a wildfire, and in the event that one was ignited, would make it harder to suppress. Within the project area, stands dominated primarily by white woods would continue to compete with western larch and Douglas-fir of all age classes, further removing the stands from the desired future conditions. Weed spraying and pre-commercial thinning activities would be conducted based on priorities set by the Stillwater Unit and as funding allows.

Additional mineral soil would not be exposed, and heavy tree canopies would continue to compete with weeds, therefore the cumulative risk of additional establishment of weed populations would not likely increase. Cumulatively, the Stillwater Unit's DFC would not move towards its desired cover types.

Action Alternative: Direct, Secondary, and Cumulative Effects

Noxious Weeds
Direct, Secondary, and Cumulative Effects

The spread of noxious weeds from the use of mechanized equipment and ground disturbance would be minimized, but not completely eliminated, by the washing of equipment before entering the site, and sowing grass seed on roads after road construction and harvesting (ARM 36.11.445).

Cumulatively, weed populations would be monitored and herbicide treatments on haul roads would be scheduled through the Stillwater Unit's weed management program in an effort to maintain or reduce infestations.

Standard Vegetative Community
Direct, Secondary, and Cumulative Effects

Under the proposed action:

- 91 acres of mixed conifer cover type that does not currently meet the State's desired future conditions (DFC) would be moved towards western larch/Douglas-fir DFC. The remaining 52 acres of harvest area would not change from the State's current cover type.
- Units 1 and 5 would change from a 200+ year old age class to a 0-39 year age class with the proposed overstory removal treatment. Within all other units, including seedtree harvest treatments, age class would remain the same. [DNRC's Stand Level Inventory (SLI) methodologies evaluate age class based

on the sawtimber components within stands; stands with greater than 10 percent canopy coverage of sawtimber-size trees will **not** be classified in the "non-stocked" or "0-39 year age class".]

Under the proposed action, the cumulative Stillwater Unit's DFC for the WL/DF cover type would increase about 0.2%. Conversely, the current cover type of mixed conifer DFC would decrease less than 0.1%. In addition, the cumulative Stillwater Unit 150+ age class would decrease less than 0.1% and the 0-39 age would increase less than 0.1%. Refer to table V-2 (2015 SLI Data).

Table V-2: Age class distribution of current covertypes.

CURRENT COVERTYPE	AGE CLASS					
	0-39 YEARS	40 TO 99 YEARS	100 TO 149 YEARS	150 YEARS AND OLDER	NO AGE DATA	TOTAL ACRES
	NUMBER OF ACRES					
Douglas-fir	83	1,094	1,540	1,761	-	4,478
Hardwoods	49	164	-	-	-	213
Lodgepole pine	6,864	8,206	519	465	-	16,054
Mixed conifer	3,815	7,929	5,519	9,515	11	26,790
Ponderosa pine	270	133	516	269	-	1,188
Subalpine fir	3,606	10,624	4,901	12,863	-	31,994
Western larch/ Douglas-fir	1,514	6,030	9,905	12,920	293	30,661
Western white pine	914	254	276	1,322	28	2,795
Nonstocked	2,019					2,019
Total Acres	19,133	34,435	23,176	39,115	332	116,191
(total percent)	16.5%	29.6%	19.9%	33.7%	0.3%	

Overall, the variations of the proposed harvest treatments would create a mosaic of new stands of timber similar to what a mixed severity fire might cause. Proposed timber harvest would benefit these stands by initiating openings, thinning out crowded areas and trees with poor form/vigor, and improve growing conditions for intermediate/submerchantable trees. Seedtree with reserves treatments are regeneration treatments which would retain scattered, full vigor western larch and Douglas-fir seed trees throughout the unit and promote the establishment of the same species. In addition to regeneration from the seed-tree sources, it is anticipated that mixed conifer regeneration would also be established in some areas.

The improvement treatment proposed in Unit 12 would contribute to the uneven-aged management that was initiated in 1997. Overstory trees would be left at a wide spacing, while vigorous intermediate trees would be left at a closer density. Advanced regeneration would be retained at healthy stocking levels and the establishment of small openings would promote new regeneration, moving this towards a multistoried stand.

The commercial thin proposed in Unit 2 is an intermediate treatment which would leave the stand fully stocked with western larch and Douglas-fir.

Specific Class 2 SMZ areas are proposed to be selectively harvested while still retaining a diversity of species and stem size classes. A minimum of 40% of the existing canopy cover would be retained in riparian areas to provide for wildlife/fisher habitat and snow intercept.

Additionally, following harvest and fuels treatments, the connectivity of dense fuel loading and ladder fuels leading to the tree crowns would be removed in all of the proposed harvest units. The success of aerial and ground attacks on wildfires would likely be improved.

Vegetation Mitigations

- Wash equipment prior to harvest to limit weed seed dispersal.
- Spray weeds along roadsides to limit spread of existing weeds.
- Plant grass on newly disturbed road surfaces to limit the resources available for weeds to establish.
- Prescribe a selection harvest in order to emulate natural disturbance historically present on the landscape.

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

- Snags, snag recruits, and coarse woody debris would be managed according to *ARM 36.11.411* through *36.11.414*, particularly favoring western larch. Clumps of existing snags would 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 timber harvest in Class 1 SMZ areas.

Vegetation References

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.

Montana Natural Heritage Program (MTNHP). 2014. Plant species of concern report. Available online at: http://mtnhp.org/SpeciesOfConcern/?AorP=p Last accessed January, 22, 2015.

Attachment D – SOILS ANALYSIS

Soils Analysis

Assessment Prepared By

Name: Marc Vessar
Title: Hydrologist, Northwest Land Office

Introduction

This analysis is designed to disclose the existing condition of the soil resources and present the anticipated effects that may result from each alternative of this proposal.

Issues and Measurement Criteria

During the initial scoping, issues regarding soil impacts were identified by DNRC personnel and by the public. The following issue statements were compiled from comments regarding the effects of the proposed timber harvesting:

- *Ground based harvest techniques can displace and compact soils which can adversely affect the hydrologic function, soil structure and long-term productivity of the impacted area.*
- *Reduced infiltration capacity of an impacted soil can result in overland flow and off site erosion, typically localized to main skid trails and log landing sites.*
- *Removal of both coarse and fine woody material off site during timber harvest operations can reduce nutrient pools required for future forest stands and can affect the long-term productivity of the site.*

Analysis Areas

The project area for this proposal includes approximately 255 acres. The project area contains 6 individual landtypes on which timber harvesting is proposed. The analysis area for soil impacts will be the area within harvest units and where proposed road activities would take place. This analysis area will adequately allow for disclosure of existing conditions and direct, indirect, and cumulative impacts.

Analysis Methods

Methods for disclosing impacts include using general soil descriptions and the management limitations for each landtype. *Landtype* refers to a unit of land with similar designated soil, vegetation, geology, topography, climate, and drainage. This analysis will qualitatively assess the risk of negative effects to soils from erosion, compaction, and displacement from each alternative, using insight from previously collected soils-monitoring data from over 90 DNRC postharvest monitoring projects (*DNRC, 2011*).

Coarse woody material will be addressed by, first, disclosing existing levels from transect data collected during field reconnaissance. The transect data will be compared with scientific literature as required by ARM 36.11.414 (2). If the Action Alternative is selected, this

assessment will assist in developing contract requirements and mitigation measures necessary to ensure post project levels of coarse woody debris (CWD) adequately meet the recommendations of relevant literature, primarily Graham et.al. (1994). Fine woody material will be addressed solely through contract language that minimized removal (ARM 36.11.410).

While the anticipated impacts from each alternative will disclose the direct/indirect effects, the cumulative impacts will be the result of previous and proposed activities.

Existing Conditions

GENERAL CONDITIONS

The *Soil Survey of Kootenai National Forest Area, Montana* (*Kuennen and Nielsen –Gerhardt, 1995*) combines landform and soil information with habitat types to inventory and map soils in the project area. Six landtypes were identified in the project area. *TABLE ST-1 - PROJECT AREA LANDTYPE DESCRIPTIONS* provides a brief description of the landtypes within the project area while *FIGURE SF-1– LANDTYPES IN THE PROJECT AREA* provides a visual depiction of the landtype locations.

Stillwater State Forest, like much of northwest Montana, is dominated by bedrock consisting of metasedimentary rocks from the Proterozoic age. Rocks in this formation are generally comprised of argillites, quartzites, and siltites. Surface deposits of glacial till, outwash, and lacustrine sediments can be found throughout the area. Overlying these sediments is a layer of loess that has been influenced by volcanic ash deposited and redeposited from Mount Mazama approximately 6,700 years ago (*Martinson and Basko, 1998*).

Proposed harvest units are located on gentle slopes up to 40 percent. *TABLE ST-1 - PROJECT AREA LANDTYPE DESCRIPTIONS* displays the dominant slopes, soils and vegetation characteristics in the project and analysis area

EXISTING CONDITIONS DUE TO PAST FOREST MANAGEMENT

Physical Soil Properties

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

Past monitoring on DNRC timber sales has shown an average of 13.9 percent soil impacts across all parent materials. Stratifying the results by soil texture that are similar to the majority of the proposed harvesting shows an average of approximately 12.5 percent of the harvest areas impacted from erosion, displacement or severe compaction (*DNRC 2011*).

The DNRC soil monitoring report (*DNRC 2011*) noted that ground-based operations that used dozers for site preparation and piling had the largest areas of compaction. Of the 14 sites with similar soils (silty loam and silty clay loam), those that were dozer piled and had a higher average impact (19.8 percent) over non-dozer piled sites (6.8 percent).

Harvesting under winter conditions can result in lower impacts because the ground is frozen and less susceptible to compaction and displacement. Ground-based harvesting on similar soils under winter conditions resulted in average moderate-or-higher impacts from erosion,

displacement or severe compaction of 8.5 percent, while summer (dry) activities exhibited 14.3 percent impacts.

Cumulative effects from past and current forest management in the proposed harvest units are generally limited to a few skid trails and landings from previous entries. Winter harvest operation has been effectively utilized for past entries. Through the freeze-thaw cycles and root mass penetrating the soil, impacts from past entries are substantially reduced. Most impacts have been ameliorated over time. Ocular estimate of impacts from past harvest is less than five percent of the proposed harvest areas.

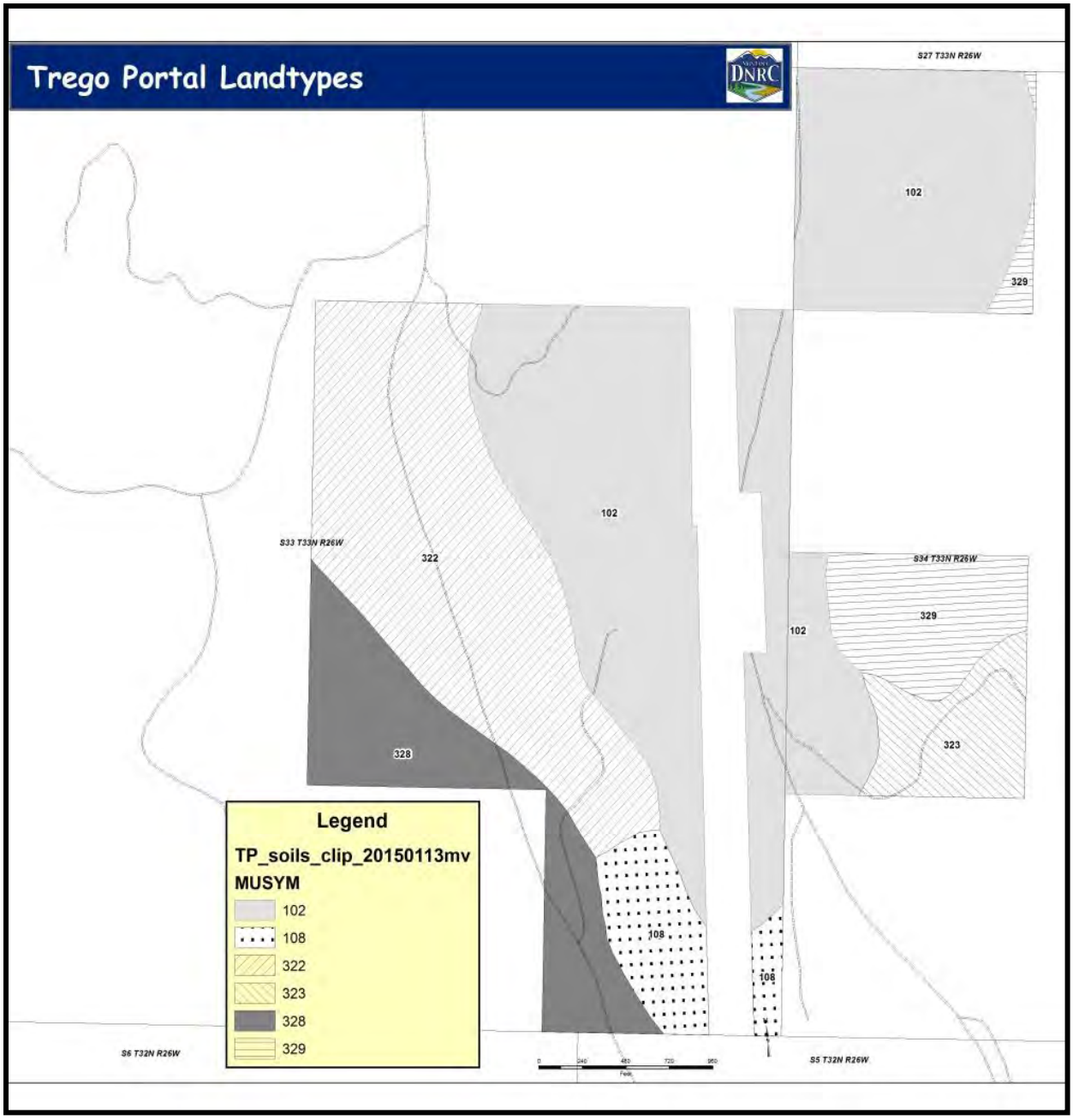
Past harvesting operations in the project area and analysis area include harvests in the 1940's through the 1980's, although the majority of harvesting occurred in the 1940's and 1950's. A list of harvesting in the project area can be found in the project file. Other forest product removals include fence posts and rails, firewood, and individual and commercial Christmas tree harvests throughout the last 70 years.

Nutrient Cycling

Coarse and fine woody debris provide a crucial component in forested environments through nutrient cycling, microbial habitat, moisture retention and protection from mineral soil erosion. (*Harmon et.al.1986*). While coarse woody debris decays at various rates due to local climatic conditions, the advanced stages of decay contains many nutrients and holds substantial amounts of moisture for vegetation during dry periods (*Larson et.al. 1978, Wicklow et.al. 1973*). Forest management can affect the volumes of fine and coarse woody debris through timber harvesting and result in changes to the available nutrients for long term forest production.

Subalpine fir habitat types found in the project area are recommended to have a level of coarse woody debris in the range of 12.5 to 24.5 tons per acre to maintain forest productivity (*Graham et.al.,1994*).

FIGURE SF-1 – LANDTYPES IN THE PROJECT AREA



Landtype	Name	Soil & Vegetation Descriptions	Management Considerations			
			erosion potential	Timber	Roads	Comments
102	Lacustrine terraces 0-15% with terrace risers of 30-60%	Terraces are generally located adjacent to major streams, although they have no surface drainage channels. Vegetation is characteristic of a mixed conifer forest with a shrub and forb dominated understory.	Moderate along skid trails and fire lines.	Potential Prod: Moderate Equipment: Tractor with winchline	Tread erosion of fine material and rutting during wet periods can result in a rough driving surface.	
108	Lacustrine/Glacial Outwash Terraces 0-15% slopes	The surface soils and vegetation is similar to Landtype 102, however the subsoils in this landtype consist of stratified glacial outwash of sand and gravels as well as the silt loam and silty clay loam from glacial lake sediment.	High erosion potential for skid trails and fire lines. Sediment delivery efficiency is low due the gentle terrain.	Potential Prod: High Equipment: Tractor unless wet areas are identified. Regen: Can be limited by frost pockets or frost heaving.	Roadcuts along terraces prone to slumping. Ruts form readily during wet weather on unsurfaced roads with silty surfaces. Road with higher cobble contents tend to become rough if finer material is eroded.	Sediment delivery efficiency is low due to the gentle topography. Fine silt material can be damaging to fish spawning gravels. Terraces tend to have no drainage features due to the well-drained subsoils.
322	Moraines 15-35% slopes	Soils of this landtype were formed in compact glacial till and are typically influenced by volcanic ash deposits. The surface soils are gravelly silt loam about 18 inches thick over clay loam subsoil. Vegetation is comprised of a moist, mixed forest of western larch, Douglas fir and lodgepole pine over an understory of low shrubs and forbs.	Erosion potential moderate on skid trails where soils have been exposed. Steep cutbanks have a severe hazard of erosion. Sediment delivery efficiency is low.	Potential Prod: High Equipment: Tractor Regen: none	Unsurfaced roads can rut when wet. Oversteep cutbanks may slough. Crusting can limit revegetation efforts. Seeding immediately after earth moving activities helps revegetation success.	Trees may be susceptible to windthrow due to limited root penetration through the compact till lower soil.
323	Moraines 15-35% slopes	This Landtype is comprised of silt loam soils formed over calcareous, compact glacial till. Vegetation is typically a dry, mixed forest of Douglas-fir, western larch and lodgepole pine over an understory of pinegrass and low shrubs.	Erosion potential severe on skid trails where soils have been exposed. Sediment delivery efficiency is low.	Potential Prod: Moderate Equipment: Tractor Regen: Can be limited by competition.	High cutbanks on terraces tend to slough. Unsurfaced roads can rut when wet.	Trees may be susceptible to windthrow due to limited root penetration through the compact till lower soil. Rotting wood is important source of nitrogen.

328	Glaciated mountain slopes. 15-35% slopes	Soils of this landtype are volcanic ash-influenced loess over calcareous glacial till. Vegetation found is a mixed forest of subalpine fir, western larch, lodgepole pine, Douglas-fir, and Engelmann spruce over a shrub- and forbs-dominated understory.	Erosion potential is moderate. Sediment delivery efficiency is moderate.	Potential Prod: High Equipment: Tractor.	Cutbanks may slough if not at appropriate angle. Tread erosion of fine material from unsurfaced roads can result in a rough, cobbly road.	Trees may be susceptible to windthrow due to limited root penetration. Compactable soils can low productivity if not properly managed.
329	Moraines, glacial till deposits 15-35% slopes	This Landtype is characterized by up to 14 inches of volcanic ash influenced loess overlying a calcareous glacial till. Vegetation found is a, mixed forest of subalpine fir, Engelmann spruce, Douglas-fir, western larch and lodgepole pine over a low-shrub and forbs dominated understory.	Erosion potential is moderate. Sediment delivery efficiency is low	Potential Prod: high Equipment: Tractor Regen: none	Some cutslopes may be difficult to revegetate due to sloughing and surface crusting. Tread erosion of fine material from unsurfaced roads can result in a rough, cobbly road.	Trees may be susceptible to windthrow due to limited root penetration. Volcanic ash influenced loess is susceptible to compaction if season of operation is not managed.

Environmental Effects

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

No timber harvesting or associated activities would occur under this alternative.

Action Alternative: Direct, Secondary, and Cumulative Effects

Fifteen units totaling approximately 143 acres would be commercially harvested under this alternative. All units would be harvested using conventional ground-based equipment although some minor winchline work may be required. In addition to the proposed timber harvest, approximately 5.2 miles of road would be maintained or have minor drainage improvements installed as necessary to protect water quality.

ENVIRONMENTAL EFFECTS ON SOILS

- ***Direct and Indirect Effects of the No-Action Alternative on Soils***

  No timber harvesting or associated activities would occur under this alternative. Skid trails from past harvesting would continue to recover from compaction as freeze-thaw cycles continue and vegetation root mass increases.

- ***Direct and Indirect Effects of the Action Alternative on Soils***

  To provide an adequate analysis of potential impacts to soils, a brief description of implementation requirements is necessary. *ARM 36.11.422 (2)* and *(2)(a)* state that appropriate BMPs shall be determined during project design and incorporated into implementation. To ensure that the incorporated BMPs are implemented, the specific requirements would be incorporated into the DNRC Timber Sale Contract. As part of this alternative design, the following BMPs are considered appropriate and, would be implemented during harvesting operations:

  1) Limit equipment operations to periods when soils are relatively dry, (less than 20% or 18% for unit 1), frozen, or snow-covered to in order to minimize soil compaction and rutting, and maintain drainage features. Check soil moisture conditions prior to equipment start-up.
  2) On ground-based units, the logger and sale administrator would agree to a general skidding plan prior to equipment operations. Skid-trail planning would identify which main trails to use and how many additional trails are needed. Trails that do not comply with BMPs (i.e. trails in draw bottoms) would not be used unless impacts can be adequately mitigated. Regardless of use, these trails may be closed with additional drainage installed, where needed, or grass-seeded to stabilize the site and control erosion.
  3) Tractor skidding should be limited to slopes of less than 40 percent unless the operation can be completed without causing excessive displacement or erosion. Based on site review, short, steep slopes above incised draws may require a combination of mitigation measures, such as adverse skidding to a ridge or winchline, and skidding from more moderate slopes of less than 40 percent.
  4) Keep skid trails to 20 percent or less of the harvest unit acreage. Provide for drainage in skid trails and roads concurrently with operations.
  5) Slash disposal: Limit the combination of disturbance and scarification to 30 to 40 percent of the harvest units. No dozer piling on slopes over 35 percent; no excavator piling on slopes over 40 percent, unless the operation can be completed without causing excessive erosion. Consider lopping and scattering or jackpot burning on the steeper slopes. Consider disturbance incurred during skidding operations to, at least, partially provide scarification for regeneration. Consider dispersed skidding to achieve scarification when soil moisture is less than 15% oven-dried weight.
  6) Retain 12 to 25 tons of large woody debris and a feasible majority of all fine litter following harvesting operations. On units where whole tree harvesting is used, implement one of the following mitigations for nutrient cycling: 1) use in-woods processing equipment that leaves slash on site; 2) for whole-tree

harvesting, return-skid slash and evenly distribute within the harvest area; or 3) cut tops from every third bundle of logs so that tops are dispersed as skidding progresses.

Physical Soil Properties

Considering data from the *DNRC SOIL MONITORING REPORT (DNRC, 2005)*, the implementation of Forestry BMPs has resulted in less risk of detrimental soil impacts from erosion, displacement, and severe compaction. While the report noted that the impacts were more likely on the fine-textured soils and steep slopes, reduced soil productivity due to compaction and displacement can occur on coarser parent materials. Also, the greatest impacts occurred where harvesting implementation departed from BMP's by ground-based skidding on slopes of greater than 40 percent.

Comparing the soil type map, field reconnaissance notes, and topographic map features with the proposed harvest unit map, indicates that ground-based skidding would occur on slopes of up to 40 percent under this alternative although less than an estimated 5 percent of the proposed harvest unit area has slopes over 35%. The extent of expected impacts would likely be similar to those reported in the *DNRC SOIL MONITORING REPORT (DNRC, 2011)*, or approximately 14.3 percent (20.4 acres) of the harvest area for ground-based operations during summer conditions.

Although erosion would potentially result from this alternative, the magnitude, area and duration of erosion and other adverse impacts such as compaction and displacement would acceptable. Therefore the risk of unacceptable adverse direct and indirect impacts to physical soil properties would be low.

As vegetation begins to establish on the impacted areas and freeze-thaw cycles occur, the area of reduced productivity would decrease.

Nutrient Cycling

As required in the DNRC Timber Sale Contract, both fine and coarse woody debris would be retained to reduce potential impacts to forest productivity. Although fine woody debris would be left on-site for nutrient retention, a moderate reduction in annual fine material contribution would result from this alternative for up to 20 years. Coarse woody debris would be left on-site to in volumes recommended to help maintain soil moisture and forest productivity, generally in the 12 to 25 tons per acre range for habitat types found in the harvest locations (*Graham et.al. 1994*)

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

- ***Cumulative Effects of the No-Action Alternative to Soils***

No additional adverse cumulative effects would be expected from the implementation of the No-Action Alternative. Because harvesting would not be implemented, compaction, displacement and erosion rates above natural levels would not be expected. Coarse woody debris levels and nutrient cycling would continue without anthropogenic alteration.

- ***Cumulative Effects of the Action Alternative to Soils***

Cumulative effects would be controlled by limiting the area of adverse soil impacts to less than 15 percent of the harvest units (as recommended by the SFLMP) through implementation of BMPs, skid trail planning on tractor units, and limiting operations to dry or frozen conditions. Future harvesting opportunities would likely use the same road system, skid trails, and landing sites to reduce additional cumulative impacts. Due to these mitigation measures and the limited existing impacts, the cumulative effects from compaction, erosion and displacement would be low.

Both fine and large woody debris would be retained for nutrient cycling for long-term soil productivity. By following research recommendations on the levels of coarse and fine material left on site, the risk of cumulative impacts to forest productivity from nutrient pool loss would be low.

By designing the proposed harvesting operations with soil-moisture restrictions, season of use, and method of harvesting, the risk of unacceptable long-term impacts to soil productivity from compaction and displacement and nutrient pool losses would be low.

Soils Mitigations

- Limit equipment operations to periods when soils are relatively dry, (less than 20 percent or 18 percent for unit 1), frozen, or snow-covered in order to minimize soil compaction and rutting, and maintain drainage features.
- A general skidding plan would be proposed and agreed upon prior to equipment operations.
- Retain 12 to 25 tons of large woody debris and a feasible majority of all fine litter following harvesting operations.

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Attachment E – WATER AND FISHERIES ANALYSIS

Water and Fisheries Resources Analysis

Assessment Prepared By
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Title: Hydrologist, Northwest Land Office

Introduction

This analysis is designed to disclose the existing condition of the hydrologic and fisheries resources and display the anticipated effects that may result from each alternative of this proposal. During the initial scoping, no issues were identified regarding water-quality, water-quantity, or fisheries resources from the public.

Analysis Areas

ANALYSIS AREA

Sediment Delivery

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

Fisheries Habitat Parameters

The analysis area for fisheries habitat parameters is the proposed harvest units adjacent to Fortine Creek.

Issues

DNRC developed the following issue statements regarding the potential effects of the proposed timber harvesting:

- *Timber harvesting and road construction activities may increase sediment delivery into streams and affect water quality.*
- *Timber-harvesting activities may affect water quality and fisheries habitat by reducing shade and increasing stream temperatures.*

These issues will be addressed by assessing the risk of sediment delivery to water bodies from roads and harvest units and evaluating the potential effects of reducing forest canopy near streams.

ISSUE DISMISSED FROM FURTHER ANALYSIS

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

Issues related to potentially impacts associated with water yield were dropped from further analysis for the following reasons:

Water yield is generally modeled at an appropriate watershed scale to disclose potential impacts from increased flow due to the removal of trees. Because this project straddles Fortine Creek, the appropriate analysis area would be the Upper Fortine Creek 6th code watershed. The most recent modeling of the Upper Fortine Creek watershed was completed by the USFS Kootenai National Forest, Fortine Ranger District in 2004. At that time the *peak flow increase* was at 7 percent over fully forested conditions (Jungst, personal communication, January 30, 2015) and no harvest has taken place on USFS lands within the Upper Fortine watershed since 2004. While *peak flow increase* is not the same as *annual water yield increase,* the metrics are similar and would suggest that annual water yield increases would be less than 10%. Because DNRC manages only 255 acres of this 25,119-acre watershed, increases in annual water yield would not be measureable.

The *ENVIRONMENTAL EFFECTS* sections disclose the anticipated direct, indirect, and cumulative effects to water resources in the analysis area from the proposed actions. Past, current, and future planned activities on all ownerships in each analysis area have been taken into account for the cumulative-effects analysis.

Regulatory Framework

WATER USES AND REGULATORY FRAMEWORK

WATER QUALITY STANDARDS

This portion of the Kootenai River Basin, including Fortine Creek and its tributaries is classified as B-1 by the State of Montana Department of Environmental Quality (MDEQ), as stated in the *Administrative Rules of Montana (ARM 17.30.609)*. The water-quality standards for protecting beneficial uses in B-1 classified watersheds are located in *ARM 17.30.623*. Water in B-1 classified waterways is suitable for drinking, culinary and food processing purposes after conventional treatment, bathing, swimming and recreation, growth and propagation of salmonid fishes and associated aquatic life, waterfowl and furbearers, and agricultural and industrial water supply. State water-quality regulations limit any increase in sediment above the naturally occurring concentration in water classified B-1. Naturally occurring means condition or materials present from runoff or percolation over which man has no control or from developed land where all reasonable land, soil, and water conservation practices have been applied (*ARM 17.30.602 [17]*). Reasonable land, soil, and water conservation practices include “methods, measures or practices that protect present and reasonably anticipated beneficial uses…” (*ARM 17.30.602 [21]*). The State of Montana has adopted Best Management Practices (BMPs) through its non-point source management plan as the principle means of meeting the *Water Quality Standards*.

WATER QUALITY LIMITED WATERBODIES

Fortine Creek is listed in the *2014 303(d)* list for nonsupport of aquatic life and primary contact recreation. The listed probable causes for not supporting these uses include stream-side vegetation alteration, excess algal growth, low flow alterations, sedimentation/siltation, and water temperature. Water diversions, forest roads, grazing, agriculture and silvicultural activities are listed as probable sources as well as unknown sources. A TMDL was approved by the EPA in September 2011 for sediment/siltation and in September 2014 for temperature. The *303(d)* list is compiled by DEQ as required by *Section 303(d)* of the *Federal Clean Water Act* and the *EPA Water Quality Planning and Management Regulations (40 CFR, Part 130)*. Under these laws, DEQ is required to identify waterbodies that do not fully meet water-quality standards, or where beneficial uses are threatened or impaired.

STREAMSIDE MANAGEMENT ZONE LAW (SMZ)

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

WATER RIGHTS AND BENEFICIAL USES

A search of the DNRC Water Right Query System shows surface water rights exist within three miles downstream of the project area on Fortine Creek for irrigation use. Tributaries to Fortine Creek within three miles downstream have surface water rights for domestic, stock watering and irrigation uses.

FISHERIES—THREATENED, ENDANGERED AND SENSITIVE SPECIES

Westslope cutthroat trout are listed as a Class-A Montana Animal Species of Concern. A Class-A designation is defined as a species or subspecies that has limited numbers and/or habitats both in Montana and elsewhere in North America, and elimination from Montana would be a significant loss to the gene pool of the species or subspecies (*Montana Fish, Wildlife and Parks, Montana Natural Heritage Program,* and *Montana Chapter American Fisheries Society Rankings*). DNRC has also identified westslope cutthroat trout as a sensitive species (*Administrative Rule of Montana (ARM) 36.11.436*).

Analysis Methods

ANALYSIS METHOD

Sediment Delivery

The methods applied to the project area to evaluate potential direct, indirect, and cumulative effects include a field review of potential sediment sources from haul routes. Stream crossings and roads were evaluated to determine existing sources of introduced sediment. Potential sediment delivery from harvest units will be evaluated from a risk assessment. This risk assessment will use the soil information provided in the *SOILS ANALYSIS* and the results from soil monitoring on past DNRC timber sales.

Fish Habitat Parameters

Expected effects to fisheries habitat will be addressed qualitatively using the current condition as a baseline, disclosing the expected changes due to the alternatives proposed. The analysis method for woody debris recruitment will evaluate the potential reduction in available woody debris and shading due to timber-harvesting activities. Stream temperature will be addressed by evaluating the risk of stream temperature increases due to reduced shading from existing vegetation.

Existing Conditions

GENERAL DESCRIPTION

Upper Fortine Creek (HUC 170101010202)

The Upper Fortine Creek watershed is approximately 25,119 acres and includes several named and unnamed tributaries including Davis, Cedar and White Creeks. Precipitation ranges from 18 to 35 (27 inches average) inches per year, mostly in the form of snow. Elevations in this watershed range from 3,400 feet above sea level at the furthest downstream point to approximately 6,600 feet above sea level near Elk Mountain. Ownership within the watershed is comprised of private land (4 percent), DNRC-managed lands (1 percent), and USFS-managed lands (95 percent).

A data search of the Montana Fisheries Information System indicates that several species of fish inhabit this portion of Fortine Creek. This includes native species such as westslope cutthroat trout, torrent sculpin, mountain whitefish, longnose dace, largescale sucker, and longnose sucker, as well as non-native species including eastern brook trout, and rainbow trout.

SEDIMENT DELIVERY

Upper Fortine Creek

In 2011, the *Tobacco Planning Area Sediment TMDL and Framework Water Quality Improvement Plan* was approved by the EPA (*DEQ 2011*). This document provides a description of the Fortine Creek watershed including the Upper Fortine Creek subwatershed. Impacts mentioned in the document from past management include channelization from railroad construction, bank trampling associated with grazing and riparian timber harvest.

During field review, no substantial, direct sediment delivery was observed or noted from the proposed haul route. Best management practices have been applied to haul roads.

Sediment from in-channel sources channel constrictions and outcurves as well as locations of cattle and wildlife access show signs of trampling. This channel is relatively confined through the State parcel in section 33 with banks that are relatively stable whether naturally stable or from riprap. Historic accounts suggest that a temporary dam for log drives was located in this area. Field review did not definitively locate any historic dam sites.

FISH HABITAT PARAMETERS

Large Woody Debris

Large woody debris recruitment to streams is important to maintain channel form and function and as a component of fish habitat. According to *ARM 36.11.425*, DNRC will establish a Riparian Management Zone (RMZ) *'…when forest management activities are proposed …on sites that are adjacent to fish bearing streams and lakes.*' One reason for the RMZs is to retain adequate levels of large woody debris recruitment to the stream channel. Site potential tree height (SPTH) is the method used to identify RMZ width according to *ARM 36.11.425 (5). S*ite potential tree height in the project was measured at 88 feet.

Along Fortine Creek, no harvest is proposed within the RMZ or SMZ. Because no reduction in canopy would result from either alternative and the risk of potential woody debris recruitment loss is very low, no further analysis will be discussed.

Stream Temperature

Fortine Creek is listed on the 2014 303(d) list for temperature impairment. The warm water temperature has been attributed to a variety of possible causes including "local climate, geology, elevated levels of fines, channel modification, reduction of riparian vegetation cover and channel widening." (*MDEQ, 2014*). The recent *Tobacco Planning Area Nutrient and Temperature TMDLs and Water Quality Improvement Plan* (*MDEQ, 2014b*) recommends a 50 foot buffer with medium density trees or vegetation to provide effective shade.

Because this proposal would leave an 88 foot no-harvest buffer on Fortine Creek, the risk of temperature increases due to reduced shading associated with timber harvest is very low and will not be further discussed.

Environmental Effects

DESCRIPTION OF ALTERNATIVES

- ***No-Action Alternative***

  No timber harvesting or associated activities would occur under this alternative. Existing activities such as recreational use, individual Christmas tree harvesting, and firewood gathering would continue.

- ***Action Alternative***

  Fifteen units totaling approximately 143 acres would be commercially harvested under this alternative. All units would be harvested using conventional ground-based equipment although some minor winchline work may be required. In addition to the proposed timber harvest, approximately 5.2 miles of road would be maintained or have minor drainage improvements installed as necessary to protect water quality.

DIRECT AND INDIRECT EFFECTS

- ***Direct and Indirect Effects of the No-Action Alternative to Water Resources***

  Sediment Delivery

  Under this alternative, no timber harvesting or related activities would occur. The existing direct sediment-delivery sources would continue until repaired by another project or funding source. In-channel sources of sediment would continue to exist and erode as natural events dictate.

- ***Direct and Indirect Effects of the Action Alternative to Water Resources***

  Sediment Delivery

  Past monitoring of DNRC timber harvests has shown erosion on approximately 6 percent of the sites monitored, although no water-quality impacts from the erosion were found (*DNRC 2011*). These sites were harvested during the summer period, and the erosion was attributed to inadequate skid-trail drainage. Monitoring of soil impacts from past DNRC timber sales have found that "winter logging resulted in minimal soil displacement. Displacement was limited to main skid trails that occupy less than 2% of the harvest units." (*DNRC 2011*). By minimizing displacement, less erosion would likely occur compared to other harvest methods with more extensive disturbance (*Clayton 1987*).

  No harvesting would occur within the 88 feet of Fortine Creek, a Class 1 fish-bearing stream. For Class 2 streams within the parcel, approximately 50 percent of the merchantable trees

would be removed as long as the canopy cover remains above 40 percent. Trees targeted for harvest in the SMZ are the large, windthrow-prone spruce. As per administrative rules (*ARM 36.11.304*), no equipment would be operated within the 50- or 100-foot SMZ except for in adjacent wetlands under frozen or snow-covered conditions per the SMZ Law (ARM 36.11.304). Under frozen or snow-covered conditions, the risk of soil displacement or compaction is reduced.

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

Existing roads would have drainage improvements and BMP upgrades implemented under this alternative. Minor drainage improvements may include reshaping drain dips and cleaning ditch-relief culvert catchbasins. Current maintenance activities would continue to provide drainage to area roads.

In-channel sources of sediment would be expected to continue to contribute sediment at the current rate.

Because DNRC would incorporate BMPs into the project design as required by *ARM 36.11.422 (2)* and all laws pertaining to SMZs would be followed, a low risk of sediment from timber-harvesting activities would result from the implementation of this alternative. Therefore, the risk of long-term adverse direct or indirect effects to water quality or beneficial uses would be low.

CUMULATIVE EFFECTS

- ***Cumulative Effects of the No-Action Alternative to Water Resources***

Sediment Delivery

No additional risk of sediment delivery would result from the implementation of this alternative. In-channel sources of sediment would continue to exist and erode as natural events dictate.

Cumulative Effects Summary

Because no timber harvesting or associated activities would occur under this alternative, cumulative effects would be limited to the natural progression of the existing condition. Under this alternative, fisheries habitat quality would be maintained at its current level with a low degree of risk of change due to anthropogenic sources.

Cumulative Effects of the Action Alternative to Water Resources

Sediment Delivery

The proposed timber-harvesting and road-construction activities would occur. No increase in sediment delivery would be expected from roads because road maintenance would be implemented to ensure proper function. A cumulative increase in sediment delivery as a result of timber harvesting would have a low risk of occurring because of the BMP application and adequate stream buffers to filter potential displaced soil. In-channel sources of sediment would continue to exist and erode as natural events dictate with a low risk of affecting beneficial uses.

Cumulative Effects Summary

Because all timber-harvesting activities would follow BMPs as required by *ARM 36.11.422* and the direct and indirect effects would have a low risk of impacts, a low risk of additional adverse cumulative effects would be expected to occur under this alternative. Conditions would continue to support fish-habitat parameters and provide adequate levels of large woody debris and shade to maintain channel form and function and also support a natural range of water temperatures. Under this alternative, fisheries habitat quality would also be maintained at its current level, with a low degree of risk of change due to anthropogenic sources.

Because BMPs would be implemented during timber-harvesting the risk of adverse cumulative impacts to water quality and beneficial uses, including fisheries habitat, would be low.

Water Resources and Fisheries Mitigations

- No harvesting would occur within the 88 feet of Fortine Creek, a Class 1 fish-bearing stream. For Class 2 streams within the parcel, approximately 50 percent of the merchantable trees would be removed as long as the canopy cover remains above 40 percent.
- Existing roads would have drainage improvements and BMP upgrades implemented.

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Attachment F – WILDLIFE ANALYSIS

Trego Portal Timber Sale – Wildlife Analysis

Analysis Prepared By:
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Title: Wildlife Biologist, Montana DNRC

Introduction

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

Issues

- Mature forest cover and connectivity. The proposed activities could decrease forested cover, which may reduce habitat connectivity and suitability for wildlife species associated with mature and old-growth forest.
- Canada lynx. The proposed activities could result in the modification of habitat preferred by Canada lynx (*Felis lynx*) and decrease the area's suitability for lynx.
- Grizzly bears. The proposed activities could alter grizzly bear (*Ursus arctos*) cover, reduce secure areas, and increase human access, which could adversely affect bears by displacing them from important habitats and/or increase risk of human-caused bear mortality.
- Fishers. The proposed activities could decrease habitat suitability for fishers (*Martes pennanti*) by decreasing canopy cover in mature forest stands, decreasing abundance of snags and coarse woody debris, and by increasing roads, which could elevate risk of trapping mortality.
- Pileated woodpeckers. The proposed activities could reduce tree density and alter the structure of mature forest stands, which could reduce habitat suitability for pileated woodpeckers (*Dryocopus pileatus*).
- Big game. The proposed activities could reduce habitat quality for big game, especially during the fall hunting and winter seasons, by removing forest cover, increasing roads in secure areas, and disturbing animals.

Regulatory Framework

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

Analysis Areas

Direct and Secondary Effects Analysis Area
The direct and indirect effects of the proposed activities on all species/issues were analyzed within the Project Area (*FIGURE WI-1*), which consists of 255 acres of DNRC-managed lands in sections 33 and 34 of T33N, R26W.

Cumulative Effects Analysis Areas
The cumulative effects of the proposed activities on all species/issues were analyzed at a broad surrounding landscape scale that varies according to the issue or wildlife species being discussed. Cumulative effects analysis areas are named according to the relative size of the area and are summarized in *TABLE WI-1* and *FIGURE WI-1*. Cumulative effects analysis areas (CEAAs) include the Project Area as well as lands managed by other agencies and private landowners. Detailed descriptions of each analysis area are located in the **Affected Environment** section for each issue or wildlife species evaluated (e.g., fisher, pileated woodpecker, etc.). In general, CEAAs were delineated to approximate the size of a focal species' home range or to approximate a surrounding landscape in which the proposed activities could most likely have measureable cumulative effects to wildlife habitat.

Table WI-1 - Wildlife Analysis Areas. *Descriptions of the areas used to analyze the proposed project's effects on wildlife species/issues.*

Analysis Area Name	Description	Total Acres	Issues/Species Analyzed
Project Area	DNRC managed lands in sections 33 and 34 of T33N, R26W	255	Direct & indirect effects for all issues/species
Small CEAA	The project area and 10 sections surrounding it.	7,591	Mature forest cover & connectivity, pileated woodpeckers,
Medium CEAA	The Small CEAA and portions of the Upper Fortine Creek HUC12 subwatershed	22,628	Canada lynx, fishers
Large CEAA	Portions of the Upper Fortine Creek, Middle Fortine Creek, and Swamp Creek-Lake Creek HUC12 subwatersheds.	63,092	Grizzly bears, big game

Analysis Methods

Analysis methods are based on the DNRC State Forest Land Management Plan, which is designed to promote biodiversity. The primary basis for this analysis includes information obtained by: field visits, review of scientific literature, Montana Natural Heritage Program (MNHP) data queries, DNRC Stand Level Inventory (SLI) data analysis, USDA Forest Service VMap data, GIS aerial photograph analysis, and consultation with professionals.

The coarse-filter wildlife analysis section includes analyses of the direct, secondary, and cumulative effects of the proposed alternatives on old-growth forest and connectivity of mature forest habitat.

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

Coarse Filter Wildlife Analysis

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

Introduction
A variety of wildlife species rely on older, mature forests to meet some or all of their life history 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, species composition and development. Timber harvest, like wildfire and blowdown, is a disturbance event that often creates open patches of young, early-successional habitat. 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 forests. In contrast, other wildlife species flourish in early seral habitats created by disturbance. Connectivity of forest stands under historical fire regimes 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
The analysis area for direct and indirect effects is the Project Area and the analysis area for cumulative effects is the 7,591-acre Small CEAA as described in *TABLE W-1* and depicted in *FIGURE W-1*. The Small CEAA is large enough to support a diversity of species that use mature forested habitat and/or require connected forested habitats and centers evaluation of cumulative effects on those areas most likely to be affected by the proposed action.

Measurement Criteria
Mature forested habitat was defined as forest stands with ≥40% canopy cover comprised primarily of trees ≥9 inches dbh. Forested stands containing trees of at least this size and density were considered adequate for providing minimal conditions necessary to facilitate movements of many wildlife species that benefit from well-connected mature forest conditions

across the landscape. Road density was calculated in linear miles per square mile by dividing the number of road miles by the specified analysis area in square miles. Factors considered in the analysis include: 1) availability of mature forested habitat (≥40% canopy cover, ≥9 inches dbh), 2) average patch size, 3) the degree of timber harvesting, 4) open and restricted road density, and 5) the availability of potential travel corridors.

Affected Environment

The project area currently contains approximately 169 acres (66.5% of project area) of mature forest stands that have a reasonably well-developed canopy (≥40% crown closure). Approximately 40 acres (12.5% of project area) consist of mature stands with a more open canopy (<40% crown closure) within the project area. Harvesting activities within the last 40 years have resulted in approximately 36 acres (14.1% of project area) of young, regenerating forest within the project area. Small clearings, wetlands, and roads occupy another 10 acres. Old-growth forest, as defined by Green et al. (1992), is not present within the proposed project area and is not discussed any further in this analysis. Mature forested stands are well represented within the proposed project area; with 3 patches present averaging 57 acres in size (see TABLE WI-2). Approximately 2.3 miles (5.8 miles/sq. mile) of roads exist in the project area, of which 1.9 miles of road are open to public motorized use and 0.4 miles are currently restricted to non-motorized use by the public. Additionally, the well-used Burlington-Northern Santa Fe railway bisects the project area from north to south; thus making continuous forest connectivity across the area unachievable and likely limits habitat connectivity for some species. Due to existing mature forest cover, patch characteristics, railways and road densities, habitat connectivity for species using well-stocked mature forest is moderate within the project area.

Abundance and locations of mature, well-stocked forest within the Small CEAA has been influenced by past timber harvesting, clearing around private home sites, dry south-facing slopes with open habitat types, and rocky, unproductive slopes. Presently, 53.9 percent (4,092 acres) of the small CEAA contains relatively well-connected mature forest stands possessing ≥40% crown closure. Average patch size of mature forest in the small CEAA is 372 acres (11 patches, see TABLE WI-2 – Mature Forest Attributes). Landscape connectivity of mature forest stands within the CEAA is moderate, with two patches (1,351 and 2,198 acres, respectively) accounting for over three-fourths of the mature forest inside the CEAA. However, some of these patches contain narrow corridors less than 300 feet that could limit connectivity for some species more sensitive to interior forest conditions. Given these assessments, landscape connectivity of mature forest stands within the CEAA is moderate. Approximately 49.6 miles (4.2 miles/sq. mile) of roads exist within the CEAA. Of these roads, there are 39.5 miles of open and seasonally open roads that equate to a density of 3.3 miles/square mile. These roads are primarily forest roads used for logging and recreational activities within the surrounding area, as well as private roads and driveways used to access private properties within the CEAA. Additionally, the Burlington-Northern Santa Fe railway bisects the CEAA from north to south; thus making continuous forest connectivity across the area unfeasible and likely limiting habitat connectivity for some species. This existing railway also parallels the primary Class 1 stream in the area (Fortine Creek) and passes over it numerous times, which likely decreases the suitability of this riparian area as a travel corridor for some species sensitive to openings and mechanized disturbance. Across the CEAA, mature forest habitat and landscape connectivity are moderate for species that require and/or prefer these conditions.

Table WI-2 – Mature Forest Attributes. *Acreages and patch size metrics of mature forested habitat (≥40% canopy cover, ≥9 inches dbh) pre- and post-harvest in the Project Area and Small CEAA for the Trego Portal Timber Sale. Percent of the total corresponding analysis area is in parentheses.*

Mature Forest Attribute	Project Area		Small CEAA	
	Existing	Post-Harvest	Existing	Post-Harvest
Acres of mature forest	169.4 (66.5%)	100.1 (39.3%)	4,092.1 (53.9%)	4,022.8 (53.0%)
Number of patches	3	5	11	14
Average patch size (acres)	56.5	19.7	372.0	287.2
Minimum Patch Size (acres)	1.2	0.5	1.8	0.5
Maximum Patch Size (acres)	88.5	66.7	2,197.8	2,184.8

Environmental Effects – Mature Forest Cover and Connectivity

No Action Alternative: Direct and Secondary Effects

None of the proposed forest management activities would occur. This would result in: 1) no changes to existing stands; 2) no appreciable changes to forest age, the distribution of forested cover, or landscape connectivity; and 3) no changes to wildlife use. Thus, no direct or indirect effects to mature forested habitat suitability and connectivity would be expected.

No Action Alternative: Cumulative Effects

None of the proposed forest management activities would occur. Thus: 1) no changes to existing stands would occur, 2) no further changes to the suitability of mature forested cover or connectivity would be anticipated, and 3) no changes to wildlife use would be expected. Past and ongoing forest management projects have affected mature forest wildlife habitat in the CEAA, and other proposed projects could affect mature forest habitat in the future. No additional cumulative effects to connectivity and suitability of mature forested habitat are expected to result from the No-Action Alternative that could affect wildlife in the CEAA.

Action Alternative: Direct and Secondary Effects

Under the Action Alternative, approximately 143 acres (60.0% of the project area) would be harvested. Of these acres, 116 acres (45.5% of the project area) of dense, mature forest would undergo harvesting. Approximately 69 acres of mature forest would receive harvest treatments that would reduce overstory crown closure from ≥40% to 5-20% and increase mature tree spacing to 45-80 feet. Harvesting on another 47 acres of mature forest would reduce tree densities, however overstory crown closure in these treated stands would remain above 40% postharvest and provide suitable habitat for some species. Average patch size of mature forest would be reduced by 36.8 acres and the number of patches would increase by 2 (TABLE WI-2). Remaining mature forest and connectivity in the west half of the project area would primarily be located along riparian areas and draws in a linear fashion. Most patches would remain connected to larger mature forest patches outside of the project area, although some of these corridors are less than 300 feet wide. Approximately 100 acres (39.3%) of mature forest in the project area with ≥40% overstory crown closure would remain after harvesting and could provide suitable habitat for species utilizing smaller patches of mature forest. No new roads would be built under the Action Alternative and restricted roads used for harvesting activities would remain restricted after project completion. Thus, moderate adverse direct and secondary effects to connectivity and suitability of mature forested habitat in the project area would be expected since: 1) harvesting would appreciably reduce tree density and existing cover on approximately 116 acres (68.7%) of existing available mature stands, 2) connectivity of mature forest would be altered with an increase in the number of patches from 3 to 5 and a decrease in average patch size from 57 to 20 acres, 3) a measure of connectivity would be maintained on

100 acres (39.3% of project area) of mature forest primarily along riparian areas, and 4) existing road density would not change.

Action Alternative: Cumulative Effects
Under the Action Alternative, timber harvesting would alter 116 acres of the 4,092 acres (2.8%) of mature forest habitat available in the CEAA. Harvest treatments would remove 69 acres of mature forest for 80-100 years and reduce habitat quality on another 47 acres (TABLE WI-2). Reductions in the availability of suitable mature forested habitat would be additive to harvest activities that are proposed or ongoing in the CEAA, although DNRC is unaware of any projects at this time. Across the CEAA, 53% of mature, forested habitats would remain and landscape connectivity would be altered to a minor degree given habitat conditions within the surrounding forested landscape. Existing landscape connectivity would be altered to a minor degree, as the number of mature forest patches would increase from 11 to 14 and average patch size would decrease from 372 acres to 287 acres (TABLE WI-2). Mature forest in the western half of the project area (Section 33) would remain connected to larger patches in the CEAA, however the width of some of these corridors would be less than 300 feet, which could reduce their effectiveness for some species sensitive to forest openings. The largest mature patch (2,198 acres) within the CEAA would be reduced by 13 acres, but would remain connected to mature forest within the eastern half of the project area. No new roads would be constructed. Thus, minor adverse cumulative effects to mature forested habitat abundance, suitability, and connectivity would be anticipated as a result of the Action Alternative since: 1) the abundance of mature forested habitat in the CEAA would decrease by 69 acres (1.7% of existing mature forest); 2) average patch size of mature forested habitat would decrease by 84.8 acres; 3) some connectivity with larger patches in the CEAA would be maintained; 4) no new roads would be constructed.

Fine Filter Wildlife Analysis

In the fine-filter analysis, individual species of concern are evaluated. These species include those listed as threatened or endangered under the Endangered Species Act of 1973, species listed as sensitive by DNRC, and animals managed as big game by Montana DFWP. Table WI-2 – Fine Filter provides an analysis of the anticipated effects for each species.

Table WI-3 – Anticipated Effects of the Trego Portal Timber Sale on wildlife species.

Species/Habitat	[Y/N] Potential Impacts and Mitigation Measures N = Not Present or No Impact is Likely to Occur Y = Impacts May Occur (Explain Below)
Threatened and Endangered Species	
Canada lynx (*Felix lynx)* Habitat: Subalpine fir habitat types, dense sapling, old forest, deep snow zones	[**Y**] **Detailed Analysis Provided Below.** The Project Area contains approximately 213 acres of suitable lynx habitat.
Grizzly bear *(Ursus arctos)* Habitat: Recovery areas, security from human activity	[**Y**] **Detailed Analysis Provided Below**. The Project Area is considered grizzly bear non-recovery occupied habitat associated with the Northern Continental Divide Ecosystem (NCDE) (*USFWS 1993*, *Wittinger 2002*).
Sensitive Species	
Bald eagle	[**N**] No known nest territories are present in the vicinity of the

Species/Habitat	[Y/N] Potential Impacts and Mitigation Measures N = Not Present or No Impact is Likely to Occur Y = Impacts May Occur (Explain Below)
(Haliaeetus leucocephalus) Habitat: Late-successional forest less than 1 mile from open water	project area and no large water bodies exist within one mile of the project area that might provide suitable locations for nesting. Thus, no direct, indirect, or cumulative effects to bald eagles would be expected to occur as a result of either alternative.
Black-backed woodpecker *(Picoides arcticus)* Habitat: Recently burned or beetle-infested forest	[**N**] No recently (<5 years) burned areas occur within 0.25 miles of the Project Area. Thus, no direct, indirect, or cumulative effects to black-backed woodpeckers would be expected to occur as a result of either alternative.
Coeur d'Alene salamander *(Plethodon idahoensis)* Habitat: Waterfall spray zones, talus near cascading streams	[**N**] No moist talus or streamside talus habitat occurs in the Project Area. Thus, no direct, indirect, or cumulative effects to Coeur d'Alene salamanders would be expected to occur as a result of either alternative.
Columbian sharp-tailed grouse *(Tympanuchus Phasianellus columbianus)* Habitat: Grassland, shrubland, riparian, agriculture	[**N**] No suitable grassland communities occur in the Project Area. Thus, no direct, indirect, or cumulative effects to Columbian sharp-tailed grouse would be expected to occur as a result of either alternative.
Common loon *(Gavia immer)* Habitat: Cold mountain lakes, nest in emergent vegetation	[**N**] No suitable lake habitat occurs within 500 feet of the Project Area. Thus, no direct, indirect, or cumulative effects to common loons would be expected to occur as a result of either alternative.
Fisher *(Martes pennanti)* Habitat: Dense mature to old forest less than 6,000 feet in elevation and riparian	[**Y**] **Detailed Analysis Provided Below** – Approximately 155 acres of suitable fisher habitat occur within the Project Area.
Flammulated owl *(Otus flammeolus)* Habitat: Late-successional ponderosa pine and Douglas-fir forest	[**N**] No potentially suitable dry ponderosa pine or Douglas-fir stands exist in the project area. Thus, no direct, indirect or cumulative effects to flammulated owls would be expected to occur as a result of either alternative.
Gray Wolf *(Canis lupus)* Habitat: Ample big game populations, security from human activities	[**N**] Wolves may use habitat in the vicinity of the Project Area. Disturbance associated with timber sales at den and rendezvous locations can adversely affect wolves; however, timing restrictions would apply if den or rendezvous sites are documented (*ARM 33.11.430(1)(a)(b)*). Thus, negligible adverse direct, indirect, or cumulative effects to wolves would be anticipated as a result of the Action Alternative. No direct, indirect, or cumulative effects would be anticipated as a result of the No Action Alternative.
Harlequin duck *(Histrionicus histrionicus)* Habitat: White-water streams, boulder and cobble substrates	[**N**] No suitable stream habitat occurs in the vicinity of the Project Area and harlequin ducks have not been observed in the area (*MNHP 2015*). Thus, no direct, indirect, or cumulative effects to harlequin ducks would be expected to occur as a result of either alternative.
Northern bog lemming *(Synaptomys borealis)* Habitat: Sphagnum meadows, bogs, fens with thick moss mats	[**N**] No suitable wetlands occur within the Project Area. Thus, no direct, indirect, or cumulative effects to northern bog lemmings would be expected to occur as a result of either alternative.
Peregrine falcon *(Falco peregrinus)* Habitat: Cliff features near open foraging areas and/or wetlands	[**N**] No known cliffs suitable for peregrine falcon nesting exist within the project area. Recent or historical observations of peregrine falcons within 10 miles of the project area are lacking (*MNHP 2015*). Thus, no direct, indirect, or cumulative effects to peregrine

Species/Habitat	[Y/N] Potential Impacts and Mitigation Measures N = Not Present or No Impact is Likely to Occur Y = Impacts May Occur (Explain Below)
	falcons would be anticipated as a result of either alternative.
Pileated woodpecker *(Dryocopus pileatus)* Habitat: Late-successional ponderosa pine and larch-fir forest	[Y] **Detailed Analysis Provided Below –** Approximately 161 acres of suitable pileated woodpecker habitat occur in the Project Area.
Townsend's big-eared bat *(Plecotus townsendii)* Habitat: Caves, caverns, old mines	[**N**] No suitable caves or mine tunnels are known to occur in the Project Area. Thus, no direct, indirect or cumulative effects to Townsend's big-eared bats would be expected to occur as a result of either alternative.
Wolverine *(Gulo gulo)* Habitat: Alpine tundra and high-elevation boreal forests that maintain deep persistent snow into late spring	[**N**] No potentially suitable wolverine habitat exists within the proposed project area. The project area does not maintain deep snow into late spring and does not contain high-elevation alpine habitat. While a wolverine could pass through the project area during its extensive movements, appreciable use of the area is not expected. Given the large home range area (average 150+ sq. miles) wolverines occupy, and long distances wolverines typically cover during their movements, the proposed activities would not be expected to measurably affect use of the area by wolverines. Thus, no direct, indirect or cumulative effects to wolverines would be expected to occur under the proposed action.
Big Game Species	
Elk	[Y] **Detailed Analysis Provided Below –** The Project Area contains potential elk, mule deer, and white-tailed deer winter range habitat**.**
Whitetail	
Mule Deer	
Other	

Threatened and Endangered Species

CANADA LYNX

Issue
The proposed activities could result in the modification of habitat preferred by Canada lynx and decrease the area's suitability for lynx.

Introduction
Canada lynx are listed as "threatened" under the Endangered Species Act. Canada lynx are associated with subalpine fir forests, generally between 4,000 to 7,000 feet in elevation in western Montana (Ruediger et al. 2000). Lynx abundance and habitat use are strongly associated with snowshoe hare populations; thus activities which decrease habitat quality for snowshoe hares can reduce the availability of prey for lynx. Lynx habitat in western Montana consists primarily of stands that provide habitat for snowshoe hares including young and mature coniferous stands with high levels of horizontal cover (Squires et al. 2010, Squires et al. 2013). Forest type, tree densities, natural disturbance history, and time since harvesting play important roles in shaping the suitability of young foraging habitat for lynx. Mature forest stands with abundant horizontal cover and coarse woody debris provide structure important for foraging, denning, travel, and security. These conditions are found in a variety of habitat types (Pfister et al. 1977), particularly within the subalpine fir series. Historically, northwest Montana contained a variety of stand types with differing fire regimes. This variety of stand types, combined with

patchy elevation and snow-depth gradients preferred by lynx, likely formed a non-continuous mosaic of lynx and non-lynx habitats (Fischer and Bradley 1987, Ruggiero et. al. 1999, Squires et al. 2010). Forest management considerations for lynx include providing a mosaic of young and mature lynx habitats that are well connected across the landscape.

Analysis Area

The analysis area for direct and indirect effects is the Project Area and the analysis area for cumulative effects is the 22,628-acre Medium CEAA as described in *TABLE WI-1* and depicted in *FIGURE WI-1.* The Medium CEAA approximates the size of a lynx home range, is centered on the project area, and is defined according to geographic features (e.g., ridgelines), which are likely to influence movements of Canada lynx in the vicinity of the project area, providing a reasonable analysis area for Canada lynx that could be influenced by project-related activities.

Measurement Criteria

Factors considered in the analysis include: 1) the level of harvesting, 2) the availability of suitable lynx habitat, and 3) landscape connectivity. Suitable lynx habitat was subdivided into the following lynx habitat classes: 1) winter foraging, 2) summer foraging, 3) other suitable and 4) temporary non-habitat. Other suitable lynx habitat is defined as habitat that has the potential to provide connectivity and lower quality foraging habitat, but does not contain the necessary attributes to be classified as winter or summer foraging habitat classes. The temporary non-habitat category consists of forested stands that are not expected to be used by lynx until suitable horizontal cover develops. All habitat classes were identified according to DNRC's lynx habitat mapping protocols (*USFWS and DNRC 2010*). On non-DNRC lands, mature stands with ≥40% canopy cover provided by trees >9 inches dbh on average was queried to estimate potential lynx habitat. Using these forest metrics on non-DNRC lands provides a conservative estimate and likely underestimates the total amount of suitable lynx habitat on the landscape because it excludes young, dense stands that can also serve as suitable habitat for lynx and lynx prey.

Affected Environment

The Project Area contains 214 acres of suitable lynx habitat (TABLE WI-4). Other potentially suitable stands in the Project Area consist of 41 acres of preferred lynx cover types, but do not currently contain the vegetative cover to support snowshoe hares or lynx. Suitable lynx habitat is well-connected within each parcel of the project area, however connectivity across the full Project Area is interrupted by the Burlington-Northern Santa Fe railway, which cuts north-south through the middle of the project area. Some suitable lynx habitat exists along Fortine Creek, the primary Class 1 stream in the area, however this stream parallels the railway and flows underneath it in several places, likely limiting this riparian area as a potential connectivity corridor for lynx. Additionally, home sites and forest management on private lands directly north and east of the project area further reduce the likelihood of appreciable lynx use within the project area.

The Medium CEAA contains 214 acres of suitable lynx habitat on DNRC lands and another 10,764 acres of potentially suitable habitat on other ownerships (TABLE WI-4). The remaining portions of the CEAA that do not provide vegetation likely to support lynx consist primarily of scree slopes, dry south-facing slopes, and some logged stands with <40% canopy cover. In the vicinity of the Project Area and in surrounding lands, connectivity of lynx habitats is moderate, potentially enabling lynx to travel throughout the CEAA. Observations of lynx within the CEAA are scarce and sporadic over the 30 years (*MNHP 2015*). Lower elevations, lower average snow depths, and the interspersion of unsuitable habitat types within the CEAA are factors that likely reduce the overall suitability of the CEAA for appreciable use by lynx.

Table WI-4 – Lynx habitat. *Estimates of existing lynx habitat and habitat that would persist post-harvest on DNRC lands in the project area and cumulative effects analysis area. Percent refers to the percent of the lynx habitat category of the total potential habitat[a] present on DNRC-managed lands.*

Lynx Habitat Category	Acres of lynx habitat			
	Project Area		Cumulative Effects Analysis Area	
	Existing	Post-Harvest	Existing	Post-Harvest
Other Suitable	18.3 (7.2%)	57.3 (22.5%)	18.3 (7.2%)	57.3 (22.5%)
Summer Forage	0.0 (0%)	0.0 (0%)	0.0 (0%)	0.0 (0%)
Temporary Nonsuitable	41.2 (16.2%)	115.5 (45.4%)	41.2 (16.2%)	115.5 (45.4%)
Winter Forage	195.2 (76.6%)	81.8 (32.1%)	195.2 (76.6%)	81.8 (32.1%)
Grand Total: Suitable Lynx Habitat[b]	213.5 (83.8%)	139.1 (54.6%)	213.5 (83.8%)	139.1 (54.6%)

[a] *Total potential lynx habitat describes all areas that contain appropriate habitat types for lynx (i.e., sum of summer forage, winter forage, other suitable, and temporary non-suitable lynx habitat classes).*
[b] *Total suitable lynx habitat describes all DNRC lynx habitat categories that contain structural attributes necessary for use by lynx (i.e., sum of summer forage, winter forage, other suitable lynx habitat classes).*

Environmental Effects – Canada Lynx

No Action Alternative: Direct and Secondary Effects on Canada Lynx

Under this alternative, no changes in lynx habitat elements would be expected in the project area and landscape connectivity would not be altered. Thus, no direct or indirect effects influencing lynx habitat suitability would be expected to occur in the project area.

No Action Alternative: Cumulative Effects on Canada Lynx

No appreciable change in lynx habitats would occur under this No-Action Alternative, and no further changes in landscape connectivity would be anticipated. Past forest management projects not associated with the proposed Trego Portal Timber Sale have affected lynx habitat in the CEAA, and ongoing and proposed projects could alter lynx habitat in the future. Activities on non-DNRC lands could continue altering lynx habitat and create disturbance within the CEAA. Thus, no additional cumulative effects to suitable lynx habitat are expected to result from the No-Action Alternative that could affect lynx habitat suitability in the CEAA.

Action Alternative: Direct and Secondary Effects on Canada Lynx

The proposed activities would alter approximately 133 acres (62.4%) of the 213 acres of suitable lynx habitat available in the Project Area. After harvest, approximately 139 total acres of potential habitat would remain suitable and 74 acres would be converted to temporary nonsuitable habitat (*TABLE WI-4*). To ensure that forest structural attributes preferred by snowshoe hares remain following harvest, some patches of advanced regeneration and shade-tolerant tree species would be retained where possible within portions of lynx winter forage habitat. The total area of these patches would not be expected to comprise more than 5% of the acres proposed for harvest. Additionally, 12 to 25 tons/acre of coarse woody debris would be retained in accordance with DNRC Forest Management Rules (*ARM 36.11.414)* and

retention of downed logs ≥15 inch diameter would be emphasized. Lynx habitat connectivity would be reduced; however, some connectivity would be maintained throughout the east side of the project area. Habitat connectivity across the project area, particularly habitat associated with riparian areas in the western half, would continue to be limited by the Burlington-Northern Santa Fe railway. If present in the vicinity of the Project Area, lynx could be temporarily displaced by forest management activities for up to 4 years due to disturbance caused by motorized activities. Thus, moderate adverse direct and indirect effects to Canada lynx associated with landscape connectivity and availability of suitable habitat would be anticipated as a result of the Action Alternative since: 1) suitable habitat for lynx would be altered on 133 acres and reduced by 74 acres (34.6% of existing suitable habitat in the Project Area); 2) coarse woody debris and some small shade-tolerant conifers would be retained to promote forest structural complexity in harvest units, expediting their growth back into suitable lynx habitat; and 3) landscape connectivity would be reduced.

Action Alternative: Cumulative Effects on Canada Lynx
The proposed activities would affect 133 acres (1.5%) of the 11,019 acres of potentially suitable lynx habitat available in the Medium CEAA. Approximately 74 of these harvested acres would be temporarily unsuitable use by lynx due to lack of canopy cover in the understory and overstory. Habitat suitability would be reduced on another 59 acres, however adequate vegetation would be retained (total crown closure ≥40%) to remain suitable for use by lynx after harvesting. Some patches of shade tolerant trees and approximately 12 to 25 tons/acre of coarse woody debris would be retained and downed logs ≥15 inch diameter would be emphasized. Lynx habitat connectivity would be slightly reduced across the CEAA; however, overall connectivity of lynx habitat would remain moderate. Connectivity in riparian areas would remain in much of the CEAA, but would still be limited in the vicinity of the project area due to the Burlington-Northern Santa Fe railway. Changes to lynx habitat availability and connectivity would be additive to past and ongoing forest management projects within the CEAA. Thus, minor adverse cumulative effects to Canada lynx associated with landscape connectivity and availability of suitable habitat would be anticipated as a result of the Action Alternative since: 1) overall baseline habitat suitability would remain moderate with 48.7% of the CEAA in suitable habitat; 2) existing suitable lynx habitat within the CEAA would be reduced by 0.7% and those areas would remain unsuitable for at least 15 years, 3) habitat connectivity within the CEAA would be affected by proposed activities to a minor degree, and 4) lynx could be temporarily displaced by logging activities in the portion of CEAA overlapping the project area.

GRIZZLY BEAR

Issue
The proposed activities could alter grizzly bear cover, reduce secure areas, and increase human access, which could adversely affect bears by displacing them from important habitats and/or increase risk of human-caused bear mortality.

Introduction
Grizzly bears are opportunistic omnivores that inhabit a variety of habitats in Montana. Preferred grizzly bear habitat includes avalanche chutes, fire-mediated shrub fields, and riparian areas, all of which provide seasonal food sources (*Servheen 1983*, *McLellan and Hovey 2001*). Grizzly bears are federally listed as a threatened species and primary threats are related to human-bear conflicts and long-term habitat loss associated with human development (*Mace and Waller 1997*). Forest management considerations for grizzly bears include minimizing potential for conflicts with humans, minimizing adverse effects to cover, minimizing access and the

construction of new roads, and reducing disturbance levels during the non-denning season, especially in the spring and fall periods when grizzly bears have important nutritional demands.

Analysis Area

The analysis area for direct and indirect effects is the Project Area and the analysis area for cumulative effects is the 63,092-acre Large CEAA as described in *TABLE WI-1* and depicted in *FIGURE WI-1.* The Large CEAA approximates the home range size of a female grizzly bear in northwest Montana and is defined by landscape features (i.e., ridgelines) which are likely to influence movements of a Grizzly Bear in the vicinity of the project area; providing a reasonable analysis area for Grizzly Bear that could be influenced by project-related activities.

Measurement Criteria

Factors considered in the analysis included: 1) the degree of harvesting, 2) the availability of visual screening cover, 3) risk of displacement from important grizzly bear habitat including spring habitat and riparian habitat, and 4) open and restricted road densities. Grizzly bear hiding cover was considered to be forest vegetation that will hide 90% of a grizzly bear at a distance of 200 feet. Visual screening on DNRC lands was estimated by evaluating forest stand size class and the total crown density of all trees in the stand using GIS and forest inventory data. On non-DNRC lands the acreage of stands with ≥40% canopy cover provided by trees ≥9 inches dbh on average was quantified to estimate the availability of visual screening cover. Within the CEAA, open road densities were calculated using the simple linear calculation method (road length in miles divided by area in square miles).

Affected Environment

The Project Area is considered grizzly bear non-recovery occupied associated with the NCDE (*USFWS 1993*, *Wittinger 2002*). The Project Area does not occur in a linkage zone and does not contain security habitat for grizzly bears (*Servheen et al. 2003*); however, bears have been occasionally observed in the vicinity (*MNHP 2015*). Approximately 170 acres (66.6% of Project Area) possess cover in amounts capable of providing visual screening for grizzly bears, which would allow grizzly bears to travel freely in the Project Area, should they be present. The parcels are located at a low elevation, and are considered potential grizzly bear spring habitat. Riparian habitat can provide important foraging areas for bears, especially in the spring (*Servheen 1983*), and is available in the Project Area along Fortine Creek and other small unnamed streams. While vegetation conditions within the project area could support use by grizzly bears, open road density in the project area is high at 4.8 miles/square miles and the Burlington-Northern Santa Fe railway runs through the middle of the project area, which likely discourages appreciable use of the area by bears.

The Large CEAA contains a variety of age classes of forested habitat as well as some riparian habitat and wet meadows. Bears have been occasionally recorded in the CEAA in the past and continued or increasing use of the area by grizzly bears is anticipated (*MNHP 2015, MTFWP unpublished data*). The CEAA contains at least 30,029 acres (47.6%) of hiding cover. Over 84% of the CEAA consists of spring habitat for grizzly bears. Open road density within the CEAA is approximately 2.8 miles/sq. mile and total road density is approximately 3.6 miles/sq. mile. Due to the number of open or seasonally open roads, very little security habitat for bears exists within the CEAA. The greatest risk factors for grizzly bears within the CEAA are likely associated with the Burlington-Northern Santa Fe railway, as well as with homes, pets, and livestock in the northern portion of the CEAA.

Environmental Effects – Grizzly Bear

No Action Alternative: Direct and Secondary Effects on Grizzly Bear

Under this alternative, no proposed project activities would occur. Thus, no direct or indirect effects associated with grizzly bear displacement or human-caused bear mortality risk would be anticipated as a result of the No-Action Alternative.

No Action Alternative: Cumulative Effects on Grizzly Bear

Under this alternative, no proposed project activities would occur. Past forest management projects not associated with the proposed Trego Portal Timber Sale have affected grizzly bear habitat in the CEAA, and ongoing and proposed projects could alter bear habitat in the future. Activities on non-DNRC lands could continue altering grizzly bear habitat and create disturbance within the CEAA. Thus, since no additional changes in available habitats or level of human disturbance would be anticipated as a result of the No-Action Alternative, no cumulative effects to grizzly bear displacement or effects involving mortality risk would be anticipated.

Action Alternative: Direct and Secondary Effects on Grizzly Bear

Under the Action Alternative, grizzly bear hiding cover would be altered by commercial harvest on approximately 119 acres (43.7%) of the project area. Grizzly bear hiding cover would be removed on approximately 72 acres and hiding cover would be altered on another 47 acres. Harvesting associated with the Action Alternative would increase sight distances within all proposed harvest units, however existing stands of dense regenerating conifers, unharvested forest patches, and topographic breaks would exist in such a manner that no point in any harvest unit would be greater than 600 feet to screening cover. Approximately 14 acres of existing riparian cover along 1.4 miles of Class 1 and 2 streams would undergo selective harvesting but would continue to offer some cover for bears in this preferred habitat. Hiding cover adjacent to open roads within the project area would be maintained where present and practicable. Should grizzly bears be present in the area at the time of harvest operations, they could be affected by increased road traffic, noise, and human activity, and by reduced amounts of hiding cover. Seasonal restrictions on motorized activity and commercial harvest restrictions would apply to the project area, which would minimize disturbance to bears during the spring period (April 1 – June 15). Additionally, contract requirements would assist in mitigating bear-human conflict risk by specifying that contractors are not permitted to carry firearms on the work site and that unnatural attractants must stored or disposed of in a bear-resistant manner. No new roads would be built, but approximately 0.4 miles of currently restricted road would be used in the short-term for project activities. This road would be closed upon project completion. Thus, minor adverse direct or indirect effects to grizzly bears associated with displacement and mortality risk would be expected since: 1) existing conditions in the project area make appreciable use by grizzly bears unlikely; 2) moderate levels of temporary (1-4 years) disturbance and displacement would be anticipated; 3) hiding cover would be removed on 72 acres (28.2%) and reduced on 47 acres (18.4%) of the project area, but would be expected to recover in 15-20 years; 4) reductions in hiding cover would be mitigated through vegetation retention patches within and between harvest units, vegetation retention along riparian corridors, and reduced sight distances associated with varied topography; 5) commercial harvest and would be restricted during the spring period; and 6) a short-term increase in functional open road density of 1.0 miles/sq. mi. would be anticipated but long-term open road density would not change.

Action Alternative: Cumulative Effects on Grizzly Bear

Approximately 119 acres (0.2% of the CEAA) of grizzly bear hiding cover would be altered within the CEAA. Of these acres, 72 acres (0.1% of the CEAA) would receive harvest treatments that would remove hiding cover for 15-20 years. Reductions in hiding cover on 119

acres and anticipated elevated disturbance levels would be additive to past timber harvesting as well as current harvest projects within the CEAA. Harvesting and road building within the last 40 years in the CEAA has altered grizzly bear cover and habitat connectivity, however 47.5% (29,941 acres) of the area would remain suitable hiding cover for grizzly bears. Approximately 14 acres of vegetation adjacent to preferred riparian areas would be affected by selective harvesting, but would continue to provide hiding cover for bears post-harvest. Continued occasional use of the CEAA by grizzly bears would be anticipated during and after proposed activities. Collectively, short-term (1 to 4 years) increases in human disturbance would be anticipated in the CEAA, but contract requirements would lessen risk of human-bear conflicts during active harvest operations (e.g. proper storage/disposal of unnatural attractants, prohibit possession of firearms, etc.). Timing restrictions on commercial timber activities would minimize risk of disturbing grizzly bears during the spring period (April 1 – June 15). A slight short-term increase in open road density would occur, increasing by 0.004 miles/sq. mile in the CEAA. Density of all permanent roads within the CEAA would not change. Disturbance associated with temporarily accessed roads would be additive to that occurring on other open and restrictive roads in the CEAA. Within the CEAA, high-risk factors for bears associated with human developments, open roads and the railway would continue to be present at moderate levels. Thus, minor adverse cumulative effects to grizzly bears associated with displacement or effects involving mortality risk would be expected since: 1) short-duration (1 to 4 years) increases in human disturbance levels would be expected within the CEAA, 2) hiding cover would be removed for approximately 15 to 20 years on a relatively small portion (0.1%) of the CEAA, 3) approximately 47.5% of the CEAA would continue to provide hiding cover, and 4) short-term increases in functional open road density of 0.004 miles/sq. mi. would be anticipated and long-term open road density would not change.

Sensitive Species

FISHERS

Issue

The proposed activities could decrease habitat suitability for fishers by decreasing canopy cover in mature forest stands, decreasing abundance of snags and coarse woody debris, and by increasing roads, which could elevate risk of trapping mortality.

Introduction

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

Analysis Area

The analysis area for direct and indirect effects is the Project Area and the analysis area for cumulative effects is the 22,628-acre Medium CEAA as described in *TABLE WI-1* and depicted in *FIGURE WI-1.* The Medium CEAA is centered on the Project Area and is defined according to geographic features and could support the home range of at least one male fisher and

multiple female fishers, providing a reasonable analysis area for fishers that could be influenced by project-related activities.

Measurement Criteria

Factors considered in the analysis include: 1) the degree of harvesting, 2) availability and structure of preferred fisher habitats (upland, riparian), 3) landscape connectivity, and 4) human access as it relates to risk of trapping mortality. Fisher habitat classifications considered in the analysis include: a) upland fisher habitat, and b) riparian fisher habitat, which are defined according to proximity of the stand to streams. Riparian fisher habitat is located within 100 feet of Class 1 streams or within 50 feet of Class 2 streams (*ARM 36.11.440(b)*). The remaining fisher habitat is considered upland fisher habitat. Habitat structure considered appropriate for fisher use includes stands with 40-100% total stocking density. Potential fisher habitat (riparian, upland) on other ownerships was identified by identifying mature forested habitat (≥40% cover, trees >9 inches dbh average) below 6,000 feet elevation in proximity to perennial and intermittent streams.

Affected Environment

The proposed project area contains 155 acres (60.8% of project area) of suitable fisher habitat (TABLE W-5). Riparian fisher habitat within the project area is comprised of approximately 23 acres of preferred fisher cover types, of which 23 acres (99.8% of preferred cover types) of riparian habitat are currently suitable for use by fishers. The project area's class 1 stream (Fortine Creek) is directly adjacent to the Burlington-Northern Santa Fe railway, which limits suitable riparian habitat on one side of the stream and likely disrupts connectivity for any fisher traveling in the riparian corridor. Snags and coarse woody debris (CWD) were qualitatively accessed during field visits and found to be at relatively low levels, particularly large snags and CWD (>15" diameter). Existing suitable stands are providing the forest conditions (≥40% crown closure) necessary for use as fisher travel habitat in upland areas. Across the project area, suitable fisher habitat is moderately connected but limited by roads/railways and young stands created by past timber harvesting. There are 1.9 miles of open roads within the project area that facilitate access for trappers and firewood gathering, which is common. Overall, fisher habitat suitability and connectivity within the project area is moderate and risk factors are high. Given existing habitat conditions, disturbance associated with open roads/railways, and the lack of historical observations in the vicinity of the project area (*MNHP 2015*), appreciable use of the project area by fishers is unlikely.

Historical records of fisher occurring in the CEAA within the last 50 years are lacking, however fishers have been documented in Lincoln and Flathead Counties (*MNHP 2015, Foresman 2012*) and fishers potentially use the CEAA. Within the CEAA, there are 10,919 acres (48.3% of the CEAA) of potentially suitable fisher habitat (TABLE W-5). Riparian fisher habitat within the CEAA consists of approximately 23 acres of preferred fisher cover types on DNRC lands, of which 23 acres (99.8% of preferred fisher cover types) are currently suitable for use by fishers. Abundance and connectivity of suitable fisher habitat is influenced by wet meadows, rock/scree fields, roads/railways, and past timber harvesting within the CEAA. Approximately 791 acres adjacent to Class 1 and 2 streams within the CEAA have accompanying riparian vegetation that would facilitate fisher travel, and contribute to habitat suitability and connectivity. Within the CEAA, past harvesting has modified mature crown closure, snags and coarse woody debris levels. The CEAA contains a network of existing roads (density = 2.8 mi/sq. mile) that facilitate trapper access and firewood harvesting. Collectively, habitat suitability for fishers within the CEAA is moderate and risk factors are moderate.

Table WI-5 – **Fisher habitat.** *Estimates of existing and post-harvest acreages of suitable fisher habitat within the project area and CEAA for the Trego Portal Timber Sale, including potential habitat on non-DNRC ownership. Values in parentheses refer to the percentage that each fisher habitat type represents within the larger analysis area.*

Fisher Habitat Attribute	Project Area (255 acres)		Cumulative Effects Analysis Area (22,628 acres)	
	Existing	Post-Harvest	Existing	Post-Harvest
Upland Fisher Habitat (DNRC)	131.7 (51.7%)	58.8 (23.1%)	131.7 (0.6%)	58.8 (0.3%)
Upland Fisher Habitat (non-DNRC)	0.0 (0%)	0.0 (0%)	9,996.1 (44.2%)	9,996.1 (44.2%)
Riparian Fisher Habitat (DNRC)	23.2 (9.1%)	23.1 (9.1%)	23.2 (0.1%)	23.1 (0.1%)
Riparian Fisher Habitat (non-DNRC)	0.0 (0%)	0.0 (0%)	768.2 (3.4%)	768.2 (3.4%)
Total Suitable Fisher Habitat (DNRC)	154.9 (60.8%)	81.9 (32.2%)	154.9 (0.7%)	81.9 (0.4%)
Total Suitable Fisher Habitat (DNRC lands & non-DNRC lands)	154.9 (60.8%)	81.9 (32.2%)	10,919.3 (48.3%)	10,846.3 (47.9%)

Environmental Effects – Fishers

No Action Alternative: Direct and Secondary Effects on Fishers

Under this alternative, no proposed project activities would occur. Thus, no direct or indirect effects associated with fisher habitat suitability or trapping mortality risk would be anticipated as a result of the No-Action Alternative.

No Action Alternative: Cumulative Effects on Fishers

Under this alternative, no proposed project activities would occur. Past forest management projects not associated with the proposed Trego Portal Timber Sale have affected fisher habitat in the CEAA, and ongoing and proposed projects could alter fisher habitat in the future. Activities on non-DNRC lands could continue altering fisher habitat and create increased trapping risk within the CEAA. Thus, since no additional changes in available habitat or level of human access would be anticipated as a result of the No-Action Alternative, no cumulative effects to fisher habitat suitability or trapping mortality risk would be anticipated.

Action Alternative: Direct and Secondary Effects on Fishers

Approximately 91 acres of the 155 acres (58.7%) of suitable fisher habitat in the project area would be harvested under the Action Alternative (TABLE W-5). Approximately 73 acres of upland fisher habitat within the project area harvest units would receive harvest treatments that would likely yield stands too sparsely forested for appreciable use by fishers for 40-80 years. An additional 4 acres of upland fisher habitat would receive harvest treatments that would reduce tree densities but retain adequate overstory crown closure (≥40%) for use by fishers. Up to 14 acres of suitable riparian habitat (31.7% of riparian habitat) within 100 feet of Class 1 or Class 2 streams could undergo selective harvesting that would leave adequate overstory crown closure (≥40%) suitable for use by fishers after treatment, however habitat quality would be lower within these acres. Another 0.06 acres of suitable riparian habitat within 50 to 100 feet of Class 1 or Class 2 streams could undergo harvest treatments that would remove enough

overstory crown closure to render the habitat temporarily unsuitable for use by fishers. Approximately 99.5% (23 acres) of preferred fisher cover types in riparian areas would remain suitable for use by fishers. In all areas, harvest prescriptions call for retention of at least, 2 snags and 2 snag recruits per acre (≥21 in. dbh) where they exist, otherwise the next largest size class. In addition, 12 to 25 tons of coarse woody debris per acre would be planned for retention within harvest units. Long-term open road density would not change under the Action Alternative. Because roads would remain restricted during the trapping season, fisher mortality risk due to trapping would be expected to remain the same. The potential future risk for snag and coarse woody debris loss due to firewood gathering would be expected to remain the same, as no new permanent roads would be built. Thus, minor adverse direct and indirect effects would be anticipated that would affect fisher habitat suitability in the project area since: 1) existing baseline suitability and connectivity of fisher habitat within the project area is moderate and appreciable use by fishers is unlikely, 2) harvesting would reduce suitable upland fisher habitat in the project area by 28.6%, 3) reductions in upland habitat connectivity would occur but existing levels of riparian fisher habitat would be minimally affected, 4) some large snags and snag recruits would be retained, and 5) overall risk factors associated with motorized human access levels would not appreciably change.

Action Alternative: Cumulative Effects on Fishers

Approximately 91 acres (0.8%) of 10,919 acres of potentially suitable fisher habitat in the CEAA would be harvested. Of these proposed harvest acres, 77 acres would be upland fisher habitat and 14 acres would be riparian habitat (TABLE W-5). Approximately 14 acres of riparian fisher habitat would receive harvest treatments that would reduce tree densities but retain adequate overstory crown closure (≥40%) suitable for use by fishers, whereas 0.06 acres of harvested riparian habitat would likely be too open for appreciable use by fishers. Of the approximately 23 acres of preferred fisher cover types associated with Class 1 and 2 streams on DNRC lands, 23 acres (99.5% of preferred fisher cover types) would remain suitable for use by fishers (*ARM 36.11.440(1)(b)(i)*). Reductions in upland fisher habitat would be additive to the changes associated with current timber harvesting in the CEAA and past harvesting within the last 40 years. Approximately 10,846 acres of the 22,628-acre cumulative effects analysis area (47.9%) would remain as suitable fisher habitat (TABLE W-5). Reductions in landscape connectivity of suitable upland fisher habitat within the CEAA would occur; however existing forest stands along riparian areas would persist and appreciable effects on fisher use of the CEAA would not be expected. The potential future risk for snag and coarse woody debris loss due to firewood gathering would not be expected to change, as no new permanent roads would be built and all existing restricted roads would remain restricted. Potential trapping mortality would be minimally influenced, as there would be no change in public access. Thus, minor adverse cumulative effects would be anticipated that would affect fisher habitat suitability within the CEAA since: 1) harvesting would alter tree density, snags, and stand structure in 0.8% of suitable fisher habitat within the CEAA, 2) minor changes to fisher habitat associated with riparian areas in the CEAA would be anticipated and 99.5% of the total preferred cover type acreage would remain moderately to well-stocked, 3) suitable fisher habitat would remain connected within riparian areas, and 4) no change in the risk of snag/coarse woody debris loss and trapping mortality would be expected.

PILEATED WOODPECKERS

Issue

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

Introduction
Pileated woodpeckers play an important ecological role by excavating cavities that are used in subsequent years by many other species of birds and mammals. Pileated woodpeckers excavate the largest cavities of any woodpecker. Preferred nest trees are western larch, ponderosa pine, cottonwood, and quaking aspen, usually 20 inches dbh and larger. Pileated woodpeckers primarily eat carpenter ants, which inhabit large downed logs, stumps, and snags. Aney and McClelland (1985) described pileated nesting habitat as..."stands of 50 to 100 contiguous acres, generally below 5,000 feet in elevation with basal areas of 100 to 125 square feet per acre and a relatively closed canopy." Necessary feeding and nesting habitat attributes include large snags, large decayed trees, and downed wood, which closely tie these woodpeckers to mature forests with late-successional characteristics. The density of pileated woodpeckers is positively correlated with the amount of dead and/or dying wood in a stand (McClelland 1979).

Analysis Area
The analysis area for direct and indirect effects is the Project Area and the analysis area for cumulative effects is the 7,591-acre Small CEAA as described in *TABLE WI-1* and depicted in *FIGURE WI-1.* The Small CEAA is centered on the Project Area and provides a sufficient area to support multiple pairs of pileated woodpeckers if enough suitable habitat is present (*Bull and Jackson 2011*).

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

Affected Environment
In the project area, there are approximately 161 acres (63.2% of project area) of potential pileated woodpecker habitat. Current potential pileated habitat within the project area consists of mature Douglas-fir/western larch, ponderosa pine, and mixed conifer stands that function as two patches; one on either side of the Burlington-Northern Santa Fe railway. These patches are part of larger suitable patches including lands outside of the project area. Snags and coarse woody debris within the proposed project area are at the lower end of levels generally appropriate for the existing habitat types. Few large snags and downed woody debris (>15" dbh) were observed. However, some potential pileated woodpecker foraging evidence was observed during field visits. Firewood gathering, which can result in a reduction of snags and downed logs valuable as woodpecker nesting and foraging substrates, is likely widespread within the project area due 1.9 miles of open roads. Given these observed existing habitat conditions, pileated woodpecker habitat suitability is currently moderate within the project area.

The CEAA contains approximately 4,084 acres (53.4% of the CEAA) of potential pileated woodpecker habitat. Together, these are distributed among 11 patches and average patch size is 372 acres. Pileated woodpecker habitat in the project area is part of two patches within CEAA measuring 2,198 acres and 1,351 acres (totaling 46.8% of the CEAA). Firewood gathering is active along 34.0 miles of open road and on private lands within the CEAA. Thus, habitat quality and availability for pileated woodpeckers within the CEAA is currently moderate.

Environmental Effects – Pileated Woodpeckers

No Action Alternative: Direct and Secondary Effects on Pileated Woodpeckers

Under this alternative, no proposed project activities would occur. Thus, no direct or indirect effects to pileated woodpecker habitat suitability would be anticipated as a result of the No-Action Alternative.

No Action Alternative: Cumulative Effects on Pileated Woodpeckers

Under this alternative, no proposed project activities would occur. Past forest management projects not associated with the proposed Trego Portal Timber Sale have affected pileated woodpecker habitat in the CEAA, and ongoing and proposed projects could affect habitat suitability in the future. Activities on non-DNRC lands could continue altering pileated woodpecker habitat within the CEAA. Thus, since no additional changes in available habitat would be anticipated as a result of the No-Action Alternative, no cumulative effects to pileated woodpecker habitat suitability would be anticipated.

Action Alternative: Direct and Secondary Effects on Pileated Woodpeckers

The proposed activities would occur in 119 acres (73.7%) of the 161 acres of pileated woodpecker habitat available in the Project Area. Proposed harvest prescriptions on 69 acres would open stands to 5-20% canopy cover causing the structure of these stands to become unsuitable for appreciable use by pileated woodpeckers. An additional 50 acres of suitable habitat would undergo harvest treatments that would reduce habitat suitability but would retain sufficient large trees for some use by pileated woodpeckers. Patch size and connectivity of suitable habitat would be reduced, although connectivity of remaining habitat with adjacent suitable habitat would be retained in narrower corridors. Snags would likely be removed by the proposed harvest, but at least 2 large snags and 2 large snag recruitment trees per acre (>21 inches dbh, or next largest size class) would be retained (*ARM 36.11.411*) where present. Disturbance associated with harvesting could adversely affect pileated woodpeckers on portions of the Project Area for approximately 4 years, should they be present in the Project Area. Thus, moderate adverse direct and indirect effects to pileated woodpecker habitat suitability in the Project Area would be anticipated as a result of the Action Alternative since: 1) forest structural changes would occur, but mitigation would include retention of snags and coarse woody debris (*ARM 36.11.411, ARM 36.11.414*); 2) harvesting would reduce pileated woodpecker suitable habitat availability by 69 acres (42.9%) and alter 50 acres (31.1%) of available suitable habitat; 3) patch size of suitable habitat would decrease and connectivity would be altered to a minor degree; and 4) pileated woodpeckers could be temporarily displaced for up to 4 years.

Action Alternative: Cumulative Effects on Pileated Woodpeckers

Under this alternative, pileated woodpecker habitat would be altered on 119 acres (2.9%) of the 4,084 acres of potentially suitable habitat in the CEAA. Harvesting would remove 69 acres of suitable habitat and reduce habitat suitability on another 50 acres of the CEAA. Two of the three patches of resulting suitable habitat in the project area would remain connected with larger habitat patches in the CEAA. Snags, coarse woody debris, and potential nesting trees would be retained in the project area according to forest management *ARM 36.11.41*; however, snags and snag recruitment trees would be reduced from existing levels in all of the proposed harvest units. Disturbance associated with the proposed activities could adversely affect pileated woodpeckers in the vicinity of the Project Area for up to 4 years. Past harvesting in the CEAA has altered the quality and abundance of pileated woodpecker habitat; reductions associated with this action alternative would be additive to those reductions. Firewood gathering along open roads would continue to limit the abundance of snags and woody debris within areas of the CEAA. Thus, minor cumulative effects to habitat suitability for pileated woodpeckers would be anticipated since: 1) 2.9% of suitable pileated woodpecker habitat currently present within

the CEAA would be altered; 2) patch size of suitable habitat would decrease but connectivity within the CEAA would largely be maintained; and 3) some snags and snag recruits would be removed in the proposed harvest areas for operational and human safety purposes, however, mitigation measures would retain at least 2 large snags and 2 large recruitment trees per acre in harvested areas.

Big Game

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

Issue
The proposed activities could reduce habitat quality for big game, especially during the fall hunting and winter seasons, by removing forest cover, increasing roads in secure areas, and disturbing animals.

Introduction
Timber harvesting can affect big game and habitat quality through disturbance during harvest activities, removal of forest crown closure, and by creating openings in the forest used for foraging. Forested cover on winter range enables big game survival by ameliorating the effects of severe winter weather conditions. Winter ranges tend to be areas found at lower elevations that support concentrations of big game, which are widely distributed during the remainder of the year. Suitable winter ranges have adequate midstory and overstory cover that reduces wind velocity and intercepts snow, while moderating ambient temperatures. Besides providing a moderated climate, the snow-intercept capacity effectively lowers snow depths, which enables big game movement and access to forage. Snow depths differentially affect big game; deer are most affected, followed by elk, then moose.

Timber harvesting can increase big game (e.g. elk) vulnerability by changing the size, structure, juxtaposition, and accessibility of areas that provide security during times of hunting pressure (Hillis et al. 1991). As visibility and accessibility increase within forested landscapes, elk and deer have a greater probability of being observed and, subsequently, harvested by hunters. Because the female segments of the elk and deer populations are normally regulated carefully during hunting seasons, primary concerns are related to a substantial reduction of male animals and resulting decrease in hunter opportunity.

Analysis Area
The analysis area for direct and indirect effects is the Project Area and the analysis area for cumulative effects is the 63,092-acre Large CEAA as described in *TABLE WI-I* and depicted in *FIGURE WI-1*. The Large CEAA is defined according to geographic features (e.g., watershed boundaries), which provide a reasonable biological analysis unit for big game animals that could be influenced by project-related activities.

Measurement Criteria
Factors considered in the analysis include: 1) the degree of timber harvesting, 2) the availability and structure of forest cover on big game winter range, and 3) the level of human access for recreational hunting. Forested habitat (≥40% canopy cover, >9 inch dbh average) was considered capable of providing minimal conditions capable of providing thermal cover for big game in the Large CEAA.

Affected Environment
The entire proposed project area (255 acres) has been identified by DFWP as white-tailed deer, moose and elk winter range. Evidence of summer/fall deer use was observed during field visits to the project area. The project area contains approximately 169 acres (66.5%) of habitat that is currently providing year-round cover and visual screening for big game. These acres also provide moderate to high amounts of thermal cover and snow intercept for wintering big game. An additional 80 acres (31.4%) of the project area have forested stands that contain a more open overstory canopy (<40% canopy cover) or small-diameter trees than what would be considered high-quality thermal cover or cover that would provide appreciable snow intercept. Due to past harvesting within the project area, small dense patches of 10-20 foot-tall trees less than 0.5 acres in size are interspersed within most of the area and could be providing marginal levels of thermal cover/snow intercept. High levels of hunter access exist in the project area, as there are 1.9 miles of open roads spread throughout the area. The density of open roads in the project area is 4.8 miles/sq. mile. The high density of open roads, railway, and small project area reduce the ability of this area to provide high-quality winter range and security for big game.

White-tailed deer winter range occupies approximately 33,723 acres (53.4%) of the CEAA. Approximately 47,148 (74.7%) and 34,491 acres (54.7%) of the CEAA were identified as moose and elk winter range, respectively. Big game winter ranges within the CEAA are connected to a much larger winter range area (>500,000 acres) extending north to the Canadian border and west to Lake Koocanusa. Presently, approximately 29,755 acres (47.1%) within the CEAA are providing usable thermal cover and snow intercept for big game. These forest patches are distributed primarily on DNRC and Forest Service lands within the CEAA, as private lands consist of large meadows or have undergone harvesting. The CEAA also likely receives moderate to high levels of hunter access, especially in areas where roads, both open and restricted, are more numerous. Open road density within the CEAA is 2.8 miles/sq. mile and total road density is 3.6 miles/sq. mile.

Environmental Effects
No Action Alternative: Direct and Secondary Effects on Big Game
No changes in big game habitat would be expected as no timber harvesting activities would occur. Existing cover would continue to contribute to winter range quality and visual screening would not be altered. Thus, no direct or indirect effects to big game habitat in the project area would be anticipated since: 1) no changes to big game habitat would be anticipated and continued maturation of forest cover would improve thermal cover and snow intercept, and 2) the level of human access would remain unchanged.

No Action Alternative: Cumulative Effects on Big Game
No additional changes in big game habitat would be expected as no timber harvesting activities would occur. Existing levels of cover would persist. Past and ongoing forest management projects not associated with the proposed Trego Portal Timber Sale have affected big game habitat in the project area, and other proposed projects could disturb big game species and/or alter habitat quality in the future. Activities on other ownerships could continue altering big game winter range habitat and create disturbance within the CEAA. No additional cumulative effects to big game habitat quality are expected to result from the No-Action Alternative that could affect big game species in the CEAA since: 1) no big game habitat would be altered and continued maturation of forest cover would improve thermal cover and snow intercept, and 2) the level of human access would remain unchanged.

Action Alternative: Direct and Secondary Effects on Big Game
Under the Action Alternative, approximately 143 acres (45.5% of project area) of big game habitat and winter range would be harvested on the project area. Of these acres, 116 acres (68.6%) of available mature canopy forest currently providing thermal cover would be harvested. Harvest prescriptions in 69 acres of harvest units would result in forest canopy too open to effectively function as thermal cover or snow intercept. Harvesting on another 47 acres would reduce tree densities and winter range habitat quality, however overstory crown closure in these treated stands would remain above 40% postharvest and could provide measurable levels of snow intercept for big game. Retention of small, scattered patches of regenerating conifers could also provide marginal levels of thermal cover/snow intercept. Forest vegetation capable of providing these big game habitat attributes would require 40-60 years for suitable sized trees (>40 ft. tall) to develop in harvested stands.

Proposed tree removal would increase sight distances in harvest units and could increase risk of hunting mortality for 15-20 years. Vegetative visual screening would be preserved along open roads where present and feasible. Additionally, rolling topography and the retention of scattered patches of regenerating conifers 5-20 feet tall within harvest units would help mitigate some loss of big game security. Some short-term (1-4 years) displacement of big game would be expected as a result of the proposed motorized logging disturbance. No new roads would be constructed, but open and restricted road use within the project area would see a temporary increase. During all phases of the project, any restricted roads would be restricted from motorized-use by the general public and closed after completion of project activities. Long-term open road density would not change.

Thus, minor adverse direct and indirect effects to big game security habitat and winter range habitat quality would be expected for the next 40 to 60 years since: 1) 68.6% of thermal and hiding cover in the project area would be altered and lesser amounts of unaltered winter range and thermal/cover (53 acres) would remain; 2) existing habitat quality for big game has been lowered by high amounts of motorized access and the railroad; 3) sight distances would increase on 143 acres, which could increase big game vulnerability and associated hunting mortality risk; 4) visual screening along roads, rolling topography, riparian areas, and retained patches of regenerating conifers would mitigate some of the adverse effects of cover removal; 5) relatively short-term logging activities would create disturbance in this area; and 6) long-term open road density would not change.

Action Alternative: Cumulative Effects on Big Game
Forest stands providing suitable thermal cover and snow intercept would be altered by harvesting on approximately 116 acres (0.4%) of the 29,755 acres containing these habitat qualities. Approximately 69 acres (0.2%) undergoing treatment would be too open to provide adequate hiding or thermal cover after project completion. This reduction in thermal cover and snow intercept would be additive to past reductions within the CEAA due to forest management. Advanced dense patches of regenerating conifers (>6 feet height) and some canopy cover (5-15%) would be retained, providing some residual cover in harvest units. Reductions in cover may cause moderate decreases in winter use by deer, moose, and elk in the project area; however, appreciative changes in deer, elk, or moose distribution or abundance would not be expected at the scale of the CEAA. Continued maturation of previously harvested stands within the CEAA would improve thermal cover/snow intercept and partially offset these current losses within 20 to 40 years.

Harvesting and motorized disturbance within the CEAA associated with the proposed project could temporarily displace wintering big game for up to 4 years. Under the Action Alternative,

use of existing roads for harvesting activities could temporarily increase access and disturbance on 8.8 miles. After harvesting, open road density would be not change, however an extensive network of roads would continue to facilitate moderate to high amounts of hunter access. Thus, minor adverse cumulative effects to big game winter range and elk security habitat would be expected since: 1) harvesting would reduce overall levels of cover on 116 acres (0.4% of existing cover) of winter range within the CEAA; 2) existing thermal cover and snow intercept on winter range in the CEAA would be altered, but approximately 29,686 acres of these attributes would remain; 3) some canopy cover and regenerating conifer patches would remain; 4) overall habitat quality within the larger winter range would not be appreciably altered; 5) logging activities would create additional disturbance on a minor portion of the CEAA; and 6) long-term open road densities would not change.

Wildlife Mitigations

- If a threatened or endangered species is encountered, consult a DNRC biologist immediately. Similarly, if undocumented nesting raptors or wolf dens are encountered within ½ mile of the Project Area contact a DNRC biologist.
- Commercial forest management activities are prohibited from April 1 through June 15 as per *GB-NR3* (*USFWS and DNRC 2010)*.
- Prohibit contractors and purchasers conducting contract operations from carrying firearms while on duty as per *ARM 36.11.444(2)* and *GB-PR2* (*USFWS and DNRC 2010)*.
- Contractors will adhere to food storage and sanitation requirements as described in the timber sale contract. Ensure that all attractants such as food, garbage, and petroleum products are stored in a bear-resistant manner.
- Restrict public access at all times on restricted roads that are opened for harvesting activities. Effectively close all restricted roads following harvest completion.
- Close roads and trails to the extent possible following the proposed activities to reduce the potential for unauthorized motor vehicle use and/or loss of snags to firewood gathering.
- Retain patches of advanced regeneration of shade-tolerant trees within harvest units as per *LY-HB4* (*USFWS and DNRC 2010*).
- Retain visual screening along roads where possible to increase security for wildlife.
- Retain at least 2 snags and 2 snag recruits per acre, particularly favoring western larch, ponderosa pine and Douglas-fir for retention. If designated snags are cut for safety concerns, leave them in the harvest unit. Retain 12-25 tons/acre of coarse-woody debris as described in the *SOILS ANALYSIS* in this document.

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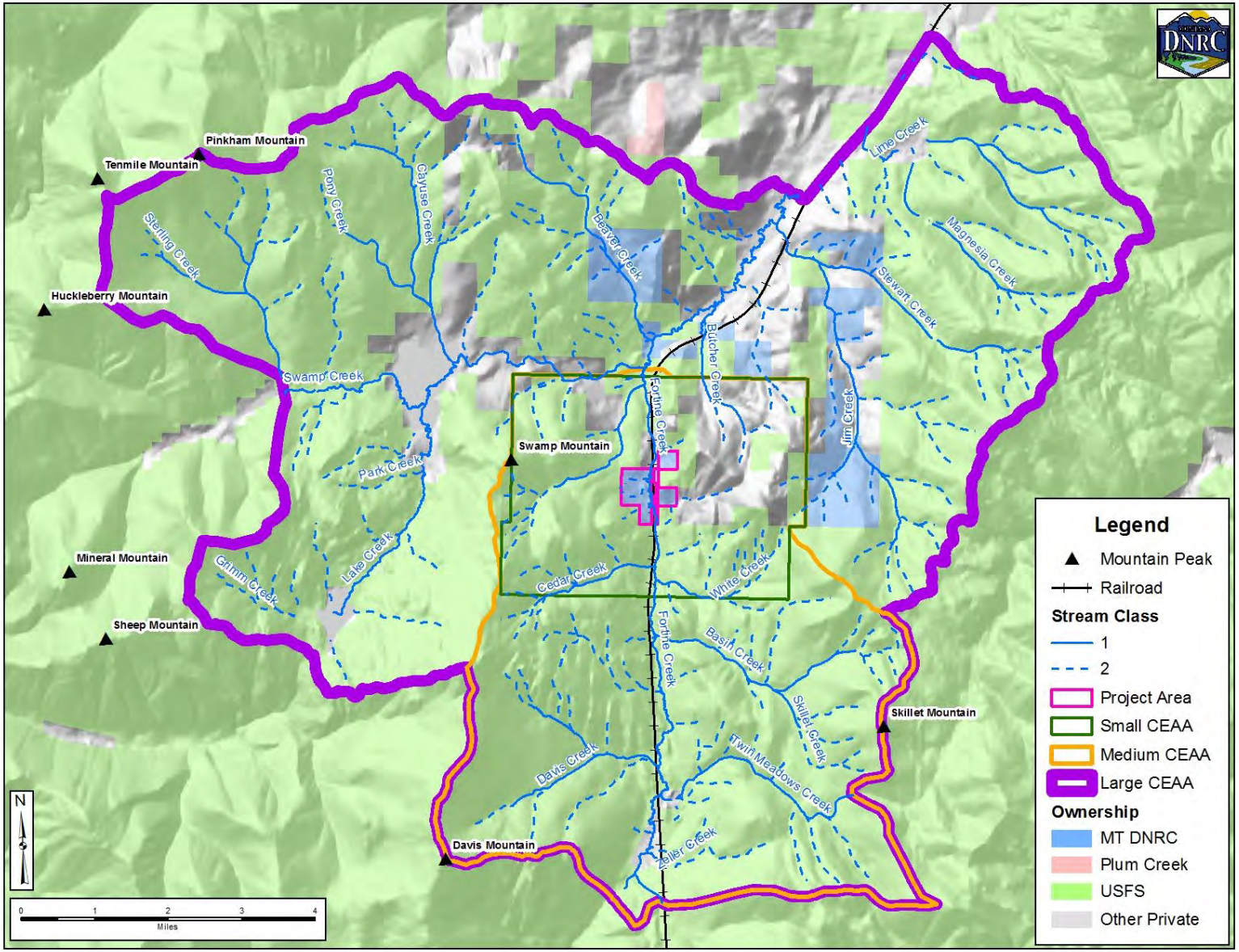
Figure WI-1 –Wildlife analysis areas for the proposed Trego Portal Timber Sale.



Attachment G – ALTERNATIVE PRACTICE

DS-97

STATE OF MONTANA
Department of State Lands
ALTERNATIVE PRACTICE REQUEST

Owner: Montana DNRC Stillwater State Forest
Address: PO Box 164 Olney MT 59927
Phone Number (406) 881-2371

Operator Name: Montana DNRC Stillwater State Forest
Address: PO Box 164 Olney MT 59927
Phone Number: (406) 881-2371

Site-Specific Alternative Practice Requested: DNRC-Stillwater State Forest is requesting an alternative practice to modify the tree retention requirement in the SMZ law, specifically Rule 5 (ARM 36.11.305 (2)(a)(ii), which requires that tree retention should be representative of the species and size class found pre-harvest. The SMZ contains spruce and alpine fir with shallow root systems and stem decay. Partial cutting in the SMZ would leave these trees vulnerable to wind throw and breakage. The Stillwater Unit proposes to harvest more of the windthrow prone white woods (subalpine fir, Engelmann spruce) while leaving more Douglas-fir and western larch.

Explanation and Justification for Alternative Practice: There are medium and large diameter spruce and alpine fir with shallow root systems and stem decay that are susceptible to wind throw and breakage. Harvesting adjacent timber stands can increase their vulnerability to wind throw.

The root wads from wind thrown trees adds soil disturbance which can add sediment to the stream.

Other options are:
1) Comply with the SMZ Law and leave many of the large diameter trees and species that are vulnerable to wind throw and breakage.
2) No action, defer management at this time.

Planned Mitigation Measures: It is desired to harvest high risk trees and substitute them with wind firm trees such as aspen, western larch and Douglas-fir of the same size class. Over 50% of the smaller and medium diameter spruce and alpine will be retained to assure the size class presence and species representation.

The planned timber harvest will retain at least 50% of all merchantable trees; however the representative distribution of diameter classes and species will differ from that of the pre-existing stand. Additional measures will be taken to retain a minimum of 40% canopy cover in the SMZ.

Starting Date: 07/01/2015 Completion Date: 9/30/2017

The following questions refer to the area where the alternative practice will be performed:

Legal Description: T33N R26W Sections 33 and 34

Lineal Extent Along Stream: 8,635 feet % Slope: <13%
SMZ Width: 50-178 feet

Stream Class: X Class Two Wetlands: adjacent wetlands of the Class 2 streams

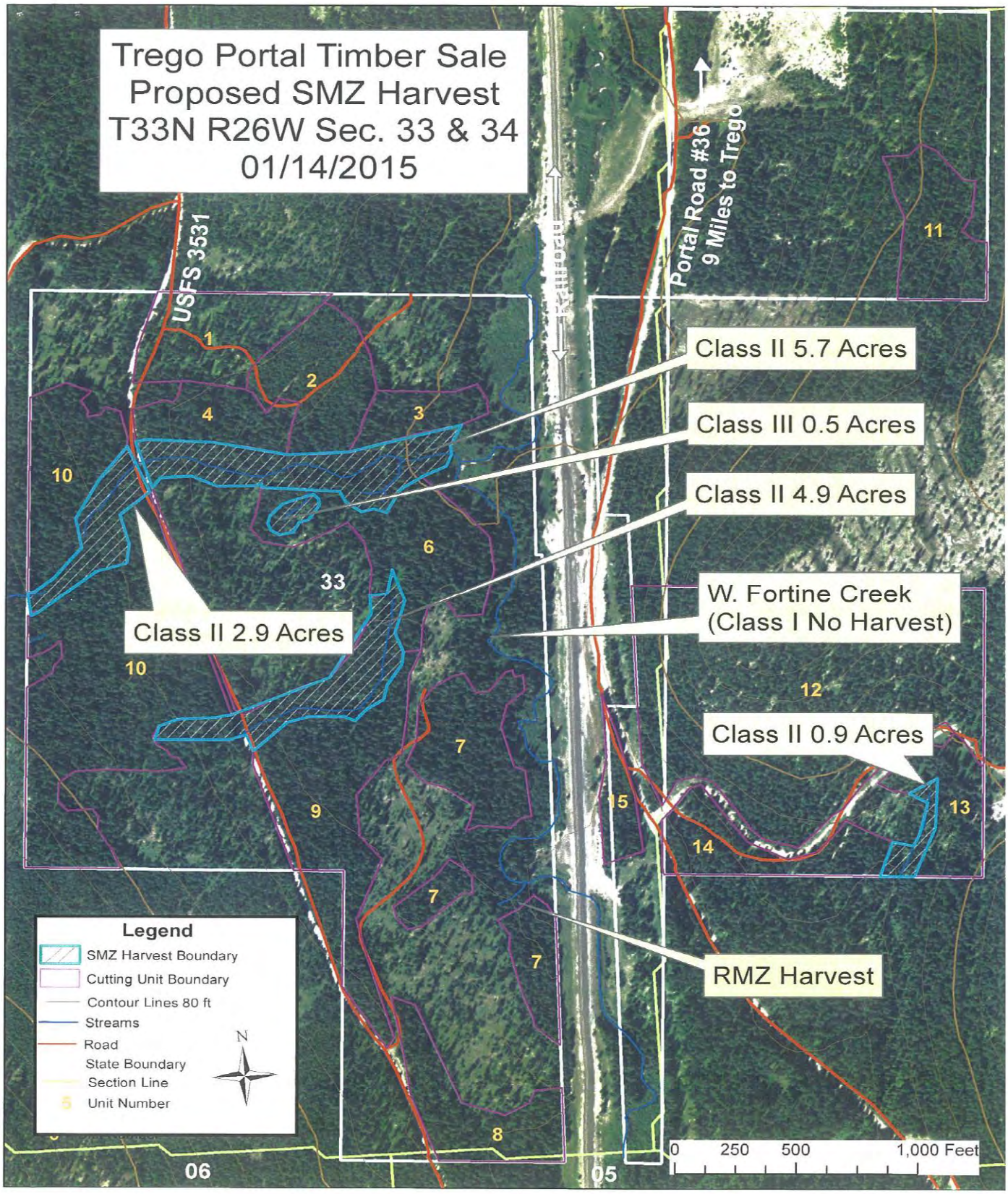
INCLUDE A TOPO MAP showing the logging unit boundaries, alternative practice area boundaries, streams, wetlands, and existing and/or proposed roads.

Approved alternative practices, including any additional conditions approved by DNRC, shall have the same force and authority as the standards contained in 77-5-303, MCA, and shall be enforceable by DSL under 77-5-305, MCA, to the same extent as such standards.

APPLICANT SIGNATURE: Brian Manning

Inaccurate or incomplete information will affect the ability to evaluate this alternative practice.

R:3/93


Trego Portal Timber Sale
Proposed SMZ Harvest
T33N R26W Sec. 33 & 34
01/14/2015
USFS 3531
Railroad
Portal Road #36
9 Miles to Trego
Class II 5.7 Acres
Class III 0.5 Acres
Class II 4.9 Acres
W. Fortine Creek
(Class I No Harvest)
Class II 2.9 Acres
Class II 0.9 Acres
RMZ Harvest
Legend
SMZ Harvest Boundary
Cutting Unit Boundary
Contour Lines 80 ft
Streams
Road
State Boundary
Section Line
Unit Number
N
0 250 500 1,000 Feet
06
05

CHECKLIST ENVIRONMENTAL ASSESSMENT

Project Name Trego Portal Timber Sale
Proposed Implementation Date 7/1/2015 to 7/1/ 2017
Proponent: DNRC Stillwater State Forest

Location: Sections 33 and 34 T33N R26W

County: Lincoln

I. TYPE AND PURPOSE OF ACTION

Proposed Action: To modify tree retention requirements in a Streamside Management Zone. Allow the harvest of large spruce and alpine fir trees with stem decay and are susceptible to blowing down when the stand is partially harvested. Substitute large wind firm trees such as larch, Douglas-fir and Cottonwood. Over 50% of the trees by diameter will be retained to maintain the integral functions of the SMZ

II. PROJECT DEVELOPMENT

1. PUBLIC INVOLVEMENT, AGENCIES, GROUPS OR INDIVIDUALS CONTACTED:

Provide a brief chronology of the scoping and ongoing involvement for this project.

The Timber sale was scoped to the public and no important issues were raised. No adjacent landowners are expected to be affected by the proposal so no additional public scoping was not deemed necessary.

2. OTHER GOVERNMENTAL AGENCIES WITH JURISDICTION, LIST OF PERMITS NEEDED:

None

3. ALTERNATIVES CONSIDERED:

No Action Alternative: 1) Avoid logging in the SMZ Law

Action Alternative: 2) Comply with the rules set in SMZ Law. 3) Modify tree retention requirements to remove the large mature spruce and alpine fir and substitute large wind firm tree species and smaller diameter spruce as replacements. At least 50% of the merchantable trees by diameter class will be retained.

III. IMPACTS ON THE PHYSICAL ENVIRONMENT

- *RESOURCES potentially impacted are listed on the form, followed by common issues that would be considered.*
- *Explain POTENTIAL IMPACTS AND MITIGATIONS following each resource heading.*
- *Enter "NONE" if no impacts are identified or the resource is not present.*

4. GEOLOGY AND SOIL QUALITY, STABILITY AND MOISTURE:

Consider the presence of fragile, compactable or unstable soils. Identify unusual geologic features. Specify any special reclamation considerations. Identify any cumulative impacts to soils.

Kootenai Land Type 102 This land type contains alluvial glacier terraces. The surface soil layer has a silt loam texture and the subsoils have a fine sandy loam texture. The soils have moderate surface erodibility rating and low sediment delivery efficiency. There will be no ground disturbing activities in the SMZ.

5. WATER QUALITY, QUANTITY AND DISTRIBUTION:
Identify important surface or groundwater resources. Consider the potential for violation of ambient water quality standards, drinking water maximum contaminant levels, or degradation of water quality. Identify cumulative effects to water resources.

The Streams are Class 2 streams and are unnamed tributaries to the Fortine Creek Drainage. These class 2 streams do not support fish. Each action alternative will provide adequate shade, canopy cover and future woody recruitment into the stream. The alternative practice will help minimize soil disturbance from large trees blowing over and their root wads becoming exposed.

6. AIR QUALITY:
What pollutants or particulate would be produced? Identify air quality regulations or zones (e.g. Class I air shed) the project would influence. Identify cumulative effects to air quality.

Normal air pollution that is associated with a standard logging operation.

7. VEGETATION COVER, QUANTITY AND QUALITY:
What changes would the action cause to vegetative communities? Consider rare plants or cover types that would be affected. Identify cumulative effects to vegetation

No rare, sensitive plants or cover types were observed during ground reconnaissance. Minimal vegetation disturbance will occur from logging.

8. TERRESTRIAL, AVIAN AND AQUATIC LIFE AND HABITATS:
Consider substantial habitat values and use of the area by wildlife, birds or fish. Identify cumulative effects to fish and wildlife.

There is no significant use by important wildlife, birds or fish.

9. UNIQUE, ENDANGERED, FRAGILE OR LIMITED ENVIRONMENTAL RESOURCES:
Consider any federally listed threatened or endangered species or habitat identified in the project area. Determine effects to wetlands. Consider Sensitive Species or Species of special concern. Identify cumulative effects to these species and their habitat.

Threatened or endangered species such as Lynx and grizzly bears may migrate through the area. There were no denning sites noted on the property.

10. HISTORICAL AND ARCHAEOLOGICAL SITES:
Identify and determine effects to historical, archaeological or paleontological resources.

No historical archeological or paleontological resources were observed during ground reconnaissance

11. AESTHETICS:
Determine if the project is located on a prominent topographic feature, or may be visible from populated or scenic areas. What level of noise, light or visual change would be produced? Identify cumulative effects to aesthetics.

Normal temporary noise increase associated with standard logging operation.

12. DEMANDS ON ENVIRONMENTAL RESOURCES OF LAND, WATER, AIR OR ENERGY:
Determine the amount of limited resources the project would require. Identify other activities nearby that the project would affect. Identify cumulative effects to environmental resources.

No limited resources will be used from the project. There are no other activities nearby that will affect the project.

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

There are no other planed activities in the area.

IV. IMPACTS ON THE HUMAN POPULATION

- *RESOURCES potentially impacted are listed on the form, followed by common issues that would be considered.*
- *Explain POTENTIAL IMPACTS AND MITIGATIONS following each resource heading.*
- *Enter "NONE" If no impacts are identified or the resource is not present.*

14. HUMAN HEALTH AND SAFETY:
Identify any health and safety risks posed by the project.

Normal health risks associated with a standard logging operation.

15. INDUSTRIAL, COMMERCIAL AND AGRICULTURE ACTIVITIES AND PRODUCTION:
Identify how the project would add to or alter these activities.

This project will add minor amounts of additional timber to the local woods product industry.

16. QUANTITY AND DISTRIBUTION OF EMPLOYMENT:
Estimate the number of jobs the project would create, move or eliminate. Identify cumulative effects to the employment market.

The project will not add any significant amount of work or income to the local work force.

17. LOCAL AND STATE TAX BASE AND TAX REVENUES:
Estimate tax revenue the project would create or eliminate. Identify cumulative effects to taxes and revenue.

There will not be any changes to the local tax base.

18. DEMAND FOR GOVERNMENT SERVICES:
Estimate increases in traffic and changes to traffic patterns. What changes would be needed to fire protection, police, schools, etc.? Identify cumulative effects of this and other projects on government services

Traffic will not be significantly altered from the project. There will not be any affects to local government services

19. LOCALLY ADOPTED ENVIRONMENTAL PLANS AND GOALS:
List State, County, City, USFS, BLM, Tribal, and other zoning or management plans, and identify how they would affect this project.

There are no known zoning or management plans in this area.

20. ACCESS TO AND QUALITY OF RECREATIONAL AND WILDERNESS ACTIVITIES:
Identify any wilderness or recreational areas nearby or access routes through this tract. Determine the effects of the project on recreational potential within the tract. Identify cumulative effects to recreational and wilderness activities.

There will be no impacts to the recreational attributes of the property.

21. DENSITY AND DISTRIBUTION OF POPULATION AND HOUSING:
Estimate population changes and additional housing the project would require. Identify cumulative effects to population and housing.

This project will not influence the local population.

22. SOCIAL STRUCTURES AND MORES:
Identify potential disruption of native or traditional lifestyles or communities.

Native communities or traditional lifestyles will not be disturbed.

23. CULTURAL UNIQUENESS AND DIVERSITY:
How would the action affect any unique quality of the area?

Cultural uniqueness will not be disturbed.

24. OTHER APPROPRIATE SOCIAL AND ECONOMIC CIRCUMSTANCES:
Estimate the return to the trust. Include appropriate economic analysis. Identify potential future uses for the analysis area other than existing management. Identify cumulative economic and social effects likely to occur as a result of the proposed action.

There will not be any significant change in return to the School Trust. There are no other unique social or economical qualities in this area.

EA Checklist Prepared By:	**Name:**	Michael Justus	**Date:**	1/27/2015
	Title:	Service Forester		

V. FINDING

25. ALTERNATIVE SELECTED:

Allow modification of tree retention requirements and allow mature spruce to be harvested while substituting mature wind firm trees and smaller diameter spruce.

26. SIGNIFICANCE OF POTENTIAL IMPACTS

All action alternatives maintain the integral functions of the SMZ. There is adequate shade and woody recruitment with either action alternative. ALTERNATIVE 2 allows the removal of the high hazard trees that have a high likelihood of breaking of blowing down.

27. NEED FOR FURTHER ENVIRONMENTAL ANALYSIS:

	EIS		More Detailed EA	X	No Further Analysis

EA Checklist Approved By:	Name: Douglas Turman Title: Acting Libby Unit Manager
Signature: Douglas Turman	Date: 1/28/15

DEPARTMENT OF NATURAL RESOURCES
AND CONSERVATION
LIBBY UNIT OFFICE

STEVE BULLOCK, GOVERNOR

STATE OF MONTANA

PHONE (406) 293-2711
FAX (406) 293-9367

177 STATE LANDS OFFICE ROAD
LIBBY, MT 59923

January 28, 2015

Brian Manning
Stillwater State Forest Unit Manager
PO Box 164
Olney MT 59927

Dear Brian,

This letter is in reference to your request to the Department of Natural Resources and Conservation (DNRC) for an Alternative Practice to the Streamside Management Zone Law in Sections 33 and 34, T33N, R26W. After review of the Checklist Environmental Assessment prepared for this request, the Alternative Practice to allow for the modification of tree retention standards is hereby approved, subject to the following conditions:

1. The alternative practice(s) are approved for a period of two years from the date of issuance, and cover the sections described in the legal description.
2. All SMZ's must be flagged prior to logging.
3. Trees designated for cutting will be marked by DNRC Foresters.
4. Mature spruce, susceptible to blow down or breakage may be harvested. The mature spruce must be replaced with similar sized wind firm trees such as larch, cottonwood, Ponderosa pine, or Douglas-fir.
5. Both leave trees and cut trees will be tallied to assure that at least 50% of the stand is retained by diameter class
6. All other provisions of the SMZ law must be met.

Conditions #1, 2 and 3 . must be completed prior to the start of logging operations. Conditions 4, 5, and 6 must be monitored during the logging operation.

Approved alternative practices, including any additional conditions required by DNRC, shall have the same force and authority as the standards contained in 77-5-303, MCA, and be enforceable by DNRC under 77-5-303, MCA, to the same extent as such standards.

It is your responsibility to ensure that your operator(s) understand that an alternative practice has been issued for their operations in this area, and these conditions must be fully met to achieve compliance with the SMZ Law.

This approval is contingent upon your execution and return of the attached statement to the DNRC Libby Unit Office. No actions related to this alternative practice are to be taken until the statement is returned to DNRC.

Thank you for your cooperation in this matter. Please call me if you have any questions.

Sincerely,

Douglas Turman
Acting Libby Unit Manager
DNRC

Alternative Practice Responsibility Affidavit

Sale Name: Stillwater Trego Portal Timber Sale

In consideration of DNRC's approval of the alternative practice(s) in Sections 33 and 34 T33N, R26W. I hereby certify that I, or by written contract the legal entity I represent, am responsible for compliance with Montana's Streamside Management Zone Law. I understand that failure to implement any of the mitigation measures required by DNRC will be considered a violation of the SMZ Law (77-5-301), and may result in penalties assessed against me or the legal entity I represent.

Brian Manning
SIGNATURE OF RESPONSIBLE PARTY

2/4/15
DATE