

CHECKLIST ENVIRONMENTAL ASSESSMENT

Project Name: Prickly Pear Creek Proposed Implementation Date: Nov. 1, 2002
 Proponent: Montana DNRC, 8001 North Montana Ave., Helena, MT 59602
 Type and Purpose of Action: A comprehensive restoration of the Ponderosa Pine ecosystem to restore sustainable structure and function, increase tree vigor, reduce fire hazards, regenerate seral species, and produce income for the school trust.
 Location: S1/2, W1/2NW1/4 sec. 16, T8N, R3W County: Jefferson

I. PROJECT DEVELOPMENT	
1. PUBLIC INVOLVEMENT, AGENCIES, GROUPS OR INDIVIDUALS CONTACTED: Provide a brief chronology of the scoping and ongoing involvement for this project.	Scoping began in April 2001 with a letter being sent to the adjacent landowners. An initial proposal was sent out to 34 individuals and groups in Sept. 2001. (This listing is in the project file at the CLO.) Legal notices were published in the Helena IR on 9/26, 10/7 & 17 and in the Boulder Monitor on 9/26, 10/3 & 17. A field trip to the project area was held on 11/8/01. Contacts with DNRC specialists and FWP Biologists was ongoing into January 2002.
2. OTHER GOVERNMENTAL AGENCIES WITH JURISDICTION, LIST OF PERMITS NEEDED:	Jefferson County Weed Board - A revegetation and weed management plan must be approved by the Weed Board prior to operations.
3. ALTERNATIVES CONSIDERED:	No Action - Under the no action proposal, no thinning would be conducted. Conditions and activities would continue as they currently are. Proposed Action - Commercial and pre-commercial thinning on an estimated 62 acres, no road construction, winter operations, mechanical slash treatments (no burning), pre and post operation weed management activities. Existing grazing and recreational uses unchanged.
II. IMPACTS ON THE PHYSICAL ENVIRONMENT	
RESOURCE	[Y/N] POTENTIAL IMPACTS AND MITIGATION MEASURES: = Not present or No Impact will occur. Y = Impacts may occur (explain below)
4. GEOLOGY AND SOIL QUALITY, STABILITY AND MOISTURE: Are fragile, compactible or unstable soils present? Are there unusual geologic features? Are there special reclamation considerations? Are cumulative impacts likely to occur as a result of this proposed action?	[N] Soil resources and impacts are described in the attached report by George Mathieus, DNRC Hydrologist. The mitigation measures identified in the report would be implemented throughout the project. Winter operations, use of an in-woods processing system and use of other standard BMPs would prevent any direct or cumulative adverse affects to soils. BMPs have successfully minimized any adverse erosion on other nearby State tracts with similar soils, treatments, and operating seasons.
5. WATER QUALITY, QUANTITY AND DISTRIBUTION: Are important surface or groundwater resources present? Is there potential for violation of ambient water quality standards, drinking water maximum contaminant levels, or degradation of water quality? Are cumulative impacts likely to occur as a result of this proposed action?	[N] Hydrologic resources are described in the attached report by George Mathieus, DNRC Hydrologist. There is no surface water in the project area. There is no direct surface connectivity to Prickly Pear Creek. Direct or cumulative adverse effects to water quality would be negligible due to the following factors: winter operations, use of an in-woods processing system, use of other standard BMPs, low average precipitation and lack of surface water in the project area.

<p>6. AIR QUALITY: Will pollutants or particulate be produced? Is the project influenced by air quality regulations or zones (Class I airshed)? Are cumulative impacts likely to occur as a result of this proposed action?</p>	<p>[N] No Slash burning operations are proposed. No cumulative air quality impacts are likely to occur. (Slash fire hazards would be treated by a variety of mechanical methods.)</p>
<p>7. VEGETATION COVER, QUANTITY AND QUALITY: Will vegetative communities be permanently altered? Are any rare plants or cover types present? Are cumulative impacts likely to occur as a result of this proposed action?</p>	<p>[N] A vegetative analysis for the project area has been completed. That report is attached, and describes the existing vegetative conditions, including an old growth evaluation.</p> <p>The proposed thinning operations would return the stand to a semblance of the natural condition. As proposed, the project would retain 29% of the trees ≥ 6 inch dbh, 42% of the Basal area, and 54% of the standing net sawlog volume. Most of the larger trees would be retained. An estimated 241 MBF of logs and 1100 tons of roundwood product would be harvested.</p> <p>The stand does not currently meet old growth minimum requirements as defined by Green et.al. The average age of large (≥ 17 inch dbh) trees is only 113 years. (Green minimum is 180 years for this type.) The proposed post treatment stand would still exceed Green et.al. minimum requirements for numbers of large trees per acre and stand Basal area. Thus maintaining the potential for the stand to develop into an old growth condition in the future.</p> <p>There are no rare or endangered plants known in the area.</p> <p>Some noxious weeds (spotted knapweed and dalmation toadflax) are present on site. The proposal includes a weed management plan which would have an adverse affect on weed populations. The plan is expected to include pre and post operation weed spraying and biological control agents. All weed spraying would be by licensed applicators, in accordance with labeling requirements.</p>
<p>8. TERRESTRIAL, AVIAN AND AQUATIC LIFE AND HABITATS: Is there substantial use of the area by important wildlife, birds or fish? Are cumulative impacts likely to occur as a result of this proposed action?</p>	<p>[N] The area is inhabited by Mule deer and occasionally by Elk. Wildlife Biologist Gayle Joslin, DFWP evaluated the project area. Thermal cover and movement routes along ephemeral drainages would be maintained by retaining clumps of trees in pole size patches within the stand and by retaining stringers of larger trees along draws. A copy of Gayle Joslin's comments are attached. Cumulative impacts are not likely to occur as a result of the proposed action.</p>

<p>9. UNIQUE, ENDANGERED, FRAGILE OR LIMITED ENVIRONMENTAL RESOURCES: Are any federally listed threatened or endangered species or identified habitat present? Any wetlands? Sensitive Species or Species of special concern? Are cumulative impacts likely to occur as a result of this proposed action?</p>	<p>[Y] The project area does NOT contain habitat suitable for Bald Eagle, Peregrine Falcon, Wolf, Grizzly Bear, Lynx, Boreal Owl, Northern Bog Lemming, or Black-backed Woodpecker.</p> <p>The project contains potential Flammulated Owl and Pileated Woodpecker habitat.</p> <p>Flammulated Owls prefer open (35 - 80 sq. ft. basal area/acre) stands of Ponderosa pine that are 50+ acres in size. The current 62 acre stand has 109 sq. ft. basal area/acre. The proposed leave stand would retain approximately 46 sq. ft. basal area per acre, in 40+ trees/acre 6" - 29" dbh, with an estimated 15+ trees per acre $\geq 17"$ dbh. The proposal would improve Flammulated Owl habitat.</p> <p>Pileated Woodpecker prefer older stands of large diameter trees, including Ponderosa Pine, with snags and down woody material. The existing stand, with 36+ trees/acre $> 15"$ dbh is potential Pileated habitat, but currently lacks nesting snags and large down woody material for foraging; rendering the area unsuitable for Pileated use at this time. The current stand is in an early mature stage. The avg. age of trees $> 6"$ dbh is 86 yrs, for large trees $\geq 17"$ dbh the avg. age is 113 yrs. The proposal would retain 15+ trees/acre $> 15"$ dbh, and does not propose to cut any existing snags. The project stand would continue to have the potential to develop into Pileated habitat as it matures.</p> <p>No fragmentation of wildlife habitats would occur. Minor positive impacts to Pileated Woodpecker and Flammulated Owls may occur.</p>
<p>10. HISTORICAL AND ARCHAEOLOGICAL SITES: Are any historical, archaeological or paleontological resources present?</p>	<p>[Y] There are signs of human activity, primarily access trails and small scale mining prospect pits and mounds, scattered throughout the area. No historical or archaeological resources are documented, nor have any been observed. Activities proposed for the project would not adversely affect any cultural resources.</p>
<p>11. AESTHETICS: Is the project on a prominent topographic feature? Will it be visible from populated or scenic areas? Will there be excessive noise or light? Are cumulative impacts likely to occur as a result of this proposed action?</p>	<p>[Y] The area is adjacent to high density subdivision areas in section 16 and sections 20 and 21. The area is also mostly visible from I-15 and other subdivision areas east of the highway. (A stand of trees along the stream which are not included in the proposal would partially screen about 1/2 of the area from the view on I-15.)</p> <p>The proposed thinning treatment would maintain an open stand of relatively large diameter Ponderosa Pine trees. This stand structure is generally considered to be aesthetically pleasing. None of the adjacent landowners have raised aesthetics as an issue. No cumulative visual impacts expected.</p>
<p>12. DEMANDS ON ENVIRONMENTAL RESOURCES OF LAND, WATER, AIR OR ENERGY: Will the project use resources that are limited in the area? Are there other activities nearby that will affect the project? Are cumulative impacts likely to occur as a result of this proposed action?</p>	<p>[Y] An issue unrelated to the proposal is the legal status of the two-track road through the State land. An old stage route, and subsequent county road passed through the tract along a route only vaguely documented in the public record. Jefferson county officially abandoned the route in 1931. County/Public right-of-ways have been re-established up to the State property line to service the adjacent subdivisions. The nearby landowners have voiced split opinions regarding the re-establishment of a route across the State land. The Department's position is that there is no current public route across the State tract, and it would not be in the best interest of the School Trust to establish one. There is currently a case in District Court to address this issue. The outcome of the case would not directly affect this project proposal, but could affect traffic conditions through the tract. No cumulative impacts are likely to occur as a result of this proposal.</p>

<p>13. OTHER ENVIRONMENTAL DOCUMENTS PERTINENT TO THE AREA: Are there other studies, plans or projects on this tract? Are cumulative impacts likely to occur as a result of other private, state or federal current actions w/n the analysis area, or from future proposed state actions that are under MEPA review (scoping) or permitting review by any state agency w/n the analysis area?</p>	<p>[N]</p>
<p>III. IMPACTS ON THE HUMAN POPULATION</p>	
<p>RESOURCE</p>	<p>[Y/N] POTENTIAL IMPACTS AND MITIGATION MEASURES</p>
<p>14. HUMAN HEALTH AND SAFETY: Will this project add to health and safety risks in the area?</p>	<p>[N] One of the project objectives is to reduce the risk of wildfire, and the associated risks to health and safety that result during high intensity fire events. Please refer to the attached report on project area fire history.</p> <p>The Evergreen Health Center is located within ¼ mile of the project area. To ensure no air quality risk for the residents on respirators, the project proposal would utilize non-burning slash disposal treatments.</p>
<p>15. INDUSTRIAL, COMMERCIAL AND AGRICULTURAL ACTIVITIES AND PRODUCTION: Will the project add to or alter these activities?</p>	<p>[N] The project is not associated with any other activities.</p>
<p>16. QUANTITY AND DISTRIBUTION OF EMPLOYMENT: Will the project create, move or eliminate jobs? If so estimated number. Are cumulative impacts likely to occur as a result of this proposed action?</p>	<p>[N] People are currently employed in the wood products industry in the region. Due to the relatively small size of the timber sale program, there will be no measurable cumulative impact from this proposed action on employment.</p>
<p>17. LOCAL AND STATE TAX BASE AND TAX REVENUES: Will the project create or eliminate tax revenue? Are cumulative impacts likely to occur as a result of this proposed action?</p>	<p>[N] People are currently paying taxes from the wood products industry in the region. Due to the relatively small size of the timber sale program, there will be no measurable cumulative impact from this proposed action on tax revenues.</p>
<p>18. DEMAND FOR GOVERNMENT SERVICES: Will substantial traffic be added to existing roads? Will other services (fire protection, police, schools, etc) be needed? Are cumulative impacts likely to occur as a result of this proposed action?</p>	<p>[N] There will be no measurable cumulative impacts related to demand for government services due to the relatively small size of the timber sale program, the short-term impacts to traffic, the small possibility of a few people temporarily relocating to the area, and the lack of other timber sales in the adjacent area.</p>
<p>19. LOCALLY ADOPTED ENVIRONMENTAL PLANS AND GOALS: Are there State, County, City, USFS, BLM, Tribal, etc. zoning or management plans in effect?</p>	<p>[Y] In June 1996, DNRC began a phased-in implementation of the State Forest Land Management Plan (Plan). The management direction provided in the Plan comprises the framework within which specific project planning and activities take place. The Plan philosophy and appropriate Resource Management Standards have been incorporated into the design of the proposed action.</p>
<p>20. ACCESS TO AND QUALITY OF RECREATIONAL AND WILDERNESS ACTIVITIES: Are wilderness or recreational areas nearby or accessed through this tract? Is there recreational potential within the tract? Are cumulative impacts likely to occur as a result of this proposed action?</p>	<p>[Y] The tract is accessible for general recreational use, provided the persons possess a valid State Land Recreational Use License. All access must be by non-motorized methods. Some big game hunting likely takes place on the tract, and would continue with or without the project, at similar low levels.</p> <p>No direct or cumulative adverse affects to recreational use are expected.</p>
<p>21. DENSITY AND DISTRIBUTION OF POPULATION AND HOUSING: Will the project add to the population and require additional housing? Are cumulative impacts likely to occur as a result of this proposed action?</p>	<p>[N] There will be no measurable cumulative impacts related to population and housing due to relatively small size of the timber sale program, and the fact that people are already employed in this occupation in the region.</p>

22. SOCIAL STRUCTURES AND MORES: Is some disruption of native or traditional lifestyles or communities possible?	[N]
23. CULTURAL UNIQUENESS AND DIVERSITY: Will the action cause a shift in some unique quality of the area?	[N]
24. OTHER APPROPRIATE SOCIAL AND ECONOMIC CIRCUMSTANCES: Is there a potential for other future uses for easement area other than for timber management? Is future use hypothetical? What is the estimated return to the trust. Are cumulative impacts likely to occur as a result of this proposed action?	<p>[Y] As noted in item 12 above, there is a current court case to determine the re-establishment of a public route across the State tract. If the State is unable to successfully defend its position, then a public route may result, with no return to the Trust. This issue is currently outside of the Department's decision making authority.</p> <p>The following costs, revenues, and estimates of return are intended for a relative comparison of the alternatives. They are not intended to be used as absolute estimates of return. Stumpage values for the sawlog material were estimated using a residual value method, values for roundwood products were based upon comparable sales. The estimated stumpage value in a residual value analysis equals the estimated delivered log price minus operating costs. Operating costs include logging costs, hauling costs, forest improvement costs and fees, development costs, other costs (e.g. BMP implementation, and weed management), and "profit & risk" (the return to the timber buyer that accounts for actual time and effort, some profit for entrepreneurial spirit, and something to cover the potential losses from the occasional sale which is not profitable). The estimated minimum stumpage values for this project are \$90.82/MBF for sawlog material and \$1.00/ton for roundwood material. The proposed thinning project would result in the harvest of an estimated 241 MBF of sawlog size material and an estimated 1100 tons of roundwood products. The proposed action would generate \$22,000 to \$50,000 of return to the trust, above that generated by the No Action (current) alternative. (No estimates of potential losses to the trust from insects, disease, or fire, which could result from a long term application of the No Action alternative, have been calculated or included in the above estimates.)</p>
EA Checklist Prepared By: D.J. Bakken Forester 4/30/2002 IV. FINDING	
25. ALTERNATIVE SELECTED:	I have selected the proposed Action Alternative to conduct commercial and pre-commercial thinning operations on approximately 62 acres during the winter months, mechanically treat the resulting slash and to conduct pre and post harvest weed management activities.

26. SIGNIFICANCE OF POTENTIAL IMPACTS:

As a result of my review of the Environmental assessment, supporting documentation, comments received from concerned individuals, interest groups and resource management specialists as well as my field review of the project area, I conclude significant impacts are not expected to occur as a result of implementing the proposed action. My rationale for reaching this conclusion is based on the following:

The proposed thinning encompasses a small 62 acre area of ponderosa pine that has become overstocked with small diameter trees. The thinning would retain most of the larger diameter trees and result in an open stand of ponderosa pine that is similar to stand conditions in which ponderosa pine has historically grown.

There is no old growth within the project area as defined by any of the old growth definitions currently used by the scientific community, including Green, et al. The post harvest stand would retain large diameter trees to maintain the potential to develop old growth characteristics in the future.

The state land is surrounded by high density residential development and bordered on one side by Interstate 15. Consequently it's value for wildlife species that prefer secluded or semi-secluded habitats is quite low. Recommendations by the DFWP biologist to preserve some wildlife travel corridors within the project area have been incorporated in the project design.

There are no rare, unique conditions or habitats for any Threatened or Endangered Species within the project area.

The terrain is gentle and well suited for the proposed activity. Operations are planned to be conducted during the winter when soils will either be frozen or snow covered to minimize site disturbance.

There are no streams as defined by the Streamside Management Law or surface water in the project area and there is no direct delivery connectivity to streams outside the project area.

No new road construction is planned under the proposal.

27. Need for Further Environmental Analysis: EIS More Detailed EA No Further Analysis

EA Checklist Approved By: Garry Williams Manager Forest and Lands Programs (LL)

Signature

Date

5/29/02

TO: DJ Bakken, Forester, Central Land Office

cc: Garry Williams, Manager, Central Land Office
Jeff Collins, Soil Scientist, Resource Mgmt. Section
Gary Frank, Supervisor, Resource Mgmt. Section
Bruce Rowland, Supervisor, State Land Management Section

FROM: George Mathieus, Hydrologist, Resource Mgmt. Section

SUBJECT: Prickly Pear Creek Proposed Timber Sale Write-up

DATE: December 13, 2001

Existing Conditions/Effects Analysis
Prickly Pear Creek Proposed Timber Sale
Section 16, T8N-R3W
Central Land Office

INTRODUCTION

The following document contains background information for the watershed and soils portion of the proposed Prickly Pear Creek Timber Sale Environmental Assessment. This analysis includes an existing conditions and effects assessment of all watercourses draining the proposed sale area. Write-up and assessments are based on a coarse filter screening approach and an on-site field review of all contributing areas within the proposed sale area.

POTENTIAL ISSUES

Soil Resources:

Equipment operations and timber harvest on steep slopes or sensitive soils can result in soil impacts that effect soil productivity depending on area and degree of physical effects and amount or distribution of course woody debris retained for nutrient cycling.

Noxious Weeds:

Following disturbance events such as timber harvest activities, invasion and spread of noxious weeds is more prevalent than in undisturbed areas. Noxious weed invasion and spread detrimentally influences surface cover, erosion and native species growth.

Cumulative Watershed Effects:

Cumulative watershed effects can be characterized as impacts on water quality and quantity that result from the interaction of disturbances, both human-caused and natural. Timber harvest can affect the timing of runoff, increase peak flows and increase the total annual water yield of a particular drainage.

AFFECTED ENVIRONMENT

The proposed sale area lies within one state section surrounded by private lands. Precipitation ranges from 10-15 inches per year. There are no perennial streams draining the proposed sale area, it consists of ephemeral draws and coulees with only infrequent minor surface flows for short durations. These ephemeral tributaries all drain into Prickly Pear Creek, a tributary to the Missouri River.

Regulatory Framework:

This portion of the Missouri River basin is classified B-1 in the Montana Water Quality Standards. Waters classified B-1 are suitable for drinking, culinary and food processing purposes after conventional treatment; bathing, swimming and recreation; growth and propagation of salmonid fishes and associated aquatic wildlife, waterfowl and furbearers; and agricultural and industrial water supply. State water quality regulations prohibit any increase in sediment above naturally occurring concentration in waters classified B-1 (ARM 16.20.618 2(f)).

Naturally occurring means conditions 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. Reasonable land, soil and water conservation practices include methods, measures or practices that protect present and reasonably anticipated beneficial uses. The state of Montana has adopted Forestry Best Management Practices (BMPs) through its Non-point Source Management Plan as the principal means of meeting Water Quality Standards.

Existing beneficial uses in the immediate vicinity of the proposed sale area include the following water rights for groundwater sources: domestic, geothermal heating, lawn & garden, stock, multiple domestic, commercial, geothermal, institutional and municipal uses. Surface water sources include, geothermal heating, commercial and mining uses. Outside of the analysis area, downstream beneficial uses include aquatic life support and cold-water fisheries.

The Clean Water Act and EPA Water Quality Planning and Management Regulations requires the determination of allowable pollutant levels in 303(d)-listed streams through the development of Total Maximum Daily Load (TMDL) limits. There are no water quality limited segments (WQLS) within the project area (as per Section 303(d) of the Clean Water Act) in the 305(b) report. Prickly Pear Creek is currently listed as a WQLS. Causes of impairment are Arsenic and other metals with the probable sources being abandoned mining tailings.

Water Quality:

There are no streams draining the proposed sale area. It consists of ephemeral draws and swales with only minor seasonal flow.

Fisheries:

Due to the ephemeral nature of the stream channels and disconnectivity to Prickly Pear Creek and ultimately the Missouri River, no fish species are present within the analysis area.

Soil Resources:

The proposed sale area is located on moderate to flat slopes with shallow to deep soils weathering from granitic bedrock of the Boulder Batholith. There are no unusual or unique geologic features in the proposed harvest area. Slopes within the sale area are moderate, ranging from 5-30%, with isolated steeper breaks along draw features. There were no signs of slumping or mass wasting.

Primary soils within the proposed harvest area are Shaboom/Kellygulch extremely boldery sandy loams of shallow to moderate depth on most slopes. Rock outcrops occur on ridges and convex slopes. These soils are droughty and subject to erosion where disturbed.

Soils along the flatter slopes and fan features are Hiore-Clugulch very bouldery sandy loams. These soils are more productive than the steeper slopes within the state section and have a longer season-of-use. These soils are sensitive to rutting and displacement if operated on during wet periods.

Approximately 1.0 mile of road provides access to the sale area. This road system contains, blacktop, low standard gravel road and two-track. The gravel road meets current BMP standards, while the two-track does not. The existing road system does not appear to be a source of potential erosion and sediment delivery to any stream channels. There are no perennial stream channels adjacent to the existing road.

Noxious Weeds:

Spots of thistle (*Cirsium arvense*) and spotted knapweed (*Centaurea maculosa*) occur within the project area mainly along the existing roads. No real outbreaks or large infestations were noted within the project area.

Cumulative Watershed Effects:

Past management activities in the general vicinity include grazing; fire suppression, road construction, development and timber harvest.

A cumulative watershed effects analysis for the proposed sale was completed to determine the existing conditions of the affected environment. Due to the low precipitation region, ephemeral nature of the stream channels a smaller, more defined boundary was selected for the analysis area. This analysis area was selected because it was determined to be the most appropriate scale to detect potential effects.

All drainage features and draw bottoms draining the proposed sale area were evaluated in the field. All tributaries to Prickly Pear Creek, within the State section, have no surface connectivity or any perennial flow.

Field evaluation concludes that past management activities have resulted in impacts to soil resources. These impacts have been limited to erosion from existing roads and cattle trampling.

ENVIRONMENTAL CONSEQUENCES

The proposed timber sale is comprised of one action alternative. This alternative would selectively treat approximately 62 acres. No new roads would be constructed with this proposal. Portions of the 1.0 miles of existing road would be improved to meet BMP standards.

Noxious Weeds:

No Action Alternative:

Under the No Action Alternative, weed seed may spread by vehicle traffic, wind and animal dispersion into the project area, which would result in competition with native species trying to establish in recently disturbed areas.

Action Alternative:

Ground disturbing activities associated with the proposed action alternative have the potential to introduce or spread noxious weeds in susceptible habitat types. Under the Action Alternative, DNRC would follow an integrated weed management approach to help prevent the introduction and establishment of noxious weeds and slow the expansion of existing weeds.

Cumulative Effects of Noxious Weeds:

Invasion and spread of noxious weeds would decrease soil productivity and stability and reduce the reestablishment of native species. A combination of prevention, revegetation and monitoring will be implemented to reduce the possible infestation and spread of weeds associated with this project.

Soil Resources:

No Action Alternative:

Under the No-Action alternative, there would be no direct effects to soils or geology. Segments of existing roads with inadequate drainage identified in the affected environment would continue to erode without future mitigation and/or maintenance.

Action Alternative:

Due to the ephemeral nature of the draws and the low annual precipitation within the sale area, the proposed activities have a low potential to contribute to the degradation of water quality. The primary water and soil concerns associated with the proposed timber sale activities are sediment delivery to the draws, erosion of soil and subsequent loss of site productivity. Vegetative regrowth is a critical factor in avoiding long-term soil erosion from harvest activities. Season-of-use and skidding restrictions would minimize impacts to soil resources.

Cumulative Effects to Soil Resources:

Portions of the existing low standard road systems would be improved under the proposed action to a standard that meets minimum BMPs. Improvements to this road system are expected to decrease existing and future risk of sediment delivery to draws and subsequent erosion.

Proper application of BMPs and site-specific designs and mitigation measures would reduce future erosion and potential water quality impacts to an acceptable level as defined by the water quality standards. Acceptable levels are defined under the Montana Water Quality Standards as those conditions occurring where all reasonable land, soil and water conservation practices have been applied. There is little risk of adverse impacts to soil resources, water quality and beneficial uses occurring as a result of the proposed action alternatives.

Cumulative Watershed Effects:

No Action Alternative:

The no-action alternative would have minimal effects to cumulative watershed effects. Moderate timber management activities in the surrounding drainage's and the range-like landscape have resulted in undetectable cumulative watershed effects.

Action Alternative:

There are no cumulative watershed effects constraints associated with the proposed sale area. This is due to the following reasons:

- Low precipitation region.
- No perennial streams.
- No new road construction.
- The proposal is for a selective harvest in stands that are overstocked from that of natural, pre-fire suppression stands.

CONTRACT, SALE & MITIGATION DESIGN RECOMMENDATIONS

General Road Design and Mitigation Recommendations:

- Construct drain dips, grade rolls and other drainage features where necessary and practical to insure adequate road surface drainage. **Install and maintain all road surface drainage concurrent with new road construction, reconstruction and reconditioning.** Drain dips constructed on sustained road grades greater than 8% may require gravel surfacing to function properly. Sustained road grades greater than 10% may require installation of conveyor belt water diverters.
- Stabilize newly constructed road cuts and fills following excavation. Stabilization can be met through one or more of the following: seeding, benching or mulching. Apply seed as soon as conditions permit to maximize successful establishment of grass cover. Local professional judgement and consideration for temperature and precipitation would determine when seeding is likely to be most successful. Delay of seeding may require scarification of crusted soils.
- Leave all temporary or abandoned roads in a condition that will provide adequate drainage and will not require future maintenance. Partially obliterate abandoned roads through ripping and seeding. Where it is available, scatter slash across the ripped road surface. Install water bars at regular intervals to facilitate surface drainage.
- Provide effective sediment filtration through the use of slash filter windrows, filter fabric fencing or straw bales along drainage features located in areas with inadequate buffer capacity. Note: straw bales alone may not be effective in areas with heavy concentrations of livestock or big game.
- Where potential erosion exists at the outlet of drainage features, provide outfall protection using slash and/or coarse angular rock.
- Filter ditches with direct delivery to ephemeral draws at the outlet by using slash, or filter fabric and straw bales.
- Incorporate a filtering mechanism at all ephemeral draw crossings requiring fills that are greater than 2 feet deep. This may include slash filter windrows, filter fabric fencing, straw bales or rock, depending on feasibility of materials and characteristics of the site. Ensure that method used is keyed into the toe of road fill.
- When excavating material in and around ephemeral draw crossings (i.e. cleaning inlets and outlets, constructing ditches, etc.) Special care should be taken so as not to cause an excessive amount of disturbance to the draw bottom or area immediately adjacent to the crossing sites. Excess or waste material should be disposed of at a location where it will not erode directly into the stream or draw bottom.
 - Limit road use and hauling to dry, frozen or snow covered conditions. **Suspend operations during periods before rutting occurs.**

Noxious Weeds:

- Clean all road construction and harvest equipment of plant parts, mud and weed seed to prevent the introduction of noxious weeds. Equipment would be subject to inspection by forest officer prior to moving on site.
 - Re-seed all newly disturbed soils on road cuts and fills to site adapted grasses for reduction of weed encroachment and stabilization of roads

- Weed control would be implemented according to the weed plan outlined in the environmental assessment. Monitor the project area for two years after completion of harvest activities to identify occurrence of any noxious weeds on site.

General Design and Mitigation Recommendations for Harvest Units:

- Implement equipment restriction zones (ERZ) along deeply incised ephemeral draws.
- In all units, designate ERZs below slope breaks > 45%. These areas shall require directional felling and winching as designated by the forest officer.
- Develop a skidding plan prior to equipment operations. Skid trail planning would identify which main trails to use, and what additional trails are needed. Trails that do not comply with BMPs (i.e. draw bottom trails) should not be used and closed with additional drainage installed where needed or grass seeded to stabilize the site and control erosion.
- Slash would be trampled and chipped in the woods and spread over skid trails to help reduce erosion and enhance seedling growth.
- Leave 5-10 tons/acre of coarse woody debris on the ground to enhance seedling growth and maintain long-term overall soil productivity.

PRICKLY PEAR PROJECT
Vegetative Analysis

The DNRC is proposing forest management (commercial thinning operations) in the area south of Alhambra, MT. The state owns the south half, and the W $\frac{1}{2}$ NW $\frac{1}{4}$ Section 16, T8N, R3W, less the interstate and highway right-of-ways. In whole, we usually refer to this tract as the Warm Springs Creek tract. This project proposal is limited however to a single forest stand in the W $\frac{1}{2}$ SW $\frac{1}{4}$ of the section and will be referred to as the Prickly Pear Project. The SFLMP recommends a third order drainage basin for vegetative analysis of the landscape surrounding a project area on scattered trust lands. However, in this case, the project area lays within 1st and 2nd order drainages which deliver directly into Prickly Pear Creek, so a grouping of these drainages have been selected as a representative analysis area.

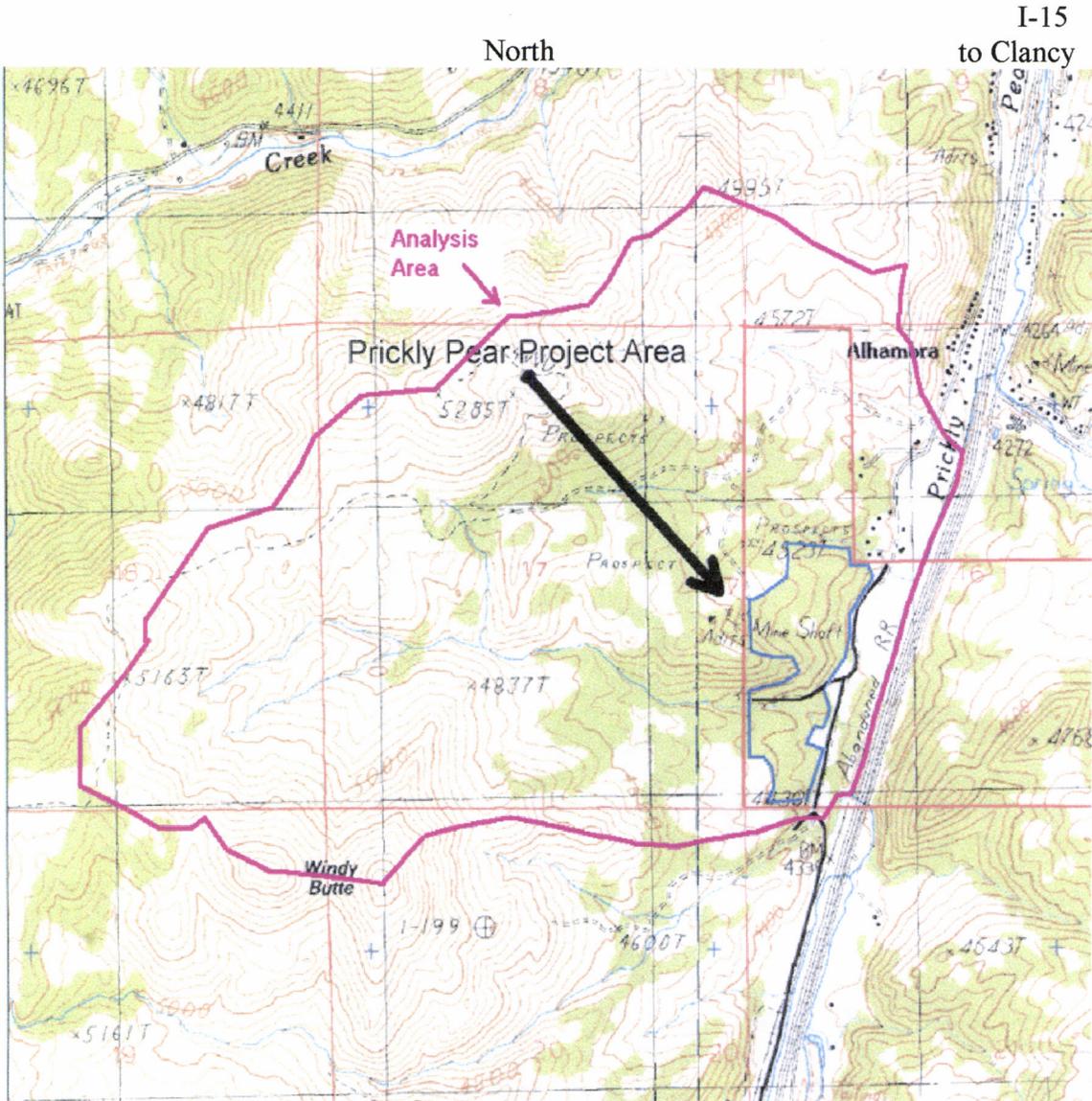
The analysis area boundary begins at the south line of Section 16, at the west right-of-way boundary of I-15, thence westerly up the ridge line to Windy Butte, thence north westerly along the ridgeline to a point in the S $\frac{1}{2}$ Section 18, thence north easterly along the ridgelines to a peak (4995') in the SE $\frac{1}{4}$ Sec. 8, thence south easterly down the ridgeline to the south side of Alhambra and the I-15 right-of-way in the north central portion of Section 16, thence south along the I-15 right-of-way to the point of beginning. This analysis area encompasses 1276 acres, more or less. Ownerships within the analysis area include 213 acres of state land (public school trust) and 1063 acres private.

State land in the analysis area includes the following:

<u>Stand</u>	<u>Acres</u>	<u>Type</u>	<u>Notes</u>
1	42	P7P	Burned by wildfire in 1961
2	54	P9MP	Underburned by wildfire in 1961
3	18	NF	Brushy area near stream
11	16	NF	
12	12	P9W	SMZ and adjacent
13	<u>71</u>	P9WM	Includes the 62 acre project area
	213		

Prickly Pear Project Area

Section 16, T8N, R3W



Scale 1:24000

to Jefferson City

State land forest habitat types in the analysis area are all Ponderosa pine, some Bluebunch wheatgrass, some Idaho Fescue (Pipo/Agsp & Feid). The average site index in the project area is 42.5. The average tree age is 86.5, with a range for mature size trees of 50-120 years. There are several hundred/ac., in some patches thousands/ac., of seedlings and saplings 0-40 years old.

One old tree was observed and documented at 211 years. (Thirteen sample plots systematically located across the project area included age samples on 22 trees. The oldest tree observed was 211 years. A second tree, which exhibited old tree form characteristics, was sampled twice and confirmed to be only 103 years old.) This age distribution coincides with the land use history of this area. The project area was mined in the late 1800's, early 1900's, and was readily accessible along an old stage and rail line.

Green et.al. provide the following basic characteristics for Old Growth Ponderosa Pine, the conditions in this stand are included for comparison.

	<u>Green Minimum</u>	<u>This stand</u>
TPA \geq 17" dbh	4	28.8
Large tree age avg.	>180	113
BA/ac. (\geq 6" dbh)	>40 sq.ft.	111
Snags/ac.	9	0.5
Down logs >9"/ac.	low to moderate	almost none

The project area stand is not Old Growth, based upon these observations.

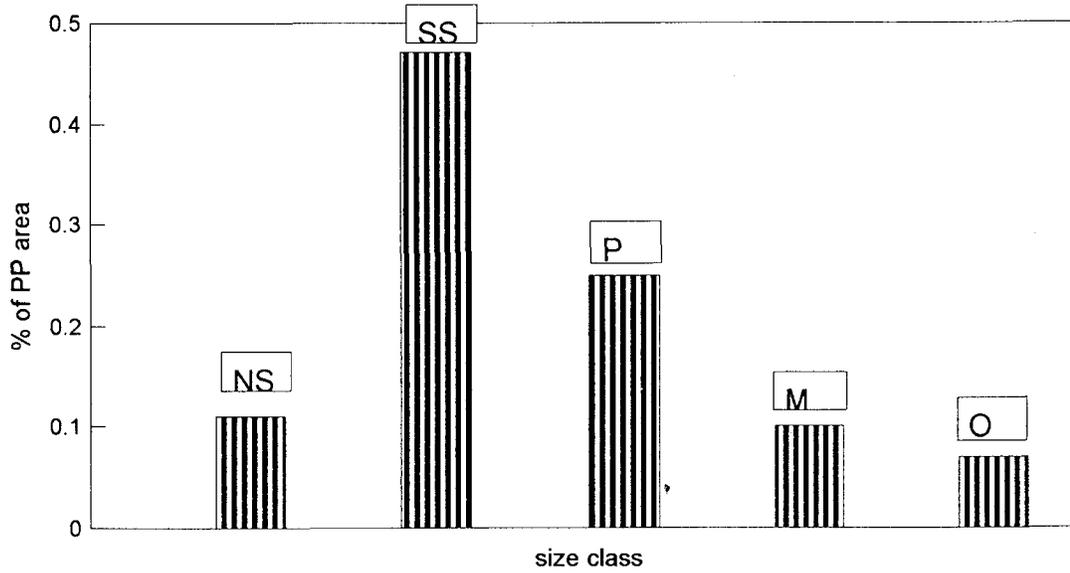
The 1997 Losensky report analyzed historic (early 1900's) forest inventory data to estimate forested acreage and age class distributions. The Helena Unit, and the Prickly Pear Analysis area, lay within climactic zone M332D. The Losensky report found that a historic condition for the 11% of the zone classified as Ponderosa Pine forest included 7% of acreage old (\geq 171 years), 10% mature, 25% pole size, 47% seedling/sapling and 11% nonstocked. Ponderosa pine in this area typically occupies the drier lower slope positions, adjacent to valleys. Frequent low intensity wildfire is thought to have been the principle disturbance responsible for this historic age class distribution. (see Figure 1)

Based upon inventory data for Helena Unit lands compiled as of 1/26/01, the age distribution of Ponderosa Pine includes 22.35% old (\geq 151 yrs.), 58.91% mature, 10.03% pole size, 5.24% seedling/sapling and 3.48% nonstocked. It is probable that a combination of land use practices and fire suppression activities have caused this significant abnormal skewing of Ponderosa Pine age distributions. (See Figure 2) Current stocking of mature and old Ponderosa Pine stands are nearly 5 times the historic level for this area.

The project stand, at an average large tree age of 113 years, is just in the early mature age range. Current growth is still relatively good, but will begin to decline rapidly now that understory stocking is reaching full occupancy of the site.

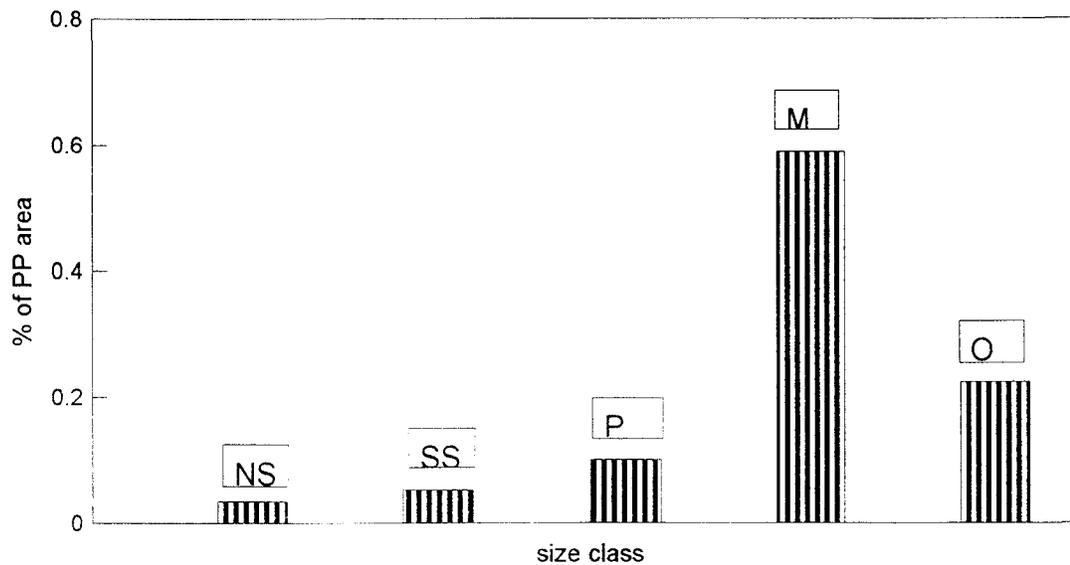
size class	nonstocked	seed/sap	pole	mature	old
age range	0	1 - 40	41 - 100	101 - 170	171 +
% of type CT2 PP	11.00%	47.00%	25.00%	10.00%	7.00%
% of area 8% total	0.88%	3.76%	2.00%	0.80%	0.56%

Historic PP age dist. in M332D



size class	nonstocked	seed/sap	pole	mature	old
age range	0	1 - 40	41 - 100	101 - 150	151 +
% of type PP	3.48%	5.24%	10.03%	58.91%	22.35%
% of area 15.34% total	0.53%	0.80%	1.54%	9.03%	3.43%

2001 PP age Dist. Helena DNRC



The private lands within the analysis area include areas of high density subdivision and rural range and forest land. Private lands include approximately 243 forested acres, with the balance of 820 acres being nonforested, or non stocked since the 1961 fire.

The forest stand proposed for thinning has 1593 total trees/ac., with 139 over 6" dbh. Basal area for all trees is 123.3 sq. ft. The stand exhibits an irregular dense, multi-layered canopy which would not be typical for a Ponderosa Pine stand on these habitat types under natural conditions. The adjacent stand north of the project area was under burned by the fire of 1961 and is more characteristic of a natural Ponderosa Pine stand condition. The next stand north experienced a stand replacing fire at that same time and is currently poorly stocked with Ponderosa pine seedlings/saplings, which have regenerated naturally following the blaze. The project stand in its overstocked and stressed condition is at an elevated risk for stand replacing wildfire and/or insect (Mountain Pine Beetle) attack. The adjacent housing developments pose a considerable value at risk of wildfire.

Noxious weeds, specifically spotted knapweed and dalmation toadflax, are present on the project area, and all surrounding lands. The knapweed in particular is well established in most open areas, and is present in trace amounts throughout the stand. Management actions for well established category 1 noxious weeds should include containment and suppression of existing infestations and prevention of new infestations.

Current forage production on the lease west of I-15 is 32 AUM on 213.1 acres (L-7611). During the previous lease cycle (1990-99) the capacity was rated at 34 AUM, from 1980-89 it was listed at 57 AUM. This trend is most likely due to a combination of Ponderosa Pine encroachment and fill in stocking and noxious weed infestation. The attached page shows the 1955 and 1991 aerial photographs of the section.

Conclusions:

The proposed project area appears to be more heavily stocked than would be expected for a natural condition. Regional Ponderosa Pine age distributions are uncharacteristically shifted toward mature and old age classes. Considering this alone would indicate an evenaged regeneration harvest. However, the project stand is only in the early mature stages and likely has not yet reached culmination of annual volume increment. Management actions which would reduce seedling/sapling and pole size stocking levels in the understory, while maintaining a broadly unevenaged stand of relatively large diameter trees may be appropriate. Some weed control activities should be implemented.

11-5-01
D.J. Bakken
Forester

Dh



Figure 1, Prickly Pear area 1955



Figure 2, Prickly Pear area 1991

-----Original Message-----

From: Joslin, Gayle
Sent: Friday, January 04, 2002 5:29 PM
To: Bakken, D.J.
Cc: Korn, Mike (HARO); Peterson, Joel
Subject: Alhambra Timber Sale

D.J. -

Thanks for the tour yesterday of the Alhambra project site. As we discussed, if it is possible to leave clumps of trees in the pole stands, and stringers of larger trees where they tend to be anyway, the integrity of movement routes along the ephemeral drainages will be retained to some degree and thermal cover will be retained to a larger degree than if the area were left with evenly trees distributed. At least 40 trees per acre is important, even though that stocking rate will not achieve the canopy coverage necessary to achieve 70% that is ideal for thermal cover, if the trees are left in clumps and stringers, wildlife will be able to make better use of them and microclimates will exist in these overstory arrangements that would not otherwise be achieved.

Please take all measures to ensure that traffic does is not allowed through this area connecting adjacent subdivisions. The impacts to wildlife from these adjacent developments are taking their toll already as evidenced by the tracks of dogs in the snow. Traffic would add to the severity of the situation for wildlife.

Sorry to be so brief, but I promised a response to you soon.

Gayle Joslin
Wildlife Biologist
Helena Area Resource Office
Montana Fish, Wildlife & Parks

*For in the end we will conserve only what we love.
We will love only what we understand.
And we will understand only what we are taught.*

~ Baba Dioum, African Conservationist ~

PRICKLY PEAR PROJECT AREA

Fire History

The Prickly Pear Project Area lays within the boundary of the Helena Forest Fire Protection District (est. 1977) and partially within the Clancy Fire Services Area, and the boundaries of the Jefferson City Volunteer Fire Company. Jefferson County is also included in the State-County Cooperative Fire Program, initially in 1970, revised in 1979 and 1986. Since 1977, the State of Montana has kept fire records for this area. (Records since 1981 are in a computer database maintained by the Fire & Aviation Management Bureau in Missoula.) Fires are categorized by size as follows:

<u>Size Class</u>	<u>Acreage</u>
A	0 - .25
B	.26 - 9
C	10 - 99
D	100 - 299
E	300 - 999
F	1,000 - 4,999
G	≥ 5,000

Since 1981, there have been nine fires within one mile of the Prickly Pear Analysis area. There have been two size class G fires within ten miles of the project area. (Warm Springs Creek, 1988, and Boulder Complex, 2000)

On lands outside of the USFS boundary¹ within T8N, R3W, there have been 30 wildland fires since 1981. These occurrences would all have been within 3.5 miles of the project area.

Prior to state record keeping, there was a large (category F or G) fire in 1961 which burned into the project area.

Historically, initial attack efforts have been successfully able to suppress most of the fires in this area at a small size. In the few instances where this did not occur, large catastrophic fires resulted.

During the last decade, the Northern Rockies have experienced several seasons of increased fire occurrence and acreage burned. The three dominant causes cited for this trend are prolonged droughty periods, increased forest fuel levels and the presence of urban interface areas. (Urban interface areas pose an increased risk of human caused fire)

¹Records of fires within the USFS boundary are maintained by the Helena National Forest for this area. These records were not reviewed as part of this analysis.

ignition, and defensive activities to protect lives and property can inhibit suppression actions resulting in larger fires.)

The vegetative analysis for the Prickly Pear project area has documented a significant increased stocking level in these forest stands from 1955 to the present (the only exception being those stands still poorly stocked following the 1961 burn). Subdivision activity since the early 1960's has resulted in numerous homes being constructed in this analysis area.

Increased forest stocking levels, increased levels of urban interface, and a history of fire starts averaging more than one a year for the area, cumulatively yield a relatively high fire risk for the project area. Preventive forest management treatments (thinning in this case), being the only factor directly within DNRC control, would be recommended to reduce fire risk.

A September 2001 study by the University of Montana (A Strategic Assessment of Fire Hazard in Montana, Carl Fieder, et al.) evaluated existing crown fire risk and management strategies for its prevention. For this study, the indicator used to rank crown fire risk was the crowning index. Crowning index is the estimated wind speed needed to carry a crown fire through a specified forest stand. If a low wind speed/crowning index is estimated, the stand would be considered high risk, high wind speeds would be low risk. For this study, high risk had a crowning index of <25 mph, medium 26-50 mph and low risk >50 mph. A variety of stand species, canopy structures and treatment prescriptions were evaluated.

The existing project area is Ponderosa Pine, high density (>75 sq. ft. BA/ac) with a mix of two storied and multi-storied canopy configurations. The study predicted crowning index values for this type of stand to be 21 mph (2 storied) to 19 mph (multi-storied), for stands east of the continental divide.

The treatments proposed for this area would retain approximately 46 sq. ft. of Basal area per acre across nearly all tree sizes 6" and larger. This prescription would approximate the comprehensive treatment evaluated in the University of Montana study. The study estimated crowning index following a comprehensive treatment to increase to 76 mph (2 storied) to 80 mph (multi-storied). (In contract, a treatment thinning from below, removing trees <9" dbh, would only increase crowning index to 38 mph and 35 mph respectively.) The study further estimated that 75% of stands treated with a comprehensive prescription would retain their low risk rating 30 years post treatment.

The proposed treatment for the Prickly Pear Project area should achieve the objective of reducing hazardous forest fuel conditions.

DJ Bakken
01/16/02