UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT, LOWER SNAKE RIVER DISTRICT OFFICE
EA TITLE PAGE, FONSI, AND DECISION RECORD

Applicant (if any) None - BLM initiated			Proposed Action: Prescribed Burn and Juniper Cut	RIPs Project No.: Funding Code: 2823	EA # 01066 FA69
State IDAHO	Counties OWYHEE	District LSRD	Field Office OFO	Authority: Federal Land Policy and Management Act of 1976	
Prepared By (signature)		Title: Fire Use Specialist		Field Exam Date(s) multiple	Report Date: 07-17-02

LANDS INVOLVED

Project. name	Township	Range	Section(s)		Acres
Pixley Basin Prescribed Burn and Juniper Cut	7S	1W	13-14, 21-28, 33-35		7,000

FINDING OF NO SIGNIFICANT IMPACT

The proposed action is tiered to the 1983 Bruneau Management Framework Plan (MFP). The MFP and this EA adequately analyze the impacts of the proposed actions and indicate there will be no significant adverse effects on the quality of the human environment. Therefore, no Environmental Impact Statement will be prepared.

DECISION RECORD

The decision is to implement the Pixley Basin Prescribed Burn and Juniper Cut as described in the attached environmental assessment.

Rationale: This project will maintain the mountain big sagebrush, mixed mountain shrub and aspen communities in a portion of the Owyhee Uplands by reintroducing the natural function of fire.

Appeals: This decision may be appealed to the Interior Board of Land Appeals, Office of the Secretary, in accordance with the regulations contained in 43 CFR 4. If an appeal is filed, your notice of appeal must be filed in this office within 30 days of the date of this decision. The appellant has the burden of showing the decision appealed from is in error. If you wish to file a petition pursuant to regulations found in 43 CFR 4.21(a)(2) for a stay of the effectiveness of this decision during the time your appeal is being reviewed by the Board, you need to submit it concurrently with filing your appeal, and it must address the *Standards and Procedures for obtaining a Stay* identified in 43 CFR 4.21(b). Copies of the notice of appeal and petition for stay must also be submitted to the Interior Board of Land Appeals and to the appropriate office of the Solicitor at the same time the documents are filed with this office. If you request a stay, you have the burden of proof to demonstrate that a stay should be granted.

/s/ Jenna Whitlock — July 22, 2002

Jenna Whitlock Owyhee Field Manager — Date

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT, BOISE FIELD OFFICE

ENVIRONMENTAL ASSESSMENT FACE SHEET

EA No. 01066 Pixley Basin Prescribed Burn and Juniper Cut

Consideration of Critical Elements	Not Present	Present, No Impact	Present, Discussed in EA
Air Quality Concerns			x
Areas of Critical Environmental Concern	x		
Cultural Resources			
Prime or Unique Farm Land	x		
Floodplains	x		
Native American Religious Concerns	x		
Special Status Species			
Hazardous Substances or Solid Wastes	x		
Water Quality Concerns			x
Wetlands/Riparian Zones			x
Wild and Scenic Rivers (eligible)	x		
Wilderness Study Areas	x		
Wild Horse Herd Management Areas	x		
Environmental Justice	x		
Noxious Weeds			x
Migratory Birds			x
Hydropower Impacts	x		

Clearances Survey Worksheets	Worksheet Status Attached	Pending
Cultural Resource Worksheet (ID-01-8100-3)		x
Special Status Animal Worksheet (ID-01-6840-10)		x
Special Status Plant Worksheet (ID-01-6850-1)		x

Visual Resource Evaluation

VRM Class: III Visual Contrast Rating completed: x Photo included: ____
Visual impacts of action: _____

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CHAPTER 1: PURPOSE OF AND NEED FOR ACTION

The **purpose** of the proposed action is to maintain the existing mountain big sagebrush and mixed mountain shrub communities in a portion of the Owyhee Uplands by reintroducing the natural function of fire.

The proposed action is **needed** because the natural role of fire has been excluded, resulting in widespread juniper expansion and subsequent loss of shrub and aspen communities.

Background

Mountain big sagebrush and mountain shrub communities developed with and are maintained by periodic wildfire. Burkhardt and Tisdale's (1976) investigations in the Owyhee Uplands determined that prior to European settlement, in the mid-to-late 1800's, these sites burned approximately every 10 to 30 years. Miller and Rose's (1999) studies in similar country, in south east Oregon, estimate historic fire frequency on mountain big sagebrush communities at 15 to 20 years. Historical fire frequency in aspen stands is estimated to be approximately 50 years (Jones and DeByle, 1985). These periodic wildfires helped maintain the upland shrub and riparian communities and confined western juniper to rocky outcrops and other fire resistant sites. Once the area became settled, heavy livestock grazing consumed the fine fuels and fire suppression efforts greatly reduced wildfire, allowing widespread juniper encroachment onto historically unoccupied sites (Miller and Rose 1995, Burkhardt and Tisdale 1976).

Juniper is a desirable native plant which provides many values within its natural habitats on rocky fire resistant sites. However, the lack of periodic fire has allowed juniper to expand into diverse upland shrub and riparian communities. In the continued absence of fire, these shrub communities eventually cross a threshold into fire-resistant juniper monocultures, resulting in:

- Loss of biodiversity and values associated with diverse shrub communities.
- Accelerated soil erosion and permanent loss of site productivity due to absence of ground cover.
- Catastrophic stand replacing fires, which will eventually result from years of accumulated fuel buildup.

Juniper woodlands now occupy approximately 7.9 million acres of the Intermountain West. Over 90% of these woodlands are less than 100 years old (Miller et al. 2000). Consequently, thousands of acres of diverse native shrub/perennial grass communities, which provided important wildlife habitat, has been lost to uncontrolled juniper expansion. The most common Owyhee Upland shrub communities lost to juniper expansion include: mountain big sagebrush, bitterbrush, mountain mahogany, and aspen/choke cherry, as well as riparian communities.

As juniper dominates a site, it increasingly shades out the shrub and herbaceous species, reducing the fine fuels and making the site increasingly more difficult to burn under normal conditions. These shade-intolerant shrubs and herbaceous species weaken under the increasing juniper competition and are much slower to recover following fire than on sites in an earlier stage of juniper succession. The diminished herbaceous component on these later successional sites often require pre-burn cutting and more intense fire conditions in order to burn the site, resulting in costlier fires, greater fire severity, and slower site recovery. Therefore, prescribed burns are most successful in areas which are in the earlier stages of juniper encroachment.

Interior Columbia Basin Ecosystem Management Project (ICBEMP) findings and Subsequent Idaho BLM Strategy. The recently completed ICBEMP found that due to the exclusion of fire, unmanaged conifer encroachment is occurring throughout much of the Intermountain West and Columbia Basin. Specifically:

- Juniper is increasing on dry grasslands and cool shrublands, reducing herbaceous understory & biodiversity.
- Conifer encroachment has increased due to decreased fire frequency.
- There has been an increase in ladder and ground fuels, resulting in high severity fires.
- Aspen, western larch, and western white pine have all decreased in distribution.

On April 2, 2002 the Idaho BLM State Director issued Instructional Memorandum No. ID-2002-031 which prioritizes fuels management, restoration, and vegetation treatment projects for the next 3 to 4 years, until various ongoing land use planning efforts have been completed. The priorities in this strategy are derived from scientific findings presented in the ICEBMP, the DOI/USDA Cohesive Strategy for Protecting People and Sustaining Resources, and other National Fire Plan directives. The memorandum prioritizes management efforts to focus on 1) sagebrush steppe, 2) aspen, and 3) dry forest biomes respectively, because of their importance and risk of future losses. Priority plant communities were then identified within each of these three biomes. Lastly, protection and maintenance of intact communities was given higher priority than restoring degraded communities because maintenance is much more efficient and cost effective than restoration. The priorities are as follows:

1. Sagebrush Steppe Protection
   a. Initial stages of juniper encroachment.
   b. Dry forest species encroachment.
   c. Thin “decadent” sagebrush stands.
   d. Minimize invasive species encroachment or expansion.

2. Sagebrush Steppe Restoration
   a. Convert juniper woodlands back to sagebrush steppe.
   b. Increase diversity in crested wheatgrass seeding monocultures.

3. Aspen Protection
   a. Protect and maintain healthy stands.
   b. Treat stands with initial stages of douglas-fir or juniper encroachment.

4. Aspen Restoration
   a. Restore declining aspen stands.

5. Dry Forest Protection
   a. Protect and maintain healthy old-growth ponderosa pine .
   b. Control douglas-fir encroachment in areas with old-growth characteristics.

6. Dry Forest Restoration
   a. Restore dead and dying douglas-fir stands.
   b. Convert climax types to early successional species like Aspen or montane shrub.

Recent Lower Snake River District (LSRD) Prescribed Burn History. The LSRD conducted various juniper controlled burns in the Owyhees during the 1980's and early 1990's and promoted public wood cutting in designated areas. Staffing limitations and non-discretional priorities have precluded juniper management activities in the last 8 years.

Recently, Congress increased funding for fuels treatment projects in an effort to restore biological diversity, and to reduce future catastrophic wildfires, which have occurred recently throughout the west due to years of accumulated fuel buildup. This funding now provides the staff and resources necessary to carry out prescribed burns and other fuels management treatments.

The Project Area. The project area is in the Pixley Basin watershed of the West Castle Creek Allotment (see map). This area was identified by BLM staff in 1994 as an area in need of juniper management and contains a number of criteria which prioritizes it for treatment.

- **State Director's Criteria:** This area fits the criteria outlined in the State Director's Instructional Memorandum. It consists primarily of sagebrush steppe vegetation in the earlier stages of juniper encroachment and contains numerous aspen stands also undergoing juniper encroachment.

- **High value diverse plant communities:** This area contains a diversity of mountain big sagebrush, bitterbrush, low sage, aspen, and riverbirch communities which provide important wildlife habitat. These communities will eventually be lost to the encroaching juniper unless the natural role of fire is returned to these areas.

- **Younger junipers:** Juniper has expanded eastward into Pixley Basin over the years. Therefore, most of the juniper in this area is relatively young (less than 40 years old) and could be easily controlled with a lower intensity prescribed fire. The site still contains healthy shrub/perennial grass communities which would recover much faster than a sparse weakened community undergoing the later stages of juniper encroachment. The lower intensity fire would also have less impact on bitterbrush and perennial grasses, allowing them to recover quicker.

- **Livestock grazing management:** The proposed prescribed burn is within the Pixley Basin Pasture of the West Castle Creek Allotment. This pasture is incorporated into a two-pasture rest rotation system. This pasture is grazed in the spring on odd years and is completely rested from livestock grazing on even years. Trailing is authorized through the pasture each year. This management system meets the physiological needs of the perennial plants and would allow them to recover and maintain themselves following fire .

- **No Fencing Needed:** Pixley Basin is already fenced, so can be protected from livestock grazing before and after burning without having to build additional fences.

Objectives of the Proposed Project. The specific objectives of the proposed project are to:

1. Maintain the mountain big sagebrush/bitterbrush-bunchgrass communities in Pixley Basin by controlling juniper with prescribed fire on approximately 40% of the 7,000 acre project area.

2. Improve and maintain the aspen/chokecherry, and birch stands in Pixley Basin by burning and cutting encroaching juniper.

3. Maintain watershed function, stability, and reduce accelerated erosion by maintaining and increasing shrub and diverse herbaceous plant communities, which provide cover and litter needed to protect the soil.

4. Improve wildlife habitat for sage grouse, elk, mule deer, antelope, migratory birds, small mammals, amphibians, and reptiles by creating and maintaining vegetative mosaics. These seral stages would

maintain various habitats to meet the forage and cover requirements for these species.

Scoping. Public comment was solicited for this project at various public meetings and through a scoping letter, which was mailed to interested publics on June 4, 2002. Please see Chapter 5 (Persons, Groups, and Government Agencies Consulted) for scoping details.

Compliance and Authorities. The proposed action and Environmental Assessment (EA) are in conformance with the 1984 Bruneau Management Framework Plan (MFP). The proposed action would help achieve rangeland health standards in accordance with the 1997 Idaho Standards for Rangeland Health. The proposed action is also in accordance with the: 1) April 2002 BLM Idaho State Office Instructional Memorandum No. ID-2002-031: A strategy for prioritizing fuels management, restoration and vegetative treatment projects, 2) February 2002 DOI/USDA Cohesive Strategy for Protecting People and Sustaining Resources, and 3) The 1997 Department of Fish and Game Idaho Sage Grouse Management Plan.

CHAPTER 2: DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

The proposed action would prescribe burn approximately 2,700 acres in the 7,000 acre Pixley Basin Project Area located in the Pixley Basin drainage, east of Castle Creek in the eastern end of the Owyhee Plateau. The proposed project area is in pasture 11A of the West Castle Creek Allotment (see map). Five hundred thirty of those acres consist of private holdings within the project area. An allowable burn area consisting of 13,430 acres would be established outside the project area to act as a buffer in the event the fire burns outside the project area. If this happened, the fire would be suppressed in the allowable burn area and burning operations could then continue in the project area. If the fire burned outside the allowable burn area, it would be considered an escaped fire situation. Prescribe burn efforts would be halted for the day, and all resources on the site would be diverted to suppressing the fire.

The estimated 2,700 acres blackened within the 7,000 acre project area equate to 40% of the project area, or 20% of the 13,430 acre allowable burn area.

Elk, deer, and other wildlife species are attracted to burned areas because of the succulent herbaceous vegetation and aspen which resprouts after a burn. Past experience has shown that larger burns help protect aspen and other palatable species by distributing browsing animals over larger areas (Bartos, D.L. and W.F. Mueggler 1981). Therefore, the proposed 2700 acres would be burned in the same year, if possible.

The fire would be allowed to burn into aspen and some of the birch and willow stands in an attempt to control juniper and to reinvigorate these fire dependent trees. However, these communities are usually difficult to burn under less-than-intense-fire conditions because of the green fine fuels located under them. Manual cutting would therefore be required to remove as many juniper as possible from these stands after burning. These efforts are very labor intensive and would not result in complete removal of juniper from all the aspen groves. Cutting would be prioritized based on wildlife and riparian resource benefits.

The project area would be rested from livestock use before and after burning to allow native plant recovery. Pre- and post- treatment monitoring would be conducted to document plant response to the burning treatments.

Proposed Action

Prescribed Burn: Burn approximately 40% of the mountain big sagebrush/bitterbrush communities in the 7,000 acre project area, in the fall of 2002. If the burn is not implemented in 2002, it may be conducted in subsequent years.

1. Allow fire to burn into the aspen, chokecherry, and some birch and willow stands, which are not included in fenced exclosures, but are undergoing juniper encroachment.

2. The area would be burned primarily by helicopter and by some on-the-ground personnel with drip torches.

3. Blacklines would be established to secure the fireline before burning the project area.

4. Blacklines would also be established around the five exclosures located within the project area.

5. Fire engines and ATVs would be used to control the black lines, requiring some off-road travel by these vehicles. Travel would be restricted to existing trails when possible.

6. No graders, dozers, or other surface disturbing equipment would be used to implement the burn, however a dozer would be available on site in the unlikely event the fire escapes outside of the fire line.

7. The under carriage of all vehicles involved in the prescribed burn would be cleaned before traveling to the project area to reduce the likelihood of introducing noxious weed seed.

Livestock Grazing Management: Post-fire livestock management is an integral part of the long-term success of this project.

1. The Pixley Basin Pasture (11A) would be closed to livestock grazing in 2002 (or the year it is burned) to allow accumulation of the fine fuels needed to carry a fire.

2. The Pixley Basin Pasture would then be rested at least two full years following the burn to allow recovery of the native perennial species. Controlled trailing through the pasture would be authorized.

3. The established grazing system would be temporarily modified between the Pixley Basin Pasture (11A) and the Doyle Mountain Pasture (10A) as shown in Table 1. The Doyle Mountain Pasture would be grazed for three consecutive spring grazing seasons while the Pixley Basin pasture is being rested. The current grazing system would be reinitiated when the Pixley Basin pasture reopens for grazing.

4. The uplands and riparian areas would be monitored after two years of rest from livestock grazing to determine whether adequate vegetative recovery occurred to resume livestock grazing. Additional rest would be required if warranted.

Table 1. Proposed temporary change to grazing system for the Doyle Mt. Pasture (10A) and the Pixley Basin Pasture (11A), in the West Castle Creek Allotment.

Pasture Name & Number	Authorized AUMs per pasture	Current Grazing Period		Proposed Temporary Modification			
		Even Years	Odd Years	2002	2003	2004	2005
Pixley Basin No. 11A	1000	Rest	5/23 - 6/22	Rest/burn	Rest	Rest	5/23 - 6/22*
Doyle Mt. No. 10A	1000	5/23 - 6/22	Rest	5/23 - 6/22			Rest

* Provide additional rest if monitoring indicates additional rest is warranted.

Cutting:

1. After the prescribed fire, unburned juniper would be cut out of the allowable burn area with priority given to the aspen, water birch, and willow communities, followed by the mountain big sagebrush/bitterbrush communities.

2. Some aspen could be cut to stimulate new growth where fire did not reach and to create obstacles around the perimeters of these stands.

3. Cutting could occur for a number of years following burning.

Monitoring:

Monitoring Objectives: Sampling sites would be established at various locations in the project area before burning. The sites would be sampled before burning, to obtain baseline data, and on subsequent years following burning, to assess plant recovery, plant reestablishment, and watershed recovery.

The data would be used to determine whether the project objectives were met, and to develop adaptive management strategies for future prescribed burns.

Monitoring Methods:

1. Point intercept and foliar cover would be recorded to obtain pre- and post-burn ground cover. This method would provide information for assessing soil cover, watershed recovery, and changes in plant cover and community composition following the burn.

2. Hundredth acre shrub density plots would be used to record shrub density before burning and to quantify post-burn shrub reestablishment.

3. Existing nested frequency transects would be read a few years after the burn. This information would indicate change in individual plant species composition resulting from the burn. Photo plots would be taken at each monitoring site.

4. Attention would be given to locate noxious weeds when working in this area. If infestations are found they would be recorded, grubbed out, and sprayed with herbicide if needed.

5. Riparian shrubs would be monitored ocularly and with photographs to determine if these species are regenerating. Some mortality of riparian shrubs is expected to occur. If monitoring indicates that species at a given site are not reproducing, seedlings or cuttings would be planted. If necessary, these sites would be protected from grazing until the plants are capable of withstanding some browsing.

6. The proposed project area occurs on granitic soils on moderate to steep slopes. Select draw bottoms would be monitored using erosion bridges or measured cross sections to determine if post-fire erosion occurs. Photographs would be taken at each monitoring site.

Watershed Protection Project:

1. The prescribed fire would be expected to burn with a light fire severity and in a mosaic pattern on the landscape. Some pockets of heavier fuels could burn with a hotter fire severity. If post-fire burn reconnaissance identifies areas on steep slopes or in steep draws that burned hot, erosion prevention (such as straw bale check dams) would be initiated.

2. Several undeveloped roads would be used as part of the burn boundary. If needed, portions of these roads would be rehabilitated with water bars following burning.

3. Riparian sedges and rushes are lacking in most of the project's riparian areas (especially Pixley Creek and a tributary in Sec 27 SE). Plugs or seedlings would be planted in these areas and protected with juniper rip-rap.

Cultural Resources Inventory: This area has not been systematically surveyed over the full extent of the project area. A cultural inventory to identify historic properties, specifically burnable historic artifacts, structures, or features including historic arborglyphs on aspens and prehistoric rock art, would be completed prior to project implementation. Impacts to historic properties would be avoided or mitigated by recording and determination of significance.

Sensitive Species Inventory: No known sensitive plant species occur in the project area. A botanical and wildlife inventory would be conducted of the area. If sensitive plants are found, impacts would be avoided or mitigated. The burn prescription would be tailored to mitigate effects to sensitive animal species.

No Action

Under this alternative, there would be no prescribed fire or juniper cutting in the project area.

Other Alternatives Considered

Alternatives to the proposed action were considered to prevent juniper expansion in the project area, but were dismissed or not analyzed in detail because they would not address the purpose and need for action, or would otherwise be ineffective.

One alternative included hand thinning the entire project area. This alternative was dismissed and not analyzed in detail because it would be cost prohibitive and too labor intensive to be efficient or effective, considering the amount of juniper expansion currently occurring.

Another alternative considered using mechanical treatment for juniper control. This alternative was dismissed because it would be ineffective on very young juniper trees.

CHAPTER 3: AFFECTED ENVIRONMENT

This chapter describes the affected environment and addresses it according to the Idaho Standards for Rangeland Health; it will also address other traditional uses and resources which are not included in the Rangeland Health guide. The Standards for Rangeland Health, as applied in the State of Idaho, are to be used as the Bureau of Land Management's management goals for the betterment of the environment, protection of cultural resources, and sustained productivity of the range. The Standards were developed with the specific intent of providing for the multiple use of the public lands.

The affected environment for this proposed project is within the Pixley Basin drainage, in Pasture 11A of the West Castle Creek Grazing Allotment, located 12 miles southwest of Grandview, Idaho. This pasture is approximately 7,020 acres, which consists of the following ownership: 6,482 acres of public land; 9 acres of state land; and 529 acres of private land. The area ranges in elevation from 4,600 to 6,600 feet.

Idaho Standards for Rangeland Health

Watershed (Standard 1)

The area lies within the 14-16" precipitation zone. Peak snowmelt runoff occurs in May and the area is subject to short duration, high intensity summer thunderstorms. The main drainage in the area is Pixley Creek, which is an intermittent stream that is tributary to Castle Creek. The flow regime is discontinuous, with numerous seeps and springs providing discrete riparian zones throughout the drainage network. No fish occur in the stream.

The soils in the project area occur on undulating to very steep granitic foothills, and mountains at elevations from 4,600 to 6,600 feet. These soils formed in residuum, colluvium, and alluvium derived mainly from intermediate intrusive rock. Soils are shallow to deep and are well to somewhat excessively well drained. These soils have a xeric soil moisture regime and a frigid soil temperature regime.

The Kanlee and Poisoncreek soil series are representative of the major soils in the area with the Takeuichi, Bauscher, and Ola soils found as inclusions. The main soils have gravelly coarse sandy loam surfaces and sandy clay loam or coarse sandy clay loam subsoils. The main difference between these two soils being the depth (Poisoncreek soil is less than 20 inches to bedrock, where the Kanlee soil is 20 to 40 inches to bedrock). These soils are associated with Loamy 13-16", Shallow-Claypan 12-16", and Loamy 16+" ecological sites. Many of the loamy sites have a high component of Antelope bitterbrush. Western juniper is increasing on many of these vegetative sites.

At this time there have been no site specific evaluations of the present erosional conditions or watershed health for the project area. Observations made during field trips to the project area indicate that no major accelerated erosional processes are occurring. Areas that have experienced fires in the past appear to have recovered without any erosional or watershed related impacts.

The hazard of erosion on these soils, from water, is moderate to very high. As slopes exceed 30 percent in grade, the erosion hazard is very high, and surface disturbing activities should be limited or Best Management Practices (BMPs) incorporated into the planning process. The hazard of erosion from wind is low throughout the project area.

Riparian Areas and Wetlands (Standard 2)

Approximately 24 seeps/springs occur within the project area. BLM's riparian proper functioning condition assessments have not been completed on these areas, however field observations conducted in June 2002 indicate that many of these riparian zones have been impacted by past livestock grazing practices and would be rated as either nonfunctional or at the low end of functioning at risk.

These riparian areas contain one, or a combination of the following species: water birch, willow (yellow, lemmon, coyote, and perhaps others), aspen, and dogwood. Some sites contain riparian shrubs, but do not have direct evidence of surface water associated with them. Most riparian shrubs throughout the project area are older aged individuals. In general, riparian graminoids (sedges, rushes) are lacking from these sites.

Stream Channel/Floodplain (Standard 3)

The flow regime in Pixley Creek and its tributaries (including the tributary that drains to Savage Crossing, on Castle Creek) is dominated by discrete seeps/springs, which results in a pattern of discontinuous flow (i.e. surface flows from spring to spring are not connected). Stream channel features (such as meanders) occur downstream of some of the springs, but are not always identifiable in the nonflowing reaches between springs.

In general, the draws are well-vegetated with grasses and/or sagebrush and do not contain erosional features indicative of flowing water (i.e. scour and/or deposition). Currently, the watershed appears to be absorbing the amount of precipitation it receives, without causing channel scour or forming rills or gullies. Movement of water on the ground surface is related to hardened surfaces, such as roads and livestock trails. Erosional features related to roads and trails is not causing downstream degradation of draws or stream channels.

Native Plant Communities (Standard 4)

All the plant communities are undergoing various degrees of juniper expansion throughout much of the landscape. Most of the encroachment is in an early successional stage with 30-40 year old individuals. Some mid successional stages also occur with individuals approximately 70 years. Most of the juniper expansion is occurring on the deeper soils because these sites are more productive and contain larger shrubs, which act as nurse plants to the young juniper. Less expansion is occurring on shallow claypan sites.

Most of the upland sites, including the Loamy 13 - 16", Shallow claypan 12 - 16", and Aspen thicket 16 - 22" are in relatively good condition and are currently meeting rangeland standards. However, much of the mountain big sagebrush and bitterbrush communities in the Loamy 13 - 16" sites consist of older even-aged stands that appear to be losing their productivity. The aspen sites contain multiple-aged individuals and are still in relatively good condition.

The creek bottoms have been historically used as livestock trail ways and have undergone heavy use in the past. These loamy bottom, 12 - 16" sites, consist mostly of even-aged basin big sagebrush with a Sandberg bluegrass understory. The Riparian (7 - 20") ecological site, along Pixley Creek, consists primarily of older birch trees.

The watershed consists of five main ecological sites and associated plant communities as shown in Table 2.

Table 2. Ecological sites, associated plant communities, and the percentage each community occupies in the Pixley Basin Project Area.

Percent of area	Ecological Site	Existing plant community
60	Loamy 13 - 16"	Mt. big sagebrush, bitterbrush/Idaho fescue, bluebunch wheatgrass, Thurber needlegrass
25	Shallow claypan 12 - 16"	Low sagebrush/Idaho fescue, bluebunch wheatgrass
7	Loamy bottom 12 - 16"	Basin big sagebrush/Sandberg bluegrass (occur outside the riparian areas along Pixley Creek .)
5	Aspen thicket 16 - 22"	Aspen (occur in patches in snow pockets and at the numerous springs throughout the area.)
3	Riparian 7 - 20"	River birch and willows (occurs in patches along portions of Pixley Creek and some of the springs. Some of this area is protected by six permanent exclosures)

Seedings (Standard 5)

This Standard is not applicable to this project.

Noxious Weeds (Standard 6)

In June of 2002, 4 small patches (<0.1 acre) of whitetop, also known as hoary cress (*Cardaria sp.)*, were discovered in Pixley Basin along the drainage bottoms. Additionally, several patches of whitetop appear to have expanded within the Goodman Gulch fire area, and are now approximately 50 feet in diameter. These patches were treated with herbicide by the Lower Snake District, and will be monitored and retreated each year until they have been eradicated. The largest known patch of whitetop within Pixley Basin is located at the base of the Goodman Gulch fire. Thus, Goodman Gulch is probably the most likely place, within Pixley Basin, to have whitetop problems after fire.

Water Quality (Standard 7)

Measurements of physical, chemical, or biological water quality parameters have not been conducted on water resources within the project area. The Idaho Department of Environmental Quality identifies the following surface water use designations for Pixley Creek: 1) aesthetics, and 2) water quality appropriate for industry, agriculture, and wildlife habitat.

Threatened and Endangered Plants and Animals (Standard 8)

The diverse plant communities of Pixley Basin provide important habitat for a wide variety of wildlife species.

Sage grouse use the mountain big sagebrush and aspen communities for late brood-rearing habitat. During this period, from late June to early November, sage grouse will use a variety of moist and mesic habitats where succulent forbs are found. These habitats include riparian areas, wet meadows, lake beds, farmlands, and uplands, including sagebrush and recently burned areas (Sather-Blair et al. 2000).

There are several wintering areas for sage grouse within the project area. These areas were delineated in the 1983 Bruneau Management Framework Plan. They occur on high ridges within the project area that are covered with low sagebrush. This vegetation type typically does not burn easily, and in two past wild fires within the project area, the fires stopped at the low sage boundary.

The area is used as spring, summer, and fall habitat for mule deer and receives some use by elk and antelope. The riparian areas provide habitat for many nongame species and provide breeding habitat and migratory paths for songbirds.

There are no fish in Pixley Creek and no known sensitive plants in the area.

Other Resources and Uses

Cultural Resources: The project area in Pixley Basin has not been systematically surveyed. A Class II cultural resources inventory would be conducted prior to project implementation on selected acres with high potential for cultural sites. Artifacts of primary concern would include combustible historic artifacts, structures, features (arborglyphs on aspens) and prehistoric rock art. These resources can be destroyed or damaged during prescribed burning. Lithic scatters can be exposed to the lower intensity of prescribed fire without significant alteration, therefore 100% survey of the area is not necessary. All known or discovered sites would be avoided where combustible properties exist. Sites exposed by removal of vegetation would be recorded after project completion. Inventory is necessary to be in compliance with the 1966 National Historic Preservation Act.

Wilderness and Recreation: No wilderness or wilderness study areas occur anywhere near the project area. The area receives little recreation use because of its distance from main roads. The area is used primarily by hunters, OHV trail riders (motorcycles and ATVs) and occasional hikers. The proposed burn lies within the Owyhee Front Off Highway Vehicle Management Area, and some trails in the area have been used, in the past, for permitted competitive OHV racing.

Visual Resource Management: Pixley Basin is within Visual Resource Management (VRM) Class III. Class III VRM areas are managed to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may be visible, but should not dominate the view of the casual observer. Currently the scenic quality of the proposed burn area is only moderate, and is declining, in part because the increasing dominance of juniper results in progressively less contrast or variety in vegetation.

Air Quality: Limited data is available on the air quality of the project burn area due to the fact that no air quality stations are operating in this portion of Idaho. Some data gathered at a field study station near Silver City (1994, CH2MHill) indicate that levels for PM10 and TSP are well below current Federal and State standards. Average particulate concentrations measured were 28.4 ug/m3 for TSP and 20.1 ug/m3 for PM10. No PM2.5 sampling was done at this time. The PM10 concentration is well below the Federal and State 24-hour standard of 150 ug/m3, and indicates the area has low levels of TSP and PM10. Other parameters, though not monitored, are believed to be below any standards due to the lack of available source of emissions. National Ambient Air Quality Standards (NAAQS) are expected to be met under the existing conditions in the area.

The Clean Air Act establishes a national goal of preventing any further degradation or impairment of visibility within federally designated areas. Attainment areas are classified as Class I, II, or III and are subject to the Prevention of Significant Deterioration (PSD) program. Class I areas include national wilderness areas (larger than 5,000 acres) and national parks (larger than 6,000 acres). Class III status is assigned to attainment areas to allow maximum industrial growth while maintaining compliance with NAAQS. All other attainment areas are designated Class II. The project area is a designated Class II area. The Jarbidge Wilderness area, located approximately 100 miles southeast of the project area, is the closet PSD Class I designated area.

Smoke management is necessary to minimize air quality and visibility impacts in smoke sensitive areas from prescribed burning. Prescribed burning should be planned, coordinated, and conducted in order to minimize the impact of smoke by combining favorable atmospheric transport and dispersion conditions with prescribed fire management techniques. These techniques may include (but not be limited to) the size of the burn, season of year, time of day, moisture content of the fuel, fuel treatment, ignition method, and topography of the area.

Livestock Management: The Pixley Basin Pasture (No. 11A) is grazed by cattle. Historically, this pasture and the adjacent Doyle Mountain Pasture (No. 10A), were grazed in the late spring every year. In 1997, the Final Decision for the West Castle Creek Grazing Allotment reduced the authorized grazing use and implemented a rest rotation system to meet the physiological needs of perennial plants. These pastures are now rested every other year and have improved considerably since implementing the grazing system (Table 3). Limited trailing is authorized each year to allow movement of cattle from the spring range to summer range.

Table 3. Grazing system and authorized livestock use for Pastures 10A and 11A in the West Castle Creek Allotment.

Pasture Name & Number	Authorized livestock use in Animal Unit Months	Grazing Use Period	
		Even Years	Odd Years
Pixley Basin No. 11A	1000	Rest	5/23 - 6/22
Doyle Mt. No. 10A	1000	5/23 - 6/22	Rest

Critical Elements not Discussed: The project area contains no Areas of Critical Environmental Concern, prime or unique farmlands, floodplains, hazardous substances or solid wastes, designated or eligible Wild and Scenic Rivers, Wild Horse Herd Management Areas, Native American religious concerns, Environmental Justice Concerns, or hydropower.

CHAPTER 4: ENVIRONMENTAL CONSEQUENCES

Environmental Consequences - Proposed Action

The anticipated long term result of the proposed actions would be the maintenance of the desirable shrub and herbaceous communities, and a reduction of juniper within the project area. The anticipated short term effects would be a temporary loss of shrubs, decreased vigor of herbaceous species, and increased risk of accelerated soil erosion.

Idaho Standards for Rangeland Health

Watersheds (Standard 1)

In the short-term, immediately following the prescribed fire, there would be a risk of accelerated soil erosion (especially due to the erodible nature of granitic soils) and subsequent increased sediment entering Pixley Creek before the first growing season, as a result of removal of vegetation cover. The potential for accelerated erosion would mainly be dependent on post-fire climatic events (large rainfall events or excessive spring runoff) until vegetation stabilized the area. However, with about 40% of the area proposed to be burned in a mosaic, unburned communities would help provide buffer areas to slow the affects of surface runoff and collect any sediment which could move off-site before the first growing season.

Preventing the long term decrease in shrub and herbaceous vegetation, which accompanies juniper dominance, would result in better watershed function (i.e. capture, storage and slower release of water and nutrients on-site). Relative to a juniper dominated site, healthy shrub and bunchgrass communities would hold more snow in place, allow improved infiltration of snowmelt and rain, and provide a more steady runoff pattern, which could increase the flow duration of seeps and springs, with a resultant increase in downstream flow and flow duration. With improved watershed function, there would be less opportunity for accelerated erosion and sediment entering streams.

As stated above, the anticipated riparian plant community changes, following cutting and burning, would provide increased shading and bank stability due to improved root holding capacity from the increased density of riparian woody and hydric herbaceous plant species. These factors would likely improve water quality and ensure no negative impact to water quality.

Intense surface heat, causing soil sterilization, should be minimal because most of the trees on the site are still quite small and areas of thick shrub communities are scattered, creating a mosaic. Where shrub cover is thick and soil surface temperatures reach critical levels, some soil heating affects would occur. There is adequate seed source of native perennial plant species to allow rapid colonization of any localized areas that could be sterilized.

Riparian Areas and Wetlands (Standard 2)

Riparian resources should respond well to low severity fire. Depending on the fire burn pattern, surface flow could return to several “springs” which are labelled “spring” on the USGS topo map, but that are currently not flowing. Hydrologically, the key to the long term riparian health would be livestock

management after the prescribed fire, because so many springs are functioning at the low end of the spectrum. If riparian areas burned hot, and most of the riparian shrubs were killed, soil loss could occur.

Stream Channel/Floodplain (Standard 3)

Rainfall and snowmelt runoff would increase from burned surfaces, until the site was revegetated. If a large runoff-producing event occured before vegetation became established, headwater draws could become scoured and sediment could be delivered downstream. By preventing the site from becoming dominated by juniper, in the long term, more runoff would be captured, stored (intercepted, infiltrated) and released more slowly. By retaining more moisture in draw bottoms (rather than just conveying water through), more vegetation would be maintained and would help to dissipate any runoff that occured. Essentially, the existing condition would be maintained.

Native Plant Communities (Standard 4)

In the long term, the proposed action would maintain sagebrush, aspen, and riparian communities by reducing juniper expansion into the project area. Relative to the conditions that would develop if the juniper were allowed to continue expanding, there would be more shrub and herbaceous ground cover and increased soil stability and watershed health. In the short term, after the burn, there would be a decrease in big sagebrush and bitterbrush cover. After a few years, there should be an increase in herbaceous vegetation compared to pre-burn conditions.

A major question is whether the desirable shrubs would recover faster than the juniper, so that in the long term there are gains of sagebrush and bitterbrush habitat quality. Within the first year or two, big sagebrush and bitterbrush would re-establish or resprout, and within about 15 years, they would attain approximately 10-25% canopy cover. These estimates are based on observations of a 15-20 year-old fire within the project area, that now has 10-25% sagebrush and bitterbrush canopy cover. Additional evidence about the speed of recovery is found on the Goodman Gulch fire of 2000, where young vigorous sagebrush about 4 - 6 inches tall are already establishing within the burned area, after one year. This fire is within the Pixley Creek drainage.

Juniper expansion should be set back at least 40 years. This estimate is derived from the fact that there is still no sign of young juniper re-establishing in the 15-20 yr old fire. There are juniper skeletons scattered in the old burn. The median age of the juniper in the project area is estimated to be 40 years. Thus, adding the length of time that the old fire has been free of juniper, to the age of the current stand (when it is at an early stage appropriate for control by fire), there is an estimate of 40 years, minimum, before the area might return to the current stage of juniper invasion. However, many factors influence juniper re-establishment after fire, including weather and proximity of seed sources. For instance, after the proposed fire, there would still be a mosaic of unburned areas with junipers remaining. Thus, juniper re-invasion after the fire would be starting from a different point than the original invasion, with more seed sources near the burned area. This could speed up re-invasion.

Big sagebrush: All subspecies of big sagebrush are easily killed by fire and do not resprout, therefore its cover in the burned areas would be greatly reduced in the short term following fire. Reestablishment of big sagebrush varies tremendously by subspecies.

Mountain big sagebrush communities developed with periodic fire and therefore reestablish rapidly following fire. Mountain big sagebrush seed that is present in the upper 2 cm of the soil can be stimulated during prescribed burning, while the seeds of other big sagebrush subspecies are either not influenced or are damaged by fire (Hironaka 1983). Kuntz (1982) noted that sagebrush seedlings rapidly establish and that their densities, during the first year, can equal that of the preburned condition. On Wyoming big sagebrush sites, seedling establishment is slower due to lower elevation and drier site conditions.

In addition to differences in reproductive potential, the growth rate between various big sagebrush subspecies differ substantially. Mountain big sagebrush exhibits rapid growth rates and should result in cover equaling the preburn level within 15 to 25 years following fire. An existing 15-20 year old fire within the project area has shown this recovery rate. Other subspecies may be reduced in cover and density for over 50 years following fire (Bunting 1985).

Bitterbrush: Bitterbrush is an important shrub which provides cover, browse, and seed for many wildlife species. Most bitterbrush communities also evolved with periodic fire and are more tolerant to fire than mountain big sagebrush because some individuals would resprout and develop into mature plants. Additional plants become established after fire by rodent seed caches.

Bitterbrush is widely distributed throughout the Intermountain west and exhibits various growth forms which differ in their response to fire. Burning conditions and preburn bitterbrush stand conditions also affect its post fire survival. Much literature exists on bitterbrush survival and reestablishment following fire on specific sites. Therefore, when analyzing fire impacts on bitterbrush, it is necessary to review literature which focuses on similar sites.

Bunting et al. (1985) examined bitterbrush recovery on 50 sites throughout Southern Idaho (which included the Owyhee Uplands) and 5 sites in Montana, in which all 55 study sites had burned 3 - 10 years earlier. The study's objective was to determine the effects of: 1) habitat type, 2) growth form, and 3) season of burning on bitterbrush reestablishment through resprouting and new seedling establishment. This study is the most comprehensive one of its kind for Southern Idaho, and therefore would be used as a model for predicting fire effects on bitterbrush in Pixley Basin.

***Growth Form and habitat type*:** Bitterbrush populations exhibit one of three growth forms (decumbent, columnar, and subcolumnar) throughout the various portions of it's range, and is generally associated with elevation-moisture gradients:

The ***decumbent form*** is found on more mesic sites at higher elevations. Conifers, mountain shrub, and mountain big sagebrush communities are dominated by this form. This form resprouts more readily than the other two forms. The most sprouting occurred on the mountain shrub communities followed by the conifer and mountain big sagebrush communities respectively. This is the form found in the Pixley Basin project area.

The ***columnar form*** occurs primarily at lower elevations, on more xeric sites and has the lowest sprouting potential.

The ***subcolumnar form*** is intermediate in regard to both variables.

***Season of burning*:** The season of burning is also believed to affect bitterbrush resprouting and seedling establishment. Monsen and Christensen (1975) suggested that fall burning is the best time for prescribed burning if seedling establishment is a major consideration, because fall burns occur after the current years crop of bitterbrush seed has fallen from the plants, so the seed availability is maximized. However, Bunting et al. found no significant difference (at the 95% confidence level) between spring and fall burns. Summer burns had significantly more plant mortality than the other two seasons.

Preburn conditions also influence bitterbrush and other plant species recovery following fire. Sites containing healthy populations of bitterbrush and perennial grasses, and undergoing early stages of juniper expansion, will recover much more quickly than sites in later stages of juniper expansion and lacking bitterbrush and perennial grass populations. As juniper begins to dominate

a site, the density and vigor of the shrubs and perennial grasses decline, causing recovery of these species to be much slower following fire. Bunting et al. also observed that bitterbrush seed production is reduced and seed reserves in the soil are depleted as juniper begins to dominate the site. Without fire or some other disturbance that removes the juniper, bitterbrush will eventually be replaced by the developing juniper stand.

***Changes in density following fire*:** Since bitterbrush populations reestablish after fire by resprouting and by new seedling establishment, the authors suggested that overall changes in plant density (number of plants per acre) is the most important variable to examine when determining bitterbrush recovery following fire. In the mountain big sagebrush communities, Bunting reported an average reprouting of 28%, and the establishment of 94 plants per acre from new seedlings 3 to 10 years after burning. Subtracting the new individuals from the individuals killed by burning resulted in a decreased density of 55% three to ten years after burning (Table 4).

Table 4. Percent bitterbrush resprouting, seedling density, and overall changes in bitterbrush density by habitat type group or community averaged across season and growth form in the Northern Rocky Mountains. (From Bunting et al. 1985.)

Plant Community or Habitat Type Group	Mean % Resprouting	Mean Seedling Density (no./acre)	% Overall Change in Bitterbrush Density[1]
Mountain shrub	60a	107ab	-11
Conifer	49a	260a	-30
Mountain big sagebrush	28b	94ab	-55
Basin big sagebrush	11c	54b	-68
Juniper	6c	6b	-91

[1] Density change includes resprouting and seedling establishment 3 to 10 years after fire occurred, minus mortality. Sample sites consisted of both spring/fall prescribed burns and summer wildfires.

It is important to note that although the authors grouped bitterbrush reestablishment statistics (seedling density and percent resprouting,) by "plant community/habitat type group", they did not differentiate between burning seasons for each vegetative group. Over 50% of their 56 sample sites occurred on sites burned by summer wildfire. Since bitterbrush is more susceptible to summer burns, one would expect the proposed fall Pixley Basin prescribed burn to have higher bitterbrush densities 3 to 10 years after burning, as opposed to the results shown in Table 4.

Fire Management Implications for Bitterbrush in Mountain big sagebrush communities: The authors found that "bitterbrush associated with mountain big sagebrush is usually well adapted to fire. The bitterbrush present usually are of the decumbent form, or rarely, subcolumnar. Resprouting frequency averaged 45% in the nonforested communities where mountain big sagebrush was present. Mountain big sagebrush coverage is among the greatest found in sagebrush types and may exceed 40%. Fire is an effective means to stimulate production of these communities. Initially, the herbaceous component is enhanced.

Nearly all shrubs, including bitterbrush and mountain big sagebrush, establish more rapidly from resprouts or seed than many other sagebrush communities. Consequently, the productivity of the shrub component is also enhanced in the long term by periodic fire in many situations. Spring fires give the best results in this vegetation, but spring prescribed burning may be limited in some areas due to climate. Most shrubs, including bitterbrush, also respond well to low-severity fall prescribed fires."

They concluded that "although bitterbrush density usually decreases initially following fire, the continued productivity and dominance in a community of bitterbrush is disturbance-dependent. In many instances, continued protection from fire will result in low rates of reproduction and declining productivity. Proper application of prescribed fire may be used to maintain vigorous bitterbrush stands on a long-term basis. As managers we must not be so concerned with short-term effects that we lose sight of the future needs of the species and those animals that are dependent upon it." Near the old Pixley Basin burn discussed above, unburned bitterbrush at the southern edge of the burn was very dense (>30% cover) and had many dead branches. Adjacent bitterbrush within the burn had less coverage, 15-20%, and did not have dead branches. Thus, the fire appears to have reinvigorated the bitterbrush stand as Bunting suggests.

Low sagebrush: Low sagebrush occurs on shallow soils and does not usually produce enough fine fuels to carry a fire. Consequently, fires in low sagebrush communities are comparatively rare. The possibility of fire increases during years of above-average precipitation, which can result in increased herbaceous growth (Blaisdell et al. 1982, Winward 1985). When fires do occur it is easily killed by fire.

The lower intensity burn should result in minimal amounts of low sage burned. If fire burns into some of these areas, the unburned sites would provide a seed source for low sagebrush reestablishment. Low sage reestablishes on burned sites through small, light, wind-dispersed seed. Recovery may occur within 2 to 5 years under favorable conditions, but may require more than 10 years on harsh sites (Young 1983). Burned areas would provide a short term abundance of forbs before the low sagebrush reestablishes itself on the burned sites.

Aspen: Most of the aspen clones in the western US were established after the last ice age and are dependant on periodic fire to maintain them. Thousands of acres of aspen are being lost each year due to the exclusion of fire. Fire maintains these communities by stimulating root sprouting and sucker growth and by removing the competing conifer species. However, aspen communities are relatively resistant to low intensity fires because it occurs on cool moist sites and the understory consists primarily of fire resistant green forbs. Intense fire conditions are therefore needed to burn into these stands. One consequence of a lower intensity burn would be the inability of fire to carry into much of the aspen stands. It is estimated that fire would carry into no more than 20% of the aspen within the project area.

Manual cutting would therefore be required to remove as many juniper as possible from these stands after burning. These efforts are very labor intensive and would not result in complete removal of juniper from all the aspen groves. Cutting would be prioritized based on wildlife resource benefits. Even though most of the aspen would not be burned, new suckers should become established around the edges of these stands.

Cutting some aspen around the stand perimeters may promote sprouting and help protect the resprouts from deer and elk use. Aspen resprouts are highly palatable to ungulates in the late summer and fall when the other vegetation is cured out. The large acreage treated would help disperse the deer and elk, thereby minimizing concentrated use on resprouting aspen.

Livestock use on the resprouted aspens should be minimal. Livestock tend to use aspen later in the year after the herbaceous species dry out. Cattle would be excluded from the area for at least two years following burning. After the pasture is reopened for grazing, the cattle would continue to use the pasture for only one month (5/23 - 6/22) on alternate years when the herbaceous species are still green. The flush of herbaceous plants would further encourage livestock grazing on the herbaceous species instead of on the aspen.

Water Birch (*Betula Occidentalis*): Water birch occur in sparse to dense clumps throughout the drainages within the project area. Some of these sites contain surface water in the form of seeps and springs, while others do not. Some stands contain little understory to carry fire, while others are intermixed with sage brush and/or juniper. Depending on the fire severity, water birch may be killed by fire, or they may resprout. Two wild fires within the Lower Snake River District during the past 10 years illustrate both responses. Within the Pixley Basin prescribed fire project area, water birch which are growing in wet riparian areas, with little understory to carry fire, would not burn hot, if at all. Likewise, water birch growing on drier sites, with little understory and no adjacent sage brush or juniper would also not burn hot. Some individuals or clumps of water birch growing on drier sites and intermingled with sage brush and juniper would burn hot and may be killed.

Willow (*Salix sp*): Species of willow growing within the project area include: yellow (S. lutea), lemmon's (S. lemmonii, coyote (S. exigua), scouler (S. scouleriana). These species, in general, will resprout vigorously following low severity fire but may be killed by high severity fire. Willow habitats, and subsequent fire response, are similar to those described above, for water birch. In many cases, the willow and water birch occupy the same site.

Herbaceous Species: The forbs and perennial grasses in these areas evolved with and are maintained by periodic fire. The proposed burn would have long term beneficial effects for these plants. Forbs respond quickly to fire, therefore, A flush of forbs are expected for the first few years after the fire. The temporary reduction of shrubs would also allow the perennial grasses to increase once they recover from the short term effects of the burn. Over time, the forb component would decrease slightly as the grasses increase and as the shrubs reestablish on the site.

Generally, bluebunch wheatgrass, bottlebrush squirreltail, and Sandberg bluegrass are fairly resistant to fire because they consist mostly of coarse stems with minimum leafy material. They burn quickly so little heat transfers below the soil surface.

Idaho fescue and Thurber needle grass have densely clustered stems and are more susceptible to injury from burning. Most studies show that fire initially reduces frequency and basal area of the these species with spring and summer burns having the greatest impacts, and fall burns having the least impacts. However, fires impacts to these species also varies considerably between ecological site, ecological condition at the time of the burn, burn severity, precipitation, pre and post-burn management, etc. Extensive and often conflicting literature exits on the short term fire effects to these species under the various conditions. The literature can be viewed on The US Fire Effects Information Data Base Web Site (http://www.fs.fed.us/database/feis/).

Observations this spring (June 2000) indicated that the Goodman Gulch Fire area had excellent recovery of both Idaho fescue and Thurber needle grass, with no observed mortality and little reduction in basal area. The burn occurred two years ago, in August when these species are most susceptible to damage. A fall prescribed burn in this area should minimize impacts on these species. The two year rest following the prescribed burn and the existing grazing system which provides for rest every other year would allow for good recovery perennial grass recovery if fire impacts did occur.

Seedings (Standard 5)

This Standard is not applicable to this project.

Noxious Weeds (Standard 6)

Whitetop is known to increase after fire, and there is a chance it could increase in other parts of Pixley Basin after the proposed prescribed fire. Weed inventory and treatment would be conducted for at least 5 years after the burn to eliminate whitetop. Cleaning the under carriage of all vehicles involved in the project should reduce the likely hood of new noxious weed introductions.

Water Quality (Standard 7)

State water quality standards for sediment and nutrients could be exceeded if a large runoff-producing event occured before re-establishment of groundcover. In the long-term, the slower release of water from the upland watershed and the ability of draw bottom vegetation to maintain bank stability would aid in preventing sediment movement downslope and capturing sediment that may be transported from the uplands.

Threatened and Endangered Plants and Animals (Standard 8)

Reintroducing fire into the area would increase plant diversity by providing varied seral stages of plant communities. The resulting vegetation mosaics would provide improved habitat for most wildlife species and would approximate the natural conditions that occurred in this area prior to Euro-American settlement. The long term effect would be the maintenance of the mountain sagebrush/bitterbrush, aspen, and birch communities.

> **Fire Effects on Wildlife Habitat:** "Fires affect animals mainly through effects on their habitat . . .The extent of fire effects on animal communities generally depends on the extent of change in habitat structure and species composition caused by fire. . . Animal species are adapted to survive the pattern of fire frequency, season, size, severity, and uniformity that characterized their habitat in pre-settlement times. When fire frequency increases or decreases substantially, or fire severity changes from pre-settlement patterns, habitat for many animal species declines" (USDI, 2002, p37).

> Restoring healthy aspen communities to their historical niche on the landscape would provide habitat and forage for many wildlife species, including sage grouse, elk and deer, migratory birds and small mammals.

> **Sage grouse:** The burn would have long term benefits for sage grouse which use the area as late brood rearing habitat. The 1997 Idaho Sage Grouse Management Plan recommends managing late summer brood rearing habitat by providing "a good variety of succulent vegetation adjacent to sagebrush escape and loafing cover". The availability of forbs in the late summer is the most important common denominator for good brood-rearing habitat (Sather-Blair et al. 2000). The increased forb component adjacent to unburned sagebrush would provide a good variety of succulent vegetation alongside sagebrush escape and loafing cover as recommended in the Idaho Sage Grouse Management Plan.

"Sage grouse population dynamics are dependent on landscape and temporal habitat disturbance patterns, as well as on long-term vegetation change such as movement of conifers into sagebrush grass communities where fire has been excluded. The restoration of sage grouse habitat requires reestablishment of native rangeland grasses, shrubs, and forbs. To accomplish this, fire frequency must be reduced in landscapes that have become dominated by cheatgrass and increased where tree encroachment has replaced sagebrush grass communities" (USDI 2002, p37-38).

As discussed in the section on low sagebrush, the prescribed fire would be unlikely to burn into the low sage communities that constitute sage grouse winter range, especially because the burn prescription would not be for extreme burning conditions. BLM maps showing the winter range in this area are 15-20 years old, and current sage grouse use of these areas is uncertain. Even if some of the low sage burned, it would not significantly reduce the amount of grouse winter range in the area. Regardless, the identified wintering low sagebrush sites would be avoided.

Big Game Animals: Prescribed burning in Pixley Basin would improve habitat for elk, deer, and antelope in the long term by creating successional mosaics within the various shrub communities, and by reducing encroaching juniper. An immediate increase in forbs would improve foraging habitat for antelope. In the short term, the burn would reduce big game cover on the burned areas, and reduce browse for deer for approximately five to ten years, but would result in healthy sustained big game habitat in the long term. In the 15-20 year old burn, within the project area, more deer pellets were found within the fire, in the younger bitterbrush and sagebrush, than in the denser, old bitterbrush stands adjacent to the fire.

The proposed burn would invigorate and expand the existing aspen communities and would create forage and dense hiding cover for deer and elk within two years. Aspen that burned in the 2000 Goodman Gulch fire is vigorously resprouting within burned stands as well as around stands where the fire burned just to the edge. The sprouts are currently about 2.5 to 4 ft tall and very dense, after 1½ growing seasons.

Sagebrush Dependent Songbirds: Some sagebrush obligate (dependent) species such as sage thrasher, sage sparrow, and Brewer's sparrow,would lose nesting habitat for the short term. In the long term this habitat would be maintained by controlling the juniper and allowing sagebrush reestablishment back into burned upland areas.

Juniper Songbirds: Gray flycatchers, chipping sparrows, mountain chickadees, American robins, and cassin's finches are the most abundant species in old-growth and seral juniper stands in the Owyhees (Challenge Cost Share Study, Golden Eagle Audubon Society, 1993). In prescribed-burned juniper stands, Northern flickers, mountain bluebirds, vesper sparrows, and brewer's sparrows were the most abundant species. Burning the expanding juniper in Pixley Basin, would prevent an increase in juniper habitat for some species, while maintaining habitat for others. Robins, chipping sparrows, cassin's finches, mountain chickadees, and gray flycatchers were more abundant in unburned compared to burned juniper, while mountain bluebirds, flickers, and vesper sparrows were more abundant in burned juniper. All of the species using the juniper woodlands are also common in many other habitat types, (except the gray flycatcher, which uses mainly pinyon-juniper and sagebrush.) Thus, reducing and preventing the expansion of juniper in Pixley Basin would not have any significant effects on the viability of any songbird populations.

Raptors: Northern goshawk, Cooper's hawks, red-tailed hawks, long-eared owls, and great-horned owls are likely to or are known to use Pixley Basin, and could benefit from the long-term maintenance of prey habitat.

Sensitive Plants: No known sensitive plant species occur in the proposed treatment area. A botanical investigation would occur prior to any treatments.

Other Resources and Uses

Cultural Resources: All cultural materials which can be significantly effected by fire or are combustible would be avoided.

Wilderness and Recreation: The proposed burn is outside of WSAs, so there would be no impacts to wilderness values.

Short-term impacts would occur to the recreational user during the burning operation. Recreation activities like hiking and hunting would be displaced for a short period during burning. OHV trail use could continue on the existing trail and road network, and there is little risk that OHV users would go off-road or trail because of the typically steep terrain in the area.

Long-term benefits to the recreationist would include increased wild flowers, increased plant diversity and watchable wildlife opportunities. Improved big game and sage grouse habitat would improve hunting opportunities.

Visual Resource Management: The visual quality of the area would be negatively affected during the actual burning, and for a period of up to five years after the burn. However, the impacts would be moderate and short-term and meet the Class III management standards. Due to the isolation of the area, difficult public access, and low levels of recreational use, the casual observer would be only slightly affected by these short term impacts. In the long-term (5 to 10 years) establishment of a variety of shrubs, forbs and grasses in areas now beginning to be dominated by juniper would enhance the visual quality of the area by providing a richer variety of form, texture and contrast than is currently available.

Long term visual benefits would result from the added texture and color in the landscape. An abundance of wildflowers would result from the increase in forbs. Increased fall colors would occur from the increase in aspen.

Air Quality: The desired condition would be an unstable atmosphere favoring a rising smoke column. Burning would proceed during stable and unstable atmospheric conditions with expected smoke suspension to be short lived and scattered over wide areas. Any wind speed below15 mph from a northwest or westerly direction is acceptable.

Smoke from the project burn would be visible over a wide area of western Owyhee County. The communities of Murphy and Silver City could be briefly impacted by the smoke from this burning. Notifications would be made to area residents and local authorities prior to burning. The Jarbidge Wilderness Area, a Class I air shed, would not be impacted by this action. Smoke would be noticeable for 1-2 days following the burn. Typically, smoke production is not noticeable three to four days following a burn project of this size.

On the average, under 1 ton of fuel per acre would be expected to be consumed. Particulate emission would be expected to be less than 13 pounds per acre. Based on an estimate of 4,000 acres burned, approximately 20 to 31 tons of PM emissions would be estimated for the project. No violations of the NAAQS would be anticipated.

Daytime haze would predominate over the landscape closest to the project site. Nighttime inversions could trap residual smoke from smoldering fuels in drainages and valley bottoms until prevailing winds or a weather system change purged smoke from these areas.

Livestock Management: The prescribed burn would increase forage in the pasture after several years. An increase in forage grazed by the same number of livestock would result in lower grazing use levels.

Pixley Basin pasture would be rested from livestock use for a minimum of 2 full years after burning to allow plant recovery. Monitoring (point intercept and foliar cover) would be used to determine whether adequate recovery has occurred to resume livestock grazing after the two year rest. Ater 2 years, if adequate vegetative recovery had not occurred, the rest period would be extended to allow for recovery.

The rotation system for pastures 10A and 11A would be temporarily modified to allow the 3 year minimum rest to pasture 11A (see Table 1 on Chapter 2 - 2 for the pasture rotation schedule), while still allowing controlled trailing. This would result in the Doyle Mountain pasture (10A) being grazed three consecutive years. This modification may temporarily reduce the perennial grass vigor in the Doyle Mountain Pasture. Before the grazing system was implemented in 1997, both pastures were grazed every spring for the past 50 plus years. The reduced vigor that could occur from three consecutive years of spring use would be minor in comparison. The plants would soon regain any lost vigor after reinstatement of the pasture rotation.

Effects on Other Resources: The proposed action and alternatives would have no impact on National Wild and Scenic Rivers, prime or unique farmlands, floodplains (other than those addressed as streamside riparian areas), Native American religious concerns, Environmental Justice, Federal Threatened or Endangered species, or Hazardous Materials Management.

Cumulative Impacts

The proposed burn would begin to restore the natural occurrence of fire in this area. Since fire is a natural component and helps maintain the natural character of the landscape it would have no cumulative impacts on the landscape. Furthermore, the mosaic properties of the proposed burn would blacken a small portion of the landscape (approximately 20% of the allowable burn area). Removing juniper where it does not occur naturally through cutting would also help retain the natural character of the landscape and would therefore have no cumulative effects.

Environmental Consequences - No Action Alternative

Under this alternative there would be no burning or juniper cutting. The area would continue on the current successional path from mountain big sagebrush/bitterbrush bunchgrass, low sagebrush, aspen, and river birch communities into a juniper woodland.

The riparian communities would develop a more xeric juniper overstory with reduced vegetation and ground cover, and a decreased density of deciduous woody species and hydric herbaceous species. Juniper would continue to encroach into the aspen and river birch stands. Over time, streambanks would destabilize as riparian vegetation decreased.

The course of succession described above for these communities would continue with the resulting loss of soil, site productivity, species, and structural diversity. This successional course would continue until a catastrophic fire occurs in which burning conditions would be extreme enough to allow a canopy fire to spread within the juniper woodlands. Afterwards, there would be little shrub and herbaceous vegetation within the stand to recover after the fire.

Idaho Standards for Rangeland Health

Watersheds (Standard 1)

As shrub-steppe communities proceed toward woodlands, community structure and composition change would alter community processes such as hydrology, nutrient cycling, and energy flow. As the amount and size of unvegetated interspaces between juniper trees increases, runoff-producing events would become more frequent, because of the lack of vegetation to hold snowmelt or rain. Rills may begin to form in the loosely consolidated granitic soils, especially on steeper slopes.

These changes also influence habitat suitability for wildlife species. As woodlands move from mid to late stages of development thresholds are approached or crossed. These thresholds include 1) significant decline in shrubs, 2) a decline in fire potential, 3) reduced tree mortality to fire due to increasing tree size, 4) decline in berry production, and 5) a potential decline in herbaceous cover and diversity dependent on soils and other site factors.

Within 15 to 20 years, extreme wildfire conditions would be necessary for fire to carry through the upland communities. This is due to the continuous loss of shrub species which provide a pathway for fire to reach the canopy. The juniper trees would continue to grow and become more resistant to fire. Plant species and structural diversity would be lost with reduced habitat for many wildlife species such as elk, deer, songbirds, and many small mammals. Reduced vegetation cover, litter, and increased bare ground would increase vulnerability to accelerated erosion, site instability, and decrease watershed function of the upland communities.

Riparian Areas and Wetlands (Standard 2)

Many riparian areas within the project area contain a mixture of riparian shrubs with sage brush and/or juniper. Juniper encroachment on segments of the riparian communities would continue at an accelerated rate as the young juniper continue to develop. Western juniper would out-compete deciduous woody riparian species influencing plant community succession toward a more xeric plant species composition. The currently existing diversity of hydric plant species and community structure would decline, resulting in a downward trend in riparian condition. The riparian vegetation functions of sediment capture and water storage would be reduced with the increase in xeric species. As juniper plants replace riparian shrub species, the massive rooting capabilities of these species and their soil holding potential would be lost, decreasing bank stability. As juniper woodlands develop within the riparian zone, the hydric species (sedges and rushes) understory decline affecting the functioning of the riparian community.
As riparian areas become encroached, the potential for high severity fire increases. High fuel-load riparian corridors can become fire corridors. When hot fires burn large portions of riparian areas, stream bank and bed stability is temporarily lost until the site becomes revegetated. Riparian shrubs can be killed by high severity fires, and, unless hand planted, regenerate slowly, if a local seed source is not available. Inactive headcuts may begin to advance and seep/spring areas may become scoured.

Stream Channel/Floodplain (Standard 3)

As stated in Standard 1, the hydrological cycle, nutrient cycling, and energy flow change to less efficient and less effective processes as plant community succession transitions toward juniper woodlands. These processes would continue to function at a reduced level and reduce the efficiency of energy conversion. These community processes would not function as expected under a historical fire regime or presettlement "natural conditions."

As conversion to a juniper dominated site occurs, higher and more frequent runoff from uplands can negatively impact draw bottoms and stream channels. Currently, draw bottoms are vertically stable. Changes to the way the uplands capture, store and release water, in addition to juniper encroachment in riparian zones, may cause instability, bank failure, and gullying.

Native Plant Communities (Standard 4)

Conditions for species noted in this standard are currently providing for healthy populations. However these species would decline as juniper begins to dominate the site and would eventually cross a threshold into juniper woodland.

Vegetation: As juniper expands it competes with the shrubs, grasses and forbs for light and water. Without periodic fire it eventually dominates the site resulting in the loss of bio diversity and the values associated with diverse plant communities. As the juniper canopy increases the fine fuels and ground cover decreases and the site becomes increasingly more fire resistant. Eventually it will cross a threshold which will no longer support low and moderate intensity fires. Large landscapes of the Owyhee Uplands which once consisted of mountain mahogany, bitterbrush, mountain big sagebrush, aspen, and other desirable mountain shrub communities now have crossed this threshold into fire resistant juniper monocultures. These stands can no longer be returned to their previous state by low or moderate intensity fires.

Aspen and Birch: Juniper will out-compete these shade-intolerant trees for sunlight, water, and nutrients. Aspen communities are important to songbirds and many other nongame species. These communities also provide important food and cover for elk and deer. The loss of these trees will result in declines of biodiversity, watershed function, ecological processes, and critical wildlife habitat.

Seedings (Standard 5)

This Standard is not applicable to this project.

Noxious Weeds (Standard 6)

Whitetop would continue to exist without the reintroduction of fire, and may continue to spread seed through vectors such as wind, water, and animals. Although fire may reduce vegetative competition for weeds and may contribute to easier weed establishment, lack of fire would not necessarily reduce the risk of weeds spreading to new sites.

Water Quality (Standard 7)

Without upland community change through the reintroduction of fire, watershed function would continue to decline. Decreasing vegetative cover, litter, and ground cover lessens site stability, increasing opportunity for accelerated erosion with possible sediment deposition into streams. The riparian communities with juniper encroachment would not function as they are now. Those segments would continue to develop toward more xeric communities, losing bank-holding ability and sediment capture ability and reducing the potential for storage and release of water.

As upland communities change toward juniper woodlands, changes in sedimentation, infiltration, runoff, snow distribution, interception and transpiration occur which suggest potential decreases in understory

production and water quality, increases in peak streamflows, and decreases in annual streamflows and total annual water yields. State water quality standards could be compromised, if sediment from uplands or bank scour is transported downstream.

Threatened and Endangered Plants and Animals (Standard 8)

Wildlife and Plants: The loss of important habitat provided by aspen communities for the elk and deer herds would be detrimental to these species. The continued successional transition of the plant communities within Pixley Basin toward fully-developed juniper woodlands would provide less diversity of habitat for most wildlife species.

The cumulative effect on wildlife habitat would be a gradual decline in habitat for most wildlife species which would accelerate as plant community change progresses and certain thresholds of change were met (e.g., shrub component of the community is dying or dead).

Other Resources and Uses

Cultural Resources: No impacts to cultural resources would occur. Historically, juniper was not the dominant species. If left untreated the area would develop into a juniper woodland significantly changing the historic landscape.

Wilderness and Recreation: No impacts to WSAs or wilderness values. The loss of plant community diversity impacts the natural landscape viewshed. This would have a negative impact on the recreationist using the area. Wildlife habitat would decline and reduce recreational opportunities such as hiking, wildlife viewing, and hunting.

Visual Resource Management: Visual quality would not be enhanced as the landscape continues transition toward juniper woodlands losing the diversity of upland and riparian vegetation communities.

Livestock Management: As the shrub/herbaceous vegetation types transition toward juniper woodlands, forage for livestock would diminish.

Effects on Other Resources: The No-Action alternative would have no impact on National Wild and Scenic Rivers, prime or unique farmlands, floodplains (other than those addressed as streamside riparian areas), Native American religious concerns, Environmental Justice, Federal Threatened or Endangered species, and Hazardous Materials Management.

CHAPTER 5: PERSONS, GROUPS, AND GOVERNMENT AGENCIES CONSULTED

List of Preparers - Owyhee Field Office Staff - BLM

Steven Jirik - Fire Use Specialist
Myra Black - Rangeland Management Specialist
Helen Ulschnieder - Wildlife Biologist
Paul Seronko - Soils Scientist
Zig Napkora - Hydrologist
Mike Ford - Fire Operations Specialist
Juanita Allen - Cultural Resource Specialist
Sheri Hagwood - Botanist
Frank Jenks - Recreation Specialist

Individuals, Agencies, and Groups Consulted

Dr. Steve Bunting - University of Idaho Department of Rangeland Ecology
Dr. Stewart Hardegree - Northwest Watershed Research Center, USDA Agricultural Research Service
Dr. Fred Pierson - Northwest Watershed Research Center, USDA Agricultural Research Service
Dr. Jon Bates - Eastern Oregon Agricultural Research Center, USDA Agricultural Research Service
Krista Wade - BLM Idaho State Office Fire Ecologist
Bob, Blaine, and Brian Collett - livestock permittees
Darrin Fredricks - Bluebird Mine owner
Gene Bray - Interested citizen

Scoping Meetings

Owyhee Initiative Meetings

Nampa, Idaho (November 27, 2001and April 2, 2002)

Fred Grant - Owyhee Initiative Chairman
Cindy Bachman - Owyhee County Soil Conservation District
Tim Dufner - Idaho Department of Lands
Craig Gehrke, Lahsha Johnson - Wilderness Society
Dr. Chad Gibson - Owyhee Cattleman's Association
Dr. Ted Hoffman - Owyhee Boarderlands Trust
Inez Jaca - Owyhee County
Lou Lunte - Nature Conservancy, Will Whelan
John McCarthy - Idaho Conservation League
Andy Ogden - Idaho Department of Fish and Wildlife

Owyhee Co. Sagegrouse Working Group Meetings
Murphy, Idaho (September 5, 2001)
Grandview, Idaho (September 25, 2001)

Owyhee County Commissioners Meeting
Marsing, Idaho (May 4, 2002)

Owyhee County Historic Preservation Committee
Murphy, Idaho (February 20, 2002)

Wings & Roots
Boise, Idaho (May 16, 2001)
Consultation with Shoshone-Bannock & Shoshone-Paiute Tribes

Bruneau Resource Management Plan Scoping Meetings
Kuna High School - Kuna, Idaho (November 27, 2001)
Rim Rock Jr./Sr. High School - Grandview, Idaho (December 3, 2001)
Caldwell Court House - Caldwell, Idaho (December 11, 2001)
Mountain Home Elks Lodge - Mountain Home, Idaho (December 13, 2001)

Scoping Letter

Mailed to interested publics on June 4, 2002.

Appendix A

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APPENDIX B

Table 5. Characteristics of transitional stages during succession from shrub-steppe communities to fully-developed juniper woodlands (Miller et al. 2000).

Characteristics (Post Settlement Stands)	Early	Mid	Late	Closed
Tree Canopy	Open, actively expanding, cover ≤ 5%	Actively expanding, cover 6 to 20%	Canopy expansion greatly reduced, cover 21-35%	Canopy expansion stabilized, over >35%
Leader Growth (Dominant Trees)	Good terminal and lateral leader growth	Good terminal and lateral growth	Good terminal growth, reduced lateral growth	Good to reduced terminal growth lateral growth absent
Crown Lift (Dominant Trees)	Absent	Absent	Lower limbs beginning to die where tree canopy > 35%	Present where tree canopy > 35%
Potential Berry Production	Low	Moderate to High	Low to Moderate	Rare to Low
Tree Recruitment	Active	Active	Reduced, limited primarily to beneath trees	Absent
Leader Growth (Understory Trees)	Good terminal and lateral leader growth	Good terminal and lateral growth	Greatly reduced terminal and lateral growth; reduced ring growth	Absent, some mortality
Shrub Layer	Intact	Nearly intact to showing mortality around dominant trees	≥ 40% dead	≥85% dead