

ENVIRONMENTAL ASSESSMENT

WILDLAND FIRE MANAGEMENT PLAN

JOHN DAY FOSSIL BEDS NATIONAL MONUMENT

APRIL 1999

**U. S. DEPARTMENT OF INTERIOR
NATIONAL PARK SERVICE
ENVIRONMENTAL ASSESSMENT**

for

**WILDLAND FIRE MANAGEMENT PLAN
John Day Fossil Beds National Monument
Oregon**

Summary:

Fire was a natural component of this ecosystem until suppression of fire started around the turn of the century. With the decades of fire suppression, changes have occurred to the lands of the monument. Species diversity is declining, native vegetation is disappearing, and densities of juniper trees are increasing. Continued suppression of wildland fires increases the potential for catastrophic fires.

The Fire Management Plan calls for continued suppression of all wildland fires. Prescribed fires (management-planned ignitions) are called for at the monument in order to return fire as a natural process, maintain historic/cultural scenes, and to reduce fuel loads. Prescribed fires would only be started under project specific burning prescriptions (predetermined conditions of weather, fuel moisture, and personnel availability). Objectives of the prescribed fires would be documented in individual burn plans. Monitoring and research of fire effects would determine if management goals are being achieved and if burn prescriptions are appropriate.

Address Comments To:

James F. Hammett, Superintendent
John Day Fossil Beds National Monument
HC 82, Box 126
Kimberly, Oregon 97848

TABLE OF CONTENTS

TABLE OF CONTENTS.....	II
PURPOSE AND NEED	1
ALTERNATIVES	2
ALTERNATIVE A: FULL SUPPRESSION (NO ACTION).....	2
ALTERNATIVE B: PRESCRIBED FIRE (PROPOSED ALTERNATIVE).....	2
ALTERNATIVES CONSIDERED BUT REJECTED.....	2
No Suppression or Prescribed Fire.....	2
Wildland Fire Use Program	2
Mechanical Manipulation of Fuels Only.....	2
AFFECTED ENVIRONMENT	4
DESCRIPTION OF THE MONUMENT	4
FUELS.....	4
WILDLIFE	4
VEGETATION	5
AIR QUALITY	5
WATER AND SOILS	6
PALEONTOLOGIC AND CULTURAL RESOURCES.....	6
CONSEQUENCES OF THE PROPOSED AND ALTERNATIVE ACTIONS	7
VEGETATION	7
Alternative A: Full Suppression (No Action).....	7
Alternative B: Prescribed Fire (Proposed Alternative)	7
FUELS.....	7
Alternative A: Full Suppression (No Action).....	7
Alternative B: Prescribed Fire (Proposed Alternative)	8
WILDLIFE	8
Alternative A: Full Suppression (No Action).....	8
Alternative B: Prescribed Fire (Proposed Alternative)	8
AIR QUALITY	9
Alternative A: Full Suppression (No Action).....	9
Alternative B: Prescribed Fire (Proposed Alternative)	9
WATER RESOURCES	9
Alternative A: Full Suppression (No Action).....	9
Alternative B: Prescribed Fire (Proposed Alternative)	9
SOILS.....	10
Alternative A: Full Suppression (No Action).....	10
Alternative B: Prescribed Fire (Proposed Alternative)	10
PALEONTOLOGIC AND CULTURAL RESOURCES.....	10
Alternative A: Full Suppression (No Action).....	10
Alternative B: Prescribed Fire (Proposed Alternative)	10
SAFETY.....	10
Alternative A: Full Suppression (No Action).....	10
Alternative B: Prescribed Fire (Proposed Alternative)	11

VISUAL OR AESTHETIC VALUES.....	11
Alternative A: Full Suppression (No Action).....	11
Alternative B: Prescribed Fire (Proposed Alternative)	11
OVERALL PROGRAM RISK.....	11
Alternative A: Full Suppression (No Action).....	11
Alternative B: Prescribed Fire (Proposed Alternative)	11
CUMULATIVE IMPACTS	11
Alternative A: Full Suppression (No Action).....	11
Alternative B: Prescribed Fire (Proposed Alternative)	12
PREPARER	13
CONSULTATION AND COORDINATION.....	14
REFERENCES.....	15

PURPOSE AND NEED

Fire has been suppressed at John Day Fossil Beds National Monument since the early 1900's. Fire suppression and other land management practices have altered plant community structure and composition, helped change the historic/cultural scene, and might have resulted in artificially high fuel loads (Gruell 1983, Pierce 1982).

Fire suppression activities have unintentionally deprived the land of fire as a natural process, which is now understood to be necessary for perpetuation of ecological processes. As a result, fire-adapted communities of the monument have been altered, potentially creating a decline in the biological diversity of the monument.

There is an ongoing need to ensure the perpetuation of monument ecosystems and natural resources while managing wildland fire to provide protection of life, property, and cultural resources.

The restoration of fire to monument ecosystems is an important objective in managing the natural and cultural resources of John Day Fossil Beds NM. The preparation of a Fire Management Plan for the monument is required by The National Park Service Wildland Fire Management Guidelines and Director's Order #18 (NPS 1999, USDI 1998).

The NPS Wildland Fire Management Guidelines further define the service wide goal of wildland fire management:

To achieve the resource objective of the monument through prevention of human-caused wildfire, to minimize the negative impacts on resources from all wildland fires that occur, and to guide the use of prescribed fire as an integral part of the resources management program in a manner which would minimize the risk to the lives of employees, visitors, neighbors and their property.

The monument's general management plan and resources management plan reinforce the need for a comprehensive fire management program, including fire suppression, prescribed burning, fire monitoring, and fire research.

ALTERNATIVES

The following alternatives were analyzed for this environmental assessment. Under both alternatives, appropriate suppression response would be taken on all wildland fires, including human- and lightning-caused fires.

ALTERNATIVE A: FULL SUPPRESSION (NO ACTION)

Under this alternative, all ignitions within John Day Fossil Beds National Monument, including those of natural origin would be suppressed. Suppression would be accomplished through the use of appropriate techniques. No prescribed burning or mechanical fuel manipulation would be conducted.

ALTERNATIVE B: PRESCRIBED FIRE (PROPOSED ALTERNATIVE)

Under this alternative, prescribed fires, ignited by qualified fire personnel, would be used to simulate the ecological effects of natural fire, and to reduce hazard fuels. Prescribed fires would be intentionally ignited to accomplish management objectives in specific areas under prescribed conditions identified in approved prescribed burn plans. All other ignitions (whether of natural or human origin) would be suppressed. All prescribed fires would be monitored and be available as research projects. Mechanical manipulation of fuels for site preparation prior to ignition of prescribed fire projects might be used. This manual manipulation might include the use of chainsaws and hand crews to create fireline and/or move or stack downed fuels for ignition during burning windows.

ALTERNATIVES CONSIDERED BUT REJECTED

No Suppression or Prescribed Fire

Under this alternative all ignitions would be allowed to burn in all areas and at all times. This alternative was rejected due to unacceptable risk to human life and property, with significant political, socioeconomic, and environmental impacts.

Wildland Fire Use Program

Under this alternative, natural (lightning-caused) ignitions would be managed in predetermined areas for resource benefits, if all prescription criteria were met. This alternative was rejected due to staff limitations, small land management parcels, long response times, valuable cultural resources, and values at risk on neighboring lands. This plan does not recommend wildland fire managed for resource benefit at the monument.

Mechanical Manipulation of Fuels Only

Under this alternative, hazard fuel buildups would be removed or manipulated strictly by mechanical means to the extent practicable. This alternative was rejected because it would be extremely expensive and natural ecological processes would still not be allowed to function in this fire-dependent community. This option would likely result in substantial damage to the resources from human activities and mechanical devices.

AFFECTED ENVIRONMENT

DESCRIPTION OF THE MONUMENT

The monument consists of three separate units: Sheep Rock, Painted Hills, and Clarno. All three units support similar plant communities, though species of these communities vary from unit to unit. The plant communities are classified as "intermontane sagebrush steppe" with a mixture of dryland grasses, forbs, shrubs, and Western juniper dominating.

FUELS

Numerous wildland fires occur annually on lands in and surrounding the monument. Many of the fires surrounding the monument are human-caused resulting from agricultural practices by individual landowners. Fires of natural origin commonly occur on lands within and adjacent to the monument.

Most fires in the area occur during the summer months with the majority of ignitions in July, August, and September. These months are generally hot and dry although precipitation free months are rare.

After the 1900's human activities interrupted the natural fire interval and patterns of burning. Livestock grazing reduced the light fuels that historically carried fires in the forests and interspersed meadows. Efforts to control naturally caused fires began about 1906. At the same time the effects of extensive livestock grazing were being seen, as the frequency of fires and the area burned decreased due to the decrease of perennial grasses which provided flash fuels.

Past private land management practices have included burning of agricultural ditches in portions of the monument area, however, these practices were inconsistent prior to NPS management and have been rarely utilized since. These areas include the area in the immediate vicinity of Cant Ranch.

Three different fuel types are currently recognized in the monument. Grasslands are characterized by dry, open, grassy areas, which allows surface fires to move rapidly through the cured grass and associated materials. Clarno has grassland-dominated areas. Big sage is the dominant shrub at John Day Fossil Beds. Native and non-native grasses are also found throughout this community. Vegetation in this area remains green during the first half of the fire season. As the grass cures, this community becomes more flammable. The riparian and riverine bottoms of the John Day River, found at about 2,200 feet, are occupied by willow dominated communities. Native and non-native grasses are found throughout the community. Vegetation in this area remains green during the majority of the fire season, but as the grasses cure the understory becomes more flammable.

WILDLIFE

The John Day River and Bridge Creek flow through the monument. "Sensitive" fish species

believed to intermittently inhabit waters within the monument include steelhead (*Oncorhynchus mykiss*), redband trout (*Onchorhynchus mykiss gibbsi*), and Pacific lamprey (*Lampetra tridentata*). Steelhead is listed as threatened while the latter two are listed as “species of concern”.

The bald eagle (*Haliaeetus leucocephalus*) is listed as a threatened species by the United States Fish and Wildlife Service (USFWS) and may be seen wintering within the monument boundaries. The USFWS lists other terrestrial species as species of concern, including:

pygmy rabbit (*Brachylagus idahoensis*), pale western big-eared bat (*Corynorhinus* (= *Plecopus*) *townsendii pallescens*), Pacific western big-eared bat (*Corynorhinus* (= *Plecopus*) *townsendii townsendii*), spotted bat (*Euderma maculatum*), small-footed myotis (bat) (*Myotis ciliolabrum*), long-eared myotis (bat) (*Myotis evotis*), long-legged myotis (bat) (*Myotis volans*), Yuma myotis (bat) (*Myotis yumanensis*), tricolored blackbird (*Agelaius tricolor*), western burrowing owl (*Athene cunicular hypuncea*), ferruginous hawk (*Buteo regalis*), and Lynn’s clubtail dragonfly (*Gomphus lynnae*).

The Oregon Department of Fish and Wildlife list several terrestrial animals that are “species of concern”. These animals include the pallid bat (*Antrozous pallidus*), Townsends big-eared bat (*Corynorhinus* (= *Plecopus*) *townsendii*), fringed myotis bat (*Myotis thysanodes*), yellow-billed cuckoo (*Coccyzus americanus*), olive-sided flycatcher (*Contopus borealis*), greater sand-hill crane (*Grus canadensis tabida*), and western toad (*Bufo boreas*).

VEGETATION

Dominant plant communities in the monument include big sagebrush/ bunchgrass, western juniper/ big sagebrush, and bunchgrass-dominated communities. Other communities, such as willow-dominated riparian communities and mountain mahogany communities are also found in some areas of the monument. Native species predominate in those communities high on the ridges and slopes, although cheatgrass (*Bromus tectorum*) is abundant throughout the monument. The lowlands are dominated by introduced species. Most of these vegetative communities, but predominantly those in the lowlands, were subjected to prolonged periods of livestock grazing prior to the establishment of the monument in 1974.

According to information obtained from the U.S. Fish and Wildlife Service’s endangered species program, there are currently no listed or proposed threatened or endangered plants within the monument. However, two “species of concern” of plants have been identified. These are Washington monkeyflower (*Mimulus washingtonensis* var. *washingtonensis*) and arrow-leaf thelypody (*Thelypodium euocosum*).

AIR QUALITY

John Day Fossil Beds NM is a Class II air quality area as specified by the Clean Air Act. Prescribed fire would be conducted under the guidelines of, and in cooperation with Oregon State air quality standards.

WATER AND SOILS

There are several perennial springs that provide water for wildlife and also might serve as sources of water for agriculture adjacent to the monument. The Main Fork of the John Day River flows through the Sheep Rock Unit.

Soils of the monument are typically loams with a high percentage of clay that display moderate to severe erosion potential when vegetation is removed.

PALEONTOLOGIC AND CULTURAL RESOURCES

Contained within the monument is a significant portion of five fossil bearing geological formations representative of the John Day River basin. The ages of the fossils start from approximately 50 million years ago and continue, with some gaps, to roughly five million years ago. The sequence thus represented occurs during a particularly interesting time in the earth's history, as mammals and flowering plants were filling niches and adapting to climatic and other shifts in the environment.

The monument contains resources that represent early 20th century settlement and ranching in the John Day River valley. The 200-acre James Cant Ranch headquarters, including ranch structures and hay fields, is listed on the National Register of Historic Places as representative of local ranching activity. Examples of ranch implements and artifacts from this site are located in the monument's museum collection.

CONSEQUENCES OF THE PROPOSED AND ALTERNATIVE ACTIONS

VEGETATION

Alternative A: Full Suppression (No Action)

Under the No Action alternative unnatural vegetation patterns would continue to occur due to the removal of fire from the ecosystem. Many species, as well as the health of ecosystems, depend on fire. Fire dependent plant communities and their associated species would disappear. Higher intensity fires would invariably occur due to increased fuel loads. Suppression activities would result in adverse resource impacts from firelines, helispot construction and other activities.

Alternative B: Prescribed Fire (Proposed Alternative)

Effects of fire on vegetation are directly related to the type of vegetation and the fire behavior exhibited by the fire. Fire intensity, temperature, flame length, duration, time of day, and season influence fire impact. Fire might kill or damage individual plants but many plants would survive through various fire adaptations. Individuals of some species are inherently more resistant to fire and therefore survival rates differ. Some species increase in density and abundance following fire due to reduced competition, especially shrub cover, allowing more favorable growing conditions.

Prescribed burns would prevent catastrophic damage to fire tolerant species and would reduce fuel accumulations that could contribute to large and potentially dangerous conflagrations.

Prescribed burns, especially for hazard fuel reduction projects, are often conducted during the season best suited to fire control efforts. Burning during these times of year can increase mortality rate of some plant species that are not fire adapted. Thus hazard fuel burning, in some instances, can reduce the biological diversity of an area.

Due to decades of fire suppression in John Day Fossil Beds, some areas have very high fuel loads. Prescribed fires in areas of high fuel loads could become uncontrollable or might result in the mortality of plants that are fire adapted.

Preburn preparation of a prescribed burn project might include manual manipulation of fuels prior to ignition. This manipulation might include line preparation using hand tools, wet line, or foam techniques, and the movement of downed fuels to nearby areas where they might be safely ignited. Manual manipulation would not include the use of heavy equipment (dozers, front end loaders, etc.).

FUELS

Alternative A: Full Suppression (No Action)

Implementing this alternative would create a gradual and unnatural increase in fuel accumulations leading to increased potential of wildland fires of greater size and intensities than would occur under natural fire regimes. Control capabilities would be compromised or exceeded, and suppression expenses increased. The potential of threat to life and property rises, as well as an

increased potential for large destructive fires.

Alternative B: Prescribed Fire (Proposed Alternative)

Prescribed burning would reduce accumulations of fuels which contribute to large and potentially catastrophic fires. Prescribed fires in areas where fuel loads are very high might escape control lines.

The combination of prescribed burning and mechanical fuel manipulation would allow the reduction of fuels that, if not reduced, would contribute to large, potentially catastrophic fires.

WILDLIFE

Alternative A: Full Suppression (No Action)

Wildlife populations would be influenced directly and indirectly by the impacts on associated vegetative communities. The increased probability of intense wildland fires would lead to fire-caused mortalities. The potential for inadvertent wildlife habitat destruction could occur from fire suppression activities such as fireline construction as well as loss of successional stages for habitat.

Full suppression might have adverse impacts on fish populations in several areas. Aged, decadent, or even non-native streamside vegetation would continue to alter the structure of riparian zones at alarming rates.

Alternative B: Prescribed Fire (Proposed Alternative)

This alternative would allow greater flexibility in planning for, locating, and avoiding disturbance to wildlife populations. Habitat impacts would be determined by prescribed burn timing, location, conditions, and patterns. Considering the small size of the monument and the modest proposed prescribed fire program, any impacts to wildlife would be minimal and temporary. No long-term changes in population are anticipated.

Proper planning and management of prescribed fires would aid in the reduction of ash and other contaminants that might be washed into streams. Prescribed fires would occur in the spring or fall. Timing of prescribed burning would be coordinated to minimize impacts on spawning times for fish species, and also to minimize ground cover loss and the resultant surface washing that may produce contaminants in water resources. Additionally, riparian areas will not be burned and may further minimize impacts to the fish species.

Impacts to the mammals and birds on the federal and state species of concern list should be temporary in nature and minor in intensity. Although knowledge of populations of these species within the monument is limited, fire is a natural process in the John Day basin and local wildlife evolved in the presence of fire. To decrease negative impacts to wildlife populations, prescribed fire objectives will include the desire to burn the units in a mosaic pattern (with only 40-70% of acreage within the fire perimeter actually burned). This type of burn pattern will provide refuge

for small mammals and will ensure that forage for bat and bird species remains intact.

AIR QUALITY

Alternative A: Full Suppression (No Action)

Implementation of this alternative would generate a short term reduction of particulate matter from fires due to suppression efforts. The type and amount of emissions would vary greatly dependent upon fuel moisture, fire intensity and other physical characteristics of the environment.

This alternative would increase the potential for severe episodes of air pollution due to accumulated fuels resulting from suppression actions. The potential for large, high intensity fires which might be difficult to suppress would continue to increase, further contributing to uncontrolled and undesirable impacts to air quality and visibility.

Alternative B: Prescribed Fire (Proposed Alternative)

Local air quality would be adversely affected for short periods of time during prescribed burns, with air quality returning to normal following the completion of burning. Particulate matter would be the primary pollutant with localized effects, therefore no significant long-term health impacts are expected. The effect of particulate matter and visibility on local communities and commercial establishments can be lessened by the proper use of smoke management and public notification. All prescribed burns at John Day Fossil Beds will be rangeland burns, producing fewer pollutants per acre than in forested situations. The controlled nature of these burns makes their effect on air quality less severe than from catastrophic wildland fires.

WATER RESOURCES

Alternative A: Full Suppression (No Action)

Implementation of this alternative would cause only short term benefits. This alternative would increase the potential for severe episodes of wildland fire due to accumulated fuels resulting from suppression actions. The potential for large, high intensity fires which might be difficult to suppress would continue to increase, further contributing to vegetation and land impacts with associated runoff to hydrologic resources. Soils stripped of vegetative cover might suffer severe erosion during certain periods of the year.

Alternative B: Prescribed Fire (Proposed Alternative)

Because of the controlled area, timing, and intensity of prescribed burning in this alternative, there should be little or no long- or short-term changes in hydrologic conditions within the prescribed burn areas. Burn activities would be timed for target species growth potentials, promoting stand rejuvenation. Some erosive effects would result from the construction of firelines and other ground disturbing activities. Firelines created as a result of burn activities would be rehabilitated to minimize erosion. Burning has been shown to aid in increasing grass, forb and understory cover, all of which would reduce surface runoff. With an increase in these constituents in all areas of the monument, the potential for damaging runoff is reduced. The reduction of down and dead fuel loads by prescribed fire also reduces ash and other contamination into water resources. Erosion resulting from this alternative should approximate natural erosion levels.

SOILS

Alternative A: Full Suppression (No Action)

Long-term impacts of this alternative, with increased potential for catastrophic fire, would have adverse impacts to soils. Diurnal temperature regimes would be altered from effects of catastrophic fire due to loss of shading and insulating cover. Fire suppression activities might severely impact soils during episodes of catastrophic fire. Some erosive effects would result from the construction of firelines and other ground disturbing activities. Firelines created as a result of burn activities would be rehabilitated to minimize erosion. Soils stripped of vegetative cover might suffer severe erosion during certain periods of the year.

Alternative B: Prescribed Fire (Proposed Alternative)

Because of the controlled area, timing, and intensity of prescribed burning in this alternative, there should be little or no long- or short- term changes in soils within the prescribed burn areas. Some erosive effects would result from any construction of firelines and other ground disturbing activities. Firelines created as a result of burn activities would be rehabilitated to minimize erosion. Burning is often patchy which prevents soils in these areas from sheet erosion as well as increasing interception of precipitation.

PALEONTOLOGIC AND CULTURAL RESOURCES

Alternative A: Full Suppression (No Action)

Recorded cultural resources would receive protection from wildland fire under this alternative. Potential for cultural landscape damage by fire would increase in the long-term scenario. There would be an increased possibility of destruction of previously unrecorded paleontologic and cultural resources as a result of fire suppression activities such as fire line construction and backfiring operations. Risk to historic buildings increases as the chance for a catastrophic fire increases.

Alternative B: Prescribed Fire (Proposed Alternative)

With the scheduled nature of burning under this alternative, there would be an ability to plan for, locate, and avoid the disturbance of paleontologic and cultural resources due to either ignition or fire control activities. Dangerous fuel buildups near known resources would be reduced. Paleontologic and cultural features, structures, and other resources would receive increased protection by reducing fuels through controlled burns in appropriate areas.

SAFETY

Alternative A: Full Suppression (No Action)

The occurrence of catastrophic fires resulting from high fuel loadings caused by fire suppression would pose a threat to the safety of both firefighters and the public. Efforts at direct attack or suppression of severe fires would pose a threat to firefighter safety due to the nature of the activity. Examples of this are fireline construction, helicopter transport, backfiring operations, and exposure to smoke.

Alternative B: Prescribed Fire (Proposed Alternative)

The implementation of prescribed burning would allow fireline construction to be accomplished in a safe manner by enabling managers to schedule such activities and to plan their construction in an orderly fashion. Fires would be ignited in a preplanned pattern. There would be a potential safety problem from prescribed fires that might cross control lines.

VISUAL OR AESTHETIC VALUES

Alternative A: Full Suppression (No Action)

Implementing this alternative would reduce the short-term visual effects that would result from other alternatives utilizing prescribed fire. However the increased potential for high-intensity fire developing over the long run would result in drastic changes in the aesthetic appearances of affected areas and a short-term black appearance to the landscape.

Alternative B: Prescribed Fire (Proposed Alternative)

Through the use of prescribed burns, areas with sensitive visual resources can be protected from fire. Short-term visual effects would consist of scorching of foliage. Prescribed fires would aid in the maintenance of the historic/ cultural scene and also in the rejuvenation of the natural vegetation. This would result in increased visitor enjoyment, wildlife viewing, and protection of resources.

OVERALL PROGRAM RISK

Alternative A: Full Suppression (No Action)

In the short term, full suppression poses the least amount of risk to natural resources and developments in the monument and surrounding areas. In the long-term, fuel buildups would increase the potential for large, uncontrollable fires that would pose a significant risk to developed areas and natural resources in and near the monument. The chance that a fire starting in the monument and spreading to adjacent lands increases in the long-term.

Alternative B: Prescribed Fire (Proposed Alternative)

This alternative would present a low amount of short-term risk. Prescribed burns are conducted by trained fire personnel and would be conducted only in conditions that present an opportunity to control. There would be limited potential for loss of fire control. Long-term risk is moderate as compared to Alternative A.

CUMULATIVE IMPACTS

Alternative A: Full Suppression (No Action)

Implementing this alternative would create a gradual and unnatural increase in fuel accumulations leading to increased potential of wildland fires of greater size and intensities than would occur under natural fire regimes. Suppression activities would result in adverse resource impacts from firelines, helispot construction and other activities. The potential of threat to life and property rises. The potential for inadvertent wildlife habitat destruction could occur from fire suppression

activities. This alternative would increase the potential for severe episodes of air pollution due to accumulated fuels, especially given that wildland fires often occur simultaneously region-wide. The potential for large, high intensity fires further contributes to vegetation and land impacts with associated runoff to hydrologic resources, again with simultaneous fires region-wide increasing the magnitude of the effect. There would be an increased possibility of destruction of previously unrecorded paleontologic and cultural resources. Risk to historic buildings increases as the chance for a catastrophic fire increases. The occurrence of catastrophic fires resulting from high fuel loadings poses a threat to the safety of both firefighters and the public. As fire hazards increase due to the continuing buildup of fuels, the magnitude of the suppression effort would rise as would associated suppression costs.

Alternative B: Prescribed Fire (Proposed Alternative)

No adverse cumulative impacts would be expected from the proposed alternative action. Local air quality would be affected for short periods of time during prescribed burns, with air quality returning to normal following the completion of burning. Effects of smoke from prescribed fires throughout the John Day basin may be mitigated with careful planning. Particulate matter would be the primary pollutant with localized effects, therefore no significant long-term health impacts would be expected. The controlled nature of these burns would make the effect on air quality less severe than from catastrophic wildland fires. There should be little or no long- or short- term changes in soils within the prescribed burn areas. Some erosive effects would result from the construction of firelines and other ground disturbing activities. There is a potential safety problem from prescribed fires that might cross control lines.

PREPARER

Amanda McAdams, Prescribed Fire Specialist, John Day Fossil Beds National Monument

CONSULTATION AND COORDINATION

The following individuals were consulted in the preparation of this environmental assessment:

Richard Smedley, Regional Fire Planner, Columbia Cascades SSO, National Park Service,
Portland, OR

Ken Till, Fire Management Officer, Columbia Cascades SSO, National Park Service, Seattle, WA

Ted Fremd, Paleontologist, John Day Fossil Beds NM, National Park Service, Kimberly, OR

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