ENVIRONMENTAL ASSESSMENT

OR-030-00-008

BLM OFFICE: Vale, Jordan Field Office

PROPOSED ACTION: Southern Trout Creeks habitat maintenance, Prescribed Burn

LOCATION OF PROPOSED ACTION: Portions of the following legals: T.39S., R.40E., sec. 15,16,20-22,26-36; T.39S., R.41E., sec.31; T.40S., R39E., sec.1,2; T.40S., R40E., sec 1-12; T.40S., R41E., sec.5,6.

APPLICANT: NA

NEED FOR PROPOSED ACTION

Mountain big sagebrush (*Artemisia tridentata vaseyana*) occurs in dense, even-aged stands with sparse herbaceous understory in some high elevation pastures in the Oregon Canyon Mountains. This sagebrush density reduces biodiversity; concentrates livestock on open meadows and other less brushy sites such as riparian areas, resulting in heavier than desired grazing use; and allows a buildup of fuel loads that could lead to catastrophic wildfire. Wildfire suppression and historic livestock grazing (which harvest fine fuels {grasses}) have lowered the incidence of natural wildfire, a major regulator of sagebrush density. Controlled burning of selected mountain big sagebrush patches in the project area would increase the occurrence of grasses and forbs, produce a greater diversity of wildlife habitat, increase forage production and improve the distribution of grazing use.

CONFORMANCE WITH APPLICABLE LAND USE PLAN

This proposed action is subject to the following land use plans:

Southern Malheur Management Framework Plan (MFP) (1983)
Southern Malheur Rangeland Program Summary (RPS) (1984)

These plans have been reviewed to determine if the proposed action conforms with the land use plan terms and conditions as required by 43 CFR 1610.5, and it has been determined that the action is in conformance with the MFP and RPS and with the objectives of improving and maintaining vegetation and soil conditions to benefit watershed, wildlife and livestock.

Relationship to Statutes, Regulations, or Other Plans
The Endangered Species Act (Section 7(a)(2)) of 1973 prohibits all actions authorized, funded, or carried out by the federal government that jeopardize the continued existence of any federally listed species. Consequently, consultation with US Fish and Wildlife Service on this EA will be required to ensure that actions proposed herein do not adversely affect Lahontan cutthroat trout, a threatened species which occurs in the project area.

DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

Alternative A---PROPOSED ACTION

The prescribed burn would be located 34 miles northwest of McDermitt, Nevada along ridges and divides that border the headwaters of Whitehorse Creek and Oregon Canyon Creek watersheds. The project area would encompass 10,939 acres of public land and include portions of McCormick and Fifteenmile Community allotments. Vegetation consists of mountain big sagebrush, low sage (*Artemisia arbuscula*), native grasses and forbs, quaking aspen (*Populus tremuloides*), and pockets of mountain mahogany (*Cercocarpus ledifolius*). The project area lies within Fifteenmile Creek and Oregon Canyon Wilderness Study Areas (WSA).

Specific objectives for the burn are:

- to create a mosaic landscape for wildlife and open areas for livestock grazing by removing 30-40% of mountain big sagebrush in the project area, which will be accomplished by burning widely distributed, small patches of sagebrush

- to stimulate sucker growth in selected aspen stands by burning those exhibiting poor age structure and lack of reproduction, where these conditions are not due to excessive livestock grazing

- to enhance wilderness values by creating a mosaic burn pattern that will resemble an area that has been affected primarily by the forces of nature.

The identified project area was delineated based on the approximate location of extensive mountain big sage communities. This area was subdivided into twenty one separate units that would facilitate control and management of the planned ignition (see map). The unit divisions are based on presence of roads, fencelines, or natural barriers that would influence the spread of fire. The units would not all be burned in one season. Instead, small patches within units would be burned over a period of 5 to 10 years to allow adequate time for fine fuel establishment and pasture rest from livestock grazing prior to and after each burn, and to allow for unpredictable weather. In addition, burning over this extended time period would provide a diversity of plant communities at different seral stages.

Burns would be conducted in late summer, fall, winter, or early spring. The timing is dependent on seasonal weather patterns, flexibility in livestock grazing operations to rest burn areas, and the response of the areas that have already burned. All burn units would be rested from livestock grazing for one year prior to burning and rested for two full growing seasons following burning or until conditions are suitable for reinstating livestock grazing. Since most of the pastures in the proposal are rested for two years and then grazed for two years, all efforts would be made to time the burning to take advantage of existing rest periods.

Two methods may be used to conduct the burn. The first, *hand ignition*, would produce fine scale burn patterns that would better control the fire environment (amount and intensity) and allow targeting of specific areas to accurately achieve management objectives. The second method, *aerial and hand ignition*, would use hand ignition to black-line roads for control lines and aerial ignition to complete the burn. This method would ignite large blocks of acreage in a short time, and though management objectives would be accomplished, it would not provide the control and accuracy of hand firing.

Vehicles would not drive across vegetation unless it is a part of the ignition and holding phases of the proposed action. Vehicles would not drive on soft moist soil.

Burning would not be prescribed in the following areas:

- within 100' of riparian areas
- within 100' each side of ephemeral drainages with defined channels
- steep gradient slopes above fish-bearing streams
- within 50' of mountain mahogany stands
- within 50' of aspen stands with multiple-aged trees and evidence of reproduction
- within 50' of aspen stands where lack of reproduction is caused by excessive livestock use

In addition, the following guidelines will be implemented:

- no more than 50% of the edge on large upland meadows would be burned
- BLM policy regarding fire retardants as addressed in Guidelines for Aerial Application of Retardants and Foams in Aquatic Environments (IM no. OF&A 2000-011) if there is an escaped fire, would be to avoid delivery of chemical retardant, foam, or additives within 300 feet of surface waters. An exception may be warranted in situations where overriding immediate safety imperatives exist, or following review and recommendation by a Resource Advisor and a fisheries biologist, when the BLM determines that an escaped fire would cause more long-term damage to fish habitats than the chemical delivery to surface waters.

Alternative B–NO ACTION

Under this alternative, the prescribed burns would not be conducted.

AFFECTED ENVIRONMENT

Air Quality

There are no air quality observation stations in the project area. However, it is believed that air quality is generally good.

Soils

The soils found in the Trout Creek/Oregon Canyon mountains were surveyed and described in Oregon's Long Range Requirements for Water 1969, Appendix I-11, Owyhee Drainage Basin, and I-12, Malheur Lake Drainage Basin . The project area consists of five soil mapping units from this fourth-order soil survey; 83-82/2-3, 83-82/4, 83-84/2-3, 96/5-6, and 96-83-82/5-6. The five units incorporate four classification units that occur in various percentages within each unit and have four slope groups that range between 3 to 60 percent.

Unit 83-82/2-3
Unit 83 soils with about 30 percent Unit 82 soils, 3-12 percent slopes.
Unit 83-82/4
Unit 83 soils with about 30 percent Unit 82 soils, 12-20 percent slopes.
Unit 83-84/2-3
Unit 83 soils with about 30 percent Unit 84 soils, 3-12 percent slopes.
Unit 96/5-6
Predominantly Rock land, 20-60+ percent slopes.
Unit 96-83-82/5-6
Rock land with about 30 percent Unit 83 soils and about 20 percent Unit 82 soils, 20-60+ percent slopes.

Classification Unit 82
Soils are moderately deep, loamy, and well-drained, derived from thin loess over basalt or rhyolite bedrock. They are on mostly northerly slopes on gently to very steeply sloping terrain. Elevations range from 4,500 to 7,500 feet. Average annual precipitation is from 11 to 15 inches, and mean annual air temperature centers around 43 degrees F. The soil profile by depth consist of silt loams to stony silt loams.

Classification Unit 83
Soils are shallow, very stony, and well-drained, over basalt, rhyolite, or welded tuff. They occur on gently undulating to rolling lava plateaus with some very steep faulted and dissected terrain. Soils occur at elevations mostly above 5,000 feet. Average annual precipitation is from 11 to 15 inches, and mean annual air temperature centers around 43 degrees F. The soil profile by depth consist of very stony silt loam, stony silty clay loam, to stony silty clay.

Classification Unit 84
Soils are shallow, very stony, rocky, and well-drained, over basalt, rhyolite, or welded tuff. They occur on gently undulating to rolling plateaus and very steep canyon lands and escarpments. Soils occur at elevations mostly above 5,000 feet. Average annual precipitation is from 11 to 15 inches, and mean annual air temperature centers around 43 degrees F. The soil profile by depth consist of very stony gravelly loam to stony gravelly loam.

Classification Unit 96 (Steep Rock land)
This is a miscellaneous land unit consisting of rough, steeply sloping areas that are predominantly shallow, very stony soils interspersed with rock outcroppings. Steep Rock land occurs mainly as canyons and escarpments along margins and dissected portions of lava plateaus.

The majority of the Whitehorse and Doolittle creek drainages in the project area are made up of Unit 96/5-6 while the uplands consists of Units 83-82/4 and 83-84/2-3. Drainages in the Oregon Canyon Creek system are mainly Units 96/5-6 and 96-83-82/5-6 with the uplands predominantly Unit 83-84/2-3 in the headwaters and eastern ridge top and Unit 83-84/4 positioned in the lower headwaters and on the western side slope and the ridge top between Cottonwood Creek. Additional soil inclusions can be found throughout the project area. One inclusion not identified by the fourth-order survey occurs on stream banks and terraces derived from mixed alluvium and colluvium. Although of small areal extent within the Whitehorse and Oregon Canyon creeks, these soils are of extreme importance in supporting riparian/wetland and fish habitats.

Upland Vegetation

The project area consists of an even-aged stand of mountain big sagebrush that has increased in canopy cover to the point of reducing the understory of native grasses and forbs. Estimates of mountain big sagebrush canopy cover exceeds 25% in some areas. Perennial grasses include Idaho fescue (*Festuca idahoensis*), bluebunch wheatgrass (*Agropyron spicatum*), Sandbergs bluegrass (*Poa secunda*), and needlegrass (*Stipa sp*). Exotic grasses are scarce, though some cheatgrass (*Bromus tectorum*) is found in the project area.

Quaking aspen stands in the project area are dominated by multiple age classes with good regeneration. Some stands have large amounts of decadent or dead aspens.

Eight special status plant species have the potential to occur in the project area. They are the following: Bureau Sensitive - Slender wild cabbage (*Caulanthus major* var.*nevadensis*); Bureau Assessment-- Cusick's giant-hyssop (*Agastache cusickii*), Cooper's goldflower (*Hymenox lemmonii*), long-flowered snowberry (*Symphoricarpus longiflorus*); and Bureau Tracking-- inverted pale paintbrush (*Castelleja pallescens* var. *inverta*), nodding melic (*Melica stricta*), Janish's penstemon (*Penstemon janishiae*), short-lobed penstemon (*Penstemon seorsus*). Suitable habitat within the mountain big sagebrush type and surrounding area is found for all eight. The shrub *S. longiflorus* is the most likely to be susceptible to fire. However, because its habitat is primarily rocky outcrops, it is unlikely that it would occur within the actual burn area.

Field surveys in the project area found no special status plants.

No known County A or B listed noxious weed species are known to occur in the project area. However, they are found some distance from the proposed action.

Water and Riparian/wetland Resources

Water Quantity
The project area surrounds a portion of perennial Whitehorse and Oregon Canyon creeks, two 5th field watersheds. Whitehorse Creek is part of the Alvord Lake Subbasin (17120009) and Oregon Canyon Creek is a component of the Upper Quinn Subbasin (16040201). Whitehorse Creek and associated tributaries drain northward to the Coyote Lake playa, while Oregon Canyon Creek drains to the north in the project area then turns to the south and joins the Quinn River drainage system south of McDermitt, Nevada. Major tributaries of Whitehorse Creek that contain riparian vegetation are Cottonwood, Doolittle, Fifteenmile, and Minehole creeks, unnamed tributary TR 27.2, Sheepline Canyon, and Dry Creek, a tributary to Doolittle Creek. Oregon Canyon Creek tributaries that contain riparian vegetation are the South, East and West forks, and unnamed tributaries TR 0.5 and TR 0.5 TR 0.7 of the South Fork.

Approximately 17.0 miles of perennial streams occur in Whitehorse Creek watershed within the project area and 6.0 perennial miles in Oregon Canyon Creek watershed. Numerous first- and second-order channels contribute drainage into the two perennial streams from the acreage covered by the project area. Perennial flow in the area is attributed to spring rainstorms, snow deposition, and the ability of the soils, springs, bogs and wet meadows to store and supply water during summer months. Numerous springs in the project area (> 30) are found throughout the length of both watersheds. During suumer and fall occasional isolated, short-duration, high-intensity thunderstorms can produce sharply elevated peak streamflows and velocities. These high runoff events can contribute to severe flooding downstream.

All streams in these systems flow from the Trout Creek/Oregon Canyon mountains through steep, narrow canyons. First-order streams originate in steep, bowl-shaped summits with stream gradients of 4 to 6 percent (Rosgen stream classification type A channels) and transition into second-order streams that steepen rapidly to gradients of 6 to 8 percent (type A) in the headwaters of these mountains. The channels then become third-order streams that flow through several miles of deep, narrow canyons with gradients ranging from 1.5 to 3 percent (type B, C, F, or G). At the base of the mountains the canyons become less constrictive, stream gradients decrease to less than one percent (type E or F), and the fourth- and fifth-order streams tend to meander across increasingly wide floodplains when not diverted for irrigation on private lands.

Water Quality and Riparian/Wetland Vegetation
Riparian vegetation, upland meadows, and stream channel characteristics were monitored between 1987 and 1998 on most perennial streams located within the two watersheds and associated riparian pastures of the Trout Creek/Oregon Canyon Mountains. Analysis of various

monitoring studies, Proper Functioning Condition (PFC) assessments, and staff observations (riparian vegetation cross-sections and low level aerial photographs) indicate that upward trends occurred along many of the streams, although the amount of improvement varied from stream to stream and reach to reach. PFC assessments for Oregon Canyon streams and the main stem of Whitehorse Creek are scheduled for the summer of 2001.

Substantial increases in size and canopy volume of woody species has occurred on all streams. While the numbers of woody plants increased, recruitment was limited in some of the established, thick-rooted herbaceous areas. Riparian streambank cover, whether woody or herbaceous, increased in all streams. Improvement in vegetative cover has aided in filtering debris and fine sediments from the stream, increased bank stabilization, bank building, and channel narrowing . All stream reaches in Cottonwood, Doolittle, Fifteenmile, and Dry creeks assessed for functioning condition were found to have a PFC rating except for a 0.7 mile reach at the mouth of Cottonwood Creek and a 0.25 mile reach in the top of Fifteenmile Creek. The Cottonwood Creek reach had a nonfunctioning rating because of geologic constraints confining the channel and obstructing it with large boulders and loosely consolidated alluvium dominated by cobble-sized rock. The Fifteenmile Creek reach was rated as functioning at risk with trend not apparent because of a headcut migrating upstream from private land.

Riparian vegetation is fairly common on the streams within the two watersheds, with extensive mosaics of willows, aspen, mountain alder (*Alnus incana* var. *occidentalis*), sedges, rushes and grasses along canyon bottoms on low stream terraces where soils remain saturated. Additional riparian vegetation improvement can be found around springs and seeps, while aspen patches in headwater and upper sideslope areas are developing multiple age class structure and recruitment.

Long-term, site-specific water quality data are sparse for the entire project area. Except for macroinvertebrate samples (1985, 1988 and 1993) and stream temperatures (since 1992) on the lower portion of Whitehorse Creek, the BLM has no water quality data for Whitehorse Creek and Oregon Canyon Creek drainages.

Five macroinvertebrate sampling stations were established along Whitehorse Creek from Sweeney Ranch to above the confluence with Cottonwood Creek. Two were sampled in 1993. All sites were dominated by species that are tolerant of sedimentation and warm water temperatures, such as blackflies, baetid mayflies,and midges. However, the occurrence of clean water species, especially in the sites above Sweeney Ranch, indicated that fairly good water quality and clean rubbly substrates were present. The observed number of shredders, such as the stonefly *Malenka*, at most sites suggests that riparian canopy is providing significant leaf input to the stream community.

There appeared to be a slight downward trend in stream condition between 1985 and 1989. Biotic Condition Index values, species diversity, and productivity decreased at all stations, probably due to environmental stresses caused by drought. Data from the two stations sampled in 1993 indicated some improvement in diversity and abundance of clean water species.

The single macroinvertebrate sampling site on Doolittle Creek was located just below the confluence with Dry Creek. The invertebrate community in all years was dominated by sediment-tolerant taxa, but in 1985 and 1989 overall diversity was high, with fair numbers of clean water stoneflies and caddisflies present. In 1993, however, clean water species were considerably reduced and the large numbers of clams and amphipods present suggested an abundance of silt substrate. The overall trend at this site in 1993 for macroinvertebrates is downward, a pattern more than likely associated with aggradation and low flows caused by drought since riparian trend condition is upward and significantly improved from the 1980's.

Stream temperatures have been monitored at various sites throughout the Trout Creek/Oregon Canyon Mountains since 1992 using continuously recording thermographs. Physical conditions such as a reduction of water temperature in the creeks generally improve in the upstream direction. An increase in young and mature riparian shrub and deciduous tree components in the upstream direction provide extensive canopy cover and stream channel shade. Cooler summer maximum water temperatures, especially in the upper reaches of mountain pastures are associated with the increase in shade, input from springs, and higher elevations.

However, in some downstream areas water temperatures were higher (20-23^{o} C average summer maximum) because of heated water arriving from intermittent reaches or in areas that are still in early recovery from historic deeply incised channel conditions. These areas contain few undercut banks or woody debris for temperature control and fish cover.

Mountain Meadows

During the summer of 1995, upland wet and dry meadows were mapped to determine their arrangements and relationships within grazing allotments in the two watersheds. These two meadow types have distinctly different ecological potentials and influences on the overall watershed. Although BLM recognizes the distinction between wet and dry meadows, it is difficult to clearly delineate where one ends and the other begins. Because of the vegetative complexity within the meadow types, BLM tends to recognize them as connected habitats in the watersheds. Although the 1995 studies were established mainly for dry and wet meadow vegetation, some upland soil information, such as rooting depth, bare ground recovery rates, and wetted perimeter, could be obtained from future monitoring,

Hydrologic relationships and plant ecology of meadow habitats in the Trout Creek/Oregon Canyon Mountains are complex. Conclusions regarding the overall stability, plant composition, and ecological conditions of mountain meadows are not fully understood at this time. However, BLM has made the following determinations after looking at as many meadows as possible and discussing their status as an interdisciplinary team:

a. Most of the dry meadows in the upper reaches of the pastures are stable, have low potential for soil erosion , and are encroached by low and big sagebrush species. BLM has discussed this observation in the field with Ron Rhew (U.S. Fish and Wildlife Service) who concurred with BLM’s assessment. BLM and Rhew also concluded that

conditions on the dryland meadows are not affecting Lahontan cutthroat trout in the downstream watershed.

b. The schedule of grazing use in this area is expected to promote long-term improvement of most dryland mountain meadows. Long-term monitoring studies both within and outside meadow exclosures in the Oregon Canyon Mountains will document the influence of grazing on meadow plant succession. BLM has selected representative dry and wet meadow sites for these studies.

c. There are no known noxious weeds present in existing meadows.

d. All wet meadow/spring development areas in upper watersheds have improved in areal extent of herbaceous cover and in water yield to channels and livestock watering troughs. The improvement is caused from both the increase of precipitation from 1993 to 1998 and from improved management of livestock grazing, including fences to protect wet meadows and spring sources.

Wildlife

Priority Species and Seasons of Use
Sagebrush obligate birds and mule deer are identified as the key management species of importance. The primary seasons of wildlife occupancy are summer and fall (June - November).

Sage grouse (*Centrocercus urophasianus*) are present within the project area. They are a species of high public interest and the subject of recent public inquiry related to potential listing under the protection of the Endangered Species Act (ESA). Mule deer within the project area are managed under very limited hunter entry by the state of Oregon in order to provide trophy deer hunting opportunities.

Certain sagebrush obligate species (see inventory data section) are at risk throughout the intermountain region due to population declines and many of the breeding birds present are neotropical migratory species that are under cooperative international management.

General Habitat Setting
High elevation rangelands of the Oregon Canyon Mountains (OCM) addressed in this document offer some of the most complex, diverse and productive sagebrush steppe wildlife habitat found in eastern Oregon. The mountain sagebrush habitats where burning is proposed provide important wildlife food, structure and cover for several species that are of interest not only in Oregon but within the intermountain region in general. Furthermore, the character of the rangelands adjoining this mountain big sage type (including low sagebrush, mountain mahogany, bitterbrush (*Purshia tridentata*), serviceberry (*Amelanchier alnifolia*), willow/aspen riparian communities, meadows, canyons and cliffs) are of a quality that make the project area rich in habitat transitions and overlapping wildlife use areas.

Thomas et al. (1984) described a relationship between wildlife and their habitats for southeast Oregon in which primary vegetation types (or habitat features) are used for breeding purposes, and other secondary communities are exploited for activities such as feeding. Given the diverse arrangement of habitats in the OCM, the project area is no doubt a prime example of a setting in which complex, interrelated wildlife habitat uses are taking place among the available habitats. The significance of this point is that more species are using mountain big sage types as part of their life history requirements in the proposed action area than what may be accounted for if only the true sagebrush obligates, such as the brewer's sparrow, are considered.

General Attributes of Mountain Big Sagebrush Habitats that are Valuable to Wildlife
Mountain big sagebrush provides mid-level shrubby canopy structure for wildlife that is used for foraging, hiding, escaping predators, nesting and thermal cover. Generally speaking, the highest quality mountain big sagebrush stands are those that support a vigorous and diverse understory of herbaceous vegetation comprised of native grasses and forbs. Herbaceous understory vegetation is used by numerous species of wildlife for both forage and cover. In this case, perhaps the most important forage and cover consideration pertains to sage grouse. Healthy herbaceous understories also supply indirect food sources to species such as songbirds and sage grouse by supporting environments rich in insect life [7]. Insects offer high quality protein for song birds, sage grouse chicks and many other small species of wildlife.

Dense mountain big sagebrush types (>25% canopy) supporting a weak or depleted herbaceous understory are not necessarily an undesirable wildlife habitat condition. Dense sagebrush presence does not always require action to restore wildlife habitat values. In fact, shrub cover alone is frequently a primary habitat value for mule deer and non-game species, especially in landform types that offer very little topographic relief or where tall mountain shrubs are scarce (e.g. most of the proposed burn area). This is not to say BLM endorses depleted understory conditions or that their attainment is a wildlife habitat goal for the OCM. It is simply a statement of observed wildlife habitat use, and cover value that is often overlooked when considering land treatments.

Ultimately, it is the combined attributes and proportions of effective shrubby *and* herbaceous cover within sagebrush steppe that will meet a wide variety of wildlife habitat needs. Appendix Tables 1 and 2 describe the desired conditions for wildlife in big sagebrush habitats and the rationale for why they are needed. These data, assumptions and narratives were used for developing the impact analysis in this document.

In terms of wildlife habitat values, the project area supports an abundant shrub component of mountain big sage in predominantly heavy (15% - 25%) to dense (>25%) cover types. These are habitats known to support a wide array of sagebrush dependent species. On the other hand, open grass/forb habitats are somewhat limited and there is room for improvement in the density, distribution and vigor of herbaceous understory conditions.

Existing Wildlife Survey Data

There are no federal listed or proposed species of terrestrial wildlife within the project area that would require consultation with the US Fish and Wildlife Service regarding Section 7 of the Endangered Species Act.

With the exception of aerial sage grouse strutting ground inventories, funded jointly by BLM and the ODFW between 1996 and 1999, no systematic terrestrial wildlife survey work during the breeding period has been conducted within the project area. However, based on several summer field visits the following terrestrial species have been observed within the project area.

Coopers hawk, red-tailed hawk, american kestrel, turkey vulture, northern harrier, prairie falcon, golden eagle, mourning dove, **sage grouse***, northern flicker, tree swallow, violet-green swallow, mountain bluebird, western wood-peewee, warbling vireo, white-crowned sparrow, rock wren, american robin, northern oriole, brown-headed cowbird, common raven, cassin's finch, black-headed grosbeak, gray flycatcher, **broad-tailed hummingbird**, green-tailed towhee, rufous-sided towhee, sage thrasher*, brewers sparrow*, vesper sparrow, mule deer, coyote, least chipmunk, golden mantled groundsquirrel, white-tailed jackrabbit, pacific treefrog, western spadefoot toad, wandering garter snake, gopher snake, western rattlesnake, racer, striped whipsnake, short-horned lizard. Other species likely occur to within the project area include: sagebrush vole*, shrew species, montane vole, deer mouse, cottontail rabbit;

Legend: * = sagebrush dependent species as per Partners in Flight and the Interior Columbia Basin Ecosystem Management Project; neotropical migratory bird species are underlined, **Special Status Species per OR/WA BLM policy are indicated in bold typeface**.

Sage Grouse

Sage grouse range throughout most of the sagebrush steppe supported in the OCM. The Trout Creek Mountains and the Oregon Canyon Mountains combined support a habitat complex comprised of at least 45 leks over roughly 350,000 acres of steppe rangeland. This complex is substantially connected with a mosaic of well developed sagebrush cover types and has few areas where the effects of fire or seedings influence wildlife cover conditions. Within this mountainous region, which include portions of both the Vale and Burns districts, it is very likely that there is some level of sage grouse movement and seasonal habitat sharing across BLM administrative boundaries.

Sage grouse life history requirements are tied first and foremost to the presence of healthy sagebrush communities which are used for a variety of purposes including hiding, nesting and foraging. The presence of riparian and meadow habitats (particularly wet meadows) that are well distributed throughout different elevations and landforms provide food and water, especially during the summer and fall when upland habitats have dried out.

Based on current knowledge, sage grouse in the OCM appear to generally remain within close proximity of their breeding centers (leks) year-long. Sage grouse nesting activity within the project area is probably very limited, if it does occur at all, given the Spring snow cover characteristics of the proposed project area. Known leks are identified on Map X attached.

Heavy and persistent snowfall above the 6000' elevation, which essentially buries most sagebrush, is normal for the OCM. According to Connelly et al. (1999) sage grouse gradually walk out of their Summer ranges and seek out wind blown ridges of low sagebrush or various big sagebrush varieties where they winter. It is likely that they retreat onto the lowest mountain foothills where sagebrush is not covered in snow during extreme snowfall conditions. The whereabouts of their severe winter survival areas are not known because winter survey data are very limited here as well as countywide.

The migratory habits of sage grouse reported from other western states generally do not appear to be a factor in their use of rangeland within Malheur County. Short elevational movements within mountain ranges and between breeding areas and winter use locations appear to be the norm. Water and riparian habitat availability influence their distribution substantially in the late summer and fall. During recent summer stream survey work in the McDermitt basin, sage grouse were encountered in most riparian habitats and at a variety of elevations.

The recent update of management guidelines for sage grouse by Connelly et al., in press (2000), provides a thorough rundown of issues and habitat character important to the species. The details of this document are not provided in this document, but a tabular summary of important habitat characteristics for sage grouse are provided in Table 3.

Fisheries

Whitehorse Creek watershed
Lahontan cutthroat trout is the only fish species found in Whitehorse Creek watershed. This trout is an inland cutthroat subspecies endemic to the physiographic Lahontan Basin of northern Nevada, eastern California, and southern Oregon which was listed by USFWS as endangered in 1970 (Federal Register Vol. 35, p. 13520) and subsequently reclassified as threatened in 1975 (Federal Register Vol. 40, p. 29864). USFWS recognizes a northwestern Lahontan basin population segment of Lahontan cutthroat trout which resides in the Quinn River and Coyote Lake basins of the Jordan Resource Area. This segment is geographically, ecologically, behaviorally, and genetically distinct from other Lahontan cutthroat trout populations due to a 10,000 year isolation period caused by water level fluctuations in ancient Lake Lahontan.

Lahontan cutthroat trout occur in Willow, Little Whitehorse, Whitehorse, Fifteenmile, Doolittle, and Cottonwood creeks. Fifteenmile Creek fish are restricted by a natural barrier to the first 700 meters above the mouth, but trout range near the headwaters of Doolittle, Whitehorse, and Cottonwood creeks during periods of adequate flow. No fish occur in Minehole Creek or Sheepline Canyon.

Oregon Canyon Creek watershed
Lahontan cutthroat trout occurred historically in this watershed, but between 1915 and 1970 the Nevada Department of Wildlife distributed non-native trout (i.e., brown, rainbow, and brook) throughout the Quinn River system, including Oregon Canyon Creek. During the past 70 years,

extensive hybridization occurred with native Lahontan cutthroat trout, and rainbow/cutthroat hybrids now inhabit at least 9 miles of Oregon Canyon Creek. No other fishes are known to be present.

Life History/ Habitat Relationships
Life history information on Lahontan cutthroat trout in the project area is limited, but habitat requirements are assumed to be similar to those for rainbow/cutthroat hybrids. Lahontan cutthroat trout in the Great Basin spawn in the spring when water temperatures reach 5.5-9.0° C, with a preferred range of 4.4-12.8° C for hatching of eggs. Spawning likely occurs in high elevation reaches near the headwaters of Little Whitehorse, Cottonwood, and Whitehorse creeks, and for rainbow/cutthroat hybrids, in upper Oregon Canyon Creek. These spawning areas are within the proposed project area. Optimal rearing temperature for cutthroat trout may be about 15° C, and to minimize risk of mortality and sublethal thermal stress for Lahontan cutthroat trout, water temperatures should not equal or exceed a daily maximum of 22° C. Lahontan cutthroats and probably rainbow/cutthroat hybrids appear to be more temperature tolerant than many other salmonids.

Eggs are laid in gravels at the tails of pools. Oxygen concentration is crucial at the surface of the developing egg, which depends on the permeability of the redd. When gravels become clogged with fine sediment, water flow is impeded and less dissolved oxygen reaches the embryos. Excessive sediment accumulation in redds limits reproductive success in watersheds with accelerated erosion.

Deep pools are essential as cover from predators, sources of cool or ice-free water, and refuges during periods of low stream flow. Currently, beaver ponds are the primary source of pools in the project area and have sustained high trout densities in Cottonwood and Doolittle creeks . These impoundments also store fine sediments, allow the stream to aggrade, and extend the floodplain.

Results from a 1994 Oregon Department of Fish and Wildlife fish inventory suggested that the Coyote Lake basin Lahontan cutthroat trout population is robust, with approximately 40,000 fish present. A subsequent survey in 1999 verified an upward trend in Lahontan cutthroat numbers in Whitehorse Creek watershed. These increases in trout numbers are likely due to improved riparian and bank condition resulting from changes in livestock management and cessation of drought.

Livestock Management

Historically, livestock grazing in the project area occurred soon after snowmelt, typically around May- June, and continued throughout summer and fall until winter conditions forced livestock to lower elevations and eventually home.

Presently, grazing in the project area is normally limited to 60 days from 5/15 - 7/15 in the Sheepline, Dry Creek, White Horse and V pastures. With the exception of Sheepline pasture,

these pastures are rested for 2 years and grazed for 2 years under a 4 year, rest-rotation system. Sheepline pasture is grazed every year. Occasionally, grazing use extends to August 1 in those years when spring access to pastures is restricted by snow and turnout occurs on June 1 instead of May 15.

Special Management Areas

Two Wilderness Study Areas, Oregon Canyon (OR-3-157) and Fifteen Mile Creek (OR-3-156) are within the project area. The size of the WSAs are 42,900 acres and 51,290 acres respectively. Both WSAs are recommended for wilderness designation.

The WSAs are characterized by long, deep, steep-walled canyons separated by broad, smoothly rounded ridges. Slopes in the areas are broken rimrock, outcrops, and scree slopes with outstanding topographic and ecological diversity. These areas provide excellent opportunities for solitude and primitive recreation. Current use is primarily hunting (deer and antelope), fishing, camping, sightseeing, wildlife viewing, and nature study. Remoteness keeps total visitor numbers fairly low.

Cultural Resources

Areas of aspen art have been identified in the project area. These sites will be excluded from prescribed burning. There are no other known prehistoric or historic cultural resources in the project area. However, abundant lithic scatter has been observed in the project area by non cultural specialists.

ENVIRONMENTAL IMPACTS

Alternative A —PROPOSED ACTION

Air Quality

Prescribed burning would increase the particulate matter and gasses in the atmosphere for the duration of the burn which could cause some temporary reduction in visibility. Impacts would be minor, due to the fuel source and remoteness of the project. A northwest wind or an inversion could have a minor impact on McDermitt, NV, located 34 miles southeast of the project, the only population center near the project area.

Soils

Slow-moving high-intensity fire coupled with insufficient moisture in soil surface horizons could reduce soil productivity by reducing soil microorganisms, organic matter, soil nutrients and desirable grass and shrub species. However, prescribed fire is not expected to cause significant

change to physical and chemical properties of the soil because of low fuel loads and rapid rate of spread expected in the project area. In addition, burning would only occur during spring, late summer, fall, or winter when soil moisture conditions are adequate to prevent damage to the soil profile. To aid in the protection of soils, each burn plan would incorporate seasonal and soil moisture restrictions before implementation of burn prescriptions.

The most extensive effect of the proposed action on soil resources would be short-term loss of soil productivity due to a temporary changes in vegetative cover, surface litter, organic matter, and the possible reduction of soil organisms in the upper one to three inches of surface horizons. The loss of vegetation, surface litter, and organic matter in the surface horizon would subject soils to wind and water erosion until new plant growth becomes established.. Soil surface characteristics should return to pre-fire conditions after three growing seasons when desired plant species, such as forbs and grasses, replace the thick cover of mountain big sagebrush that would be removed.

Water and Riparian/wetland Resources

Water Quantity
Water quantity in the form of overland flow is expected to increase into perennial streams over the short-term (one-three years) until vegetation in burned areas recovers and provides interception and cover protection from high-intensity thunderstorms. Regrowth of vegetation in the burned areas would decrease overland flows by increasing plant litter and infiltration of water into the soil profile. The possibility of sediment transport to streams would also be reduced.

Water Quality and Riparian/Wetland Vegetation
Riparian/wetland areas and well defined first-order stream channels in upper watersheds would not be burned in the proposed action. Riparian areas, dry and wet meadow complexes, and well-defined drainage channels would be protected by buffer zones of unburnt vegetation. Using prescribed fire at present time within stream and meadow buffers would not be advantageous to restore riparian/wetland vegetation, even when fire is left to slowly back into these areas. Therefore, there should be minimal impacts to drainage channels and riparian/wetland areas where surrounding vegetation is burned. However, some downslope sediment transport from burned areas may occur during high-intensity short-duration precipitation events until vegetation has recovered, and therefore, it would be expected that some sediment from burned areas may collect in riparian areas, stream channels, or possibly spring areas. This sediment transport would be short-term (one-three years) since vegetation that hold soils in place on upland burned areas would be expected to rapidly recover during the next two growing seasons.

Livestock grazing in riparian areas is expected to be reduced by opening up densely covered mountain big sagebrush areas and allowing better livestock distribution throughout the pastures. Livestock typically seek out recently burned areas as succulent grasses and forbs usually dominate there. Since the livestock grazing use in these pastures is before the hottest part of the summer (before July 15), the recently burned areas should be green and succulent during the

grazing period. It is expected that reduction in livestock use of meadows and riparian areas would continue until mountain big sagebrush recolonizes the burned areas (10-25 years).

Upland Vegetation

Mountain big sagebrush is highly susceptible to fire injury. Plants are readily killed in all seasons by even light intensity fires [2]. Burning sagebrush communities can result in significant increases of herbaceous plants by reducing sagebrush that outcompetes more nutritious and palatable species [12].
Mountain big sagebrush will not resprout. Regeneration following fire is from on-site and off-site seed. Seedlings often reestablish readily and grow rapidly on light to moderate burns; reproductive maturity may occur in 3 to 5 years. Preburn density and cover may be achieved in 15 to 20 years under favorable conditions [9].

Moderate-severity fire is not expected to substantially damage the perennial grasses in the area. Following removal of the heavy sagebrush cover, the perennial grasses and forbs would be expected to increase significantly in cover as competition for resources from mountain big sagebrush has diminished.

Small-diameter quaking aspen is usually top-killed by low-severity surface fire [10]. Large quaking aspen may survive low-severity surface fire, but usually shows fire damage [4]. Moderate-severity surface fire top-kills most quaking aspen, although large-stemmed trees may survive. Some charred stems that survived low- or moderate-severity fire initially have been observed to die within 3 or 4 postfire years. Severe fire top-kills quaking aspen of all size classes.

Moderate-severity fire does not damage quaking aspen roots insulated by soil. Severe fire may kill roots near the soil surface or damage meristematic tissue on shallow roots so that they cannot sprout. Deeper roots are not damaged by severe fire and retain the ability to sucker [8].

Mortality does not always occur immediately after fire. Sometimes buds in the crown will survive and leaf out prior to the death of the tree [4]. Even when quaking aspen is not killed outright by fire, the bole may be sufficiently damaged to permit the entrance of wood-rotting fungi [11]. Basal scars which lead to destructive heart rot can be made on even good-sized aspen by "the lightest of fires"[10]. Basal fire scars may also permit entry of borers and other insects which can further weaken the tree [3].

Quaking aspen sprouts from the roots and establishes from off-site, wind-blown seed after fire [5]. Aspen generally sprouts vigorously after a fire. Long-term growth and survival of quaking aspen sprouts depend on a variety of factors including pre-fire carbohydrate levels in roots, sprouting ability of the clone(s), fire severity, and season of fire. Moderate-severity fire generally results in dense sprouting. Fewer sprouts may be produced after severe fire. Since quaking aspen is self-thinning, however, sprouting densities are generally similar several years after

moderate and severe fire. A low-severity surface fire may leave standing live trees that locally suppress sprouting, resulting in an uneven-aged stand [1].

Quaking aspen burned in spring generally sprouts later in the growing season and again the following year. Fires in mid-growing season generally result in late-season sprouting. Quaking aspen burned in late summer or fall usually sprouts the next spring [6].

Mountain mahogany are not a target of prescribed fire treatment. They will be protected and not affected.

Special status plant species are not expected to be substantially affected. Native plant species within the project have adapted over the centuries to the natural fire frequencies of their specific localities. If fires are conducted after the plants have become dormant and the fire behavior mimics that of natural fires it is anticipated that no special status plant species would be adversely affected. The seven potential forb species in the project area would be expected to be dormant by September. Any species not dormant at the time of the burn, such as long-leafed snowberry, would be identified and mitigation to avoid the populations would be conducted.

Since there are no known species of noxious weeds that exist in the project area, no threat of expansion is expected. Monitoring will occur in case they are accidently introduced. All vehicular equipment that is used to implement the proposed action would be thoroughly cleaned before the equipment is used in the project area if the equipment had been used in noxious weed areas.

Wildlife

Over the 5 to 10 year project period, fire would temporarily remove about 30 to 40% of the mountain sagebrush canopy currently existing as Class 3 (>5% to 15%) 4 (>15% to 25%) and 5 (>25%) cover types (see appendix A). This would result in reduced hiding, escape and thermal cover values for wildlife that have been observed within the project area (see existing environment) for period of about 10 to 20 years. The volume and extent of herbaceous plant communities used for summer-fall foraging would be increased substantially within burn areas for several years until enough time has elapsed to allow for shrub overstory reestablishment.

Sagebrush structure and cover values in the remaining 60% to 70% of the mountain sage types within the project area would continue to supply important hiding, escape and thermal cover values for wildlife use. Buffer areas (non-burn) around aspen stands, mountain shrubs and other areas as listed in the proposed action would conserve shrub cover values especially for species such as sage grouse, mule deer and songbirds.

Small mammal, reptile and bird populations should not be negatively impacted because there is not significant structure and diversity in the existing community. A short term loss of cover and forage could result from the burn; however, in the long term, habitat quality and quantity should

increase with the increase in perennial forbs, shrubs and grasses.

Based on current resource conditions in the local area (fine scale) and the more general geographic area comprised of the Trout Creek and Oregon Canyon Mountains (mid scale), BLM concludes that the proposed action would result in a mix of plant cover types that would support the priority wildlife species during their seasons of use. The existing shrub steppe environment is substantially connected at a landscape level and in fact exceeds the minimum habitat needs identified in the SEORMP DEIS and Standard 5 of Rangeland Health. The proposed action would reduce some sagebrush cover and increase herbaceous cover values without jeopardizing the health of wildlife communities that use sagebrush habitats.

Fisheries

In order to minimize potential impacts to fish habitat, no burning would be prescribed for riparian areas, steep gradient slopes above fish-bearing streams, or within 100 feet of any drainage with a well-defined channel. These avoidance areas would provide effective vegetated buffers to trap and dissipate any surface runoff and fine sediment that may result from prescribed fires on the uplands.

If fire were to escape prescription and inadvertently burn within riparian areas or immediately upslope from stream channels, fish populations would be negatively impacted by destruction of covering vegetation and alteration of physical properties of surface layers of soil. The immediate effect would be to expose mineral soil to surface runoff and erosion, increase water yield, remove shading canopy from stream water surfaces, and increase water temperatures. Runoff from burned areas generally imports more dissolved nutrients than usual to streams, and surface erosion transports large volumes of sediment and organic debris from slopes to the channel. Deposition of excessive fine sediment on the stream bottom eliminates habitat for aquatic insects; reduces density, biomass, number, and diversity of aquatic insects; reduces permeability of spawning gravels; and blocks the interchange of subsurface and surface waters. Escaped fire also may increase the potential for landslides due to decay of anchoring and reinforcing root systems.

Livestock Management

Livestock grazing would be enhanced by the increase of perennial grasses and forbs which would increase forage. However, no increase in livestock grazing use (AUMs) is anticipated as a result of the burns. Livestock distribution would improve as the burned areas would be more open and inviting to livestock that have traditionally stayed in open meadows and riparian areas, avoiding heavy sagebrush cover areas.

Special Management Areas

The 10,939 acres of WSA within the project area would be allowed to burn in an attempt to create a mosaic burn pattern that enhances wilderness values. The burn would not produce an aggregate negative effect upon wilderness characteristics of WSAs and values that would constrain Congress' decision to designate the WSAs as wilderness. However, in the short-term the area being blackened by burning will be a visual eyesore to some visitors. This would only last until the next growing season which would be less than one year, at which time the increase abundance of grasses and especially forbs would be visually pleasing to visitors.

Cultural Resources

Areas of aspen art have been identified in the project area and these sites will be excluded from prescribed burning. Potential lithic scatter sites would not be damaged by the proposed action. Following the burn, cultural inventory would be conducted to determined if cultural sites exist in the burn area.

Alternative B--- NO ACTION

Air quality would not be affected since there would be no prescribe burning. However, when a wild fire did occur in the project area, which is normally during the hot summer time period when wind dispersal of particulates is minimal, air quality may be degraded due to the uncontrollable nature of wildfire which could cover a much larger area than a prescribe burn. In comparison, a wildfire would be expected to produce more smoke and particulates into the air than a prescribe burn.

The vegetation condition of the area would continue decline as the mountain big sagebrush increases in cover. Mountain big sagebrush would continue to dominate the site, increase and provide a seed source into surrounding areas. Understory grasses and forbs would continue to decline as mountain big sagebrush increases in cover. Aspen stands would continue to regenerate, but decadent and dying aspen would increase.

Riparian areas would continue to receive heavier livestock grazing use than desired. This use would limit the improvement of some riparian areas that are located in easily accessible areas.

Wildlife diversity associated with herbaceous plant cover types would be expected to decline as sagebrush cover increases. Foraging areas for wildlife especially, sagegrouse would decline as sagebrush cover increases and more of the livestock use is concentrated in the more open meadows and riparian areas. Hiding, escape and thermal cover for wildlife would increase with more sagebrush canopy cover.

Fisheries would benefit from no action because the possibility of excessive stream sedimentation and organic imputes would be avoided.

Livestock grazing would continue to concentrate in open meadows and riparian areas. Livestock distribution would not be as desired. Livestock grazing management would have to be adjusted to reduce the adverse affects on meadows and riparian areas. These adjustments may adversely affect livestock grazing operations.

WSAs would not be visually affected by prescribe burning and the resulting black areas in the short term. However, the increase in the extent of the dense cover of mountain big sagebrush would be expected to reduce the WSAs biodiversity and lead to uncontrolled wildfire which may burn an uncharacteristically large area of the WSA. This would reduce the biodiversity of the WSAs transforming a large area into an early seral state that would be lacking in structure (sagebrush) and the associated diversity of wildlife.

The potential for reoccurring wildland fires would continue to exist throughout the project area. Little or no potential for site improvement is possible with no action.

CRITICAL ELEMENTS	AFFECTED	
	YES	NO
Air Quality	X	
Farmlands, Prime/Unique		X
Flood plains		X
Nat. Amer. Rel. Concerns		X
T&E Species	X	
Wastes, Hazardous/Solid		X
Water Quality	X	
Wetlands/Riparian Zones	X	
ACECs		X
Cultural Resources		X
Wild & Scenic Rivers		X
Wilderness	X	

DESCRIPTION OF MITIGATION MEASURES AND RESIDUAL IMPACTS

To ensure firefighter safety, prescribed burn plan prescriptions and fireline safety procedures would be strictly followed at all times. Project objectives may be compromised if firefighter safety is jeopardized.

The livestock grazing would not be allowed within the burn area for two years or the amount of time required to allow vegetation to become established and sufficiently recovered to withstand the continuation of grazing..

In accordance with 36CFR800.5(b), on April 2,1999, the District notified the State Historic

Preservation Office (SHPO) of the proposed action and that the proposed action would have no effect on cultural resources within the project area. As according to protocol, SHPO did not notify the District within 30 days of any problems with this assessment. Monitoring pretreatment and post-treatment would be done within the project area to record resulting vegetational changes.

All other mitigating measures have been addressed in the proposed action. There are no residual impacts identified.

PERSONS/AGENCIES CONSULTED

Walt VanDyke - ODFW

BLM STAFF SPECIALISTS

Alice Bronsdon - Archeologist
Tom Christensen - Wilderness / Outdoor Recreation Planner
Joe-Riley Epps - Project Lead / EA Co- writer
Jerry Erstrom - Weed Specialist
Jean Findley - Botanist
Tom Forre - Rangeland Management Specialist
Tom Miles - Supervisory Rangeland Management Specialist
Mike Morcom - Assistant Fire Management Officer
Rick Roach - Hot Shot Supervisor / EA Co-writer / Burn Boss II Trainee
Jon Sadowski - Wildlife Biologist
Cynthia Tait - Fish Biologist
Jack Wenderoth - Hydrologist
Marnie Wilson - Archeologist

FINDING OF NO SIGNIFICANT IMPACTS

I have reviewed this EA and determined that the proposed action with the mitigating measures will not have any significant impacts on the human environment and that an EIS is not required. I have determined that the proposed project is in conformance with the land use plan.

s/Jerry L. Taylor	10/25/00
Authorized Official	Date

DECISION/RATIONALE

My decision is to authorize ACTION

_____ _____

Authorized Official Date

References:

1. Bartos, Dale L.; Mueggler, Walter F. 1979. Influence of fire on vegetation production in the aspen ecosystem in western Wyoming. In: Boyce, Mark S.; Hayden-Wing, Larry D., eds. North American elk, ecology, behavior and management. Laramie, WY: University of Wyoming: 75-78. [5101]

2. Blaisdell, James P.; Murray, Robert B.; McArthur, E. Durant. 1982. Managing Intermountain rangelands--sagebrush-grass ranges. Gen. Tech. Rep. INT-134. Ogden, UT: U.S. Department of Agriculture, Forest Service, Intermountain Forest and Range Experiment Station. 41 p. [467]

3. Brinkman, Kenneth A.; Roe, Eugene I. 1975. Quaking aspen: silvics and management in the Lake States. Agric. Handb. 486. Washington, DC: U.S. Department of Agriculture, Forest Service. 52 p. [5107]

4. Brown, James K.; DeByle, Norbert V. 1987. Fire damage, mortality, and suckering in aspen. Canadian Journal of Forest Research. 17: 1100-1109. [5099]

5. Brown, James K.; DeByle, Norbert V. 1989. Effects of prescribed fire on biomass and plant succession in western aspen. Res. Pap. INT-412. Ogden, UT: U.S. Department of Agriculture, Forest Service, Intermountain Research Station. 16 p. [9286]

6. Brown, James K.; Simmerman, Dennis G. 1986. Appraising fuels and flammability in western aspen: a prescribed fire guide. Gen. Tech. Rep. INT-205. Ogden, UT: U.S. Department of Agriculture, Forest Service, Intermountain Research Station. 48 p. [544]

7. Connelly et al., *Draft* Guidelines for Management of Sage Grouse Populations and Habitats. June 1999, 42pp.

8. Gruell, G. E.; Loope, L. L. 1974. Relationships among aspen, fire, and ungulate browsing in Jackson Hole, Wyoming. Lakewood, CO: U.S. Department of the Interior, National Park Service, Rocky Mountain Region. 33 p. In cooperation with: U.S. Department of Agriculture, Forest Service, Intermountain Region. [3862]

9. Hironaka, M.; Fosberg, M. A.; Winward, A. H. 1983. Sagebrush-grass habitat types of southern Idaho. Bulletin Number 35. Moscow, ID: University of Idaho, Forest, Wildlife and Range Experiment Station. 44 p. [1152]

10. Jones, John R.; DeByle, Norbert V. 1985. Fire. In: DeByle, Norbert V.; Winokur, Robert P., eds. Aspen: ecology and management in the western United States. Gen. Tech. Rep. RM-119. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station: 77-81. [11910]

11. Kovalchik, Bernard L. 1987. Riparian zone associations: Deschutes, Ochoco, Fremont, and Winema National Forests. R6 ECOL TP-279-87. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Region. 171 p. [9632]

12. Smith, Michael A. 1985. Prescribed burning of big sagebrush in Wyoming. In: Fisser, Herbert G., ed. Wyoming shrublands: Proceedings of the 14th Wyoming shrub ecology workshop; 1985 May 29-30; Rock Springs, WY. Laramie, WY: University of Wyoming, Department of Range Management, Wyoming Shrub Ecology Workshop: 41-45. [13910]

13. Thomas, Jack Ward, et al. , Wildlife Habitats in Managed Rangelands - The Great Basin of Southeastern Oregon. 1984.

14. USDI Bureau of Land Management and USDA Forest Service, Interior Columbia Basin Ecosystem Management Project

15. Rosgen,D.L. 1994. A classification of natural rivers. Catena 22: 169-199.

Appendix - A

Management of Wyoming, Great Basin and Mountain big sagebrush Habitat for Sagebrush Dependent Wildlife

The relative abundance and distribution of grassland and shrubland habitat has a profound effect on wildlife habitat diversity and productivity. This section describes: (1) the general values of big sagebrush types for wildlife at different canopy cover measures (Table F-1) (2) the proportion (percent) of individual pastures and geographic areas that should support sagebrush obligate wildlife habitat (Table F-2) within the SEORMP. The combined values of woody/herbaceous canopy cover **and** the acreage of public land which support them determine the desired habitat conditions.

Table 1.—*General relationship of Wyoming, Great Basin and mountain sagebrush canopy cover classes to wildlife use and habitat values*

Class 1	**0% big sagebrush line intercept canopy cover—** Characteristic of rangelands that exhibit a grassland aspect and low vegetative structure. Generally common and widespread species of wildlife (e.g., pronghorn and horned larks) can be supported. Forage and insects are often abundant even for species that are dependent on sagebrush cover availability for nesting, hiding and so on. Class 1 rangelands do not necessarily pose a threat to wildlife diversity because they may in fact meet part or all of the habitat requirements of certain wildlife species. Native or nonnative Class 1 rangelands may be a wildlife habitat issue of concern where they dominate large tracts of land within a GMA. Depending on rangeland condition and site potential, grass and forb values are highly variable.
Class 2	**Traces to 5% big sagebrush line intercept canopy cover—** Characteristic of rangelands that exhibit a predominantly grassland aspect and low vegetative structure. Generally common and widespread species of wildlife (e.g., pronghorn and horned larks) can be supported. Most of the complex shrub cover needs of sage grouse and other sagebrush dependent wildlife (structure, forage, and cover) are very limited or absent altogether in Class 2 rangelands. ***Connelly et al. in press*** refer to the cessation of sage grouse nesting where live sagebrush canopy cover values go below 5%. Depending on rangeland condition and site potential, grass and forb values are highly variable.

Class 3	**Greater than 5 to 15% big sagebrush line intercept canopy cover—** Characteristic of rangelands that exhibit a shrub land aspect and desirable complex vegetative structure that is capable of supporting a variety of sagebrush-dependent wildlife (including many special status species), especially at the higher canopy values of 10 to 15%. ***Connelly et al. in press*** suggest that sage grouse are able to winter within habitats that support at least a 10% canopy cover of sage if the shrub cover is available 10 to 12" above snow cover. Sage grouse nesting habitat values are thought to be present at the upper (near 15%) sagebrush canopy cover values. Unpublished BLM surveys suggested sagebrush obligate songbirds began to reoccupy crested wheatgrass grasslands where the sagebrush canopy was more than 5%. Songbird studies in Nevada crested wheatgrass seedings, Macadoo (1989), showed that a balanced composition of grassland and shrub dependent species were present when shrub overstory recovery was around 10% line intercept values. Depending on rangeland condition and site potential, grass and forb values are highly variable.
Class 4	**Greater than 15 to 25% big sagebrush line intercept canopy cover—** Characteristic of rangelands that exhibit a shrubland aspect and desirable complex vegetative structure that is capable of supporting a wide variety of sagebrush-dependent wildlife (including many special status species). Sage grouse breeding and wintering can both occur within habitats with Class 4 shrub cover. Depending on rangeland condition and site potential, grass and forb values are highly variable.
Class 5	**Greater than 25% big sagebrush line intercept canopy cover—** Characteristic of rangelands that exhibit a shrubland aspect and complex vegetative structure that is capable of supporting sagebrush dependent species. Class 5 types may often support diminished herbaceous cover values. However, Class 5 cover values need to be present for some species such as the pygmy rabbit. Mule deer and elk use this type of habitat for hiding in rangelands where topographic cover is limited and/or tall structure provided by mountain shrubs is absent. Class 5 shrub cover does not necessarily imply poor or low value habitat conditions for wildlife.

Table 2
Desired Characteristics of Vegetation for Sagebrush Dependent Wildlife

A. General Distribution and Structural Characteristics of Big Sagebrush Cover on Native and Seeded Range

Shrub cover capable of supporting the life history requirements of sagebrush dependent species should be present over a large area and in a variety of spatial arrangements and scales (e.g. at a landscape level and with connectivity present). This should include combinations of large contiguous blocks, islands, corridors, or mosaic patterns.

The desired objective for spatial arrangement of sagebrush cover within individual pastures, allotments and geographic areas will vary somewhat and be determined on the basis of factors such as: 1) Predominant native shrub cover patterns and characteristics within each geographic area. 2) The frequency and reasonably foreseeable likelihood of fire. 3) Locations of seedings and their shrub overstory conditions.

Shrub cover should be present that shows some mix of height and age classes but with an overall emphasis on the presence plants in a mature structural status.

B. Big Sagebrush Shrub Cover on Native Range

Shrub overstories capable of supporting sage grouse and other sagebrush dependent species should be present on at least 50% to 75% of the surface acreage of livestock management pastures capable of supporting big sagebrush communities.

For example: a 1000 acre pasture that is a Wyoming, mountain or great basin sagebrush type should provide adequate shrub cover on at least 500 to 750 acres.

C. Big sagebrush Shrub Cover on Seeded Range

Shrub overstories capable of supporting sage grouse and other sagebrush dependent species should be present on at least 25% to 50% of the surface acreage of livestock management pastures capable of supporting a big sagebrush community.

For example: a 1000 acre seeded pasture that is a Wyoming, mountain or great basin sagebrush habitat type should provide adequate shrub cover on at least 250 to 500 acres.

D. Herbaceous Cover on Native Range

Herbaceous understory composition though out most native range habitats should exhibit multiple species of native forbs and grasses consistent with site potential at mid, late, and PNC seral stages.

Desired Amounts and Arrangements of Sagebrush Habitats

Structural characteristics and general distribution at mid scales (GMA's): Shrub cover capable of supporting the life history requirements of sage grouse and other wildlife that use sagebrush habitats should be present at multiple scales, over a large area, and in a variety of spatial arrangements (e.g., at a landscape level and with connectivity present). This should include a central core of sagebrush habitat which is present in large contiguous blocks as well as some other habitat arrangements such as islands, corridors, and mosaic patterns. Each of these patterns have significance to wildlife within geographic areas.

Wildlife objectives for sagebrush communities in individual pastures, allotments, and GMA's will be determined on the basis of factors such as: (1) presence of sage grouse and their variable life history needs, (2) existing native shrub cover patterns and characteristics within each GMA, (3) the frequency and reasonably foreseeable likelihood of fire, and (4) locations of seedings and their shrub overstory conditions.

Shrub cover should be present that shows some mix of height and age classes but with an overall emphasis on the presence of communities with shrubs in a mature structural status per Thomas et al. (1984).

Big sagebrush shrub cover on native range at fine scales (pastures): Shrub overstories capable of supporting sage grouse and other species that use sagebrush habitats should be present on at least 50 to 75percent of the surface acreage of livestock management pastures capable of supporting big sagebrush communities. For example: a 1000-acre native-range pasture that is a Wyoming, mountain, or great basin sagebrush type should provide shrub cover capable of supporting sage grouse and other species that use sagebrush habitats on at least 500 to 750 acres.

Big sagebrush shrub cover on seeded range at fine scales (pastures): Shrub overstories capable of supporting sage grouse and other species that use sagebrush habitats should be present on at least 25 to 50 percent of the surface acreage of livestock management pastures capable of supporting a big sagebrush community. For example: a 1000-acre seeded pasture that is a Wyoming, mountain, or great basin sagebrush habitat type should provide adequate shrub cover capable of supporting sage grouse and other species that use sagebrush habitats on at least 250 to 500 acres.

Herbaceous understory on native range at fine scales (pastures): Herbaceous understory composition throughout most native range habitats should exhibit multiple species of native forbs and grasses consistent with site potential at mid, late or potential natural community ecological condition.

Herbaceous understory on seeded range at fine scales (pastures): Herbaceous cover composition in most seedings should support one or more adapted forb species.

Table 3 Important Attributes of Effective Sage Grouse Habitat		
Habitat Use Period	Herbaceous Cover Requirements	Shrub Cover Requirements
Winter	Not an issue, sage grouse forage almost exclusively on sagebrush	10% - 25% line intercept canopy cover values; shrub heights capable of 12" exposure above snow
Spring (Lekking)	Low, open vegetative structure at the lek site is preferred	Low, open vegetative structure at the lek site is preferred
Nesting	Herbaceous cover capable of concealing nest sites	≥ 15% line intercept canopy cover
Brood rearing	Quality native or non-native grasses and forbs in uplands, meadows and riparian areas.	Sufficient escape cover for avoidance of predators

Appendix-B

I. Purpose: To determine if resource objectives have been met.
To determine if burn prescription and objectives have been met.
To provide documentation of treatment activities, and long term effects.
To improve cost effectiveness.
To improve burn prescriptions.

II. Monitoring Stages:

A. Pre-fire: Pre-fire monitoring is done to determine if the site is in prescription. Monitoring must start prior to ignition. Photo points will be established. The following information will be monitored and documented by district fire staff or a designated qualified representative.

1. Fuels
    a. The types of vegetation on site (grass, shrub, timber, presence of noxious weeds).
    b. Fuel loading (tons per acre).
    c. Fuel arrangement and distribution.
    d. Fuel moisture (by vegetation type).

2. Weather
    a. Determine seasonal and local weather patterns.
    b. Monitor weather forecast.
    c. Establish spot weather forecast schedule.

3. Topography
    a. Slope.
    b. Aspect.
    c. Drainages.

B. During fire: Fire conditions will be monitored to determine if the fire is remaining in prescription. The following will be observed and documented at regular intervals as conditions dictate, with a minimum of every two hours, by qualified personnel.

1. Fuel moisture (one hour).
2. Weather (wind speed and direction, temperature, relative humidity).
3. Fire behavior (rate of spread, flame length).
4. Fire location.
5. Smoke (column description, column drift direction, transport direction, dispersion).

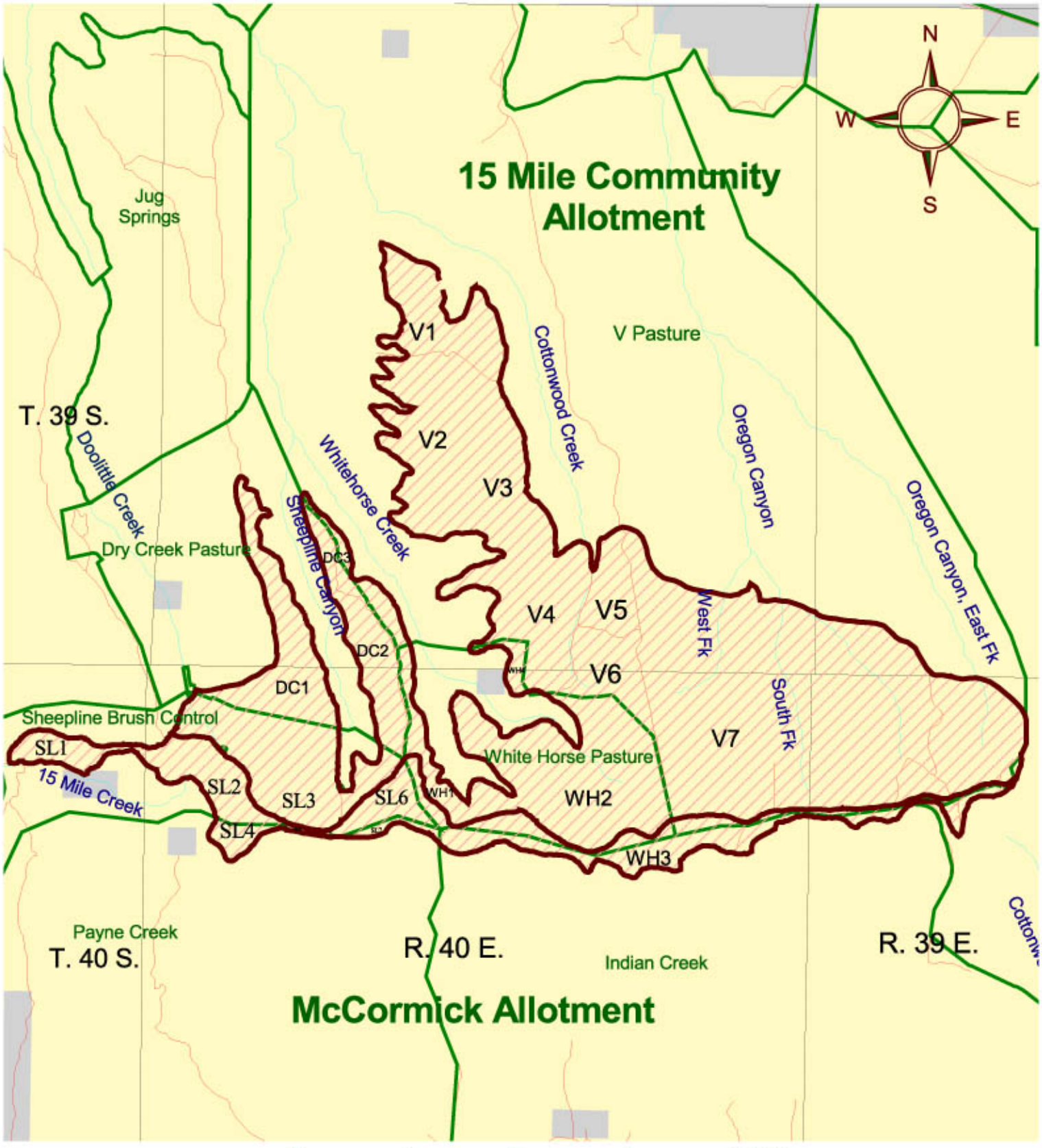
C. Post fire: Post fire monitoring is done to determine if the burn objectives were met.

1. The types and amount of vegetation remaining on the site.
2. Air quality.
3. GPS actual burn perimeter.

D. Long-term: Long-term monitoring is done to determine if resource objectives have been met and the effects of the prescribed fire. Monitoring will be conducted at intervals determined by the resource area. The following will be monitored and documented.

1. Vegetative conditions (burned and unburned, presence of noxious weeds).
2. Soil conditions.
3. Hydrological evaluation.
4. Impact to wildlife and livestock.
5. Impact to wilderness study area.

Southern Trout Creek Habitat Maintenance



No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data. Original data were compiled from various sources. This information may not meet National Map Accuracy Standards. This product was developed through digital means and may be updated without notification.