

**PRESERVE ANALYSIS:
STEENS MOUNTAIN SUMMIT**

prepared by

Robert E. Frenkel



**OREGON NATURAL AREA PRESERVES ADVISORY COMMITTEE
to the
STATE LAND BOARD**

Salem, Oregon

September, 1975

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PREFACE

The purpose of this preserve analysis is to provide a summary record of the natural features and cultural relations of the proposed Steens Mountain Summit Natural Area Preserve. The present document reflects a revision of a draft dedication proposal presented to the State Land Board on January 7, 1975. Supplies of this earlier draft have been exhausted.

A brief history of the Steens Mountain Summit Natural Area Preserve proposal might be of interest. The area was simultaneously brought to the attention of the Natural Area Preserves Advisory Committee early in 1974 through the natural area planning document, "Research Natural Area Needs in the Pacific Northwest -- A Contribution to Land-Use Planning" and by Division of State Lands staff. After prior contact with the Burns District Office, B.L.M., field investigation of the site took place in mid-July, 1974. A preserve analysis was prepared and submitted to the Natural Area Preserves Advisory Committee in November, 1974 and the Committee approved the concept and recommended the area as a preserve to the State Land Board, January 7, 1975. On May 7, the concept was presented to the Steens Mountain Committee and a Public Informational Hearing was held May 8 at Burns, Oregon. Hearing summary and transcript were forwarded to the State Land Board in mid-June.

A master plan for the area was first drafted on January 5, 1975, revised April 6 and again on July 8. The master plan is being further refined by the Division of State Lands in consultation with the Natural Area Preserves Advisory Committee and other interested agencies and individuals. The Natural Area Preserves Advisory Committee at its June 12, 1975 meeting after reviewing the public informational hearing record, reaffirmed that the Steens summit area be dedicated by the State Land Board and directed that articles of dedication be prepared (Resolution No. 41). This preserve analysis together with the master plan and any agreements comprise the articles of dedication.

Many individuals and agencies have been helpful in the compilation of this material. I extend my appreciation to the members of the Natural Area Preserves Advisory Committee many of whom contributed time and effort to this project. John Mairs, Kenton Chambers, and Karl Urban were especially helpful in providing information about Steens Mountain flora and vegetation. Chris Maser has contributed a reconnaissance of the Steens summit fauna. Staff members in the B.L.M., Burns District office, Wildlife Commission and State Division of Lands were all helpful in review of this material.

Robert E. Frenkel
August 24, 1975

NAME AND DESCRIPTION OF PRESERVE

Proposed Name and General Location

The proposed name for the preserve is: Steens Mountain Summit Natural Area Preserve.

Located in southern Harney County, the proposed Natural Area Preserve (NAP) encompasses a portion of the southern extension of the Steens Mountain summit ridge and the upper section of Wildhorse Creek cirque which together form the major topographic features.

Legal Description

The proposed Natural Area Preserve comprises the entirety of Section 36, Township 33 South, Range 33 East, Willamette Meridian (see Figure 1). This section of "Common School Fund" land contains 471 acres (192 ha), a "short section" with less than 640 acres (259 ha) caused by inaccuracies associated with the original land survey.

Ownership

The 471 acre section is owned by the State Land Board and is superintended under a blanket exchange-of-use agreement by the Bureau of Land Management. The area is managed through the Burns District Office, B.L.M. and is within the B.L.M. Andrews Resource Area. Surrounding and adjacent land is entirely under B.L.M. jurisdiction and control. A grazing lease and the summit communications facility agreement, both to be discussed later, are also attached to this section.

REASON FOR PRESERVATION

The preserve is proposed in order to protect some typical and unique ecologically valuable plant species, alpine plant communities and associated animals. These all could be damaged by grazing of livestock and to a certain extent by unregulated recreational use. The preserve would also include a small, complete watershed, examples of Steens Mountain basalt flows, and displays of recent glacial features.

Several scientific and educational values would be protected with establishment of this preserve.

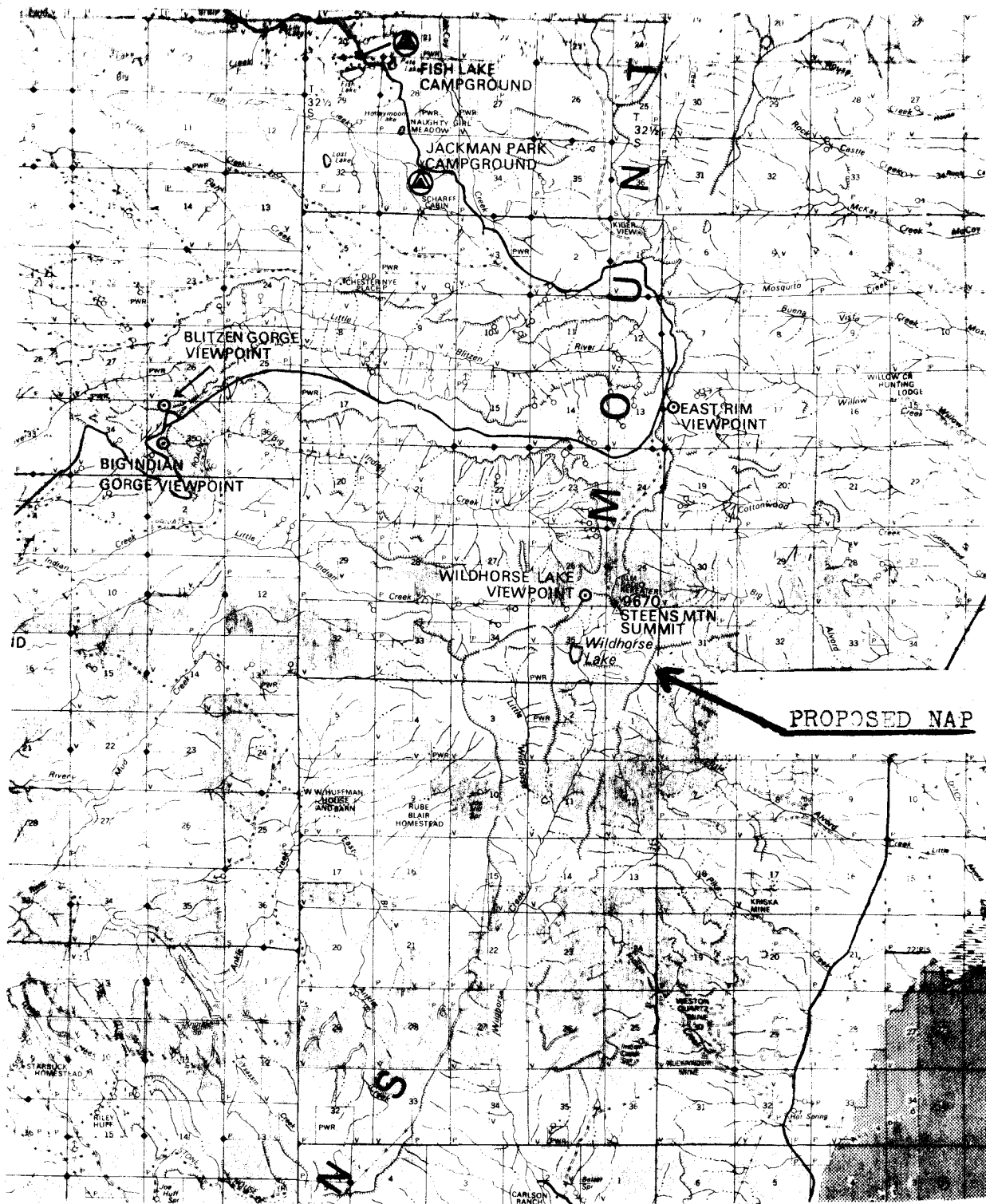


Figure 1. Location of Steens Mountain summit section.

1. It will satisfy the primary research natural area needs as outlined in Dyrness et al. (1974) for the following cells, (a) Alpine Communities, Steens Mountain and (b) Supalpine Stream Drainage in the Steens Mountain Area.
2. It will contribute to the filling of at least four other natural area cells to be discussed later including the endangered Sorex preblei (Malheur shrew) cell.
3. It will protect a number of endemic plant taxa including: Castilleja steenensis, Cirsium peckii, Draba sphaeroides var. cusickii, Eriogonum umbellatum var. glaberrimum, Eriogonum cusickii, Penstemon davidsonii var. praeteritus (Cronquist et al., 1972 and personal communication with Prof. K.L. Chambers, and Mr. K. Urban).
4. Because the section includes the summit ridge, 1300 feet (400 m) of relief, slope exposures representing all compass points, slope variety from near level to steep cliffs, habitats varying from wet to dry, and soils varying from alluvium to excessively rocky; a great diversity of habitat types is present. This habitat diversity will be useful in biological studies and is also useful for educational purposes.
5. The area provides an excellent locale to study nivalational processes, erosional and colluvial processes under extreme temperature variations including creep, incipient solifluction and alpine patterned ground phenomena.
6. The area provides the plant ecologist with an outdoor laboratory to study snowbed plant communities and to test hypotheses regarding ecosystem structure and function in an alpine environment under near-alpine tundra conditions.
7. The area is relatively defensible. Recreational use is largely confined to the northwest corner of the section near the summit relay station; few people leave the summit jeep road. Grazing of livestock is presently light and, in the future, might easily be controlled still further as discussed later.

BIOLOGICAL AND PHYSICAL DESCRIPTION

Ecosystems and Cells

The proposed natural area preserve would fill, in part, the following ecosystems and cells as outlined in Dyrness et al. (1974):

- Alpine Idaho Fescue Community
- Alpine Sagebrush Community
- *Alpine Communities, Steens Mountain
- *Subalpine Stream Drainage in the Steens Mountain Area
- Castilleja steenensis Pennell
- Cirsium peckii Henderson
- Sorex preblei Jackson (Malheur shrew)

The asterisk (*) in the above list indicates principal cells being protected. A "cell" refers to a specific type need which might be an individual organism, habitat, or ecosystem. Cells form the basic building blocks in defining the total scope of a natural area system.

It is very possible, as additional floristic and faunistic studies are pursued, this area will yield additional organisms recognized as endangered, threatened, or rare. A more complete listing of animal and plant taxa appears later.

Vegetation and Flora

Although the above cells taken from Dyrness et al. (1974) are useful in describing natural area attributes, additional characteristics may be helpful in understanding the area. Hansen (1956) in an "ecological survey of the vertebrate animals on Steen's Mountain..." recognized four elevational vegetation belts: tall sage, juniper, aspen and sub-alpine bunchgrass. The proposed NAP is entirely within the sub-alpine bunchgrass belt. Within this belt Hansen described and discussed a variety of "natural areas" which are here best considered habitats. The following listing presents Hansen's habitats which are found in the proposed NAP. Dominant habitats are shown by an asterisk (*).

- Sub-alpine Bunchgrass Belt
 - Sagebrush Areas (east side of crest)
 - Dry Shallow Soil
 - Dry Deep Soil
 - Permanently Wet Meadows
 - Seasonally Wet Meadows
 - *Bunchgrass Areas (especially in Wildhorse Cirque)

- *Dry Bare Soils
- *Dry Shallow Soils
- *Dry Deep Soils
- *Seasonally Wet Meadows
- *Permanently Wet Meadows
- *Riparian Aquatic Situations (mostly in Wildhorse cirque)
- *Rocky Situations
 - *Talus Slopes
 - *Rock Outcrops (cliffs, peaks and pinnacles)

Although no precise mapping of these different habitats has been accomplished, over two-thirds of the area would best be described as "rocky situations," followed in areal importance by "bunchgrass areas."

Since 1971, John Mairs, a graduate student in Geography, Oregon State University, has been studying the sub-alpine vegetation of Steens Mountain for his Ph.D. and has tentatively recognized four or five different types of alpine and sub-alpine plant communities which are embraced within the bunchgrass area. Along the windswept summit ridge, attaining an elevation of 9,733 ft (2970 m), there exists a community of low-growing cushion plants and tufted grasses marked by a relatively long growing season related to thin snow accumulation and consequently an attenuated snow-free season. It is this snow-deflated ridgetop plant community which exhibits considerable rockiness and which has its closest physiognomic and floristic relationships to alpine tundra. Typical species in this community include: Arenaria nuttallii, Astragalus whitneyi, Erigeron compositus, Eriogonum ovalifolium, Geum triflorum v. ciliatum, Heuchera cylindrica, Poa sandbergii, Ribes montigenum, and Senecio canus. The best representation of this community in the proposed NAP is in the area of the northwest corner which surrounds the repeater station.

Other areas exposed to wind deflation but exhibiting less rockiness support a floristically rich graminoid community marked by Festuca idahoensis, Poa nevadensis and P. sandbergii var. incurva. In areas of gentle slope subject to accumulation of snow with consequently a shorter growing season, plant communities marked by Trifolium multipedunculatum, Agoseris glauca, Lewisia pygmaea, Sitanion hystrix and Trisetum spicatum are prominent. Areas given to superficial soil disturbance and where perhaps snow accumulation is to a lesser depth are typified by Ivesia gordonii and Lupinus lepidus var. lobbii.

Much of the ridge-top and associated steep rocky slopes and cliffs support no true plant communities but provide a variety of habitats for such botanically interesting species as Penstemon davidsonii v. praeteritus, Oxyria digyna, Draba

sphaeroides v. cusickii, Heuchera cylindrica, Potentilla glandulosa v. nevadensis, Polystichum lonchites, and Polemonium pulcherrimum.

Toward the base of the cirque, snow patches linger and one encounters snowbed plant communities discussed by Faegri (1966) which are characterized by the presence of Ranunculus eschscholtzii, R. alismaefolius, and Caltha leptosepla. These long-lasting snow patches irrigate meadows and feed streams which support ribbons of alpine riparian vegetation where Deschampsia caespitosa, Polygonum bistortoides, Carex phaeocephala and relatively rare Dodecatheon alpinum, Kalmia polifolium and Lloydia serotina are all present.

On steep slopes one finds stands of low mats of caespitose shrubs of Potentilla fruticosa, Ribes montigenum, and Juniperus communis var. montana. These stands appear stable and indeed, a ring count on one shrub of Potentilla fruticosa indicated an age in excess of 80 years with a stem diameter of about 1 cm.

Vegetation currently receives only light grazing by cattle and wild fauna. Last year's cattle droppings were in evidence toward the base of the cirque. Although present grazing is light, it is very likely the area has experienced considerable livestock grazing in the past. Historical grazing is discussed later under resource use; however it should be stressed that past grazing exploitation has not diminished the value of this tract as a potential NAP. On the other hand, a natural area from which domestic stock grazing has been excluded will be of scientific value as a control for longterm recovery studies.

Floristically, Steens Mountain is of outstanding importance. Being the highest peak in southeastern Oregon, being extremely isolated, having an intermediate position between the Rocky Mountain cordillera, Cascade Range, other Great Basin fault block mountains, and the Wallowa Mountains of northeastern Oregon, Steens Mountain presents a setting for a variety of studies. Hansen (1956), reviewing the floristic relationships of the entire mountain, placed 33% of Steens Mountain taxa having mountain relationships. Of this floristic group 39% of the taxa were widespread, 27% had northern relationships, 24% had relations to the Rocky Mountains, and 11% had Cascade-Sierran relationships. William Denison (personal communication) mentioned that for fungi (Pezizales group), Cascade relationships are especially common.

Although no critical work on Steens Mountain endemism has been published, Hansen (1956) listed 7 endemics: Cirsium peckii, Draba cruciata, Agastache cusickii, Lupinus lyalli, Allium punctum, Castilleja glandulifera, and C.

steenensis. Apparently at least two of these taxa, Cirsium peckii and Castilleja steenensis are found in the proposed NAP but a critical review of endemism on Steens Mountain is badly needed and it is very likely that Hansen's (1956) statement needs major revision. Karl Urban who is preparing a Steens Mountain flora follows Cronquist et al. (1972) and suggests six endemics present on the NAP site: Castilleja steenensis, Cirsium peckii, Draba sphaeroides var. cusickii, Eriogonum umbellatum var. glaberrimum, Eriogonum cusickii, and Penstemon davidsonii var. praeteritus. A sophisticated phytotaxonomic analysis of the Steens Mountain summit flora is certain to yield additional endemic taxa.

A review of the "partial inventory of rare, threatened and unique plants in Oregon" prepared by Jean L. Siddall and appended to Dyrness et al. (1974) suggests that several species in the proposed NAP may be regarded as rare or unique. The Smithsonian Institution list of Endangered and Threatened Plant Species of the United States (U.S. Congress, 1975) now published in the Federal Register (July 1, 1975) identifies Draba sphaeroides, v. cusickii and Castilleja steenensis as threatened species. Other taxa have an undetermined status relative to their being endangered or threatened. An attempt to list these species is made below; however, because of problems with synonymy and very uneven reporting of species in the botanical literature, the following list is tentative. Symbols are: R = rare, U = unique, SU = status unknown but possibly rare, * = RNA threatened and endangered cell.

- R Castilleja glandulifera Pennell (reported from Steens)
- R* C. steenensis Pennell
- R* Cirsium peckii Henderson
- U Dodecatheon alpinum (Gray) Greene (not rare)
- R* Draba sphaeroides Pays. v. cusickii (C.L. Hitchc.
- SU Epilobium obcordatum Gray (not rare)
- SU Ivesia gordonii (Hook) T. & G.
- R Lloydia serotina (L.) Sweet (not rare)
- SU Polystichum lonchites (L.) Roth (not rare)
- R Trifolium longipes var. multipedunculatum Nels. (T. multipedunculatum Kennedy.)

Appended in this report is a floristic list of vascular plants either collected within the proposed NAP or nearby, or identified with some degree of certainty in the field but not collected as voucher specimens. An indication appears in this listing as to generalized habitat (Appendix 1).

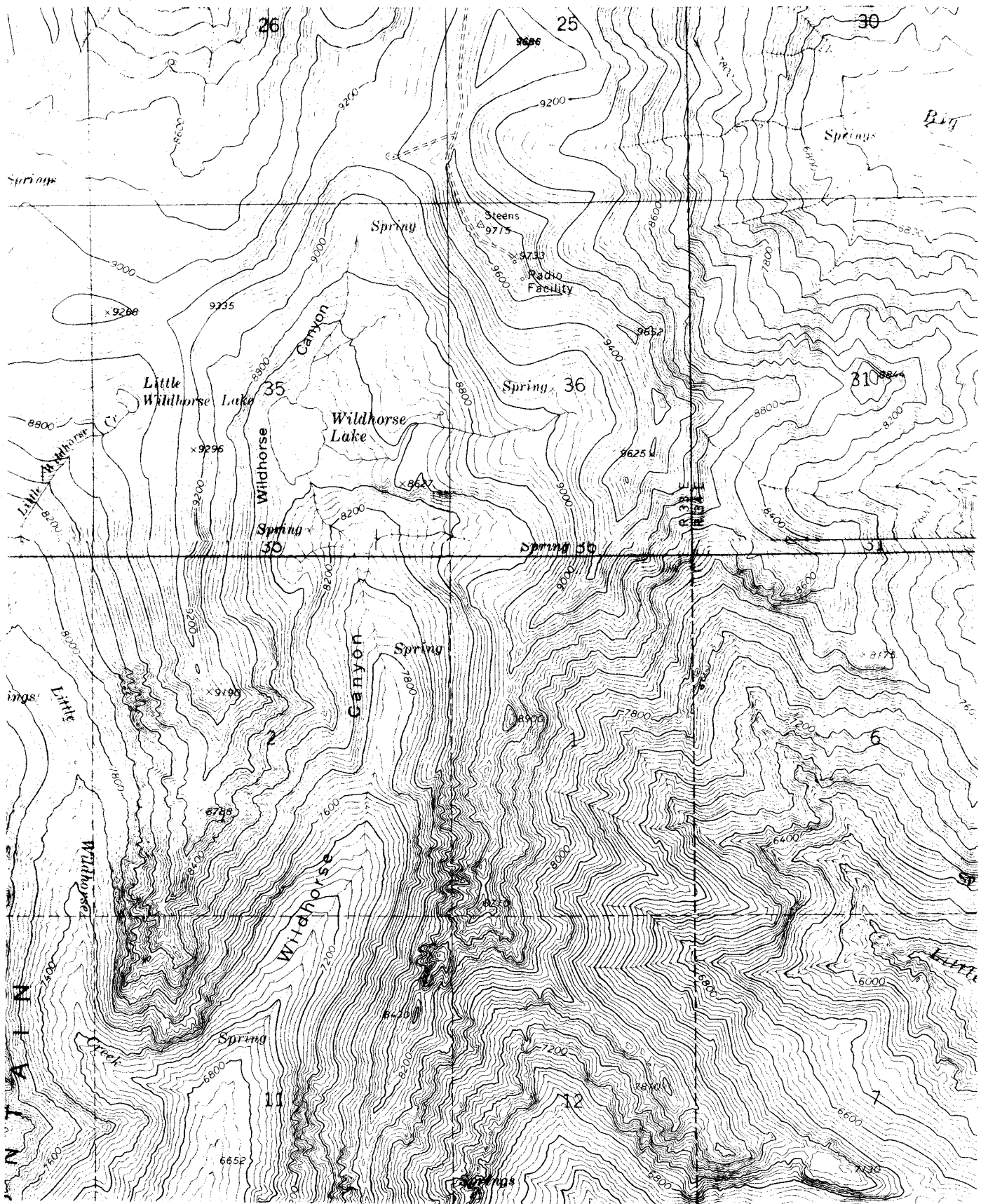


Figure 2. Steens Mountain summit section (Sec. 36, T. 33 S., R. 33 E.).

Zoological

With only limited time, it was difficult for our survey team to assess the fauna of the proposed NAP. Hansen's (1956) ecological survey of the vertebrate animals on Steen's Mountain "...lists animals and their habitat relationship." From this list, we might infer the presence of a number of animals. Mr. Chris Maser, a professional zoologist, has made a reconnaissance survey of animals in the proposed NAP and has provided a tentative list of amphibians, reptiles, birds and mammals to be found on Steens Summit. Maser's faunal list appears as Appendix 2 and has been compiled from his reconnaissance work, Hansen's survey, literature reports in Gabrielson and Jewett (1940) and Bailey (1936). Additional animals have been added based on information from the Wildlife Commission staff. This tentative list indicates animals that might be expected in the NAP and not necessarily "resident" species. Eight of these species are indicated in Dyrness et al. (1974) as rare, endangered or needing protection and are preceded by an "L" in Appendix 2. Those species regarded as either endemic or rare in Dyrness et al. (1974) include:

<u>Gulo gulo</u>	Wolverine
<u>Ovis canadensis Californiana</u>	California bighorn sheep
<u>Sorex preblei</u>	Malheur shrew

It should be recognized that the California bighorn sheep, after having been extirpated in the early 1900's have been reintroduced in 1961 by the Game Commission and the sheep today use the proposed NAP as habitat, especially the eastern slope. Hunting of this animal and others is treated in the section on resources. There may be about 100 sheep on Steens Mountain, plus or minus 25 according to the Wildlife Commission staff. The bighorn sheep is not considered by the Wildlife Commission staff as being rare. The Commission staff is dubious about the Wolverine sighting at the NAP.

Insects have not been systematically studied in the proposed area; however, Dr. David McCorkle collected and identified a number of insects during the July 16, 1974 field reconnaissance and Dr. Ernst Dornfeld is providing the committee with a list of Lepidoptera collected in the vicinity of the proposed NAP. These lists have not yet been assembled.

Geological

The proposed natural area is situated in the Basin and Range Geomorphic Province as described in Dyrness et al. (1974) reflecting a superb example of the summit of a fault

block mountain. Within this province the proposed NAP would encompass the Alpine and Subalpine (Steens Mt.) subprovince (code no. 1501) and Fault Block Mountain subprovince (code no. 1505). The area includes Steens Mountain basalts, dikes, glacial forms including cirques, Matterhorn summits, moraines, roches moutonnees, and other glacial and volcanic features. Active geological and geomorphological processes can be investigated.

The proposed natural area encompasses the 9,733 foot (2,967m) summit and the cirque and associated summit ridge embracing the main east tributary of Wildhorse Lake (Figure 2). This southwest-facing cirque presents slopes ranging from northwest aspect to south aspect but the dominant exposure is west. The section also includes the headwalls of the cirques of the southern tributaries of Big Alvord Creek. Minimum elevation is about 8,400 ft (2,560 m) in the southwest and northeast corners respectively; however, the entire east and northeast portion of the proposed preserve is extremely precipitous with average slopes in excess of 100 percent and has many cliffs and pinnacles. On the west and southwest, slopes are more moderate where the Wildhorse cirque forms a bowl including a small drainage.

The geological history of Steens Mountain has received reconnaissance treatment by Fuller (1931) and more recently by Fryberger (1959), while the glacial history of the mountain has been provisionally investigated by Bentley (1970).

Climate

No climatic stations exist at or near the proposed NAP. Climatic conditions must be interpolated from surrounding stations with due consideration given to the influences of elevation.

Climate on the summit is semi-arid characterized by moderate summers and cold winters. Temperature variations are extreme with summer temperatures rarely exceeding 80°F and not infrequently dropping below freezing. Minimum winter temperatures may reach -40°F (U.S. Department of the Interior, 1971).

With no climatic data reliably collected on the mountain, spotty data from three nearby ranches must be used. Between 1890 and 1930 the P-Ranch, Diamond Ranch and Andrews Ranch recorded temperature, precipitation, and wind direction and velocity. Precipitation was recorded intermittently until 1965. Annual data based on measurements from these three ranches taken from Hansen (1956) combined with additional data collected until 1965 permit a slight revision of Hansen's estimate as follows:

<u>Precipitation</u>	Lowlands	8-12 inches
	Highlands	20-40 inches
<u>Temperature</u>	Yearly Avg.	47°F
	Mean Max. Summer	90°F
	Mean Min. Winter	17°F
	Extremes	106° and -35°F

The rest of the known climatic data available on Steens Mountain is derived from snow surveys taken in April at stations on the mountain. The following table based on Hansen (1956) and additional data collected from 1938 to 1967 shows the average snowfall at these stations, average water content, and years of record.

	Station 951 <u>7,100 ft</u>	Station 952 <u>7,700 ft</u>	Silvies (18G1) <u>6,900 ft</u>	Fish Cr. (18G2) <u>7,900 ft</u>
Average Snowfall	36.7 in.	68.5 in.	-	-
Average Water Content	14.3 in.	25.8 in.	13.45 in.	25.55 in.
Years Recorded	16 (1938- 1954)	14 (1938- 1954)	30	30

To estimate climatic data for the proposed NAP, it has been assumed that precipitation may increase somewhat with additional elevation but that there might be a reversal in this relationship above about 8,500 ft (2,590 m) elevation. Furthermore, the proposed NAP is situated in a cirque which shelters snow that falls so that more accumulation might be expected in the cirque area. Based on these assumptions, a water equivalent for snow of 30 inches annually might be inferred. Additional precipitation in the form of summer snow, rain and hail also occurs and it is probably not unreasonable to add 5 inches in this form for an estimate of total annual precipitation of 35 inches for the proposed NAP.

Educational and Scientific Values

The location of the proposed preserve on Steens Mountain, an outlier between the Cordilleran range and the Cascades, permits a number of faunistic and floristic studies aimed at understanding biotic distribution, especially related to species survival since the last glacial advance, approximately 9,000 B.C.

Habitat diversity is exceptionally high for the summit section reflecting variety in slope, soils, moisture, aspect.

A number of research studies might be carried out relating habitat diversity to faunal niche concept.

Related to both geographic isolation and habitat diversity is a high degree of endemism which has caused Karl Urban, who is conducting a phytogeographic survey of Steens Mountain to write of this proposed preserve, "the state couldn't have selected a better floristic site than Section 36." Not only can endemics be studied but a number of outlying species including Veronica cusickii, Swertia perennis and Pedicularis attollens permit botanists to study species at the margins of their range.

The summit section will preserve what is the closest example in Oregon to alpine tundra; studies conducted to understand this arid land tundra, would be of particular value since tundra species have physiologic affinities to desert plants.

The proposed NAP site is ideally located to test ideas proposed by Faegri (1966) regarding the similarity between vegetation patterns on Steens and Norwegian mountains, particularly patterns of vegetation related to snowbed accumulation, deflation, and melt, also ideas with respect to snowline and treeline.

Because the area is subject to extreme cold winter conditions, studies could be conducted to understand pedological and geomorphological environments including studies of creep, mass wasting, incipient solifluction, patterned ground, and frost riving.

Although a number of possible scientific studies have been itemized above, the area also provides an excellent outdoor classroom. Students associated with every university in Oregon have been concerned with Steens Mountain. The section has been extensively used by students at the Malheur Environmental Field Station and by students with the Portland State University Department of Geography Field Camp.

The B.L.M. has suggested three other "Natural Areas" for Steens Mountain: the east rim of Kiger Gorge, the head of Little Blitzen Valley, and the white fir stand on Big and Little Fir Creeks. The last site, in private ownership, is a valuable potential natural area but in no way duplicates the proposed Steens Mountain Summit NAP. The Kiger ridge site, while isolated and supporting a fine stand of subalpine grassland, is dry and does not duplicate the habitat diversity in the summit section. A natural area at the head of Little Blitzen River presents an upper gorge situation with a western exposure and lacks the elevation, the multiplicity of rocky situations and slope aspects found in the proposed summit NAP. All three of the proposed B.L.M. natural areas are needed to complement the values of the state summit NAP.

The B.L.M. proposed natural areas, therefore do not duplicate the proposed state NAP.

RESOURCE BASE

Historical and Contemporary Resource Use

The major resource use in the past of the proposed NAP has been for grazing. The history of grazing on Steens Mountain is often couched in generalities. Hansen (1956) notes that "during the last few summers (before 1956), there were approximately eight bands, or a total of 18,000 sheep, on 400 square miles of sheep range." This amounts to 45 animals per square mile grazing over a four month period. Griffiths (1902) relates that there were 73 flocks numbering 182,500 sheep on the summit of Steens Mountain occupying an estimated area of 400 square miles or 450 animals to the square mile. Another estimate in Griffiths' (1902) account places the summit stocking density at 1,000 animals per square mile. Griffiths describes the degraded condition of the summer range although apparently he was observing the northwest portion of the summit area and not the area of the proposed NAP. Hansen (1956) also records the grazing pressure on Steens Mountain at a time when range utilization was waning. Inspection of photographs in Fuller (1931) also demonstrates the use of the area by excessive numbers of livestock.

Documentation of historical grazing damage to the proposed NAP and adjacent Steens Mountain summit area is based on the aforementioned sources; observations of pedestaling, sheet erosion, incipient gully erosion; field reconnaissance conducted under my direction and under the direction of Dr. Larry Price (PSU) amounting to 180 man-days; comments by the Wildlife Commission staff at Hines (letter October 2, 1974); comments made throughout the B.L.M. Steens Mountain Recreation Planning Proposal; and personal communication with a number of professional plant scientists who have visited the area.

Today all sheep grazing on the summit area has been eliminated because of the incompatibility of domestic sheep with the management of recently introduced wild mountain sheep. The last domestic sheep to have grazed the summit area were in 1970 (Wilbert Bright, B.L.M., personal communication). Wildlife Commission staff claim it is not the incompatibility of domestic sheep with wild sheep that make the domestic animals undesirable on the summit but that "... the fragile soils and vegetation condition at that elevation should have been the major reason for controlling grazing." (Ted Fies, Wildlife Commission).

Cattle also graze the summit area of Steens Mountain as well as the lower southwest portion of the proposed NAP. Present B.L.M. policy on the grazing of cattle on the summit area, which lies in a narrow strip to the north of the NAP section, is to eliminate all cattle grazing above about 7,800 ft. elevation for a period of 4 to 5 years. After this period of "recovery," carefully regulated cattle grazing will be permitted in the late summer. This projected grazing management will probably not affect the proposed NAP since cattle to the north and west of the proposed NAP would not likely stray over difficult terrain into the area.

Presently the summit section is grazed under a lease issued by the Land Board to the Shulls (as described later) and grazing is regulated in the B.L.M. Andrews Resource Management Area with a regulated capacity is 9 AUM for the 471 acre parcel. However, the relatively few cattle which graze the parcel are concentrated almost entirely on maybe 50 acres of the low-angle slopes at the base of Wildhorse cirque. B.L.M. officials assert the grazing potential for the proposed NAP is low (Wilbert Bright, personal communication). The parcel is managed in concordance with B.L.M.'s Wildhorse Canyon Allotment Management Plan (1968, revised 1973) involving rotation of summer grazing between Little Wildhorse Canyon and Wildhorse Canyon on an alternate year basis.

A second major resource use of the proposed NAP has been for hunting of recently reintroduced mountain sheep and mule deer. All hunting of sheep has been carefully administered by the Wildlife Commission through issuance of a regulated number of tags for sheep depending on annual surveys of the sheep population and by normal procedures for deer and antelope.

The third resource use of the area has been for dispersed recreation. Other than numerous visitors to the summit area constituting the repeater station, and an occasional visitor who descends from the summit to Wildhorse Lake; recreational use has been very slight. It is possible to get a horse into the area but the terrain is difficult and I suspect that there has been relatively little use of the area for equestrian purposes. There are no evidences of off-road vehicle use in the area other than at the summit corner.

Wildlife Commission staff estimates that the Wildhorse Lake area "receives 400 fishing days of use annually plus an additional 1,100 days of recreation use such as backpacking, hiking, sightseeing, photography, horseback riding, and deer hunting." Since the majority of visitors to Wildhorse Lake gain access by a 1,200 ft. descent on a crude path (route) on B.L.M. land rather than by way of the proposed NAP,

recreational visitation to the proposed natural area related to Wildhorse Lake use is assumed to be no more than 300 man-days.

Additional visitation to the proposed NAP can be expected to the summit area itself. Assuming 5% of the total Steens recreational visitors get to the summit by walking the 1/4 mile steep jeep-road, 1,500 people annually might be expected to reach the summit section of the proposed NAP (c.f., 29,500 visitors to Steens Mountain in 1970 as discussed on page 20 of "Steens Mountain Recreation Planning Proposal"). Most of these visitors walk to the radio repeater station and to overlook portions to the north, a distance of maybe 50 ft. from the road. Only a very few individuals will scramble down the ridge and either progress along the ridge or enter the cirque to the south. An estimate of visitor use by way of these routes is 100 man-days.

Thus, present visitor use to the bulk of proposed NAP is estimated at less than 400 man-days. An exception is the use of the radio repeater road where an additional 1,500 visitors annually may be expected. This level of recreational use presently does not show signs of major environmental impact except in the vicinity of the radio repeater station. Assuming a recreation increase of 5.5% annually ("Steens Mountain Recreation Planning Proposal"), 1985 NAP use might be 893 man-days and repeater station use might be 3,350 people. It is difficult to assess the degree of impact of this increased use on the proposed NAP, but at present no restriction on recreational use of the area is contemplated. Present management of the summit section is carried out by the B.L.M. through an exchange-of-use agreement attached to the grazing lease between B.L.M. and the Shulls. It is not anticipated that additional management will be needed other than by the placement and maintenance of signs designating NAP boundaries.

Access

A very low duty 4-wheeled vehicle (only) road approximately 1,500 ft. in length penetrates the northwest corner of Section 36 to service a B.L.M. radio repeater on the summit. The road is normally gated and public vehicular access prohibited; however, unauthorized motorized vehicles have been seen to use this road.

External access to the proposed NAP is presently by way of the summit leg of the Steens Mountain Loop Road. The road is currently of minimum standard, dirt and gravel, and graded annually. Plans are to improve this road given funding by constructing a 24-foot wide roadbed surfaced with crushed rock. The improved road would certainly bring

additional visitors to the proposed NAP but might also be subject to frost heave damage. No formally defined trails exist in the NAP, although there exist fragments of an informal trail along the ridge in a southeasterly direction from the summit.

Leases, Easements and Agreements

The road and associated radio repeater station consisting of two small concrete buildings, antennae, supporting wires, etc. are within a 40 acre parcel (NW 1/4 cor. of NW 1/4 cor. of Section 36) which is covered by an easement and right-of-way agreement between the State Land Board and the Federal Government (B.L.M.). A copy of agreement No. 105024 filed July 23, 1959 is attached to this report (Appendix 3). There are few restrictions on use within the agreement and the agreement is effective as long as the Federal Government uses the summit 1/4-1/4 section for a radio repeater station.

A second communications "lease agreement" also exists between the Division of State Lands and the Game Commission (Wildlife Commission) for two communications facilities one of which is the repeater facility on Steens Mountain Summit (Lease Agreement GL-1783-S, see Appendix 4). The agreement is for eight years and expires May 21, 1980; however, like the B.L.M. agreement, it pertains exclusively to the use of the summit 1/4-1/4 section for communication purposes. According to the B.L.M., Harney Electric Cooperative of Burns also shares the repeater station use with the B.L.M. and Wildlife Commission.

The area of the proposed NAP (Section 36, T. 33S., R. 33 E.) is covered by grazing lease TL-200-S including 2,031.32 acres in Harney County (Appendix 5). The leasee is Andrew J. Shull and Gregory J. Shull and the lease is effective from January 1, 1973 to December 31, 1977. However, the Shulls are selling their estate to Leonard Breck of Wildhorse Ranch and the lease will be transferred with the property base. The lease may be terminated when the lease period is up but can be terminated during the lease period for purposes of sale or exchange or for violation of terms.

There are no mineral leases on the section and the State owns the mineral rights. To my knowledge there are no other agreements, leases, easements, etc. for this section.

MANAGEMENT

Existing Management

As indicated previously, the B.L.M. superintends the area of the proposed NAP under an informal blanket agreement with the state whereby scattered parcels of land can be supervised by a single agency. The parcel is within the B.L.M. Andrews Management Area and the Steens Mountain Recreation Lands area. The managing agency office address is:

Bureau of Land Management
Burns District Office
74 South Alvord Street
Burns, OR 97220

Although the B.L.M. superintends the state-owned section, all land use decisions remain the responsibility of the State Land Board. Present and projected future management is to continue low intensity grazing as discussed above and, other than redevelopment of the summit station, to facilitate dispersed recreation use. No trails have been planned within the area other than possibly one replacing the radio repeater station road. The proposed "High Desert Trail" skirts the proposed NAP to the west along the ridge above Wildhorse Lake.

Present procedures involve extremely low level supervision. The proposed NAP exclusive of the repeater station is situated in a "Roadless Resource Coordination Zone" as outlined in the "Steens Mountain Recreation Planning Proposal." Management objectives are given in Appendix 7. Grazing management has already been discussed. No change in management of surrounding B.L.M. lands is anticipated in the immediate future.

B.L.M. Planning Proposal

It should be noted that in the Steens Mountain Recreation Planning Proposal (1971:43) the plans for the repeater station in the NE 1/4 of the NE 1/4 of Section 36 are outlined as follows:

- a. Existing Facilities: Radio repeater buildings and poles; and roads to radio repeater buildings and to the Wildhorse Lake viewpoint.
- b. Comment: The worn rim ledges are extremely dangerous. Fragile alpine vegetation has been destroyed by trampling. Radio repeater and poles degrade the environment and destroy natural beauty.

Roads are a public safety hazard.

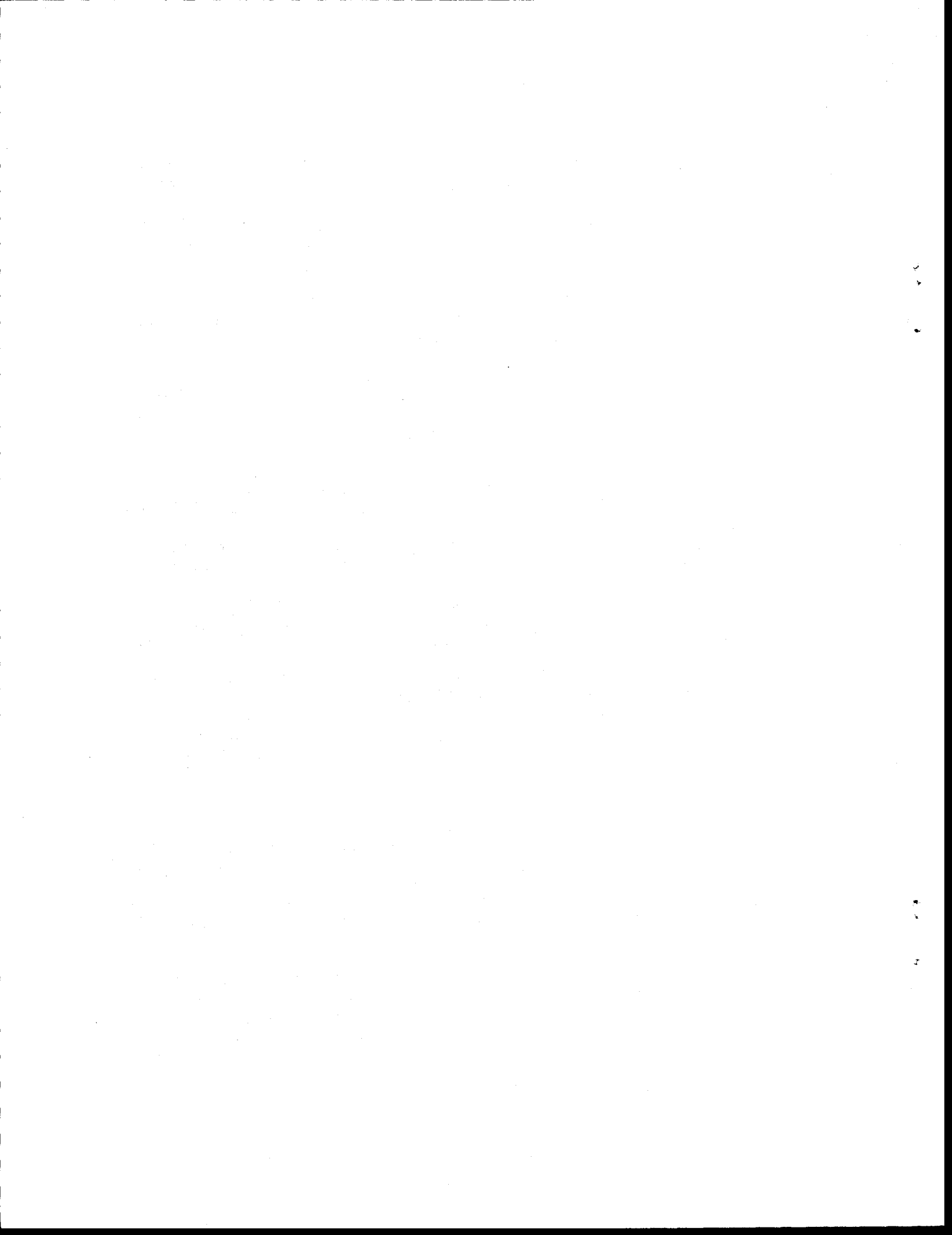
- c. Developments: Roads to both sites will be closed to vehicle use. A new turn-around and loop parking will be developed in the saddle. Paved trails will be constructed on abandoned road grades. Radio repeater buildings and antenna poles will be removed. New receiving and equipment housing will be designed as part of a native stone masonry observation structure. Sanitary facilities will be constructed adjacent to the parking area. Interpretive signs will be low profile, weatherproof, and mounted in stone. A weather station will be installed at the peak observation structure.

The road turn-arounds, saddle area parking, and proposed sanitary facilities will be outside the proposed NAP. However redevelopment of the repeater station as an observation structure and weather station and repaving of road will have an impact on the State land. Should the proposed NAP be established either the repeater station development would have to be excluded from the area of the NAP or specific arrangements made between the B.L.M. and the State Land Board to minimize the impact of any summit development. While the plan presents long range objectives, the Burns District B.L.M. has indicated that they are flexible regarding management of this area; furthermore, funds to implement the above plans are not available.

As already discussed, three "Natural Areas" are designated in the Steens Mountain Recreation Planning Proposal: the ridge top east of Kiger Gorge, the head of Little Blitzen River gorge, and the white fir grove (presently privately owned). No formal implementation of these areas as federal Research Natural Areas has taken place to date. The B.L.M. indicates that the area around Wildhorse Lake is not provided for as a natural area but that the plan is flexible and subject to modification. Under B.L.M. objectives "Natural Areas" may sustain light grazing. Comparison of these suggested natural areas to the Steens Summit NAP have been given earlier.

BIBLIOGRAPHY

- Bailey, Vernon. 1936. The Mammals and Life Zones of Oregon. U.S. Department of Agriculture. North Am. Fauna 55.
- Bentley, Elton. 1970. The Glacial Geomorphology of Steens Mountain, Oregon. M.A. Thesis, University of Oregon, Eugene.
- Cronquist, Arthur et al. 1972. Intermountain Flora, Vascular Plants of the Intermountain West, U.S.A. Vol. 1. New York: Hafner Publishing Co.
- Dyrness, C.T. et al. 1974. Research Natural Area Needs in the Pacific Northwest -- A Contribution to Land-Use Planning (Report on Natural Area Needs Workshop, Wemme, Ore., Nov. 29 - Dec. 1, 1973). Review Draft, April 25, 1974.
- Faegri, Knut. 1966. A botanical excursion to Steens Mountain, SE Oregon, U.S.A. *Blyttia* (Oslo) 24:173-181.
- Fryberger, J.S. 1959. The Geology of Steens Mountain, Oregon. M.S. Thesis, University of Oregon, Eugene.
- Fuller, Richard E. 1931. The Geomorphology and Volcanic Sequence of Steens Mountain in Southeastern Oregon. University of Washington Publ. in Geology 3(1):1-130.
- Gabrielson, I.N. and S.G. Jewett. 1940. Birds of Oregon. Corvallis: Oregon State College.
- Griffiths, David. 1902. Forage conditions on the northern border of the Great Basin. (U.S. Dept. Agriculture, Bureau of Plant Indust. Bull. 15). Washington, D.C.: Government Printing Office.
- Hansen, Charles G. 1956. An Ecological Survey of the Vertebrate Animals on Steen's Mountain, Harney County, Oregon. Ph.D. Thesis, Oregon State University, Corvallis.
- Hitchcock, C. Leo et al. 1955-1969. Vascular Plants of the Pacific Northwest, Parts 1-5. Seattle: University of Washington Press.
- U.S. Congress, 1975. Report on Endangered and Threatened Plant Species of the United States (94th Congress, 1st Session, House Document No. 94-51, Serial No. 94-A). Washington, D.C.: Government Printing Office.
- U.S. Dept. Interior, B.L.M., Burns District, Oregon, 1971. Steens Mountain Recreation Planning Proposal.



APPENDIX I

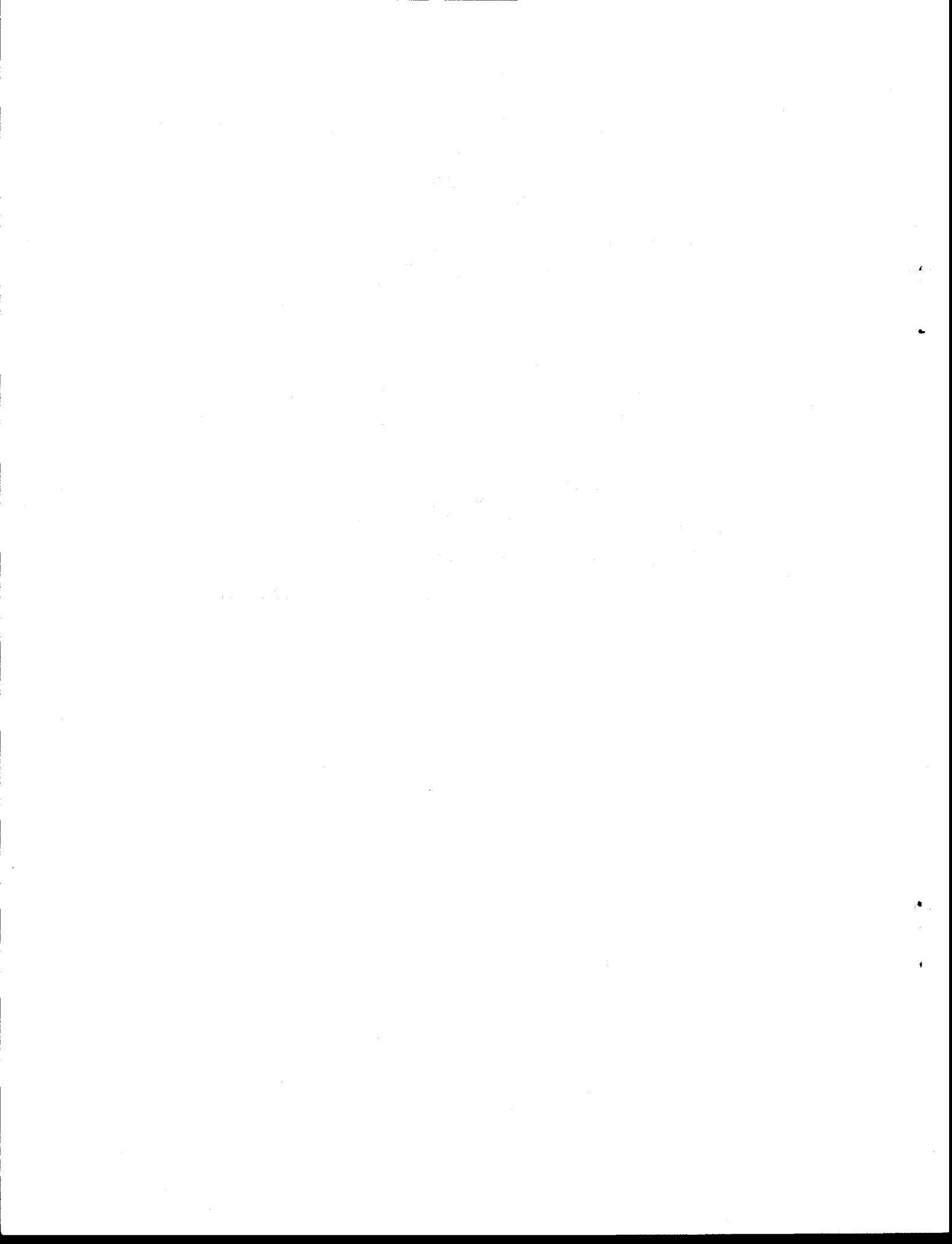
Selected Tentative Floristic List,
Steens Mountain Summit

The following list is not complete but it is based on three visits to the proposed NAP all between July 15 and July 29 in 1970, 1971, and 1974. In many cases, plants have been collected and vouchers made. Nomenclature and identification in most instances follows Hitchcock et al. (1955-1969). Symbols indicating coarse habitats or locations are R = ridge, S = slope, C = cirque, and W = wet.

- RSC Achillea millefolium sbsp. lanulosa (Nutt.) Piper
RSC Agoseris glauca (Pursh) Raf. v.
C Agrostis scabra Willd.
RSC Antennaria alpina (L.) Gaertn.
RSC A. anaphaloides Rydb.
RSC A. rosea Greene
S Arabis holboellii Hornem. v. pendulicarpa (A. Nels.)
Rollins
S Arabis (possibly several other spp.)
SC Arenaria aculeata Wats.
S A. congesta Nutt.
R A. nuttallii Pax v. fragilis (Maguire & Holmgren) C.L.
Hitchc.
C A. rubella (Wahl.) J.E. Smith
S Artemisia arbuscula Nutt.
S A. tridentata Nutt. v. vaseyana (Rydb.) Beetle.
R Aster alpigenus (T. & G.) Gray v. haydenii (Porter)
Cronq.
R Astragalus whitneyi Gray
CW Athyrium distentifolium Tausch
CW Caltha leptosepala D C.
CW Carex phaeocephala Piper
C Carex (several other caricies)
RSC Castilleja pilosa (Wats.) Rydb.
S C. steenensis Pennell
SC Cerastium beeringianum Cham. & Schlecht.
S Chrysothamnus viscidiflorus (Hook.) Nutt. v. humilis
(Greene) Jeps.
RSC Cirsium peckii Henderson
RSC Crypthantha nubigena (Greene) Pays.
CW Delphinium depauperatum Nutt.
CW Deschampsia caespitosa Beauv.
SW Dicentra uniflora Kell.
CW Dodecatheon alpinum (Gray) Greene
RSC Draba sphaeroides Pays. v. cusickii (Robins.) C.L.
Hitchc.
S Epilobium alpina v. gracillimum (Trel.) C.L. Hitchc.
R Epilobium obcordatum Gray

- S Erigeron bloomerii Gray
R E. compositus Pursh v. glabratus Macoun
R E. compositus Pursh v. discoideus Gray
R Eriogonum caespitosum Nutt.
RS E. cusickii Jones
R E. heracleoides Nutt. v. angustifolium (Nutt.) T. & G.
R E. ovalifolium Nutt. v. nivale (Canby) M.E. Jones
RS E. umbellatum Torr. v. glaberrimum (Gandg.) Reveal
R E. umbellatum Torr. v. hausnechtii (Dammer) M.E. Jones
RSC Festuca idahoensis Elmer v. idahoensis
RS F. viridula Vasey
RSC Gayophytum nuttallii T. & G. v.
RS Geum triflorum Pursh v. ciliatum (Pursh) Fassett
RS Haplopappus macronema Gray
RSCW Helenium hoopesii Gray
RS Heuchera cylindrica Dougl. ex. Hook. v. alpina Wats.
RS Horkelia fusca Lindl. v. capitata (Lindl.) Peck
S Ivesia gordonii (Hook.) T. & G.
CW Juncus parryi Engelm.
S Juniperus communis L. v. montana Ait.
CW Kalmia polifolium Wang. v. microphylla (Hook.) Rehd.
SCW Lewisia pygmaea (Gray) Robins.
RS Linum perenne L. v. lewisii (Pursh) Eat. & Wright
SC Lithophragma tenella Nutt. v. tenella
CW Lloydia serotina (L.) Sweet
S Lomatium spp.
RSC Lupinus lepidus Dougl. v. lobbii (Gray) C.L. Hitchc.
C Lupinus spp.
RS Mertensia oblongifolia Nutt.
SC Mimulus nanus H. & A.
R Oxyria digyna (L.) Hill
R Pedicularis attollens Gray
SC Pellaea breweri D.C. Eat.
R Penstemon davidsonii Greene v. praeteritus Cronq.
SC P. rydbergii A. Nels. v. varians (A. Nels.) Cronq.
RS Phacelia hastata Dougl. ex. Lehm. v. alpina (Rydb.)
Cronq.
C P. sericea (Gray) Gray v. ciliosa Rydb.
CW Phleum alpinum L.
RS Phlox austromontana Coville
RS Poa ampla Merrill
RS P. cusickii Vasey v. cusickii
RS P. sandbergii Vasey v. incurva Scribn. & Williams
RSC P. sandbergii Vasey v. sandbergii
RSC Poa (other species extremely complex taxonomically)
R Polemonium pulcherrimum Hook. v. pulcherrimum
CW Polygonum bistortoides Pursh
SC P. douglasii Greene v. latifolium (Engelm.) Greene
R Polystichum lonchitis (L.) Roth
S Potentilla diversifolia Lehm. v. diversifolia
RSC P. fruticosa L.
RS P. glandulosa Lindl. v. nevadensis Wats.
RS Potentilla gracilis Dougl. v.

- CW Ranunculus alismaefolius Geyer v. hartwegii (Greene)
Jeps.
CW R. eschscholtzii Schlecht v.
S Ribes cereum Dougl. v. cereum
RS R. montigenum McClatchie
CW Salix spp.
CW Saxifraga ascendens L.
CW S. integrifolia Hook. v. apetala (Piper) Jones
RSC Sedum lanceolatum Torr. v. rupicola (G.N. Jones) C.L.
Hitchc.
R Senecio canus Hook.
RSC S. fremontii T. & G.
R S. werneriaefolius Gray
CW Sibbaldia procumbens L.
RSC Sitanion hystrix (Nutt.) Smith v.
S Spraguea umbellata Torr.
C Stellaria longipes Goldm. v. altocaulis (Hulten)
C.L. Hitchc.
S Streptanthus cordatus Nutt.
C Swertia perennis L.
C Taraxacum officinalis Weber
SC Trifolium multipedunculatum Kennedy
RSC Trisetum spicatum (L.) Richter
CW Vaccinium caespitosum Michx.
CW Veronica cusickii Gray
SC Viola purpurea (Kell.) Wats. v. venosa Brainerd



APPENDIX 2

Faunal Lists for the Steens Mountain Summit

These lists are based on field reconnaissance conducted by Chris Maser during the summer of 1974, data presented by Hansen (1956), and information from the staff of the Wildlife Commission at Hines.

Amphibians and Reptiles Known to be in the Area

<u>Order</u>	<u>Scientific Name</u>	<u>Common Name</u>
Saliaentia	<u>Bufo boreas</u>	Western toad
	<u>Hyla regilla</u>	Pacific tree frog
Serpentes	<u>Thamnophis elegans</u>	Western garter snake

Birds Known to be in the Area

Falconiformes	<u>Aquila chrysaetos</u>	Golden eagle
	<u>Buteo jamaciensis</u>	Red-tailed hawk
	<u>Cathartes aura</u>	Turkey vulture
	<u>Circus cyaneus</u>	Marsh hawk
	L <u>Falco mexicanus</u>	Prairie falcon
Strigiformes	<u>Falco sparverius</u>	Sparrow hawk
	<u>Aegolius acadicus</u>	Sow-whet owl
	<u>Asio flammeus</u>	Short-eared owl
Caprimulgiformes	<u>Bubo virginianus</u>	Great horned owl
Apodiformes	<u>Chordeiles minor</u>	Common nighthawk
	<u>Aeronautes saxatalis</u>	White-throated swift
Piciformes	<u>Chaetura vauxi</u>	Vaux's swift
	<u>Selasphorus rufus</u>	Rufous hummingbird
	<u>Stellula calliope</u>	Calliope hummingbird
	<u>Anthus spinoletta</u>	American pipit
	<u>Colaptes cafer</u>	Red-shafted flicker
	<u>Contopus sordidulus</u>	Western wood pewee
	<u>Corvus corax</u>	Raven
	<u>Dendrocopos pubescens</u>	Downy woodpecker
	<u>Dendrocopos villosus</u>	Hairy woodpecker
	<u>Eremophila alpestris</u>	Horned lark
	<u>Passerculus sandwichensis</u>	Savannah sparrow
	<u>Salpinctes obsoletus</u>	Rock wren
	<u>Sitta canadensis</u>	Red-breasted nuthatch
<u>Sitta carolinensis</u>	White-breasted huthatch	
<u>Sphyrapicus varius</u>	Yellow-bellied sapsucker	
<u>Spizella breweri</u>	Brewer's sparrow	
<u>Tachycineta thalassina</u>	Violet-green swallow	
<u>Zonotrichia leucophrys</u>	White-crowned sparrow	

Tentative List of Mammals on Steens Summit

Insectivora	<u>Sorex palustris</u>	Northern watershrew
	*L <u>Sorex preblei</u>	Malheur shrew
	<u>Sorex vagrans</u>	Wandering shrew

Chiroptera		<u>Eptesicus fuscus</u>	Big brown bat
	L	<u>Lasiorycteris noctivagans</u>	Silver-haired bat
	L	<u>Lasiurus cinereus</u>	Hoary bat
		<u>Myotis californicus</u>	California myotis
	L	<u>Myotis evotis</u>	Long-eared myotis
		<u>Myotis lucifugus</u>	Little brown myotis
	L	<u>Myotis volans</u>	Long-legged myotis
		<u>Plecotus townsendi</u>	Western big-eared bat
Lagomorpha		<u>Ochotona princeps</u>	Pika
Rodentia		<u>Erethizon dorsatum</u>	Porcupine
		<u>Eutamias amoenus</u>	Yellow pine chipmunk
		<u>Marmota flaviventris</u>	Yellow-bellied marmot
		<u>Microtus longicaudus</u>	Long-tailed vole
		<u>Microtus montanus</u>	Mountain vole
		<u>Neotoma cinerea</u>	Bushy-tailed woodrat
		<u>Peromyscus maniculatus</u>	Deer mouse
		<u>Spermophilus beldingi</u>	Belding ground squirrel
		<u>Spermophilus lateralis</u>	Mantled ground squirrel
		<u>Thomomys talpoides</u>	Northern Pocket gopher
		<u>Zapus princeps</u>	Western jumping mouse
Carnivora		<u>Canis latrans</u>	Coyote
		<u>Felis concolor</u>	Mountain lion
	**L	<u>Gulo gulo</u>	Wolverine
		<u>Lynx rufus</u>	Bobcat
		<u>Mustela frenata</u>	Long-tailed weasel
		<u>Taxidea taxus</u>	Badger
Artiodactyla	L	<u>Antilocapra americana</u>	Prong-horned antelope
		<u>Cervis canadensis nelsoni</u>	Rocky Mountain elk
		<u>Odocoileus hemionus</u>	Mule deer
	L	<u>Ovis canadensis californiana</u>	California bighorn sheep

* Considered to be rare and endemic

** Considered to be rare and known to occur in the Steens

L = Listed in Dyrness et al. (1974) as "Rare and Endangered"

Additional Animals

Alectoris graeca
Sylvilagus nuttalli

Chukar partridge
Mountain cottontail

APPENDIX 3

Radio Repeater Easement and Right-of-Way Agreement Between
the State Land Board and the B. L. M.

STATE OF OREGON

105024

The State of Oregon, acting by its State Land Board, grantor, to the United States of America, Department of the Interior, Bureau of Land Management, grantees:

WITNESSETH, That for and in consideration of the agreement by the grantee pursuant to the Acts of June 28, 1934, as amended (43 USC 315, et seq.), April 27, 1935 (16 USC 590a), and July 14, 1952 (66 Stat. 597) to construct the following improvement:

Radio Repeater Station

the grantor does hereby grant, bargain, convey, and confirm unto the United States of America, an easement and right-of-way over the tract, lot, piece, or parcel of land situate, lying and being in the County of Harney, State of Oregon, more particularly described as follows:

NW 1/4 of Section 36, Township 33 South, Range 33 East of the Willamette Meridian.

The easement and right-of-way hereby granted is for the full, free, unrestricted and quiet use and enjoyment by the grantee of the land of the grantor occupied by the said improvements for any and all purposes deemed necessary or beneficial for, or in connection with, the control, administration, or use of the public land surrounding or adjacent to the land herein described, which may be properly grazed from, serviced by or used in connection with the said land and improvements, including the right of ingress and egress to, from, and over the land of the grantor by the grantee, its officers, agents, permittees, allottees, and licensees for the purpose of repairing, renewing, or using the said improvements, or for other business pertaining to the use and maintenance thereof, and shall be appurtenant to said public land.

It is hereby understood that the State of Oregon, and all employees of the State of Oregon will not be held liable for any suits or actions brought for or on account of any damage, injury, or loss received or sustained by any person, or damage caused to any property, resulting from or in connection with the construction, repairing, using and maintaining said improvements and equipment, including the access road serving said installation.

This grant shall be effective so long as the easement shall be actually used for the aforesaid purposes, and all rights hereunder shall revert to the grantor when and in the event the use hereof shall be discontinued or abandoned by the grantee of which due notice shall be given to the grantor by the grantee. Upon termination or abandonment of this easement, the grantee may at its option and within a reasonable time, remove any improvements constructed by it on the land hereunder.

WITNESS the seal of the State Land Board
affixed this 21st day of July, 1959.

STATE LAND BOARD,

By: 

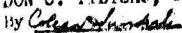
Governor

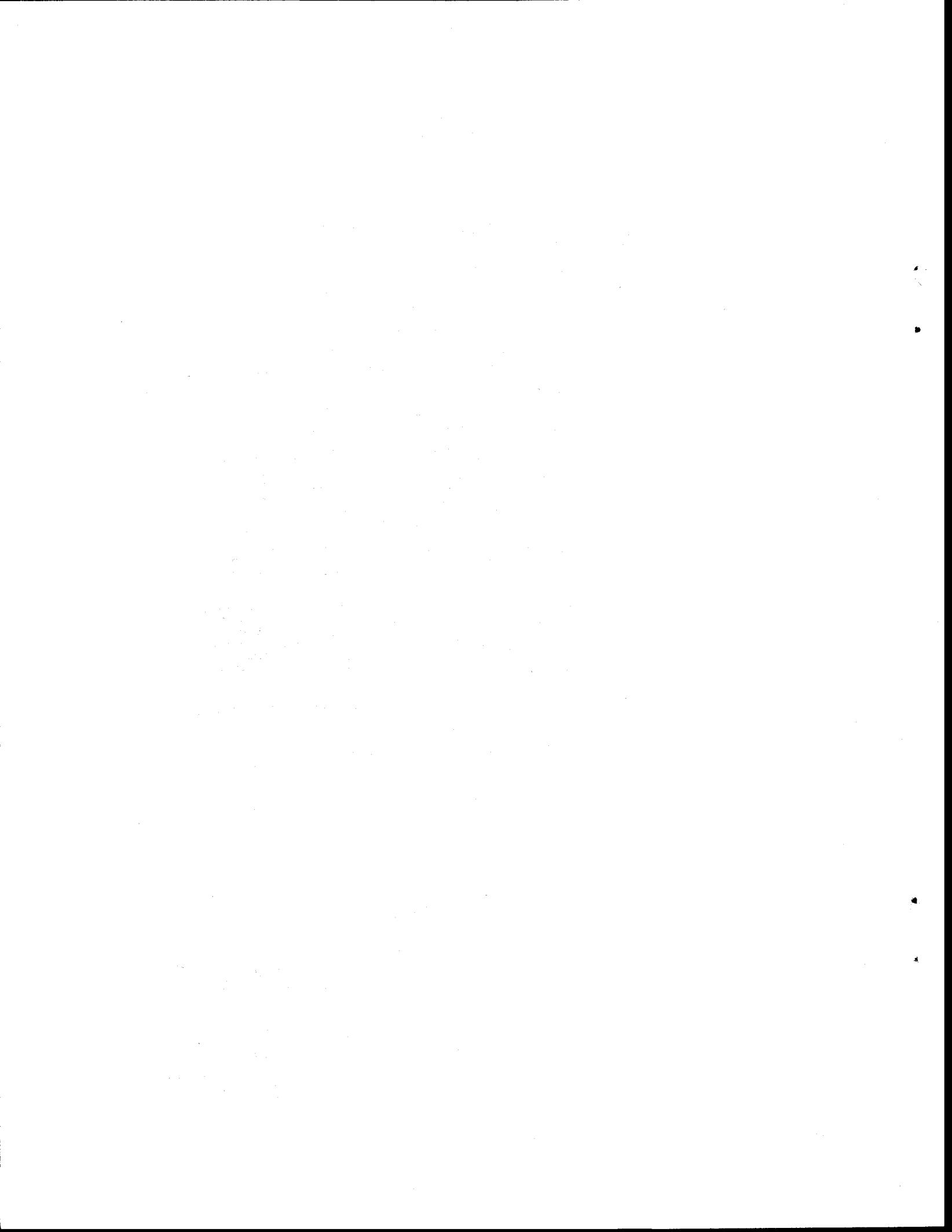
ATTEST: 

Clerk of the State Land Board

DEPARTMENT OF THE INTERIOR
State Record of Deeds, Book 50, Page 395
STATE OF OREGON
County of Harney

I certify that the within instrument of writing was received for record on the 17th day of August A.D. 1959 at 10:45 o'clock P.M. and recorded in Book 66 at Page 546 Deed Records of said County.

DON C. FILTEAU, Clerk
By  Deputy



APPENDIX 4

Communication Facility Lease Agreement Between the Division of Lands
and the Game Commission

LEASE AGREEMENT

(GL-1783-S)

State of Oregon - Division of State Lands

and

State of Oregon - Game Commission

The undersigned LESSOR does hereby grant the privilege to construct and maintain a transmitter, receiver, power supply, and antenna structure for purposes of establishing and using a radio communication station to OREGON STATE GAME COMMISSION hereinafter referred to as LESSEE, to use the following described premises on Burns Butte located in the E¹/₄SW¹/₄, Section 16, Township 23 South, Range 30 East, Willamette Meridian; and on Steens Mountain located in the NW¹/₄SW¹/₄, Section 36, Township 33 South, Range 33 East, Willamette Meridian for the purposes stated and under the terms and conditions set forth herein.

The duration of this lease shall be 8 years from date hereunder.

Special Provisions Nos. 1 through 15, attached hereto, are made a part hereof by this reference.

IN WITNESS WHEREOF, the undersigned LESSOR and LESSEE have executed this agreement on the 22nd day of May, 1972.

LESSOR:

State of Oregon
Division of State Lands

LESSEE:

Oregon State Game Commission

SPECIAL PROVISIONS

1. LESSEE shall pay a fee of \$2,400 for the term of this lease, receipt of which, in the form of an agreement to provide a valuable service, is hereby acknowledged.
2. LESSEE shall so construct and use its radio communication station sites in a manner which will not interfere with existing installations on said premises, or future installations which may be placed on said premises by users under authority given prior to the date of this lease; and further, any change in the placement of said radio communication station facilities, including equipment therefor, shall first be approved by the Director of the Division of State Lands or his designated representative.
3. LESSEE agrees that all structures and radio-electronic equipment including associated cables, wiring, auxiliary equipment and antenna systems shall be installed and maintained in a clean, neat, orderly and permanent manner, and all such installations shall be electrically and mechanically sound.
4. Communications equipment to be operated under this lease shall be limited to the types and models shown on the attached sheets designated "Operating Data (Burns Butte Station) and Operating Data (Steens Mountain Station)," which is made a part hereof by this reference.
5. LESSEE shall not change frequencies or equipment from that specified herein without prior notification to LESSOR, and LESSOR approval thereof.
6. The operation of radio equipment of LESSEE shall not impair the operation and use of communication equipment operated at site by LESSOR or another LESSEE or to any prior authorized operation. Failure to eliminate

any interference which may arise following issuance of notice of interference by LESSOR shall automatically terminate this Lease without further notice. LESSEE shall be given an opportunity to disapprove of frequencies, equipment or engineering of any new applicant for a lease on this site.

7. LESSEE shall be responsible for the payment for electric power used by its equipment as provided for in this lease.

8. The rights and privileges granted by this lease are nonexclusive and shall not be assigned in any manner without prior written consent of the State of Oregon, acting by and through its Division of State Lands.

9. The duration of this lease shall be 8 years, except that this lease may be cancelled by the State of Oregon, acting by and through its Division of State Lands, for failure of LESSEE to comply with the terms and conditions hereof.

10. In addition to the rights and privileges otherwise granted LESSEE herein, LESSEE shall have the right and privilege for the duration of this lease of ingress, egress and regress to the above described premises along the following roads in the E $\frac{1}{2}$ S $\frac{1}{2}$ W $\frac{1}{2}$, Section 16, Township 23 South, Range 30 East, Willamette Meridian, Harney County, Oregon, which is an existing roadway, and in the NW $\frac{1}{4}$ SW $\frac{1}{4}$, Section 36, Township 33 South, Range 33 East, Willamette Meridian.

11. LESSEE shall pay for all damage to property of LESSOR, directly or indirectly, resulting from negligent acts or omissions of LESSEE, its employees or agents. To the extent it may legally do so, LESSEE hereby agrees to save and hold harmless the LESSOR from any claim, action or suit of other persons due to the activity of LESSEE through its company, officials, employees or contractors.

12. LESSEE shall fully repair all damage caused by LESSEE to any access road, other than by ordinary use thereof.

13. LESSEE recognizes that use of said premises and access road shall be at its own risk, and use thereof by LESSEE shall be an assumption of such risk.

14. LESSEE shall comply with all laws, rules and regulations of the State of Oregon and of the United States of America.

15. All tools, equipment, and property not permanently affixed upon the land by the LESSEE during the term of this lease shall remain the property of the LESSEE but shall be removed within sixty (60) days after the expiration or cancellation of this lease.

Operating Data (Burns Butte and Steens Mountain Stations)

	Steens Mountain - Est. installation date 7/1/72.
Transmitting Frequency	<u>151.190 MHz</u>
Receiving Frequency	<u>151.460 MHz</u>
Standby Frequency	<u>- -</u>
Output Power	<u>35 Watts</u>
Transmitter Make and Model	<u>General Electric ET-85-A</u>
Receiver Make and Model	<u>General Electric ER-41-C</u>
Primary Alternate Power Source and Output	<u>Solar panel 36 watts</u>
Antenna Height	<u>30 ft.</u>
Antenna Direction (If Any)	<u>Omni</u>
Antenna Gain	<u>5.25 dB</u>

Grazing Lease Between the Division of Lands and Shulls

TITLE LEASE

Lease No. TL-200-8

The DIVISION OF STATE LANDS, first party, hereby leases and lets unto Andrew J. Shull et ux and Gregory J. Shull, second party, the following described grazing lands, situated in Harney County, Oregon, to wit:

Township 33 South, Range 33	East, Section 36	W $\frac{1}{2}$ and Lots 1, 2, 3, and 4
" 34 " " 32-3/4	" " 36	W $\frac{1}{2}$
" 35 " " 33	" " 36	E $\frac{1}{2}$
" 35 " " 34	" " 36	ALL
" 36 " " 34	" " 16	S $\frac{1}{2}$

Williamette Meridian, containing 2,031.32 acres, more or less, possession of which, under this lease, is hereby acknowledged by second party.

The first party and second party mutually agree and declare that the leasing and letting hereby made and entered into are for the term, for the uses, for the rental, in accordance with covenants, and subject to the conditions, hereinafter stated, and in no respect otherwise. That is to say:

1. THE TERM of this lease is from January 1, 1973 to December 31, 1977 except that the State of Oregon specifically reserves the right to sell or to exchange this land for other lands, in which event the period of the lease would expire at the time of losing title to said land.

2. THE USES: The leaseholder, or tenantry right leased and let by this lease, is for grazing purposes only, and all other rights are reserved to the State.

3. THE RENTAL to be paid is One Hundred Fifteen and 17/100 (\$115.17) - - - - Dollars, legal tender annually, the receipt of first annual payment of which is hereby acknowledged by the first party. It is furthermore mutually agreed and understood that all future payments are due on or before January 1 of each year preceding the use of the land. It is further agreed and understood by both parties that the first party may make a reappraisal of said lands every three years, and adjustment of rental based on said appraisal.

4. THE COVENANTS: (a) The first party may at any time, during the term of this lease, sell all or any part of the said leased land, and grant right of way in and over the said leased land, or any part thereof, for railroad, telegraph, telephone, electric pole-lines, oil pipe-lines and water pipe-lines, purposes, and for irrigation or other water canals and ditches; and the first party may, at any time during the term of this lease, lease or let all or any part of the said leased land for discovery, development, production and storage of petroleum, mineral oil or minerals of any nature whatsoever; and, immediately upon any such sale, grant, or lease, having been made, this lease shall cease and determine as to the lands so sold, granted or leased, as effectually as if this lease had never been made or entered into, and the second party shall immediately surrender possession of the land so sold, granted or leased; provided, however, that in case of any such sale, grant, or lease, the first party shall refund unto the second party, prorated by the acre, such sum of money as the second party may have heretofore paid as rental for the quantity of land so sold, granted, or leased, for the unexpired term of such payment; except that no repayment shall be made unless the amount otherwise repayable exceeds the sum of one dollar.

(b) The second party shall not, and will not, during the term of this lease, remove or permit to be removed from the leased land, or any part thereof, any earth, soil or other materials thereof; nor shall, nor will, the second party destroy, cut, remove, or permit to be destroyed, cut, or removed, on or from the said leased land, or any part thereof, any timber, brush or firewood, standing, lying, or growing thereon—except with special permission of the Division of State Lands.

(c) The first party of the first party agrees that the use of the said leased lands will not be limited to the time during which grazing is permitted on the adjacent federal range, but that said herein described lands may be used at the discretion and for the use of the party of the second part subject to proper usage as prescribed by the party of the first part or its duly authorized representative, or as such usage may be subject to regulation under the Federal Range Code.

(d) The second party shall not, and will not, assign, transfer, or hypothecate, any interest in this lease, or in the leasehold right conferred by it, nor sublease the said leased lands, or any part thereof, nor permit any person or persons, other than himself and his employees, to use or occupy the same, without the written consent of the first party.

(e) That where, in the judgment of the first party, fencing is necessary for the proper use of the land, the second party agrees to construct and maintain fences in such good order, repair, and condition as to at all times turn cattle or horses.

(f) Ninety (90) days prior to the expiration of this lease, the second party shall notify the first party in writing of his intention to renew this lease, and the first party shall within ninety days either accept or reject the renewal of the lease. If either party should elect not to renew this lease, the second party shall have until the expiration of said lease the right to remove, or sell or dispose of to the new lessee any and all fences, corrals and other removable range improvements that the party of the second part has placed on the premises at his own expense, or purchased from the preceding lessee. However, no improvement of any sort shall be removed until after an inspection by the duly authorized agent of the Division of State Lands, and a release given. At the expiration of the term, or other termination, of this lease, second party will surrender and deliver unto first party, without tender, notice or demand, quiet and peaceable possession of said leased premises, together with all buildings, fences, superstructures, or other improvement thereon, in as good condition and repair as reasonable use and wear will permit, with the exception of certain movable improvements above mentioned in this paragraph.

Failure to remit any money due under the terms of this lease within thirty days after demand has been made by letter to the last known address of the party of the second part may, at the discretion of the first party, result in the cancellation of this lease, and, as a further penalty, all fences, corrals and other improvements shall become the property of the first party as liquidated damages.

(g) In case the first party bring suit to compel performance of any covenant or agreement of this lease, or to recover for breach of such covenant, agreement, or any condition of this lease, then the second party shall, and will, pay unto the first party such sum as the Court may adjudge reasonable as attorney fees, in addition to amount of judgment and costs.

(h) Time, and specific performance, are each of the essence of this lease.

(i) All agreements, covenants, and conditions of this lease are alike binding upon the successors and assigns, heirs, executors, and administrators of the first party and second party to this lease.

5. CONDITIONS: It is further mutually agreed that all right of the second party under this lease shall forever cease and determine, as effectually as if this lease had never been made or entered into, in case of any failure of the second party to specifically perform any agreement or covenant of this lease; and that in any such case of failure or breach, or at expiration of the term of this lease, the first party may immediately resume exclusive possession of the said leased premises, together with all buildings, fences, superstructures, and other improvements thereon, which the party of the second part does not have specific permission to remove, without tender, notice or demand; and that in any such case of failure or breach, or at expiration of the term of this lease, first party may forcibly remove second party and his personal effects from the leased premises, without liability for trespass, or prejudice to other remedies for recovery of rent, damages, or penalties.

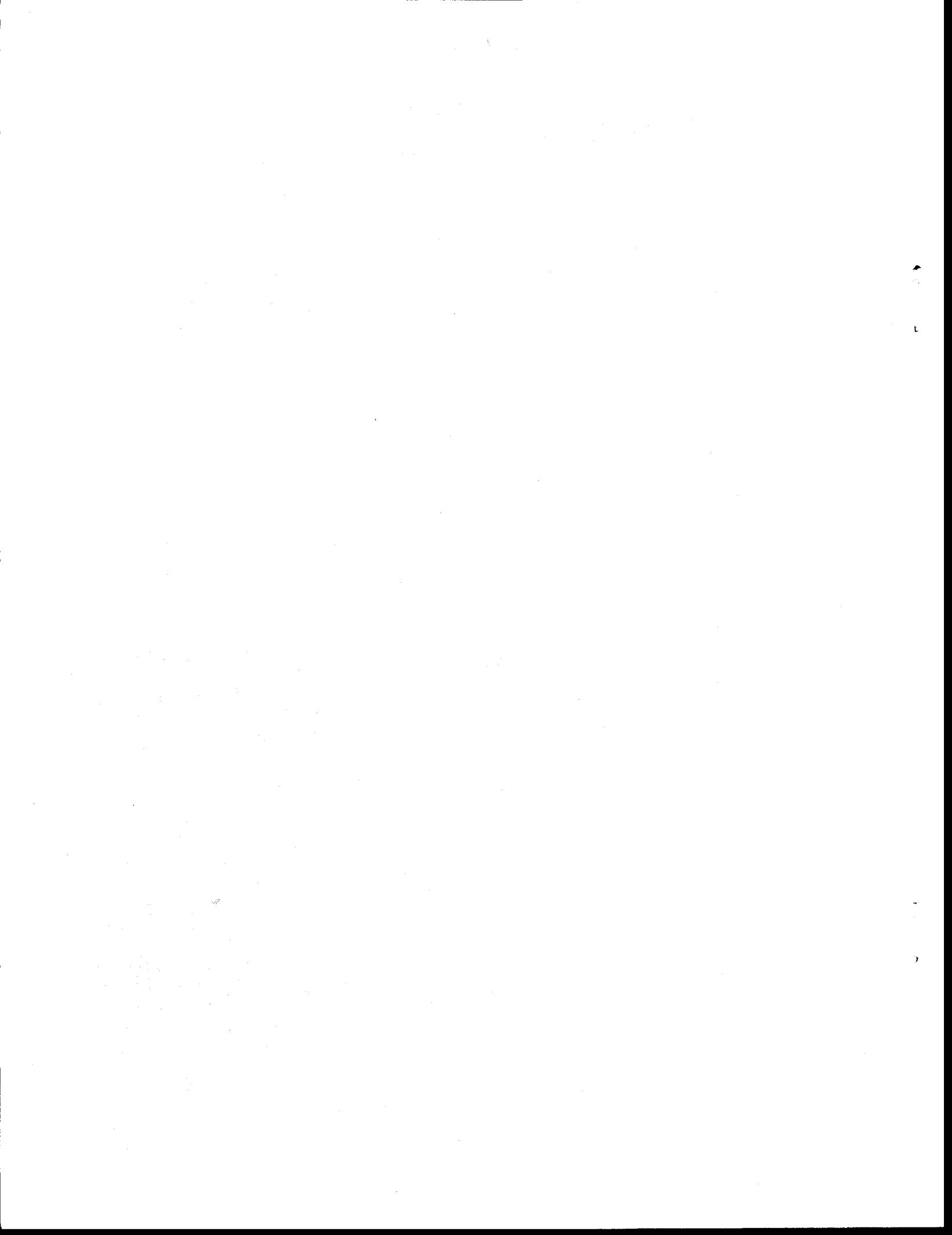
IN WITNESS WHEREOF the first party has caused its name to be hereunto subscribed by its Director and the seal of the Division of State Lands to be hereunto affixed, and the second party has hereunto subscribed his name, on the day of December 30, 1972

In triplicate.

(SEAL)

Witnesses:

.....
.....



APPENDIX 6

B. L. M. Designation of Steens Mountain Recreation Lands

DEPARTMENT OF THE INTERIOR

Bureau of Land Management

[OR 2201]

OREGON

Designation of Steens Mountain Recreation Lands

SEPTEMBER 15, 1971.

Pursuant to the authority in 43 CFR, Subpart 2070, and the authorization from the Director dated June 29, 1970, I hereby designate the public lands in the following described areas as the Steens Mountain Recreation Lands:

WILLAMETTE MERIDIAN

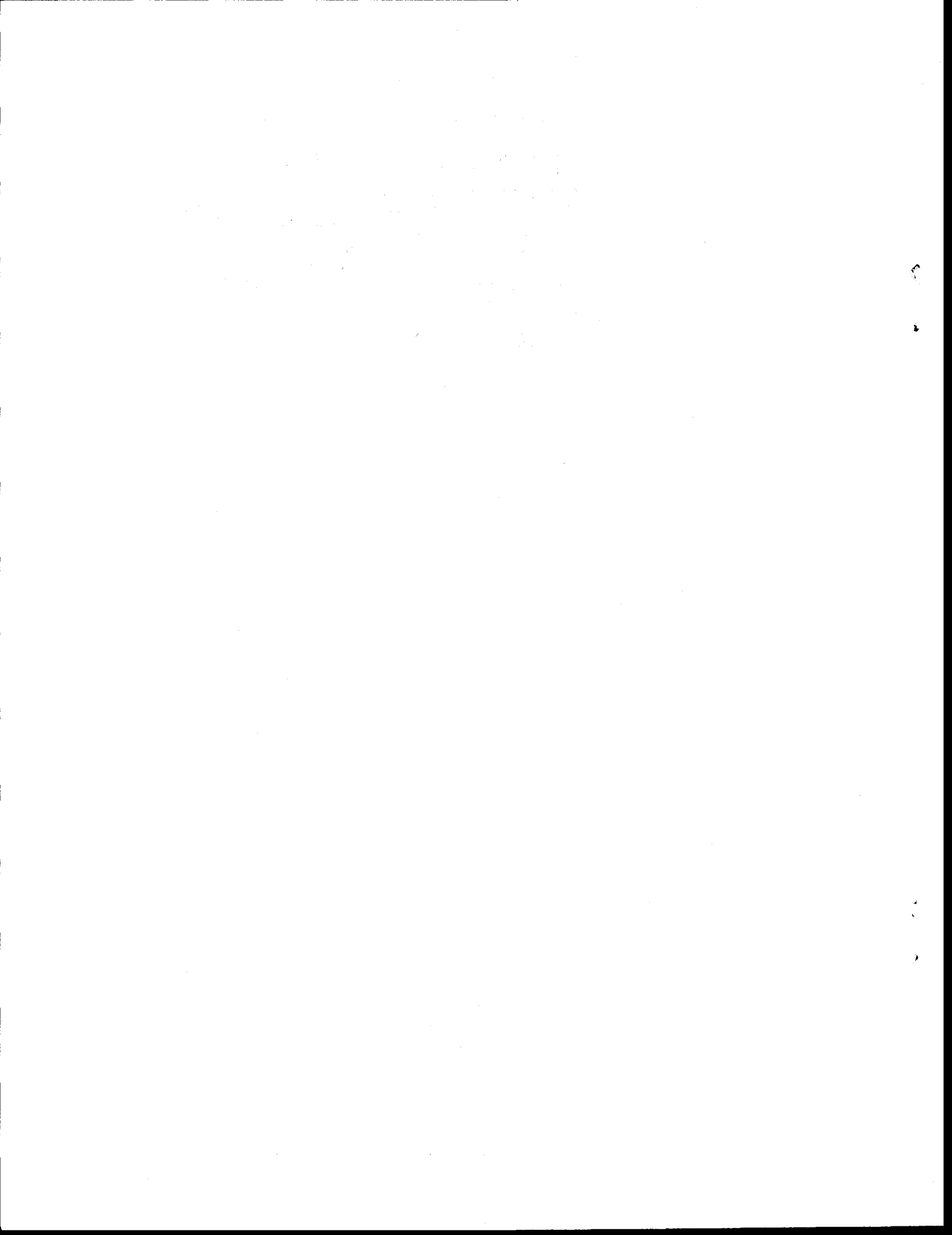
- T. 32 S., R. 32 1/2 E.,
Secs. 1 to 3, inclusive;
Sec. 4, E 1/2 NE 1/4, S 1/2 S 1/2, and NE 1/4 SE 1/4;
Sec. 5, SE 1/4, SE 1/4;
Sec. 8, E 1/2 NE 1/4, SW 1/4 NE 1/4, SE 1/4 NW 1/4, E 1/2 SW 1/4, and SE 1/4;
Secs. 9 to 36, inclusive.
- T. 33 S., R. 32 1/2 E.,
Secs. 1 to 36, inclusive.
- T. 31 S., R. 32 1/2 E.,
Secs. 1 to 18, inclusive.
- T. 32 S., R. 32 3/4 E.,
Secs. 5 to 8, inclusive;
Secs. 17 to 22, inclusive;
Sec. 25, S 1/2;
Sec. 26, S 1/2;
Secs. 27 to 36, inclusive.
- T. 33 S., R. 32 3/4 E.,
Secs. 1 to 36, inclusive.
- T. 34 S., R. 32-3/4 E.,
Secs. 1 to 36, inclusive.
- T. 32 S., R. 33 E.,
Secs. 22 and 23;
Secs. 26 and 27;
Sec. 28, S 1/2 S 1/2;
Sec. 29, S 1/2;
Sec. 30, S 1/2;
Secs. 31 to 35, inclusive.
- T. 32 1/2 S., R. 33 E.,
Secs. 20 to 29, inclusive;
Secs. 32 to 36, inclusive.
- T. 33 S., R. 33 E.,
Secs. 1 to 5, inclusive;
Secs. 8 to 17, inclusive;
Secs. 20 to 29, inclusive;
Secs. 32 to 36, inclusive.
- T. 34 S., R. 33 E.,
Secs. 1 to 5, inclusive;
Secs. 8 to 17, inclusive;
Secs. 20 to 29, inclusive;
Secs. 32 to 36, inclusive.
- T. 32 S., R. 34 E.,
Secs. 7 to 9, inclusive;
Secs. 16 to 21, inclusive;
Secs. 24 to 33, inclusive.
- T. 33 S., R. 34 E.,
Secs. 4 to 9, inclusive;
Secs. 16 to 21, inclusive;
Secs. 28 to 33, inclusive.
- T. 34 S., R. 34 E.,
Secs. 4 to 9, inclusive;
Secs. 16 to 21, inclusive;
Secs. 28 to 33, inclusive.

The areas described aggregate about 193,895 acres, of which approximately 140,607 acres are public lands administered by the Bureau of Land Management. The lands are in Harney County.

The Steens Mountain Recreation Lands include Class II—General Outdoor Recreation Areas, Class III—Natural Environment Areas, and Class VI—Historic and Cultural Sites under the Bureau of Outdoor Recreation system of classification.

MAXWELL T. LIEURANCE,
Acting State Director.

[FR Doc.71-13887 Filed 9-21-71; 8:46 am]



APPENDIX 7

B. L. M. Management Opportunities for Resource Coordination Zones

Zone III - Roadless Area.

The roadless area lies along the east face of Steens Mountain. It extends eastward from the eastern rim of the mountain downward to the foothills, then northward to include Kiger Gorge and southward to the Wildhorse Creek drainage. Encompassing approximately 30,000 acres, the terrain is precipitous, with gorges and benches.

Management Objectives: The roadless area shall be administered to preserve or restore primitive values including the opportunity for solitude, physical and mental challenge, inspiration, distinctive environment, and wilderness characteristics of the lands.

Natural ecological succession will be allowed to operate freely. The roadless area will be available for human use to the extent consistent with the maintenance of primitive conditions. In resolving conflicts in resource use, primitive values will be paramount.

Management Guidelines:

Recreation activities in this zone will be coordinated with other uses in the following manner:

1. Established use by domestic livestock will be continued to the extent consistent with the objective of the maintenance or improvement of soil, plant cover, and primitive values. Maintenance, reconstruction or relocation of essential livestock management improvements and structures may be permitted if they existed within a roadless area when established. Additional improvements or structures may be built only when necessary to provide management that will protect primitive values.

When in need of heavy maintenance or reconstruction, existing range improvements or permittee structures that are in conflict with the characteristic values of the roadless area will be removed, relocated, and/or redesigned to minimize their effect on primitive values.

2. Commercial services, such as use of recreation stock by packers, outfitters, and guides will be permitted to the extent necessary to realize the purpose of roadless areas.
3. Insect and disease and fire outbreaks in roadless areas will ordinarily not be controlled. Exceptions may be necessary to protect outstanding groves, individual trees, or other plants inside the roadless area.

4. Revegetation of plant cover by natural ecological succession is preferred over artificial means. However, restoration of the plant cover in the absence of natural vegetation may be authorized where necessary to restore or to prevent deterioration of the primitive values.
5. Water storage structures and related facilities that existed under valid special use permits or easements, when the roadless area is established, may be maintained if, in the opinion of the District Manager, their continued use in the roadless area is in the public interest and in keeping with the objectives governing primitive areas.

Watershed restoration may be undertaken when deteriorated soil and hydrolic conditions caused by man or his influence create a serious threat to primitive values.

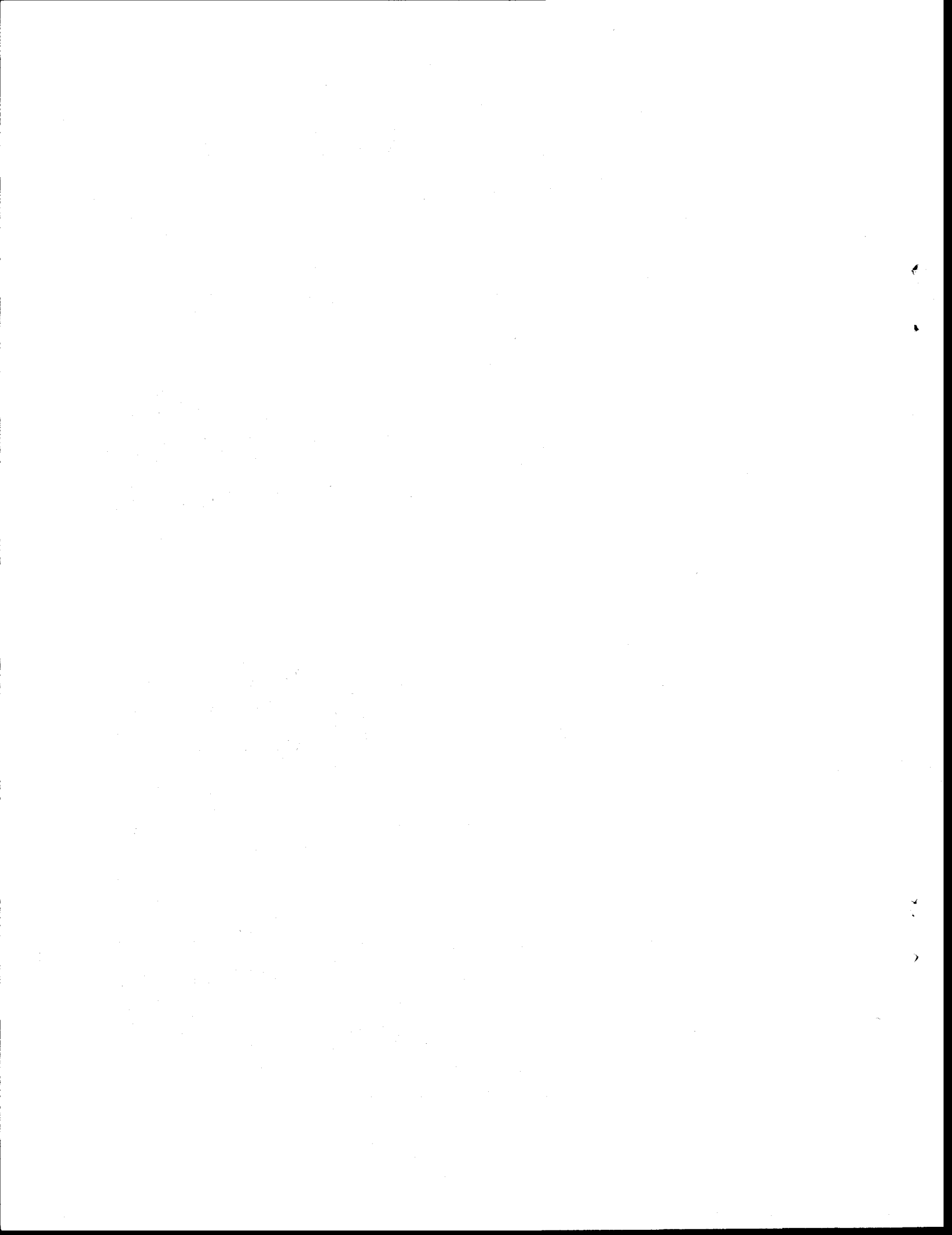
6. Hunting, trapping, and fishing opportunities will be provided in a wilderness setting, including the harvest of wildlife and fish under seasons as designated by the Oregon State Game Commission.

Action to control predatory mammals will be discouraged except where necessary to protect rare and endangered wildlife species.

7. No permanent forms of occupancy will be allowed and no rights-of-way for such things as powerlines will be issued.
8. Permits for commercial operation of a valid mining claim will provide for joint agreement between the BLM District Manager and the miner on protection of primitive values, consistent with the use of the area for mining, public safety, and restoration of disturbed areas.

Permits to remove common varieties of mineral material not locatable under mining laws will normally not be issued.

9. Although no roads will be constructed, trails may be built to serve, administer, and protect the primitive resources. Routes will be selected to best serve and preserve the primitive resources.
10. No motorized vehicle use will be permitted.
11. Aspen and juniper trees will be retained for their aesthetic values.



APPENDIX 8

Exchange-of-Use Agreement Between B. L. M. and Shull

Form 4115-9 (December 1966)

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT

FORM APPROVED BUDGET BUREAU NO. 42-R1328.1

EXCHANGE-OF-USE GRAZING AGREEMENT

RECEIVED OCT 29 1973 DIVISION OF STATE LANDS

NAME (first, middle initial, last): Greg Shull

ADDRESS: Burns RR 9772D

EMPLOYEE ACT INFO: [Table with columns: Employee, Act, Info, Employee, Act, Info]

RECEIVED OCT 29 1973 BURNS DISTRICT SUBMIT IN DUPLICATE

1. I own the following-described lands (list by legal subdivision and acreage)

T35 R.33 E. S $\frac{1}{2}$ NE $\frac{1}{4}$ sec 27
T36 R.33 E. N $\frac{1}{2}$ SW $\frac{1}{4}$ SEC 7

RECEIVED
OCT 24 1974
DIVISION OF STATE LANDS

2. I lease the following-described lands (list by legal subdivision and acreage)

T25 R34E, SEC 36 ALL ✓
T33 S.R.33 E SEC. 36 $\frac{1}{2}$ LOTS 1234 ✓
T35 S.R. 33 E, SEC. 36 E. $\frac{1}{2}$ ✓

3. These lands are situated within Burns Grazing District No. 1 and are accessible and suitable for grazing during the same periods as the Federal range. I hereby agree that continuously during the entire period, from the date of issuance of any grazing privileges under this agreement, to the final date as noted on the reverse side hereof, unless the privileges are sooner terminated by the Bureau, the Secretary of the Interior may exercise the same grazing regulations and control of the above-described private lands as over the Federal range. I understand that the grazing use allowed cannot exceed the grazing capacity of the private lands offered. I will confine my livestock to number, class, period or periods of time, and areas of use, authorized.

4. In exchange for allowing the Bureau of Land Management to regulate and control the use of the above-described lands, I hereby apply for the following grazing use on intermingled and adjacent public lands:

WILD HORSE CANYON IND. ALLOT.
46 head of CATTLE from 6/1/74 .19 to 10/31/74 .19
TULE SPRINGS WINTER USE AREA
60 head of CATTLE from 11/1/74 .19 to 12/31/74 .19
and continuing with the same number and class of livestock during the same seasons of use for a period of years
One head cattle 4/1/74 to 6/1/74
from 1/31/74 to DEC 31 1975

I CERTIFY That I will abide by the rules and regulations prescribed by the Secretary of the Interior; that the statements made by me in this agreement are true, complete, and correct to the best of my knowledge and belief and are made in good faith.

OCT 29 1973
(Date)

Greg Shull
(Signature of Applicant)

Title 16, U.S.C., Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious, or fraudulent statements or representations as to any matter within its jurisdiction.

CONDITIONS OF AGREEMENT

This agreement is subject to the following conditions:

1. It is revocable.
2. It is subject to cancellation in whole or in part upon loss of control of all or part of the land upon which it is based.
3. It is subject to cancellation for noncompliance with the rules and regulations now or hereafter approved by the Secretary of the Interior.
4. It is not transferable.

5. It is subject to reduction or cancellation if the necessity arises to protect or conserve the public lands affected.
6. It is void after final date as noted below.
7. This agreement is subject to the provisions of Executive Order No. 11246 of September 24, 1965, which sets forth the nondiscrimination clauses. A copy of this order may be obtained from the signing officer.

GRAZING USE AUTHORIZED

Having shown private ownership or control of the unfenced grazing lands above-described, said lands having an estimated grazing capacity of 28 animal unit months, and in exchange for allowing the Bureau of Land

Management to regulate and control the use of grazing on said lands, the applicant is authorized to graze:

- (1) 1 head of cattle from 4-16, 1974 to 6-15, 1974
- (2) 9 head of cattle from 11-1, 1974 to 12-31, 1974
- (3) 3 " " from 6-16, 1974 to 9-15, 1974

and continue with the same number and class of livestock during the same season of use annually for a period of

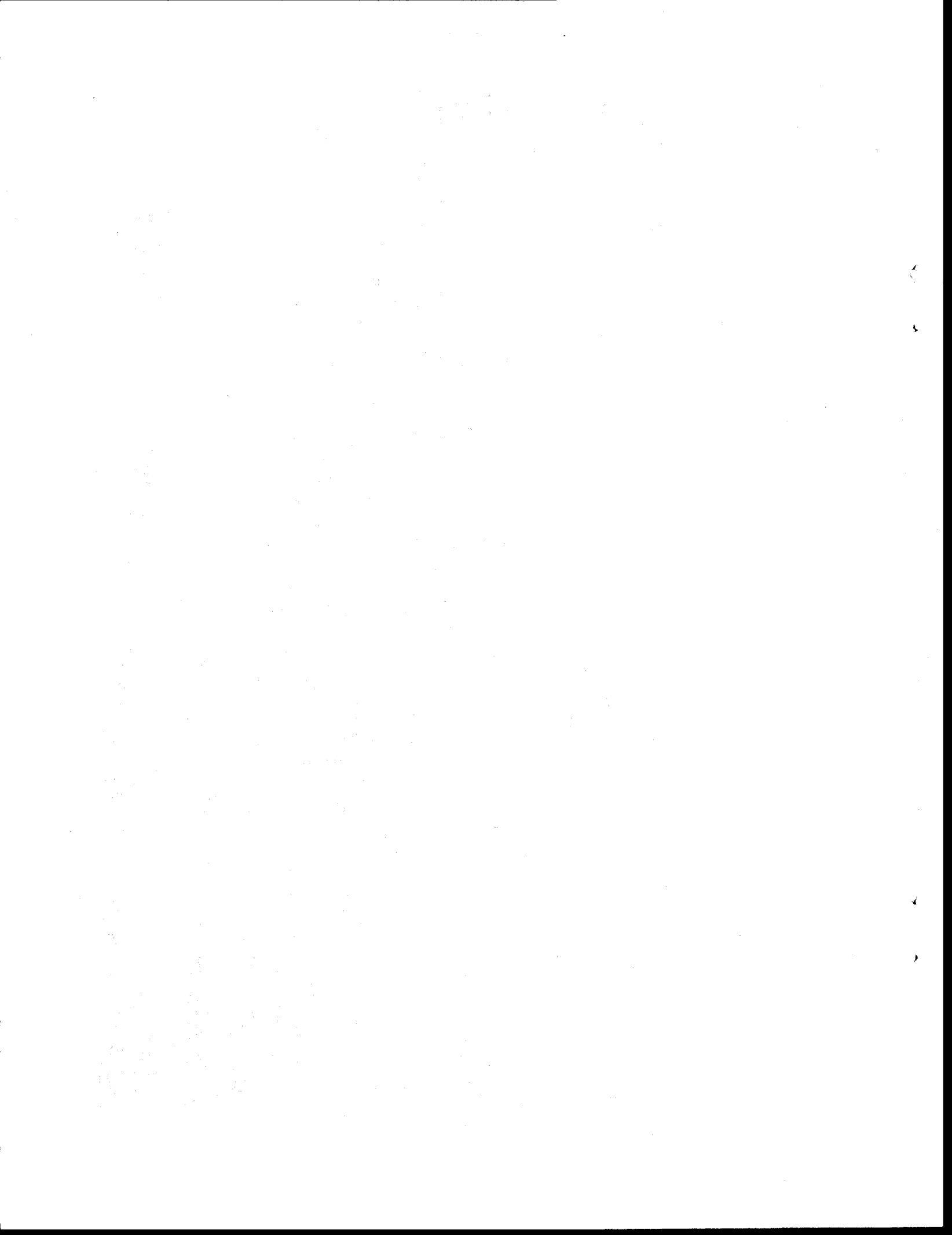
1 year, beginning Jan 1, 1974 to (final date) Dec 31, 1974, unless sooner

terminated by the Bureau of Land Management, upon the following-described Federal range:

- (1) Andrews Community Allot. - Field F
- (2) Tule Springs Winter Area
- (3) Ind. Allot. - Wildhorse Canyon in accordance with the Wildhorse Canyon Allotment Mgt. Plan dated 1968 and revised in 1973.

1-31-74
(Date)

[Signature]
(Signature of District Manager)



NATURAL AREA PRESERVES ADVISORY COMMITTEE

GOALS

1. Cooperate in developing a coordinated program of preserving representative samples of Oregon's typical and unique ecosystem types or natural features by dedicating natural area preserves on public lands.
2. Provide educational and research opportunities in Oregon through access to natural area preserves as basic resources.
3. Compile and periodically update a comprehensive list of natural area locations in Oregon, and maintain a list of natural area preserves needs.
4. Assure perpetual protection to dedicated natural area preserves and maintain preserves in as nearly a natural condition as possible.
5. Encourage the establishment of natural area preserves on qualified areas that appropriate local governments, resource agencies or citizens recommend to the State Land Board and advisory committee.
6. Recommend natural area preserves in suitable locations throughout the state, including those within and near Oregon's population centers.
7. Publish and disseminate appropriate information about natural area preserves.