

UNITED STATES DEPARTMENT OF AGRICULTURE

# FOREST SERVICE

Establishment Report For  
Vee Pasture RNA  
Bly Ranger District  
Fremont National Forest



SIGNATURE PAGE

for

RESEARCH NATURAL AREA ESTABLISHMENT RECORD

Vee Pasture Research Natural Area

Fremont National Forest

Lake and Klamath Counties, Oregon

The undersigned certify that all applicable land management planning and environmental analysis requirements have been met and that boundaries are clearly identified in accordance with FSM 4063.21, Mapping and Recordation and FSM 4063.41 5.e(3) in arriving at this recommendation.

Prepared by Dick Vander Schaaf Date Oct. 28, 1996  
Dick Vander Schaaf,  
The Nature Conservancy

Recommended by Nancy Rose Date Oct. 31, 1996  
Nancy Rose, District Ranger,  
Bly Ranger District

Recommended by Charles R. Graham Date Nov 4, 1996  
Charles R. Graham, Forest Supervisor,  
Fremont National Forest

Recommended by Thomas J. Mills Date 5/2/97  
for Thomas J. Mills, Director,  
Pacific Northwest Research Station

TITLE PAGE

Establishment Record for  
Vee Pasture Research Natural Area  
within Fremont National Forest  
Klamath and Lake Counties, Oregon

ESTABLISHMENT RECORD FOR  
VEE PASTURE RESEARCH NATURAL AREA  
WITHIN FREMONT NATIONAL FOREST  
KLAMATH AND LAKE COUNTIES, OREGON

INTRODUCTION

Vee Pasture Research Natural Area (RNA) occupies a plateau due east of the confluence of the south fork of the Sprague River and Brownsworth Creek. The area contains 750 acres (303.5 ha), roughly triangular in shape (Map 2). Two sides are bounded by steep escarpments of basaltic rimrock and the third side is delimited by a sharp transition to ponderosa pine forest which is on a gentle slope. The elevation of 5100 feet (1555 m) lies in the general transition zone between shrub-steppe and forest zones. Most of the area is dominated by a low sagebrush (*Artemisia arbuscula*)<sup>1</sup> complex; the major associate is Idaho fescue (*Festuca idahoensis*) on the deeper soils followed by Sandberg's bluegrass (*Poa secunda*) on extremely shallow and rocky soils and one-spike oatgrass (*Danthonia unispicata*) and junegrass (*Koeleria cristata*) in poorly-drained depressions. Large expanses of juniper-low sagebrush (*Juniperus occidentalis/Artemisia arbuscula*) savannah cover portions of the rocky scablands. There are also several examples of bluebunch wheatgrass (*Agropyron spicatum*) biscuit swale microtopography, mountain mahogany thickets, mountain big sagebrush thickets, and several vernal-wet depressions.

Land Management Planning

Vee Pasture RNA was included as a candidate RNA in the FEIS for the Fremont National Forest (Fremont National Forest Final Environmental Impact Statement 1989)<sup>2</sup>, in the Forest Plan (Fremont National Forest Land and Resource Management Plan 1989) and in the Record of Decision (Fremont National Forest Record of Decision 1989). Vee Pasture RNA was proposed as a candidate RNA by the Fremont National Forest to meet two unfilled natural area cell needs. The two RNA cell needs (or elements) at Vee Pasture RNA in the Terrestrial Ecosystems - East Slope Cascades Physiographic Province (Oregon Natural Heritage Advisory Council 1993) are as follows:

Western Juniper Zone

#5. Western Juniper/low sagebrush/Idaho fescue and blue bunch wheatgrass (*Juniperus occidentalis/Artemisia arbuscula/Festuca idahoensis-Agropyron spicatum*) communities.

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<sup>1</sup> Nomenclature for vascular plants follows Hitchcock and Cronquist (1973)

<sup>2</sup> Author's names in parentheses refer to references cited.

## Grassland/Shrubland Steppe

#47. Low sagebrush vegetation complex, with Idaho fescue, bluegrass and bluebunch wheatgrass (*Artemisia arbuscula/Festuca idahoensis-Poa secunda-Agropyron spicatum*).

### OBJECTIVE

The objective of the Vee Pasture RNA is to preserve in a relatively undisturbed condition the low sagebrush (*Artemisia arbuscula*) scabland complex. The RNA will serve as a reference area for study, as a baseline area for determining long-term ecological changes, and as a monitoring area to determine effects of management techniques and practices applied to similar ecosystems.

### JUSTIFICATION

Vee Pasture RNA was selected to represent typical low sagebrush scabland with transitions to deeper soils. This large tract of fairly accessible, unimpacted scabland vegetation presents ample opportunities for research into the environmental relations of the various vegetation types present, as well as the opportunity for gathering baseline data on undisturbed shrub-steppe scabland vegetation. Vee Pasture meets unfilled RNA cell needs for western Juniper/low sagebrush/Idaho fescue and blue bunch wheatgrass (*Juniperus occidentalis/Artemisia arbuscula/Festuca idahoensis-Agropyron spicatum*) communities and low sagebrush vegetation complex, with Idaho fescue, bluegrass and bluebunch wheatgrass (*Artemisia arbuscula/Festuca idahoensis-Poa secunda-Agropyron spicatum*) (Natural Heritage Advisory Council 1993). The site is representative of transition areas in the East Cascades which border the Basin and Range Province (Oregon Natural Heritage Advisory Council 1993).

### PRINCIPAL DISTINGUISHING FEATURES

1. Low sagebrush scablands: Low sagebrush (*Artemisia arbuscula*) flats are prominent across the RNA (Map 4). Low sagebrush is the only shrub in >99% of the scabland area. Grasses in the low sagebrush flats include Sandberg's bluegrass (*Poa secunda*) and Idaho fescue (*Festuca idahoensis*). Sandberg's bluegrass and Idaho fescue nearly always co-occur and shift in dominance depending upon soil depth and degree of rockiness. Sandberg's bluegrass dominates in the extremely rocky scab flats, whereas Idaho fescue becomes more important on deeper soils. Bluebunch wheatgrass (*Agropyron spicatum*) is very infrequent on the scab.
2. Western juniper/low sagebrush scablands: The vegetation in this type is quite similar to that of low sagebrush scablands with the addition of scattered juniper (*Juniperus occidentalis*) trees. This is the most common vegetation type on Vee Pasture. Sandberg's bluegrass (*Poa secunda*) and Idaho fescue (*Festuca idahoensis*) are the most common grasses, bluebunch wheatgrass is infrequent. In areas of deeper soil dense stands of juniper and ponderosa pine occur. Due to canopy shade there is no low sagebrush in these woodlands patches.

3. Low sagebrush/one-spike oatgrass-junegrass (*Artemisia arbuscula/Danthonia unispicata-Koeleria cristata*): This type is represented by small sporadic poorly-drained areas. Although the total acreage of this type is quite small, Vee Pasture RNA represents the natural distribution of this community type quite well.

4. Low sagebrush/bluebunch wheatgrass (*Artemisia arbuscula/Agropyron spicatum*): This type is restricted to a limited amount of biscuit scabland topography near the southern boundary, with a total area of <1 acre (<0.4 ha). Eight biscuits were located. Several of these biscuits are in excellent condition whereas others are dominated by exotic species.

5. Vernal wetlands: Three vernal wetlands are located on Vee Pasture for a total area of ~2 acres. These areas have poor drainage and water pools in the spring. Soils are deeper with no rocks present. These wetlands are occupied by dense mats of annual and perennial graminoids and forbs.

6. Plant associations are in excellent condition at Vee Pasture. Cattle use in the past and present has been slight due to inaccessibility and absence of a permanent water supply. However, areas which cattle are presently using on the northeastern edge and a few other scattered locations across the RNA have a greater preponderance of introduced species. Cattle impacted areas are usually located below juniper and ponderosa pine canopies. As a result, the ground surface is generally intact, with an abundance of ground mosses and lichens in places, although these taxa are absent across most of the plateau. No cryptogamic crust was observed at Vee Pasture.

#### LOCATION

Vee Pasture Research Natural Area is located at 42°23'N latitude, 120°53' W longitude. The tract is located in sections 1 and 2, T37S, R15E; section 36, T36S, R15E; section 6, T37S, R16E; and section 31, T36S, R16E. It is located 7 air miles (11.3 km) due east of Bly, on the boundary between Lake and Klamath Counties, on the Bly Ranger District of the Fremont National Forest.

#### Boundary

Basis of bearing is astronomic north. Basis of elevation is mean sea level as shown on the USGS 7.5 minute topographic quadrangle map Campbell Reservoir, Oregon 1988. The boundary description is located after the reference list.

#### Area

Total area for the Vee Pasture Research Natural Area is approximately 750 acres (303.5 hectares).

#### Elevation

Vee Pasture RNA is located at an elevation of 5100 feet (1555 m). The plateau which comprises

Vee Pasture is elevated approximately 500 feet (152 m) above and due east of the confluence of the South Fork of the Sprague River and Brownsworth Creek.

### Access

The area is most easily accessed from the town of Bly by proceeding north on County Road #1259 off Highway 140, 1 mile (1.6 km) east of Bly, for 0.5 miles (0.8 km) to Forest Service road #34; thence approximately 5 miles (8 km) northeast to Dutchman Flat. Then turn southeast on Forest Service road #34.021 for 1.6 miles (2.6 km) to Swede Cabin Flat, where a 4-wheel drive road proceeds on to the edge of the butte. The Bly Ranger Station should be consulted for road conditions, but under typical conditions, a car lacking 4-wheel drive should not be taken past the gate 0.3 miles (0.5 km) past the outset of this road. The road is followed on foot along the south side of a tributary of Brownsworth Creek, then across it and uphill to the southeast along the moderately sloping northeast edge of the plateau, until the top is reached, a total of approximately 2 miles (3.2 km). From Paisley, the Swede Cabin Flat area is reached via Forest Service road #28 to Forest Service road #34, proceeding west and south for approximately 34 miles (55 km) to Mitchell Monument. Forest Service road #34.021 to Swede Cabin Flat strikes southwest approximately 0.5 mile (0.8 km) past Mitchell Monument.

### Maps

Vee Pasture RNA is located on the following USGS 7.5 minute topographic quadrangle maps Campbell Reservoir and Gearhart Mountain, Oregon 1988. The Fremont National Forest Visitors Map, 1996, is useful for ownership and general access information, however, this map does not delineate the RNA boundaries.

### Photos

The following aerial photo of the Vee Pasture RNA site are available in the Forest Supervisor's and District Ranger's offices: July 19, 1988 USDA-F 616020C 2788-148

## AREA BY TYPES

Vegetation of the RNA has been surveyed by Seyer (1980) and Titus (Titus, field notes 1995). The following determination of plant associations and their extent have been made from the survey information and from air photo interpretation. Map 4 depicts the locations of the natural communities or associations described below.

The most current information regarding the forested portion of the RNA is described in the plant association guides of Hopkins (1979). Eight plant associations have been identified in the RNA five of which correlate to types described in Hopkins (1979). The ponderosa pine-western juniper (*Pinus ponderosa-Juniperis occidentalis*) forest is adequately described by three different plant associations. In addition, two of the non-forested associations are unpublished. Due to extensive

interdigitation of plant associations the following types were lumped into five types for mapping purposes (Map 4). Mountain-mahogany (*Cercocarpus ledifolius*) thickets were not mapped due to their small size.

<u>Forested Plant Associations</u>	Estimated	
	<u>Acres</u>	<u>Hectares</u>
Ponderosa pine ( <i>Pinus ponderosa</i> ) (Eyre 1980); Western Juniper ( <i>Juniperus occidentalis</i> ) (Eyre 1980); Ponderosa shrub forest (Küchler 1966)	20	8
<u>Non-forested Plant Associations</u> (Hopkins 1979)		
Low sagebrush/bluegrass-onespike oatgrass ( <i>Artemisia arbuscula/Poa secunda-Danthonia unispicata</i> ) and Low sagebrush/fescue-squirreltail ( <i>Artemisia arbuscula/Festuca idahoensis-Sitanion hystrix</i> )	275	110
Western juniper/low sagebrush/fescue ( <i>Juniperus occidentalis/Artemisia arbuscula/Festuca idahoensis</i> )	450	180
Big sagebrush/bunchgrass ( <i>Artemisia tridentata</i> var. <i>vaseyana</i> /bunchgrass)	<1	<0.4
Hairgrass-sedge-moist meadow ( <i>Deschampsia cespitosa-Carex</i> spp.-moist meadow)	2	0.8
<u>Other Plant Associations</u> - (these associations do not have published classifications)		
Low sagebrush/bluebunch wheatgrass ( <i>Artemisia arbuscula/Agropyron spicatum</i> ) biscuit-swale microtopography	<1	<0.4
Mountain-mahogany ( <i>Cercocarpus ledifolius</i> ) thickets	1	0.4
Total	750	300

## PHYSICAL AND CLIMATIC CONDITIONS

### Physical Conditions

Vee Pasture RNA is part of the narrow transition zone between the upland forests of the East



Cascades Physiographic Province and the Basin and Range Province lying to the north and east. Vee Pasture is a basalt tableland, steeply dissected on two sides by the South Fork of the Sprague River and Brownsworth Creek, which come together at its west end, forming a V-shaped tract. Slopes are very slight on the top, ranging from one to two percent and having a northwest aspect. Elevation ranges from 5100 to 5200 feet (1555 m - 1585 m).

Climatic Conditions

Vee Pasture RNA is located in a semiarid region in the rain shadow east of the Cascades within the east Cascades Physiographic Province and receives typical central Oregon weather. The climate of central Oregon is characterized by warm summers and cold winters. The majority of the annual precipitation (12-16 inches; 30-40 cm) falls as snow in winter with significant rains often falling during the spring as well. Summers are hot and dry, although intense localized thunderstorms occur irregularly. At Bly, 7 air miles (11.3 km) due west of and 840 feet (256 m) lower than Vee Pasture killing frosts can occur at almost any time, so the length of the growing season is quite unpredictable, ranging from 1 to 86 days (National Oceanographic and Atmospheric Association 1993). Summer winds are predominantly from the northwest and are usually light to moderate. East winds may occur in the fall and spring, blowing at higher velocities and causing drying conditions that enhance the fire hazard in adjacent ponderosa pine forests for the season. During the winter, storms come in from the southwest bringing snow while occasional storms from the northwest bring frigid weather.

The closest recording NOAA weather station with complete yearly records is located in Lakeview, Oregon, 25 miles (40 km) southeast of the RNA (records are incomplete for the weather station at Bly). Climatic conditions in Lakeview should be a fair approximation for Vee Pasture RNA with differences between the two sites being attributed to the 322 feet (98 m) greater elevation of the RNA. Vee Pasture is most likely much colder. The climate data for Summer Lake, Oregon is also included below although Vee Pasture is also most likely much colder than Summer Lake. Summer Lake weather station is located 33 miles (54 km) northwest of, and 907 feet (276 m) below, Vee Pasture. At Vee Pasture summer high temperatures regularly reach into the 80's, while winter lows would often dip into the teens. The monthly climatic data for Lakeview averaged over the past 30 years and the monthly climatic data for Summer Lake averaged over the past 36 years are listed below.

Climatic Records for Lakeview, Oregon  
 Elevation 4778 feet (1456 m);  
 (National Oceanographic and Atmospheric Administration 1994)

Mean annual temperature	46.3°F	8.0°C
Mean annual precipitation	16.04 inches	40.74 cm
Temperature extremes		
Mean annual high	98.8°F	37.1°C
Mean annual low	3.0°F	-16.1°C

Monthly Mean Temperature and Precipitation at Lakeview, Oregon

Month	Mean Temperature		Mean Precipitation	
	°F	°C	inches	cm
January	28.5	-2.0	2.01	5.10
February	32.7	0.5	1.41	3.58
March	36.9	2.8	1.49	3.78
April	43.2	6.2	1.22	3.10
May	51.2	10.7	1.43	3.63
June	59.3	15.2	1.15	2.92
July	66.8	19.3	0.66	3.20
August	65.2	18.4	0.54	1.37
September	57.5	14.2	0.63	1.60
October	47.9	8.9	1.20	3.05
November	36.3	2.4	2.07	5.26
December	29.8	-1.0	2.23	5.66

## Climatic Records for Summer Lake, Oregon

Elevation 4193 feet (1336 m);

(National Oceanographic and Atmospheric Administration 1992)

Mean annual temperature	48.6°F	9.2°C
Mean annual precipitation	18.88 inches	48.14 cm
Temperature extremes		
Mean annual high	95.0°F	35.0°C
Mean annual low	-1.0°F	-18.3°C
Mean days/year between killing frosts		89

Monthly Mean Temperature and Precipitation at Summer Lake, Oregon

Month	Mean Temperature		Mean Precipitation	
	°F	°C	inches	cm
January	34.8	1.6	0.52	1.32
February	41.1	5.1	0.41	1.04
March	44.5	6.9	0.41	1.04
April	51.7	10.9	0.70	1.78

May	61.9	16.6	0.03	0.08
June	66.5	19.2	0.79	2.01
July	68.2	20.1	1.05	2.67
August	70.4	21.3	0.84	2.13
September	61.1	16.2	0.40	1.02
October	53.3	11.8	0.95	2.41
November	38.0	3.3	0.98	2.49
December	30.2	-1.0	2.43	6.17

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### DESCRIPTION OF VALUES

#### Flora

The flora of Vee Pasture RNA is representative of the transition zone between the East Cascades and Basin & Range physiographic provinces with elements of both provinces present. Vee Pasture lies within the narrow band along the Sprague River classified by Küchler (1966) as sagebrush steppe (*Artemisia tridentata-Agropyron spicatum*), in a portion of southern Oregon otherwise classified as ponderosa pine/shrub forest (*Pinus ponderosa*/shrub) by Küchler (1966). There are several plant associations represented at the RNA and the actual number of taxa is quite high. Vee Pasture RNA has eight natural communities or plant associations represented within its boundaries, five of which are mapped (Map 4). These communities are arranged on slight edaphic gradients of soil depth and drainage.

Low sagebrush dominates the RNA on shallow, rocky soils. On slightly better sites there is Idaho fescue associated with the low sagebrush but in the poorer condition sites Sandberg's bluegrass is prevalent. Bluebunch wheatgrass rarely occurs on the scabland except for on biscuits. These low condition sites are usually referred to as bluegrass scablands but what they may lack in bunchgrasses they often make up for in herbaceous diversity. As elevational differences are slight at the RNA the natural communities present at Vee Pasture RNA are actually found more in a mosaic than along a strict gradient. The defining environmental characteristic for natural communities within the RNA is usually soil depth and drainage characteristics such that the ponderosa pine-juniper woodlands can be found as small deeper soil inclusions within scablands.

The western juniper/low sagebrush/fescue (*Juniperus occidentalis/Artemisia arbuscula/Festuca idahoensis*) association (Hopkins 1979) forms open savannahs, in which broad-crowned junipers cover approximately 1-5% of the ground surface and exhibit low levels of reproduction (Group 2, Map 4). The shrub layer consists exclusively of low sagebrush varying from widely spaced individuals to a density of up to 20 % ground cover. Idaho fescue is the dominant bunchgrass approaching 10% cover in better sites, but a variety of other grasses occur in lower abundances: Sandberg's bluegrass (*Poa secunda*), bottlebrush squirreltail (*Sitanion hystrix*), and Japanese

Brome (*Bromus japonicus*). Forbs are typically widely scattered and include such species as dwarf yellow fleabane (*Erigeron chrysopsidis*), hot-rock penstemon (*Penstemon duustus*), Douglas' buckwheat (*Eriogonum douglasii*), and Harkness linanthus (*Linanthus harknessii*).

The rather variable low sagebrush/fescue-squirreltail (*Artemisia arbuscula/Festuca idahoensis-Sitanion hystrix*) association (Hopkins 1979) is dominant over much of the plateau where typical scabland condition of extremely rocky shallow soils exist (included in Group 1, Map 4). The low sagebrush is rather evenly spaces with cover values up to 40%. The bunchgrasses dominated by Sandberg's blue grass and Idaho fescue constitute 25-35% in the better sites. Bottlebrush squirrel tail (*Sitanion hystrix*) is often present. Prairie junegrass (*Koeleria macrantha*) and onespoke oatgrass (*Danthonia unispicata*) are less common. The forb component is quite diverse as illustrated by the list above. *Antennaria*, *Erigeron*, *Perideridia* and other genera often achieve cover values of >10% respectively. In the rockiest sites (rock cover >30%) Sandberg's bluegrass predominates whereas when there is more soil Idaho fescue assumes greater importance.

The low sagebrush/bluegrass-one spike oatgrass (*Artemisia arbuscula/Poa sandbergii-Danthonia unispicata*) association (Hopkins 1979) occurs in lower rocky areas with 50-60% rock, where water collects early in the season (included in Group 1, Map 4). This type is most common in the western portion of Vee Pasture, but overall quite small in terms of total acres covered. Low pussytoes (*Antennaria dimorpha*) and barestem lomatium (*Lomatium nudicaule*) are common forbs in this community. Dealy (1971) suggests that this type provides useful habitat with its high component of forbs.

The low sagebrush/bluebunch (*Artemisia arbuscula/Agropyron spicatum*) association (unpubl. association) is restricted in area (Group 4, Map 4). The association is limited to the deeper, better drained soil of the mounds in biscuit scabland topography or in patches adjacent to the mountain- mahogany thickets and ponderosa pine-western juniper woodland islands where the soil is deeper and more xeric in the spring.

There are several broad, vernaly-flooded flats that are densely vegetated by both annual and perennial graminoids and forbs. These areas are best described by the hairgrass-sedge-moist meadow (*Deschampsia cespitosa-Carex* spp.-moist meadow) association (Hopkins 1979) (Group 5, Map 4). Perennial grasses occur such as Great basin wild rye (*Elymus cinereus*) and large needle grass (*Stipa columbiana*) occur. Pullup muhly (*Muhlenbergia filiformis*) and annual hairgrass (*Deschampsia danthanoides*) dominate sites, and an abundance of distinctive annual forbs are mixed in: hairy owl clover (*Orthocarpus hispidis*), cluster tarweed (*Madia glomerata*) and hairy goldenweed (*Haplopappus hirtus*) amongst many others. These wetlands exhibit a dramatic species turnover during the course of the growing season with more than 90% of the species changing from mid-June to late July.

At the forest end of the spectrum of natural plant associations is ponderosa pine-western juniper (*Pinus ponderosa-Juniperus occidentalis*) woodland (Group 3, Map 4) that occupies some of the boundaries of the RNA and grades into closed canopy ponderosa pine forest off the plateau

outside of the RNA. In addition, ponderosa pine-western juniper woodland occurs as sporadic islands in pockets of deeper soils on the plateau. Overall this community is not well represented in the RNA. The understory in these woodlands is different than in the non-forested associations with plants such as plateau gooseberry (*Ribes velutinum*), Torrey's cryptantha (*Cryptantha torreyana*), wool breeches (*Hydrophyllum capitatum*), flax (*Linum perenne*), and old man's whiskers (*Geum triflorum*) over a densely needle covered ground surface.

In summary, plant associations on the tableland do not form extensive, uninterrupted stands, but interdigitate in response to edaphic factors, either soil depth or drainage (Dealy 1971). The low sagebrush/Idaho fescue (*Artemisia arbuscula/Festuca idahoensis*) association covers the major portion of the scabland and is characterized by soils that are shallow but moderately well drained. In slight depressions where water is channelized or collects in spring the imperfect to somewhat poor drainage favors a different set of grasses, dominated by onespikes oatgrass bluegrass (*Poa secunda*) and (*Danthonia unispicata*). Overall this low sagebrush/bluegrass-onespike oatgrass type is less prominent being restricted to more mesic pockets. In certain broad depressions where sediment is deposited with annual spring run-off a dense mat of annual and perennial graminoids and forbs supersedes the shrub types. Pockets of deeper soil, cracked bedrock, or fire protected areas support juniper/low sagebrush/fescue or mountain mahogany thickets where soils are less rocky.

Few introduced species were observed. The annual bromes cheatgrass (*Bromus tectorum*) and Japanese brome (*Bromus japonicus*) are dominant in a few areas, particularly under juniper and ponderosa pine canopies and on degraded biscuits. In general exotics are subordinate to other species. These invaders are capable of establishing themselves wherever there is an open niche, which may result from small scale natural or human induced disturbance, or simply represent an unvegetated patch in an unfavorable site. Native species that are known to decrease with grazing pressure are present in adequate amounts, and increasers are not overly abundant.

Mule deer and Rocky Mountain elk populations have undergone dramatic changes in recent years. Elk populations have increased in the last five years and deer have decreased over the last fifty years (Terry Hershey, pers. comm.). These population fluctuations may have caused changes in the plant communities of the RNA.

The flora has not been systematically collected or studied other than those taxa encountered during a botanical inventory conducted during the course of the drafting of the Establishment Record and in the preparation of a previous draft establishment report (Seyer 1980). No state or federal threatened, endangered or sensitive plant species are known to occur within the RNA. Observations by Titus in 1995 have resulted in the following list of plants. The plant groupings listed below refer to those noted previously on page 5.

The plant groupings are characterized as follows:

1. Low sagebrush scabland complex = scab (includes: low sagebrush/bluegrass-onespike oatgrass (*Artemisia arbuscula/Poa secunda-Danthonia unispicata*) (Hopkins 1979) and

- low sagebrush/fescue-squirreltail (*Artemisia arbuscula/Festuca idahoensis-Sitanion hystrix*) (Hopkins 1979).
2. Western juniper/low sagebrush (western juniper/low sagebrush/fescue (*Juniperus occidentalis/Artemisia arbuscula/Festuca idahoensis*) (Hopkins 1979).
  3. Ponderosa pine-juniper woodland (Ponderosa pine (Eyre 1980), Western juniper (Eyre 1980), Ponderosa shrub forest (Küchler 1966).
  4. Low sagebrush/bluebunch wheatgrass (*Artemisia arbuscula/Agropyron spicatum*) biscuit-swale microtopography (unpubl. association).
  5. Vernal Wetlands (Hairgrass-sedge-moist meadow (*Deschampsia cespitosa-Carex* spp.-moist meadow) (Hopkins 1979).

The other plant communities with very minor representation on Vee Pasture, that is, mountain big sagebrush/bunchgrass (*Artemisia tridentata* var. *vaseyana*/bunchgrass) (unpubl. association) and the Mountain-mahogany (*Cercocarpus ledifolius*) thickets (unpubl. association) are not mapped and are not represented in the following species list. However, the plants unique to those communities are listed here. Species identifications were determined from Little (1979) for trees, and Hitchcock and Cronquist (1973) and Jepson (1993) for shrubs, forbs and graminoids. ("E" = exotic non-native species).

Plant Species Found in Vee Pasture Research Natural Area

Scientific name	Common name	Plant Associations				
		1	2	3	4	5
<b>TREES</b>						
<i>Pinus ponderosa</i>	ponderosa pine			X		
<i>Juniperus occidentalis</i>	western juniper		X	X		
<b>SHRUBS AND SUBSHRUBS</b>						
<i>Amelanchier alnifolia</i>	Saskatoon serviceberry					X
<i>Arctostaphylos patula</i>	greenleaf manzanita			X		
<i>Artemisia arbuscula</i>	low sagebrush	X	X	X	X	
<i>Artemisia tridentata</i> var. <i>vaseyana</i>	mountain big sagebrush					
<i>Berberis repens</i>	creeping Oregon-grape			X		
<i>Ceanothus velutinus</i>	grease-wood					
<i>Cercocarpus ledifolius</i>	curl-leaf mountain-mahogany			X		
<i>Cercocarpus montanus</i>	birch-leaf mountain-mahogany					
<i>Chrysothamnus nauseosus</i>	gray rabbitbrush					
<i>Chrysothamnus viscidiflorus</i>	green rabbitbrush					
<i>Prunus emarginata</i>	bittercherry					
<i>Purshia tridentata</i>	bitterbrush	X	X			
<i>Ribes cereum</i>	squaw currant			X		
<i>Ribes montigenum</i>	mountain gooseberry			X		

<i>Ribes velutinum</i>	plateau gooseberry	X	X	X		
<i>Rosa nutkana</i>	Nootka rose					X
<i>Rosa woodsii</i>	Wood's rose			X		
<i>Symphoricarpos albus</i>	common snowberry			X		
<b>FORBS</b>						
<i>Achillea millefolium</i>	yarrow				X	X
<i>Agoseris heterophylla</i>	annual agoseris	X	X			X
<i>Allium acuminatum</i>	tapertip onion	X	X		X	
<i>Alyssum desertorum</i>	desert alyssum	X	X			
<i>Apocynum androsaemifolium</i>	spreading dogbane	X	X			
<i>Antennaria argentea</i>	silvery pussytoes	X	X			X
<i>Antennaria dimorpha</i>	low pussytoes	X				
<i>Antennaria luzuloides</i>	woodrush pussytoes	X	X			X
<i>Antennaria microphylla</i>	rosy pussytoes	X	X			
<i>Antennaria stenophylla</i>	narrow-leaf pussytoes					X
<i>Arabis holboellii</i>	Hobell's rockcress	X	X			
<i>Arabis sparsiflora</i>	elegant rock cress	X		X		
<i>Arenaria congesta</i>	baldheaded sandwort	X	X			X
<i>Arnica sororia</i>	twin arnica	X				X
<i>Aster chilensis</i> ssp. <i>adscendens</i>	long-leaved aster					X
<i>Athysanus pusillus</i>	sandweed			X		
<i>Balsamorhiza hookeri</i>	Hooker's balsamroot	X				
<i>Balsamorhiza sagittata</i>	arrowleaf balsamroot					
<i>Balsamorhiza serrata</i>	serrate balsamroot					
<i>Blepharipappus scaber</i>	rough eyelash	X				
<i>Boisduvalia densiflora</i>	dense spike-primrose					
<i>Brodiaea hyacinthina</i>	hyacinth brodiaea					X
<i>Calochortus macrocarpus</i>	sagebrush mariposa lily	X	X	X	X	
<i>Camassia quamash</i>	camas					X
<i>Castilleja applegatei</i>	wavy-leaved paintbrush					
<i>Castilleja thompsonii</i>	Thompson's paintbrush	X	X		X	
<i>Chaenactis douglasii</i>	hoary chaenactis			X		
<i>Chenopodium fremontii</i> var. <i>atrovirens</i>	Fremont's goosefoot	X	X			
<i>Cirsium arvense</i> (E)	bull thistle	X	X			
<i>Cirsium scariosum</i>	elk thistle	X	X			
<i>Clarkia gracilis</i>	slender clarkia	X	X			
<i>Crepis occidentalis</i>	western hawksbeard	X	X			
<i>Collinsia parviflora</i>	blue-eyed Mary	X	X			
<i>Collomia grandiflora</i>	large-flowered collomia	X	X			
<i>Collomia linearis</i>	narrow-leaf collomia	X	X			
<i>Cryptantha torreyana</i>	Torrey's cryptantha	X	X	X		
<i>Delphinium burkei</i>	meadow larkspur	X	X			X

<i>Descurainia pinnata</i>	western tansymustard				X	
<i>Descurainia richardsonii</i>	mountain tansymustard				X	
<i>Dodecatheon pulchellum</i>	western shooting star	X	X			
<i>Draba verna</i>	spring whitlow-wort	X				X
<i>Epilobium paniculatum</i>	tall annual fireweed	X	X	X	X	X
<i>Erigeron bloomeri</i>	scabland fleabane	X	X			X
<i>Erigeron chrysopsidis</i>	dwarf yellow fleabane					X
<i>Erigeron corymbosus</i>	long-leaf fleabane	X	X			
<i>Erigeron divergens</i>	diffuse fleabane	X				
<i>Erigeron filifolius</i>	thread-leaved fleabane					X
<i>Erigeron linearis</i>	line-leaf fleabane	X	X			
<i>Erigeron pumilus</i> ssp. <i>intermedius</i> var. <i>gracilior</i>	shaggy fleabane					X
<i>Eriogonum caespitosum</i>	mat buckwheat	X	X			
<i>Eriogonum douglasii</i> var. <i>douglassii</i>	Douglas' buckwheat	X	X			
<i>Eriogonum nudum</i>	barestem buckwheat				X	
<i>Eriogonum ovalifolium</i>	oval-leaved buckwheat	X	X	X		
<i>Eriogonum umbellatum</i>	sulfer buckwheat				X	X
<i>Eriogonum vimineum</i>	broom buckwheat	X				
<i>Eriophyllum lanatum</i>	Oregon sunshine	X	X		X	X
<i>Frasera albicaulis</i>	white stemmed frasera	X	X			
<i>Fritillaria pudica</i>	yellow bell	X				
<i>Galium aparine</i>	cleavers		X	X		
<i>Galium trifidum</i>	small bedstraw				X	
<i>Gayophytum decipiens</i>	deceptive groundsmoke	X	X			
<i>Gayophytum diffusum</i>	spreading groundsmoke	X	X			
<i>Geum triflorum</i>	old man's whiskers	X	X			
<i>Gilia capillaris</i>	smooth-leaved gilia	X	X	X		
<i>Gnaphalium palustre</i>	lowland cudweed	X				
<i>Hackelia cusickii</i>	Cusick's stickseed	X	X			
<i>Haplopappus carthamoides</i> var. <i>cusickii</i>	Columbia goldenweed	X	X			
<i>Haplopappus hirtus</i>	sticky goldenweed					X
<i>Haplopappus stenophylus</i>	narrowleaf goldenweed	X				
<i>Heterocodon rariflorum</i>	heterocodon					X
<i>Hydrophyllum capitatum</i>	wool breeches	X	X	X		
<i>Idahoia scapigera</i>	scalepod	X	X	X	X	X
<i>Iris missouriensis</i>	western blue-flag					X
<i>Lactuca serriola</i> (E)	wild lettuce	X	X			
<i>Linanthus harknessii</i>	Harkness' linanthus	X	X			
<i>Linum perenne</i> var. <i>lewisii</i>	Lewis' flax				X	X
<i>Lithophragma bulbifera</i>	bulbiferous fringecup	X				X
<i>Lomatium dissectum</i>	fernleaf lomatium	X	X			
<i>Lomatium leptocarpum</i>	slender-fruit lomatium	X	X			
<i>Lomatium macrocarpum</i>	large-fruited lomatium	X	X			X



<i>Lomatium nudicaule</i>	pestle lomatium	X	X		
<i>Lomatium peckianium</i>	Peck's Lomatium	X	X		
<i>Lomatium triternatum</i>	line leaved lomatium	X	X	X	X
<i>Lomatium vaginatum</i>	broadsheath lomatium	X	X		X
<i>Lotus purshiana</i>	Spanish-clover	X	X		X
<i>Lupinus argenteus</i>	silver lupine	X	X		
<i>Madia glomerata</i>	cluster tarweed			X	X
<i>Madia gracilis</i>	slender tarweed				X
<i>Madia minima</i>	small-head tarweed	X	X	X	
<i>Melilotus alba</i> (E)	sweet-clover				X
<i>Microseris nutans</i>	nodding microseris	X	X		X
<i>Microsteris gracilis</i>	microsteris	X			X
<i>Mimulus nanus</i>	dwarf monkeyflower			X	
<i>Montia linearis</i>	Indian line lettuce	X	X	X	X
<i>Montia perfoliata</i>	miner's lettuce	X	X	X	X
<i>Navarretia divaricata</i>	mountain navarretia	X			
<i>Navarretia intertexta</i>	needle-leaf navarretia				X
<i>Navarretia minima</i>	least navarretia	X	X		X
<i>Nemophila pedunculata</i>	meadow nemophila				X
<i>Orobanche corymbosa</i>	flat-topped broomrape	X			
<i>Orthocarpus hispidis</i>	hairy owl-clover		X		X
<i>Orthocarpus luteus</i>	yellow owl-clover	X			
<i>Orthocarpus tenuifolia</i>	narrow-leaved owl-clover	X			
<i>Penstemon confertus</i>	yellow penstemon	X			
<i>Penstemon deustus</i>	hot rock penstemon	X	X		
<i>Penstemon humilis</i>	lowly penstemon	X	X		
<i>Penstemon laetus</i>	gay penstemon	X	X		
<i>Penstemon speciosus</i>	showy penstemon	X	X		
<i>Perideridia oregana</i>	oregon yampah	X	X		X
<i>Phacelia heterophylla</i>	varileaf phacelia	X	X		X
<i>Phacelia linearis</i>	linear leaf phacelia	X	X		
<i>Phlox hoodii</i>	Hood's phlox	X	X		X
<i>Phoenicaulis chieranthoides</i>	dagger pod	X	X		
<i>Plectritis macrosera</i>	rotund plectritis	X	X		
<i>Polygonum confertiflorum</i>	closeflowered knotweed	X	X		X
<i>Polygonum douglasii</i>	Douglas' knotweed				X
<i>Polygonum kelloggii</i>	Kellogg's knotweed				
<i>Polygonum majus</i>	small knotweed	X			
<i>Polygonum polygaloides</i>	pokeweed fleecflower	X		X	
<i>Polygonum sawatchense</i>	Sawatch knotweed	X			
<i>Potentilla glandulosa</i>	glandular cinquefoil				
<i>Potentilla gracilis</i>	slender cinquefoil				X
<i>Ranunculus glaberrimus</i>	sagebrush buttercup			X	

<i>Sambucus cerulea</i>	blue elderberry					
<i>Sanguisorba occidentalis</i>	annual burnet					X
<i>Sedum lanceolatum</i>	narrow petaled sedum	X	X			
<i>Sedum stenopetalum</i>	wormleaf stonecrop	X	X			
<i>Senecio eurycephalus</i>	Siskiyou senecio	X	X	X		
<i>Senecio integerrimus</i>	western groundsel	X	X			X
<i>Senecio serra</i>	tall butterweed	X	X			X
<i>Sidalcea oregana</i> var. <i>douglasii</i>	Douglas' silene	X	X		X	X
<i>Silene douglasii</i> var. <i>douglasii</i>	Douglas' silene	X	X			
<i>Tragopogon dubius</i>	yellow salsify	X	X		X	
<i>Wyethia mollis</i>	woolly mules-ears	X	X			
<i>Zigadenus paniculatus</i>	panicked death camas	X	X			
<i>Zigadenus venenosus</i>	meadow death camas	X	X	X		X
GRAMINOIDS						
<i>Agropyron spicatum</i>	bluebunch wheatgrass		X		X	
<i>Agrostis diegoensis</i>	thin bentgrass					X
<i>Agrostis interrupta</i> (E)	interrupted apera	X				X
<i>Alopecurus geniculatus</i> —	water foxtail					X
<i>Alopecurus pratensis</i> (E)	meadow foxtail	X				X
<i>Bromus carinatus</i> var. <i>carinatus</i>	California brome	X	X			
<i>Bromus japonicus</i> (E)	Japanese brome	X	X		X	X
<i>Bromus tectorum</i> (E)	cheatgrass	X	X	X	X	X
<i>Carex geyeri</i>	elk sedge		X	X		
<i>Carex microptera</i>	smallwinged sedge					X
<i>Carex nebraskensis</i>	Nebraska sedge					X
<i>Carex rossi</i>	Ross' sedge			X		
<i>Dactylis glomerata</i> (E)	orchardgrass					X
<i>Danthonia californica</i>	California oatgrass				X	X
<i>Danthonia unispicata</i>	onespike oatgrass	X	X		X	X
<i>Deschampsia cespitosa</i>	tufted hairgrass					X
<i>Deschampsia danthonioides</i>	annual hairgrass					X
<i>Eleocharis pauciflora</i>	few-flowered spikerush					X
<i>Elymus cinereus</i>	Great Basin wild rye					X
<i>Elymus glaucus</i>	blue wild rye					X
<i>Festuca idahoensis</i>	Idaho fescue	X	X	X	X	X
<i>Festuca ovina</i>	sheep fescue					
<i>Juncus acuminatus</i>	tapered rush					X
<i>Juncus balticus</i>	Baltic rush	X				X
<i>Juncus bufonius</i>	toad rush					X
<i>Juncus kelloggii</i>	Kellogg's rush					X
<i>Juncus nevadensis</i> var. <i>badius</i>	sierra rush					X
<i>Juncus tenuis</i>	slender rush					X

<i>Koeleria macrantha</i>	prairie junegrass	X	X			X
<i>Luzula campestris</i>	field woodrush				X	
<i>Muhlenbergia filiformis</i>	pullup muhly					X
<i>Muhlenbergia richardsonis</i>	mat muhly					X
<i>Phleum pratense</i> (E)	timothy	X				X
<i>Poa bulbosa</i> (E)	bulbous bluegrass				X	
<i>Poa cusickii</i>	Cusick's bluegrass					X
<i>Poa fendleriana</i>	muttongrass	X			X	
<i>Poa nervosa</i>	Wheeler's bluegrass					X
<i>Poa pratensis</i> (E)	Kentucky bluegrass					X
<i>Poa secunda</i>	Sandberg's bluegrass	X	X			X
<i>Sitanion hystrix</i>	bottlebrush squirreltail	X	X	X	X	X
<i>Stipa columbiana</i>	large needlegrass					X
<i>Stipa comata</i>	Tweedy's needlegrass	X				
<i>Stipa occidentalis</i>	western needlegrass	X				X
<i>Stipa thurberiana</i>	Thurber's needlegrass	X				
<i>Trisetum canescens</i>	tall trisetum				X	

### Fauna

Faunal species have not been systematically studied or inventoried in Vee Pasture RNA. Observations of animal species taken during surveys conducted at the site as well as surveys on nearby areas are included below. The RNA falls within critical mule deer and Rocky Mountain elk winter range which is located at the interface of the sagebrush steppe and the continuous ponderosa pine forest (Fremont National Forest Land and Resource Management Plan 1989). Characteristic features of winter range are the well developed thermal cover provided by younger conifer trees and mountain mahogany shrubs and the presence of bitterbrush, a preferred and nutritious browse plant (Seyer 1980). The RNA is important summer range for mule deer and Rocky Mountain elk. Elk populations have increased dramatically in the past five years and deer populations are apparently much lower than they were fifty years ago (Terry Hershey, pers. comm.).

The following terrestrial vertebrates are among those most likely to be encountered in the RNA (Burt and Grossenbieder 1976; Verts and Carraway 1984, National Geographic Society 1987, Nussbaum *et al.* 1983, Leonard *et al.* 1993, M. Gebben pers. comm. 1995 ). (Oregon Natural Heritage Program 1995). ["\*" Indicates taxa listed by the Oregon Natural Heritage Program (Oregon Natural Heritage Program 1995)]

### Potential Fauna of the Vee Pasture Research Natural Area

Scientific name

Common name

### **Anguidae**

*Elgaria coerulea* northern alligator lizard

**Iguanidae**

*Phrynosoma douglasii* short-horned lizard  
*Sceloporus occidentalis* western fence lizard  
*Uta stansburiana* side-blotched lizard  
*Sceloporus graciosus* sagebrush lizard

**Scinidae**

*Eumeces skiltonianus* western skink

**Colubridae**

*Contia tenuis* sharptail snake  
*Thamnophis ordinoides* northwestern garter snake  
*Thamnophis sirtalis* common garter snake  
*Coluber constrictor* racer snake  
*Pituophis melanoleucus* gopher snake  
*Masticophis taeniatus* striped whipsnake  
*Hypsiglena torquata* night snake

**Viperidae**

*Crotalus viridis* western rattlesnake

**Pelobatidae**

*Scaphiopus intermontanus* Great basin spadefoot

**Bufo**

*Bufo boreas* western toad

**Hylidae**

*Hyla regilla* Pacific treefrog

**Cathartidae**

*Cathartes aura* turkey vulture

**Accipitridae**

*Accipiter striatus* sharp-shinned hawk  
*Accipiter gentilis* northern goshawk  
*Buteo jamaicensis* red-tailed hawk  
*Buteo lagopus* rough-legged hawk  
*Aquila chrysaetos* golden eagle  
*Accipiter cooperii* Cooper's hawk  
*Buteo swainsoni* Swainson's hawk

*Buteo regalis* ferrugineous hawk

**Falconidae**

*Falco sparverius* kestrel  
*Falco mexicanus* prairie falcon  
*Falco columbarius\** merlin

**Phasianidae**

*Centrocercus urophasianus* sagebrush grouse

**Columbidae**

*Zenaida macroura* mourning dove

**Strigidae**

*Bubo virginianus* great horned owl  
*Glaucidium gnoma* northern pygmy owl  
*Asio otus* long-eared owl

**Caprimulgidae**

*Chordeiles minor* common nighthawk

**Apodidae**

*Chaetura vauxi* Vaux's swift

**Hirundinidae**

*Tachycineta thalassina* violet-green swallow  
*Petrochelidon pyrrhonota* cliff swallow

**Trochilidae**

*Selasphorus rufus* rufous hummingbird  
*Stellula calliope* calliope hummingbird  
*Archilochus alexandri* black-chinned hummingbird

**Picidae**

*Picoides pubescens* downy woodpecker  
*Picoides villosus* hairy woodpecker  
*Picoides albolarvatus* white-headed woodpecker  
*Colaptes auratus* northern flicker  
*Sphyrapicus ruber* red-breasted sapsucker  
*Melanerpes lewis* Lewis's woodpecker  
*Sphyrapicus nuchalis* red-naped sapsucker  
*Sphyrapicus thyroideus* Williamson's sapsucker  
*Leuconerpes albolarvatus* black-backed woodpecker

*Colaptes auratus* northern flicker

**Tyrannidae**  
*Contopus borealis* olive-sided flycatcher  
*Contopus sordidulus* western wood-pewee  
*Empidonax oberholseri* dusky flycatcher  
*Empidonax wrightii* gray flycatcher  
*Empidonax hammondi* Hammond's flycatcher

**Alaudidae**  
*Eremophila alpestris* horned lark

**Corvidae**  
*Perisoreus canadensis* gray jay  
*Cyanocitta stelleri* steller's jay  
*Corvus corax* common raven  
*Nucifraga columbiana* Clark's nutcracker  
*Pica pica* black-billed magpie  
*Aphelocoma coerulescens* scrub jay

**Paridae**  
*Parus atricapillus* black-capped chickadee  
*Parus gambeli* mountain chickadee

**Aegithalidae**  
*Psaltriparus minimus* bushtit

**Sittidae**  
*Sitta carolinensis* white-breasted nuthatch  
*Sitta canadensis* red-breasted nuthatch  
*Sitta pygmaeus* pygmy nuthatch

**Certhiidae**  
*Certhia americana* brown creeper

**Troglodytidae**  
*Troglodytes aedon* house wren  
*Catherpes mexicanus* canyon wren  
*Troglodytes troglodytes* winter wren  
*Salpinctes obsoletus* rock wren

**Sylviidae**  
*Regulus calendula* ruby-crowned kinglet

*Regulus satrapa* golden-crowned kinglet

**Muscicapidae**

*Sialia currucoides* mountain bluebird  
*Catharus ustulatus* Swainson's thrush  
*Catharus guttatus* hermit thrush  
*Myadestes townsendi* Townsend's solitaire  
*Turdus migratorius* American robin  
*Ixoreus naevius* varied thrush

**Laniidae**

*Lanius ludovicianus* loggerhead shrike  
*Lanius excubitor* northern shrike

**Mimidae**

*Oreoscoptes montanus* sagebrush thrasher

**Bombycillidae**

*Bombycilla cedrorum* cedar waxwing

**Sturnidae**

*Sturnus vulgaris* European starling

**Vireoniidae**

*Vireo solitarius* solitary vireo  
*Vireo gilvus* warbling vireo

**Emberizidae**

*Vermivora celata* orange-crowned warbler  
*Dendroica coronata* yellow-rumped warbler  
*Oporonis agilis* MacGillivray's warbler  
*Wilsonia pusilla* Wilson's warbler  
*Piranga ludoviciana* western tanager  
*Chlorura chlorura* green-tailed towhee  
*Spizella passerina* chipping sparrow  
*Pooecetes gramineus* vesper sparrow  
*Chondestes grammacus* lark sparrow  
*Spizella breweri* Brewer's sparrow  
*Zonotrichia atricapilla* golden-crowned sparrow  
*Zonotrichia leucophrys* white-crowned sparrow  
*Junco hyemalis* dark-eyed junco  
*Euphagus cyanocephalus* Brewer's blackbird  
*Molothrus ater* brown-headed cowbird

<i>Dendroica petechia</i>	yellow warbler
<i>Dendroica townsendi</i>	Townsend's warbler
<i>Geothlypis trichas</i>	common yellowthroat
<i>Spizella arborea</i>	American tree sparrow
<i>Passerculus sandwichensis</i>	savannah sparrow
<i>Melospiza melodia</i>	song sparrow
<i>Passerina amoena</i>	lazuli bunting
<i>Pipilo erythrophthalmus</i>	rufous-sided towhee
<i>Passerella iliaca</i>	fox sparrow
<i>Melospiza lincolni</i>	Lincoln's sparrow

### **Fringillidae**

<i>Carpodacus cassinii</i>	Cassin's finch
<i>Loxia curvirostra</i>	red crossbill
<i>Carduelis pinus</i>	pine siskin
<i>Coccothraustes vespertinus</i>	evening grosbeak

### **Soricidae**

<i>Sorex vagrans</i>	vagrant shrew
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### **Talpidae**

<i>Scapanus orarius</i>	Pacific mole
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### **Verperilionidae**

<i>Antrozous pallidus*</i>	pallid bat
<i>Eptesicus fuscus</i>	big brown bat
<i>Lasionycteris noctivagrans*</i>	silver-haired bat
<i>Lasiurus cinereus</i>	hoary bat
<i>Myotis californicus</i>	California myotis
<i>Myotis evotis*</i>	long-eared myotis
<i>Myotis lucifugus</i>	little brown myotis
<i>Myotis volans *</i>	long-legged myotis
<i>Myotis yumanensis*</i>	Yuma myotis
<i>Plecotus townsendii pallescens*</i>	pale western big-eared bat or Townsend's big-eared
<i>Plecotus townsendii townsendii*</i>	Pacific big-eared bat or Townsend's big-eared bat

### **Leporidae**

<i>Sylvilagus nuttalli</i>	mountain cottontail
<i>Lepus americanus</i>	snowshoe hare
<i>Lepus californicus</i>	blacktail jackrabbit

### **Sciuridae**



<i>Eutamias townsendii</i>	Townsend's chipmunk
<i>Eutamias minimus</i>	least chipmunk
<i>Eutamias amoenus</i>	yellow-pine chipmunk
<i>Citellus lateralis</i>	golden-mantled squirrel
<i>Tamiasciurus douglasii</i>	Douglas' squirrel

**Geomyidae**

<i>Thomomys mazama</i>	Mazama pocket gopher
<i>Thomomys talpoides</i>	northern pocket gopher

**Cricetidae**

<i>Dipodomys ordi</i>	ord kangaroo rat
<i>Peromyscus maniculatus</i>	deer mouse
<i>Neotoma cinerea</i>	bushy-tailed woodrat
<i>Lagurus curtatus</i>	sagebrush vole
<i>Onychomys leucogaster</i>	northern grasshopper mouse
<i>Perognathus parvus</i>	Great Basin pocket mouse
<i>Reithrodontomys megalotis</i>	western harvest mouse
<i>Spermophilus lateralis</i>	mantled ground squirrel
<i>Spermophilus townsendi</i>	Townsend ground squirrel

**Erethizontidae**

<i>Erethizon dorsatum</i>	porcupine
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**Canidae**

<i>Canis latrans</i>	coyote
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**Ursidae**

<i>Ursus americanus</i>	black bear
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**Mustelidae**

<i>Mustela frenata</i>	ermine
<i>Mustela frenata</i>	long-tailed weasel
<i>Spilogale gracilis</i>	western spotted skunk
<i>Mephitis mephitis</i>	striped skunk
<i>Taxidea taxus</i>	badger

**Felidae**

<i>Felis rufus</i>	bobcat
<i>Felix concolor</i>	mountain lion

**Cervidae**

<i>Odocoileus hemionus</i>	mule deer
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### Aquatic

Aquatic habitats are located within the Vee Pasture RNA in the vernal wetlands located on the Plateau. These vernal wetlands support a flora different from the rest of the RNA. The wetlands may provide habitat for invertebrate breeding and feeding. In addition, the wetlands may provide habitat for vertebrates such as amphibians.

### Geology

Geology of Vee Pasture RNA has not been described in detail and texts of Oregon geology do little to describe the area (Baldwin 1964). Vee Pasture RNA lies in the East Cascades physiographic province at the western edge of the Basin and Range physiographic province. The RNA is located on a high, rugged plateau north of and extending between the Lakeview and Klamath Falls areas, east of the Mazama-originated pumice zone. This plateau is characterized by numerous basaltic and rhyolitic eruptive centers. The basalt lavas from these centers flowed considerable distances before cooling, creating broad plateaus. Being highly resistant to erosion, the resultant landforms are flat to gently rolling tablelands, showing little stream erosion. Vee Pasture represents one such basalt tableland (the bedrock over most of the RNA is composed of basalt), steeply dissected on two sides by the South Fork of the Sprague River and Brownsworth Creek, which come together at its west end, forming a V-shaped tract. Slopes are very slight on the top, ranging from one to two percent and having a northwest aspect. Much of the surface of the RNA is covered by vesicular basalt stones. The nearby Gearhart Mountain, a dome-shaped shield volcano, dominates the topography to the north.

### Soils

Soils fall into two main types -- either very shallow to shallow, ranging from 8-20 inches (20-50 cm) deep, or shallow to moderately deep, ranging from 15 to 25 inches (38-63 cm). Both were formed from thin Pliocene-Pleistocene flows of open textured basalt and minor basalt breccia, overlain by pleistocene to recent aeolian ash and pumice deposits. The shallower soils are covered by up to 90% vesicular basalt stones, whereas the somewhat deeper soils exhibit only 50-90% stone covering. Both soils have dark brown loam to clay loam surface layers with fine granular structure, and subsoil layers ranging from dark reddish brown to strong brown clay to silty clay loams. The shallower soils tend to have stronger prismatic or angular blocky structure, rather than the fine to medium subangular blocky structure of the deeper soils. Both are characterized by a duripan layer in the lower subsoil that is weakly cemented, hard and massive, restricting permeability in subsoils considerably. Fertility is low in both soils. The Fremont Forest Soil Resource Inventory (1979) shows three soil mapping units present within the boundary of the RNA (Map 5). Mapping units are analogous to soil types with special reference being made to the landforms on which they are found as well as to the vegetation present on them. The soil mapping units are described below.

## Mapping Units

**Mapping Unit 28:** Very shallow to shallow, very stony residual soils associated with "scabrock flats". Surface soils are very thin to thin and moderately fine textured. Subsoils are thin and fine or moderately fine textured. Lower subsoil commonly contains a white, silica cemented duripan. Surface, vesicular basalt stones cover up to 90% of the landtype. Mapping unit 28 supports low sagebrush and Sandberg's bluegrass.

**Mapping Unit 30A:** Shallow to moderately deep, stony residual soils. Surface soils are thin and medium to moderately fine textured. Subsoils are thin and moderately fine or fine textured. Surface vesicular basalt boulders commonly cover up to 50% of the surface. Lower subsoil commonly contains a white, silica cemented duripan. Mapping unit 30A has low sagebrush, Idaho fescue and Sandberg's bluegrass

**Mapping Unit 1:** Steep and narrow canyon lands which are dominated by steep slopes, talus, and bedrock outcrops. Soils are very shallow to moderately deep on sideslopes. Alluvial stringer soils along drainageways are deep. Vegetation is varied with western juniper, mountain mahogany, big sagebrush, and low sagebrush being prominent. Slopes range from 30 to 80 percent. This mapping unit is restricted to the boundaries of the RNA.

## Lands

Vee Pasture RNA is bordered on the west, southwest, and northwest by lands managed by the Fremont National Forest classified as Management Area 1 in the Fremont National Forest Land and Resource Management Plan (1989) and are managed for mule deer habitat with an emphasis on maintaining critical components of deer winter range. Limited amounts of timber harvest may occur in Management Area 1 and livestock grazing is permitted so long as the goals for big game habitat are not compromised. The portion of the South Fork of the Sprague River located southeast of the RNA on Forest Service land was deemed eligible for Wild and Scenic River determination (USDA 1995). This section of river received outstandingly remarkable status for fisheries and wildlife. In addition, the entire southern edge of the RNA was located in the Initial Preliminary Study Boundary for the Wild and Scenic River eligibility determination.

Private lands are located to the north, south and west of the RNA and are managed for grazing and timber production. Lands 2 miles (3.2 km) to the west of the RNA are within BLM grazing allotments.

## Cultural

There are no known cultural resources of significance located within the Vee Pasture RNA. A complete cultural resources inventory has not been conducted in the RNA.

## IMPACTS AND POSSIBLE CONFLICTS

### Grazing

Due to natural barriers, rockiness of the soil surface, and distance from water, livestock have historically used the area to only a limited extent. However, introduced species do occur in the RNA. Cheatgrass (*Bromus tectorum*) and Japanese brome (*Bromus japonicus*) are the only known significant weed infestations in the RNA, occurring near the northeast corner of the site, scattered throughout the ponderosa pine-juniper woodlands and under juniper canopies in juniper/low sagebrush vegetation. At Vee Pasture RNA livestock grazing is not needed to maintain the objectives for which the RNA is being established, *i.e.*, grazing is not needed to maintain the terrestrial plant communities within the RNA. An accepted casual or incidental level of livestock use that is consistent with RNA management needs to be established by the Forest Supervisor and Station Director

### Mineral Resources

There are no reported hardrock mining claims in Vee Pasture RNA. Mineral resources are not usually found associated with lands such as those found within the RNA. The RNA will be proposed for withdrawal of mineral entry upon formal establishment.

### Timber

There is no merchantable timber resource located on this area.

### Watershed Values

There are no significant watershed values present at Vee Pasture RNA. The wetlands are quite small and vernal in nature, *i.e.* the wetlands appear to be part of an internal drainage system only. The entire southern edge of the RNA was located in the Initial Preliminary Study Boundary for the wild and scenic river eligibility determination of the South Fork of the Sprague River. Designation and establishment of the RNA may aid in protecting watershed values present in the South Fork of the Sprague River.

### Transportation Plans

The only road traversing any portion of the tract is a 4-wheel drive dirt road, which appears to receive little use. This road provides a foci for invasion by exotic species. Therefore, this road should be physically blocked and cross-drained to curtail the presently accelerated erosion it is causing. Reseeding should not be carried out unless locally collected seeds of native plants are used. The RNA does not block any transportation plans for logging operations on adjacent lands. Vee Pasture does not block transportation system development or occupy critical logging operation lands for adjacent tracts.

No roads or trails are planned for this area. The road which presently crosses the Vee Pasture should be physically blocked and cross-drained to curtail the presently accelerated erosion it is causing.

#### Recreation Values

Due to inaccessibility Vee Pasture RNA receives very limited recreational use. The level of use by hunters is unknown but probably slight. Casual recreation use has not seriously impacted the RNA to date, however, use could increase fire danger in the area. Recreational use and identification of the site as an RNA on general forest recreation maps should be discouraged. Vehicle use on the RNA must be prohibited.

#### Wildlife and Plant Values

There have been no listed threatened or endangered wildlife species located within Vee Pasture RNA to date.

#### Special Management Area Values

The portion of the South Fork of the Sprague River located southeast of the RNA on Forest Service land was deemed eligible for Wild and Scenic River determination (USDA 1995). This section of river received outstandingly remarkable status for fisheries and wildlife. In addition, the entire southern edge of the RNA was located in the Initial Preliminary Study Boundary for the wild and scenic river eligibility determination.

### MANAGEMENT PRESCRIPTION

Management and protection of Vee Pasture RNA will be directed towards maintaining natural ecological processes. Activities of humans that disturb or modify ecological processes will be discouraged.

Vee Pasture RNA is included, along with other RNAs, in the Fremont National Forest Plan in Management Area 8, Research Natural Areas (Fremont National Forest Land and Resource Management Plan 1989). Standards and guidelines for management are noted in the Forest Plan for the Management Area.

#### Vegetation Management

Standards and guidelines for RNAs, Management Area 8, address vegetation management under several different headings (Fremont National Forest Land and Resource Management Plan 1989). The overall management direction for all RNAs is to preserve the naturally occurring physical and biological processes at the site.

Wildfire will be actively suppressed unless plans approved by the Director of the Pacific Northwest Research Station provide for letting natural fires burn. Fire suppression will use methods and equipment that will minimize disturbance to the special features of the area (Fremont National Forest Land and Resource Management Plan 1989). Prescribed burning will be used only as specified in approved research projects or when needed to meet RNA management goals.

As stated above (see Grazing section) an accepted casual or incidental level of livestock use that is consistent with RNA management needs to be established by the Forest Supervisor and Station Director as soon as possible.

Introduced species and weedy native species are a concern at the RNA. At this time cheatgrass (*Bromus tectorum*) and Japanese brome (*Bromus japonicus*) are the only known significant weed infestations in the RNA, occurring near the northeast corner of the site, scattered throughout the ponderosa pine-juniper woodlands and under juniper canopies in juniper/low sagebrush vegetation. Monitoring in the form of biennial surveys of the RNA should be conducted to detect weedy invasions and to track the spread of cheatgrass into other natural communities in the RNA.

#### ADMINISTRATION RECORDS AND PROTECTION

Administration and protection of Vee Pasture RNA will be the responsibility of the Fremont National Forest. The District Ranger, Bly Ranger District, has direct responsibility.

The Director of the Pacific Northwest Research Station will be responsible for any studies or research conducted in the area, and requests to conduct research in the RNA should be referred to that office. The RNA Scientist in the Research Station is designated as the lead contact person for all such requests. The Director will evaluate research proposals and coordinate all studies and research in the area with the District Ranger. All plant and animal specimens collected in the course of research conducted in the area will be properly preserved and maintained within university or federal agency herbaria and museums, approved by the Pacific Northwest Research Station.

Records for the Vee Pasture RNA will be maintained in the following offices:

Forest Supervisor, Fremont National Forest, Lakeview, Oregon  
District Ranger, Bly Ranger District, Bly, Oregon  
Director, Pacific Northwest Research Station, Portland, Oregon  
Forest Sciences Laboratory, Oregon State University, Corvallis, Oregon

#### Archiving

The Pacific Northwest Research Station will be responsible for maintaining the Vee Pasture

RNA research data file and list of herbarium and species samples collected. The Forest Sciences Lab in Corvallis, Oregon is establishing a data base for maintaining research data and lists of species for all RNAs in the region. Computerized files for the RNA will be maintained at the Forest Sciences Lab.

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2000-10

VEE PASTURE  
RESEARCH NATURAL AREA

The property described herein lies within the following sections, Townships and Ranges: section 36, T. 36 S., R. 15 E., and sections 1 and 2, T.37 S., R15 E., located in Klamath County, State of Oregon, and section 31, T. 36 S., R.16 E., and section 6, T. 37 S., R. 16 E., located in Lake County, State of Oregon.

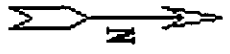
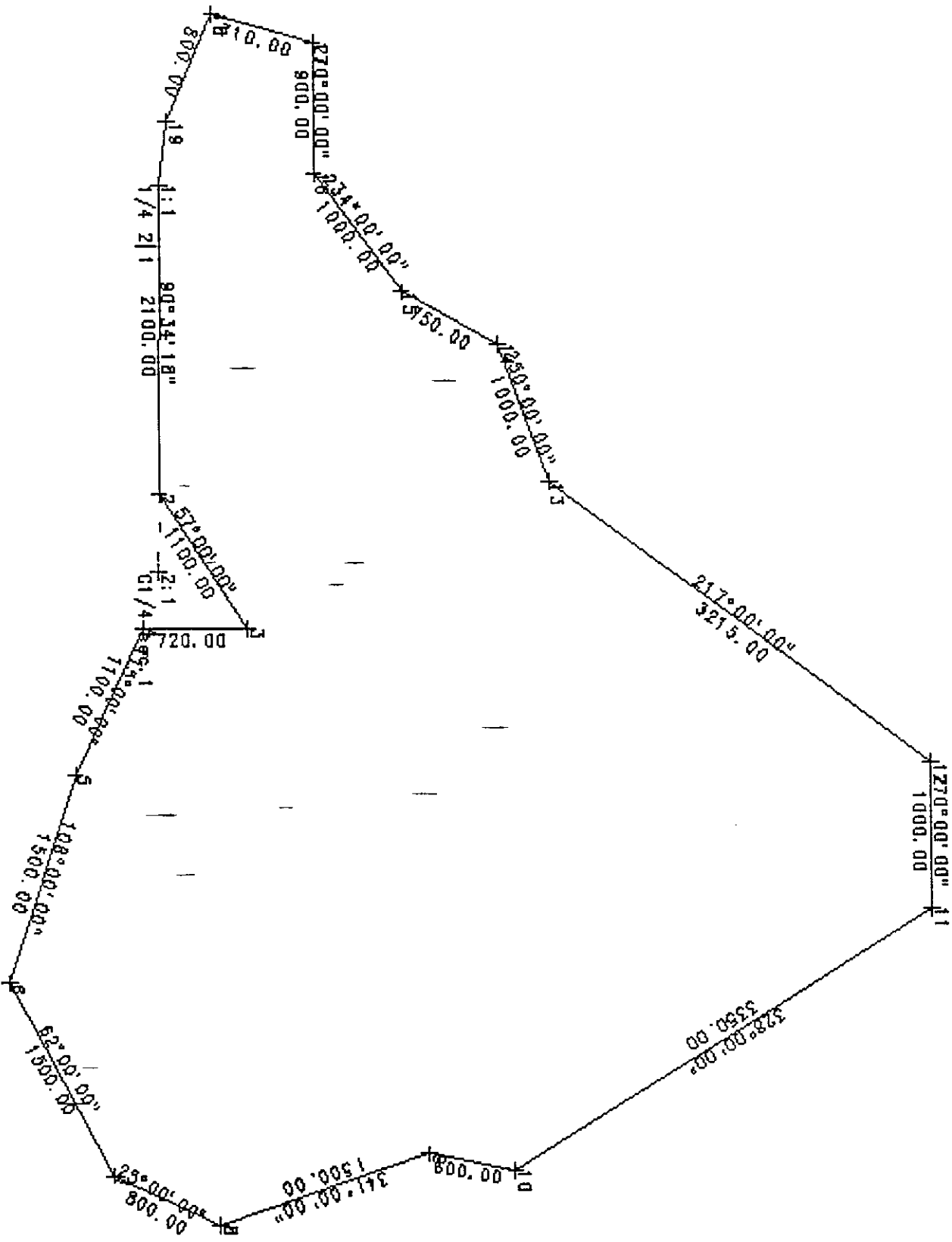
From the 1/4 section corner between sections 1 and 2, T. 37 S., R. 15 E., Willamette Meridian, which is an aluminum post 2 1/2 inch diameter with an aluminum cap, 3 1/4 inch diameter properly stamped and recorded, and lying approximately 100 feet north of canyon rim, thence S. 89°25'42" E., 2100.0 feet along the property line which is posted and marked, to a point, which bears N. 89°25'42"W., 537.45 feet from the Center 1/4 section corner for section 1, which is an aluminum post 2 1/2 ins. diameter with an aluminum cap, 3 1/4 ins. diameter properly stamped and recorded, thence

N. 57°00' E., 1100 feet to a point, thence  
— S. 00°00' E., 720 feet to a point, thence  
S. 65°00' E., 1100 feet to a point, thence  
S. 72°00' E., 1500 feet to a point, thence  
N. 62°00' E., 1500 feet to a point, thence  
N. 25°00' E., 800 feet to a point, thence  
N. 19°00' W., 1500 feet to a point, thence  
N. 11°00' E., 600 feet to a point, thence  
N. 32°00' W., 3350 feet to a point, thence  
— S. 90°00' W., 1000 feet to a point, thence  
S. 37°00' W., 3215 feet to a point, thence  
S. 70°00' W., 1000 feet to a point, thence  
S. 28°00' W., 750 feet to a point, thence  
S. 54°00' W., 1000 feet to a point, thence  
S. 90°00' W., 900 feet to a point, thence  
S. 16°00' W., 710 feet to a point, thence  
S. 67°00' E., 800 feet to a point, thence  
S. 83°00' E., 440 feet to the True Point of Beginning.

The described parcel contains 622.28 acres,

*Peter A. Olson*

Peter A. Olson  
Forest Land Surveyor  
October 25, 1996



0 1000  
Scale 1"=1000 FT

**DECISION NOTICE / DESIGNATION ORDER  
and  
FINDING OF NO SIGNIFICANT IMPACT**

**ESTABLISHMENT OF ELEVEN  
RESEARCH NATURAL AREAS**

**USDA Forest Service  
Pacific Northwest Region  
Oregon and Washington**

By virtue of the authority vested in me by the Chief of the Forest Service, in Forest Service Manual Section 4063, I hereby establish the Research Natural Areas listed in Table 1 and as described in their respective Establishment Records in the section entitled "Location".

**Table 1: Research Natural Area Locations**

<b>R N A</b>	<b>National Forest</b>	<b>Ranger District</b>	<b>County</b>	<b>Acres</b>
<b>Oregon</b>				
<b>Cache Mountain</b>	Deschutes	Sisters	Deschutes	1400
<b>Dry Mountain</b>	Ochoco	Snow Mountain	Harney	2205
<b>Gumjuwac/Tolo</b>	Mt. Hood	Barlow	Hood River	3600
<b>Hagan</b>	Willamette	Blue River	Lane	1126
<b>McKenzie Pass</b>	Willamette	McKenzie	Lane	1187
<b>Mokst Butte</b>	Deschutes	Bend/Fort Rock	Deschutes	1250
<b>Reneke Creek</b>	Siuslaw	Hebo	Tillamook	480
<b>Tenmile Creek</b>	Siuslaw	Oregon Dunes NRA	Coos	1190
<b>Vee Pasture</b>	Fremont	Bly	Klamath & Lake	620
<b>Washington</b>				
<b>Fish Lake Bog</b>	Wenatchee	Lake Wenatchee	Chelan	206
<b>Roger Lake</b>	Okanogan	Tonasket	Okanogan	436

The Regional Forester recommended the establishment of these RNAs in the Record of Decision for their respective Land and Resource Management Plans (Forest Plans). That recommendation was the result of an analysis of the factors listed in 36 CFR 219.25 and Forest Service Manual 4063.2. Results of the Regional Forester's analysis are documented in the Forest Plans and Final Environmental Impact Statements which are available to the public.

## **SELECTED ALTERNATIVE**

The Regional Forester has reexamined the RNAs to ensure that the environmental effects of establishing the areas as RNAs have not changed since the Forest Plans were adopted. In three cases (Cache Mountain, Dry Mountain, and Gumjuwac/Tolo) areas were recommended for addition or deletion from the proposed RNA to better accomplish the original purpose of the RNA. Proposed Tenmile Creek RNA boundary adjustments were adopted by the Record of Decision for the Oregon Dunes National Recreation Area Management Plan in 1994. For the remaining RNAs no changes were found. This analysis is documented in the attached Environmental Assessment.

Based on the analysis in the Environmental Assessment, it is my decision to adopt Alternative 2 which establishes these eleven areas as Research Natural Areas. Alternative 2 is selected because it provides long-term protection of the research and educational values of these special areas and the ecosystem elements that they represent. The RNAs will be managed in compliance with all relevant laws, regulations and Forest Service Manual direction regarding RNAs and in accordance with the management direction identified in their respective Forest Plans.

Although this alternative is consistent with the management direction in each Forest Plan it does change the allocation for these areas from "Proposed RNA" to "Established RNA". This is a non-significant amendment of the Forest Plans [36 CFR 219.10(f)].

## **OTHER ALTERNATIVE CONSIDERED**

The other alternative considered was Alternative 1, the "No Action" alternative which would continue management of the RNAs as "Proposed RNAs". Alternative 1 was not selected because it would provide only short-term protection of the research and educational values of the areas. Alternative 1 is consistent with the Forest Plans.

## **FINDING OF NO SIGNIFICANT IMPACT**

Based on the environmental analysis documented in the Environmental Assessment, it has been determined that the proposed action is not a major federal action that would significantly affect the quality of the human environment, therefore, an environmental impact statement is not needed. This determination is based on the following factors [40 CFR 1508.27]:

### **CONTEXT**

Although this is an addition to the national system of RNAs, both short-term and long-term physical and biological effects are limited to the local area.

### **INTENSITY**

1. There are no known effects on public health and safety.
2. No significant direct, indirect or cumulative impacts to the natural resources or other components of the human environment are anticipated.
3. Effects on the human environment are not uncertain, do not involve unique or unknown risks,

and are not likely to be highly controversial.

4. There are no known effects on historical or cultural resources, park lands, prime farmlands, wetlands, or wild and scenic rivers. Effects of establishing the RNAs is to protect ecologically sensitive areas. No significant adverse effects area anticipated to any environmentally sensitive or critical area.

5. The action is not likely to establish a precedent for future actions with significant effects.

6. The proposed action will not adversely affect any federally listed or proposed endangered or threatened species or Regionally listed sensitive species of plants or animals or their critical habitats.

7. The proposed action is consistent with the *Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl* (USDA, USDI 1994).

8. The proposed action is consistent with Federal, State, and local laws and requirements for protection of the environment.

## **NOTIFICATION and IMPLEMENTATION**

Legal notice of this decision will appear in The Oregonian and The Seattle Post-Intelligencer. The Forest Supervisor of each National Forest shall notify the public of this decision and mail a copy of the Decision Notice/Designation Order to all persons on their Forest Plan mailing lists.

Implementation of this decision shall not occur within seven days following publication of the legal notice of the decision in The Oregonian and The Seattle Post-Intelligencer.

## **APPEAL RIGHTS**

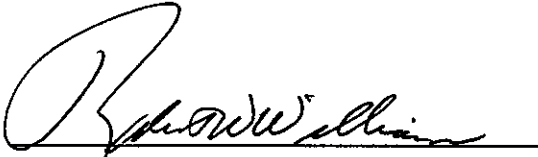
This decision is subject to appeal pursuant to 36 CFR Part 217. A copy of the Notice of Appeal must be in writing and must be submitted to:

Chief, USDA Forest Service  
ATTN: NFS Appeals  
14th and Independence Ave., S.W.  
P.O. Box 96090  
Washington, DC 20090-6090

Any written Notice of Appeal of this decision must be fully consistent with 36 CFR 217.9 (Content of a Notice of Appeal), must include the reasons for appeal, and must be submitted within 45 days from the date of legal notice of this decision in The Oregonian and The Seattle Post-Intelligencer.

CONTACT PERSON

For further information regarding this decision contact Sarah Greene,  
RNA Coordinator, Pacific Northwest Research Station, 3200 S.W. Jefferson  
Way, Corvallis, Oregon 97331, Phone 541-750-7360.

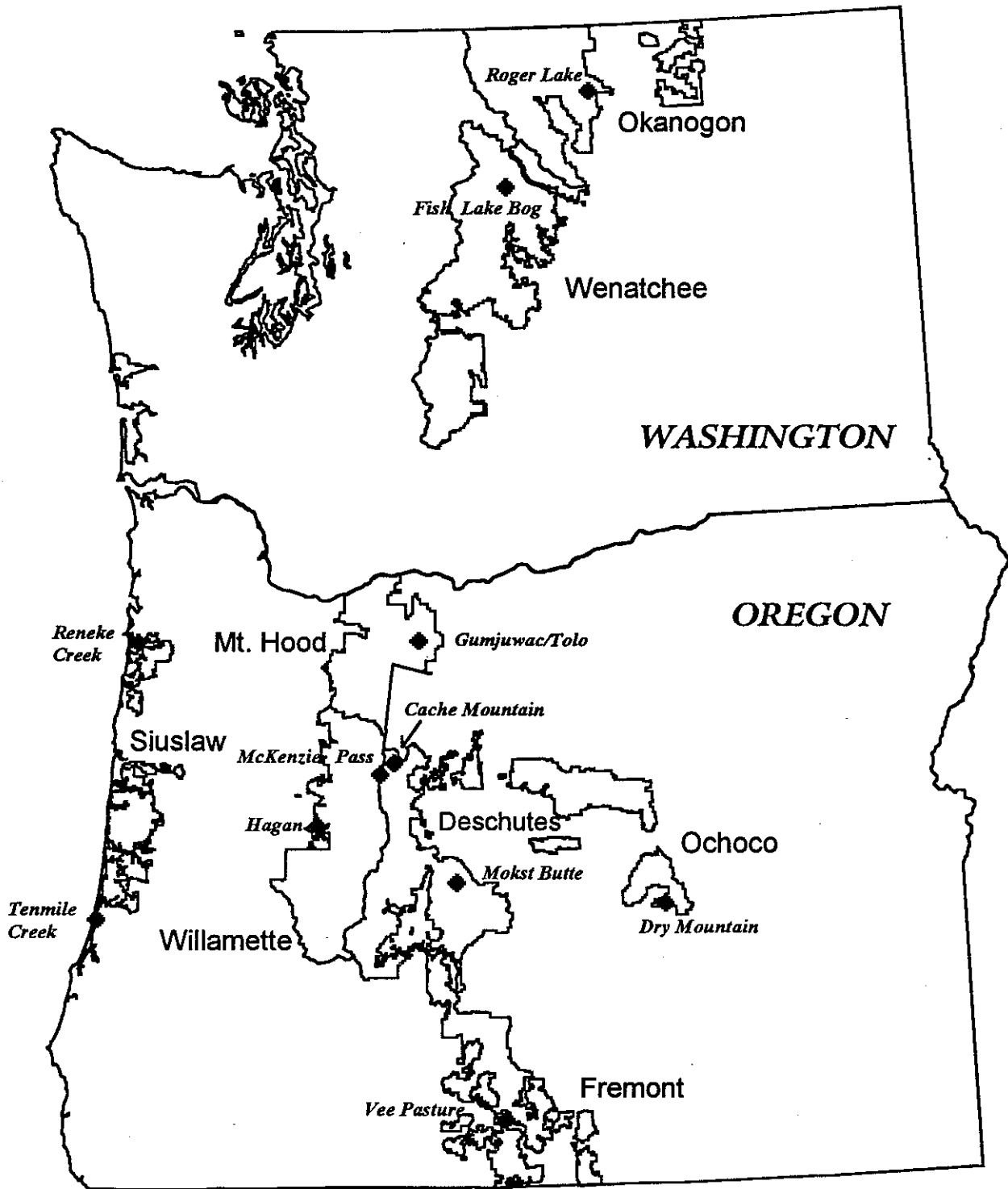


ROBERT W. WILLIAMS  
Regional Forester

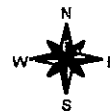
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# Research Natural Area Locations



50 0 50 Miles





# **ESTABLISHMENT OF ELEVEN RESEARCH NATURAL AREAS**

## **ENVIRONMENTAL ASSESSMENT**

Pacific Northwest Region  
USDA Forest Service  
Oregon and Washington

**Lead Agency:**

USDA Forest Service  
P.O. Box 3623  
Portland, OR 97208

**Responsible Official:**

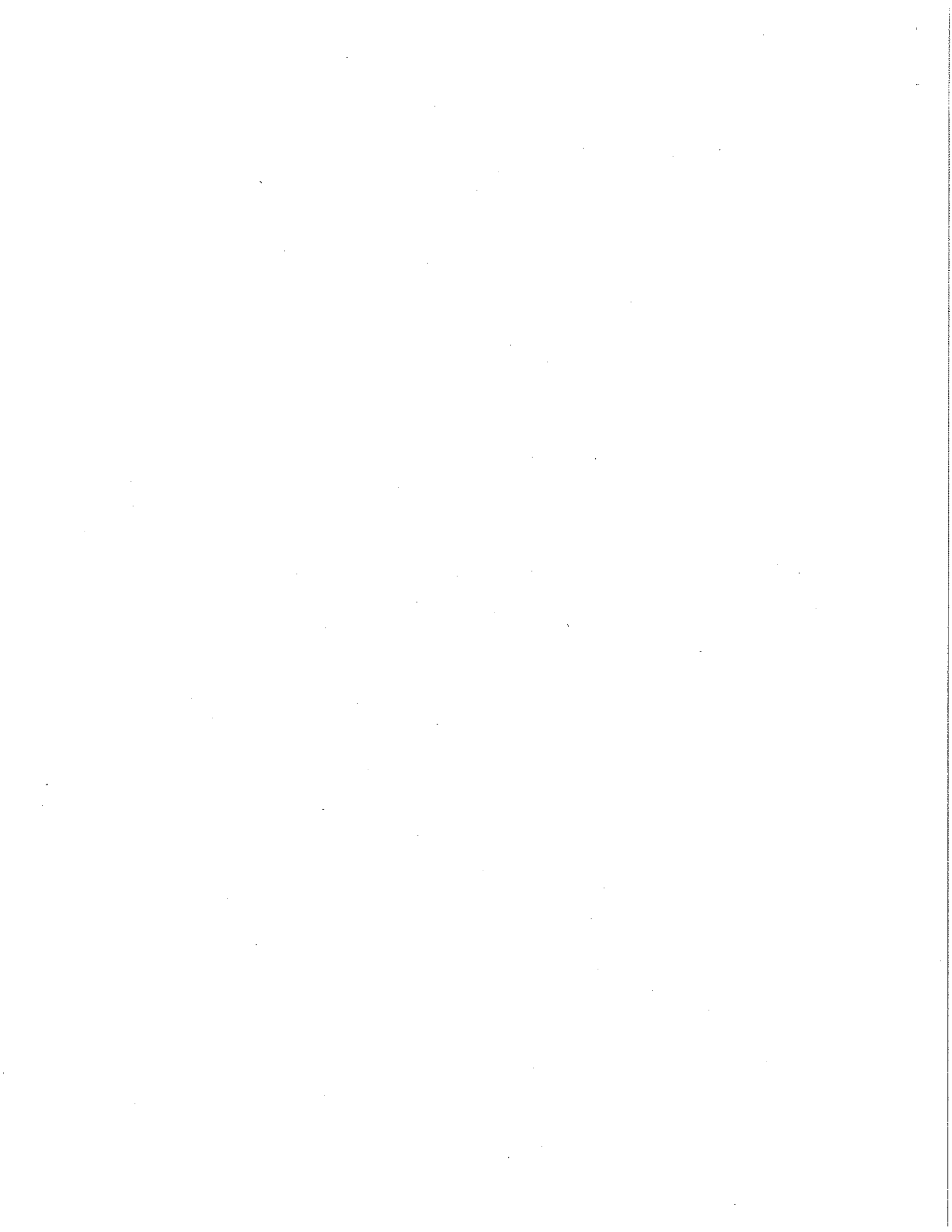
ROBERT W. WILLIAMS, Regional Forester  
Pacific Northwest Region  
P.O. Box 3623  
Portland, OR 97208

**Prepared by:**

Donna Short  
Sweet Home Ranger District  
Willamette National Forest  
3225 Highway 20  
Sweet Home, OR 97386  
541-367-5158

**Abstract:**

This Environmental Assessment identifies the need for the proposed action, describes the analysis process and the alternatives formulated during that process. It discusses the environmental effects of each of the proposed alternatives. Two alternatives were evaluated and compared and are as follows: Alternative 1 - No Action and Alternative 2 - Finalize Establishment.



# ESTABLISHMENT OF ELEVEN RESEARCH NATURAL AREAS

## USDA FOREST SERVICE PACIFIC NORTHWEST REGION OREGON AND WASHINGTON

### ENVIRONMENTAL ASSESSMENT

#### Proposed Action

The proposed action is to establish eleven Research Natural Areas (RNAs) as proposed in the Land and Resource Management Plans (Forest Plan) of each respective National Forest and the Oregon Dunes Management Plan (Tenmile Creek). These RNAs will be managed according to the direction provided in the management plans. This proposed action, formal designation of the RNAs by the Regional Forester, will amend each National Forest's Forest Plan. Table 1 lists the RNAs that are included in this environmental assessment and Figure 1 shows their locations.

**Table 1: Research Natural Area Locations**

R N A	National Forest	Ranger District	County	Acres
<b>Oregon</b>				
Cache Mountain	Deschutes	Sisters	Deschutes	1400
Dry Mountain	Ochoco	Snow Mountain	Harney	2205
Gumjuwac/Tolo	Mt. Hood	Barlow	Hood River	3600
Hagan	Willamette	Blue River	Lane	1126
McKenzie Pass	Willamette	McKenzie	Lane	1187
Mokst Butte	Deschutes	Bend/Fort Rock	Deschutes	1250
Reneke Creek	Siuslaw	Hebo	Tillamook	480
Tenmile Creek	Siuslaw	Oregon Dunes NRA	Coos	1190
Vee Pasture	Fremont	Bly	Klamath & Lake	620
<b>Washington</b>				
Fish Lake Bog	Wenatchee	Lake Wenatchee	Chelan	206
Roger Lake	Okanogan	Tonasket	Okanogan	436

**Figure 1: Vicinity Map**



50 0 50 Miles



## Purpose and Need for Action

The purpose of establishing these RNAs is to contribute to a series of RNAs designated to “illustrate adequately or typify for research or education purposes, the important forest and range types in each forest region, as well as other plant communities that have special or unique characteristics of scientific interest and importance” (36 CFR 251.23). An evaluation by the Regional RNA Committee, pursuant to direction in Forest Service Manual 4063.04b, identified the vegetation types represented by these RNAs as suitable and desirable for inclusion in the national network. Establishment of these RNAs will provide long-term protection and recognition of these representative vegetation types (see Table 2).

**Table 2: Representative Vegetative Types**

RNA	Physiographic Province	Major Vegetation Types		
Cache Mountain	East Slope Oregon Cascades	Mid-elevation lakes with marshy shores	Lodgepole pine/ beargrass and /grouse huckleberry	White fir - Pacific silver fir/snowberry
Dry Mountain	Blue Mountains	Western juniper/big sagebrush	Ponderosa pine/ mountain mahogany	Mountain mahogany/ bunchgrass
Fish Lake Bog	East slope Wash. Cascades	Low elevation wetland & sphagnum bog	Grand fir/vine maple	Western hemlock/ Oregongrape-twinflower
Gumjuwac/Tolo	East Slope Oregon Cascades	Grand fir/ Engelmann spruce/starry solomonsal	Grand fir/ skunkleaf polemonium	
Hagan	West slope Oregon Cascades	Western hemlock/salal-Oregongrape	Douglas-fir/ oceanspray/grass	
McKenzie Pass	High Cascades	Lavaflows with mountain hemlock associations		
Mokst Butte	East Slope Oregon Cascades	Cinder cones with mixed conifer/snowbrush	Ponderosa pine/ bitterbrush	Lava communities
Reneke Creek	Oregon Coast Range	Sitka spruce/ salmonberry	Red alder dominated riparian communities	
Roger Lake	East slope Wash. Cascades	Subalpine fir/ Engelmann spruce	Sedge dominated wetlands	
Tenmile Creek	Oregon Coast Range	Coastal dune mosaic with tree islands	Native stabilized dune grassland	Deflation plain marsh
Vee Pasture	East Slope Oregon Cascades	Western juniper/ low sage	Low sage/ bluegrass/fescue	Low sage/one-spike oatgrass/ junegrass

A more detailed description of the vegetation, wildlife, and physical and climatic conditions can be found in the Establishment Record for each RNA. Site conditions have been reviewed since these RNAs were proposed during the land management planning process and no significant changes have occurred.

## Public Involvement

Each National Forest included this project in their quarterly publication "Schedule of Proposed Actions" (FSH 1909.15, sec. 17) or sent a letter to interested parties. No comments were received from the public on continuing with the establishment process for ten of the RNAs. The proposed RNAs were also subjected to public review and comment during the land management planning process that resulted in the Forest Plans and the Oregon Dunes Management Plan (Tenmile Creek).

Several comments were received on Cache Mountain RNA on the Deschutes National Forest. Eunice Brandt and Donald Fontin expressed support for establishment of the RNA. Comments from the Blue Ribbon Coalition addressed the area proposed to be added to the original RNA boundary, road closures, and access for off-road vehicles. Northwest Antenna Site Services had concerns about use of the communications site on Cache Mountain. Sisters Sno-Go-Fers and William Rice expressed their opposition to placing restrictions on more public lands.

## Alternatives and Environmental Consequences

**Alternative 1, No Action:** This alternative continues management according to the direction in the each National Forest's Forest Plan for "proposed RNAs". This management generally limits recreation use to non-motorized use of existing trails and prohibits timber harvest and/or other vegetation management. There are no cumulative effects generated by this alternative. Other environmental consequences are described in the Final Environmental Impact Statement for each Forest Plan. For those RNAs with boundary changes (Cache Mountain, Dry Mountain, and Gumjuwac/Tolo) there is a possible loss of research potential in the areas that were not included in these RNAs originally.

**Alternative 2, Proposed Action:** This alternative will formally establish each RNA in the location described in their respective Establishment Record. The standards and guidelines listed in each respective Forest Plan will be applied to the management of these RNAs (see Table 3). Environmental consequences of this alternative have been discussed in the Final Environmental Impact Statements for each Forest Plan (Final EIS) and the Record of Decision and Final Environmental Impact Statement for the Oregon Dunes National Recreation Area (Tenmile Creek) (see Table 3). These consequences include the short-term loss of opportunities to change vegetation conditions through management. There are no significant cumulative effects from establishment of these RNAs beyond those already discussed in the Final EIS's.

The direction in the National Forest management plans for established RNAs also includes reasonably foreseeable actions such as withdrawal of the area from mineral entry. The general consequences of withdrawal are discussed in the Final EIS's. Site-specific consequences will be disclosed in more detail when the mineral entry withdrawal recommendation is implemented.

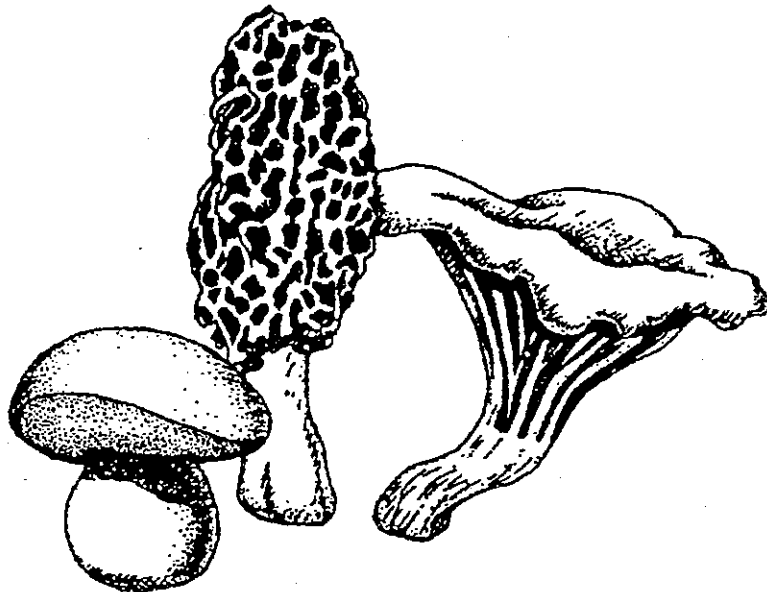
A map of each RNA follows in Figures 2 - 12. A summary of the consequences associated with a particular RNA are listed below the map for that RNA. Those with proposed boundary changes (Cache Mountain, Dry Mountain, Gumjuwac/Tolo) also discuss any additional environmental consequences not covered by the Forest Plan Final EIS for that RNA.



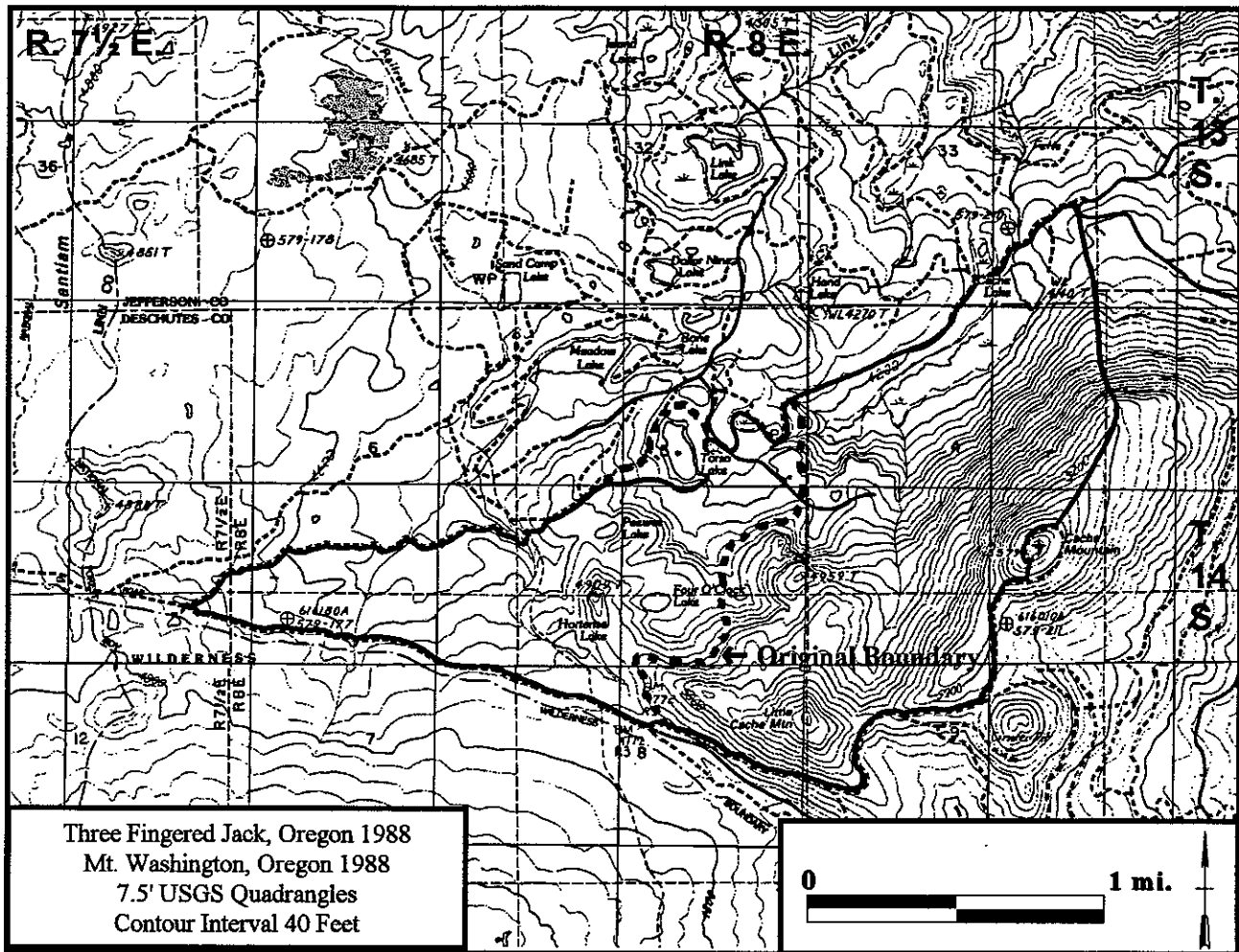
**Table 3: Land Management Plan References**

R N A	Administrative Unit	Standards and Guidelines in Land and Resource Management Plan	Environmental Consequences in Final EIS
Cache Mountain	Deschutes NF	Chapter 4 - pages 92-93	Chapter IV - pages 69-70
Dry Mountain	Ochoco NF	Pages 125-264*	Chapter IV - 9,10, 41, 51, 108
Fish Lake Bog	Wenatchee NF	Chapter IV - pages 189-197	Chapter IV - pages 83-85
Gumjuwac/Tolo	Mt. Hood NF	Chapter IV - pages 136-150	Chapter IV - pages 145-150
Hagan	Willamette NF	Chapter IV - pages 134-137	Chapter IV - pages 166-169
McKenzie Pass	Willamette NF	Chapter IV - pages 134-137	Chapter IV - pages 166-169
Mokst Butte	Deschutes NF	Chapter 4 - pages 92-93	Chapter IV - pages 69-70
Reneke Creek	Siuslaw NF	Chapter IV - pages 104-107	Chapter IV - pages 77-80
Roger Lake	Okanogan NF	Chapter 4 - pages 73-75	Chapter IV - pages 71-72
Tenmile Creek	Oregon Dunes NRA	Chapter III - pages 49-51	Chapter IV - pages 60-62
Vee Pasture	Fremont NF	Pages 126, 165-166	Chapter IV - pages 171-172

\*Specific pages that refer to RNA management include 125-127, 132, 136-138, 142-143, 147, 152, 155, 160, 163-168, 172-175, 178-179, 182, 190, 192, 198, 210, 228-234, 238-239, 250 and 262-264.



**Figure 2: Cache Mountain RNA**



**Boundary Change:** This RNA was originally proposed to include 600 acres in the Deschutes Forest Plan. Review of the area during the establishment process found that the uplands make a significant hydrologic contribution to the lakes and marshy areas that were the main objective for this RNA. To adequately maintain the hydrologic integrity of the system 800 acres were added to the RNA. Torso Lake was found to be significantly altered by previous recreational use and was therefore excluded from the final RNA boundary.

**Mineral Resources:** There are no known locatable or leasable mineral resources in the RNA and there is a low probability of finding them. Salable mineral resources include cinders and a potential hard rock resource. There has been no exploratory work done on the potential hard rock source.

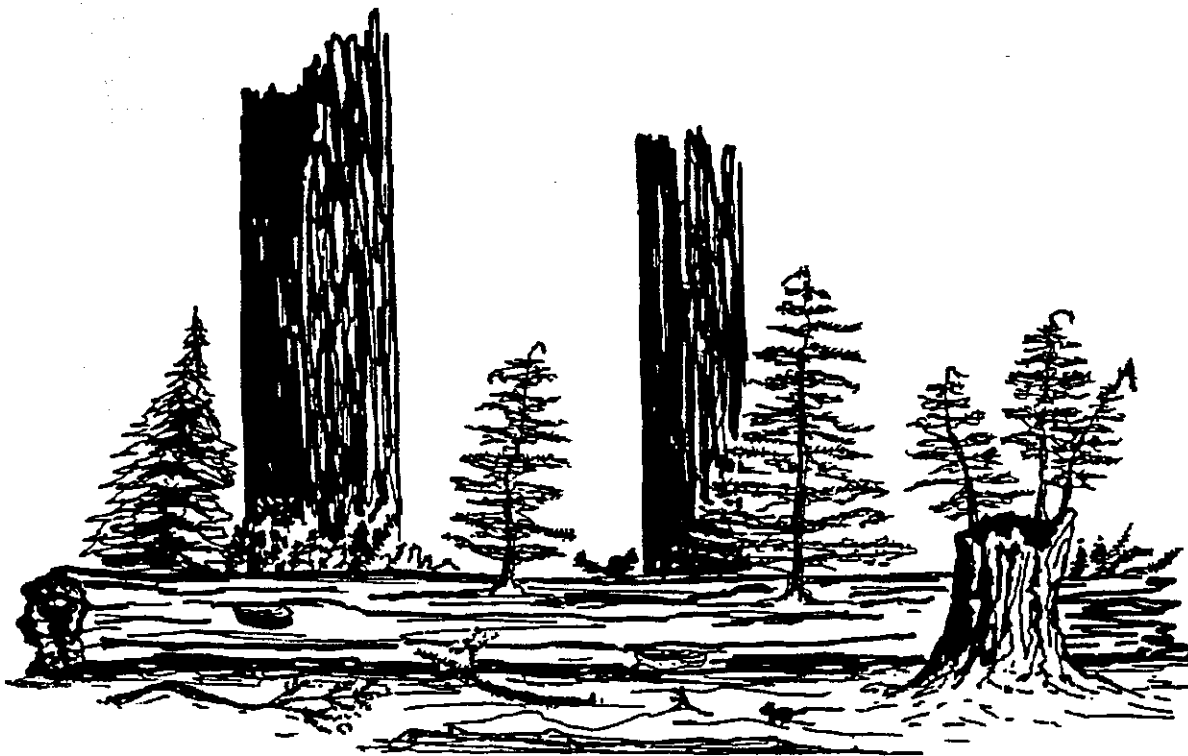
**Grazing:** One quarter of an existing but inactive sheep grazing allotment will no longer be available for grazing.

**Timber:** Of the 1400 total acres in the RNA, 1300 are within a Late-Successional Reserve and are unavailable for timber management purposes. The other 100 acres include Riparian Reserves and Forest

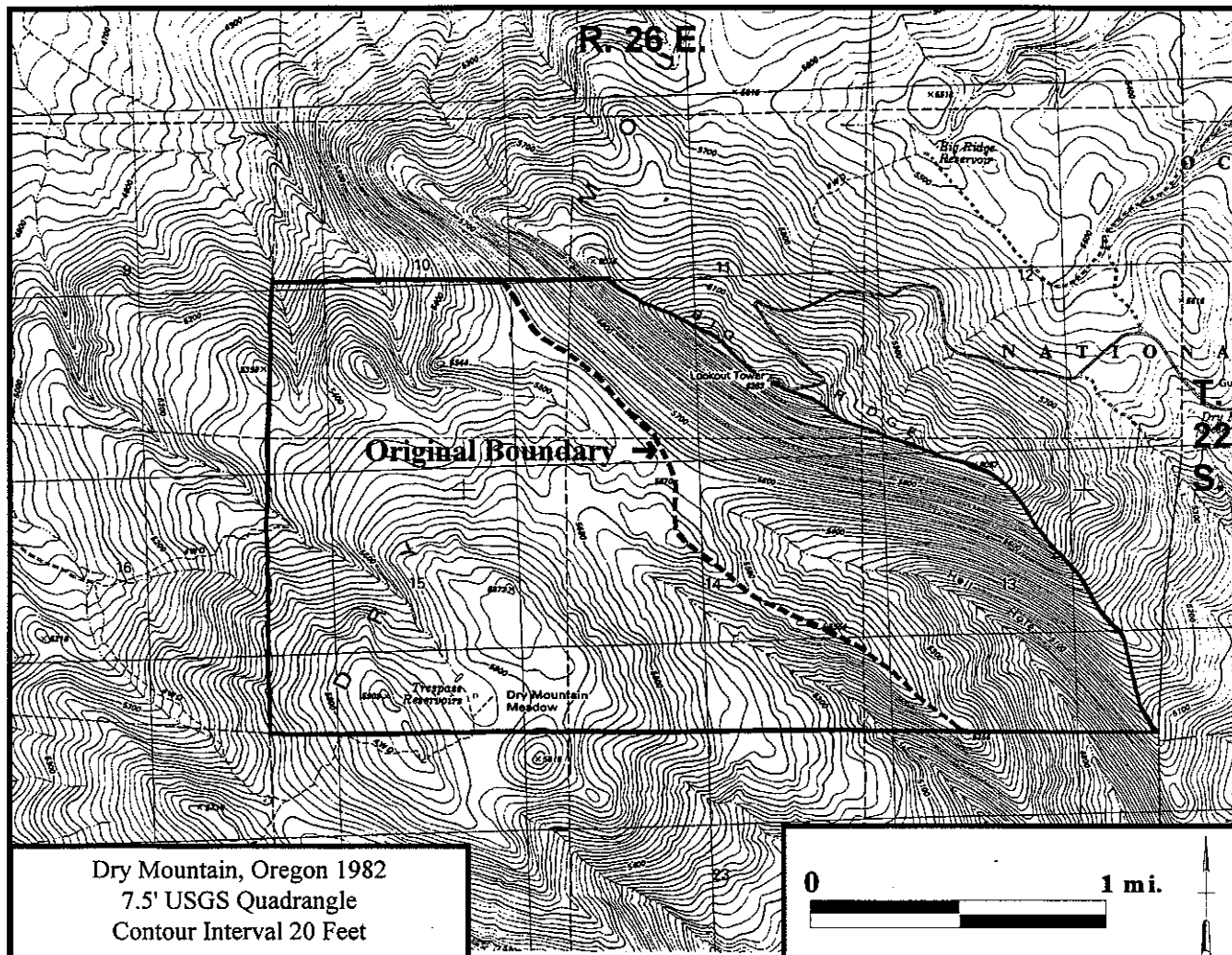
Matrix allocations. The Matrix lands are all within the proposed addition to the RNA and will no longer be available for timber harvest. The effect on the probable sale quantity will be negligible.

**Recreation:** Most recreation use is associated with the lakes. Due to limited road and trail access, use has been low in the proposed RNA. It is not anticipated that establishment of the RNA will affect this type of dispersed use. Off-highway vehicle (OHV) use in the area surrounding the RNA is high particularly along roads and the summit of Cache Mountain on the eastern boundary of the RNA. Much of the area added to the RNA is unroaded and is already off limits to this use because of wetlands standards and guidelines. Abundant down wood and steep topography in other areas has and will continue to limit OHV use in the remainder of the area that has been added. The summit area of Cache Mountain is outside the RNA. For these reasons it is anticipated that the effect of establishment on OHV use in the area will be minimal. About one half mile of Rd. 2076-800 lies within the RNA. If closure of this road to protect RNA values becomes desirable, a separate NEPA analysis will be completed.

**Communications Site:** The communications site on Cache Mountain is not included in the proposed addition to the RNA and the road to the site will remain open. There should be no conflict between use of the site and establishment of the RNA.



### Figure 3: Dry Mountain RNA



**Boundary Change:** The proposed change incorporates natural watershed boundaries and is more consistent with the topography of the area. The additional acres are currently managed as big game winter range. This change will not have any measurable effect on Forest plan outputs.

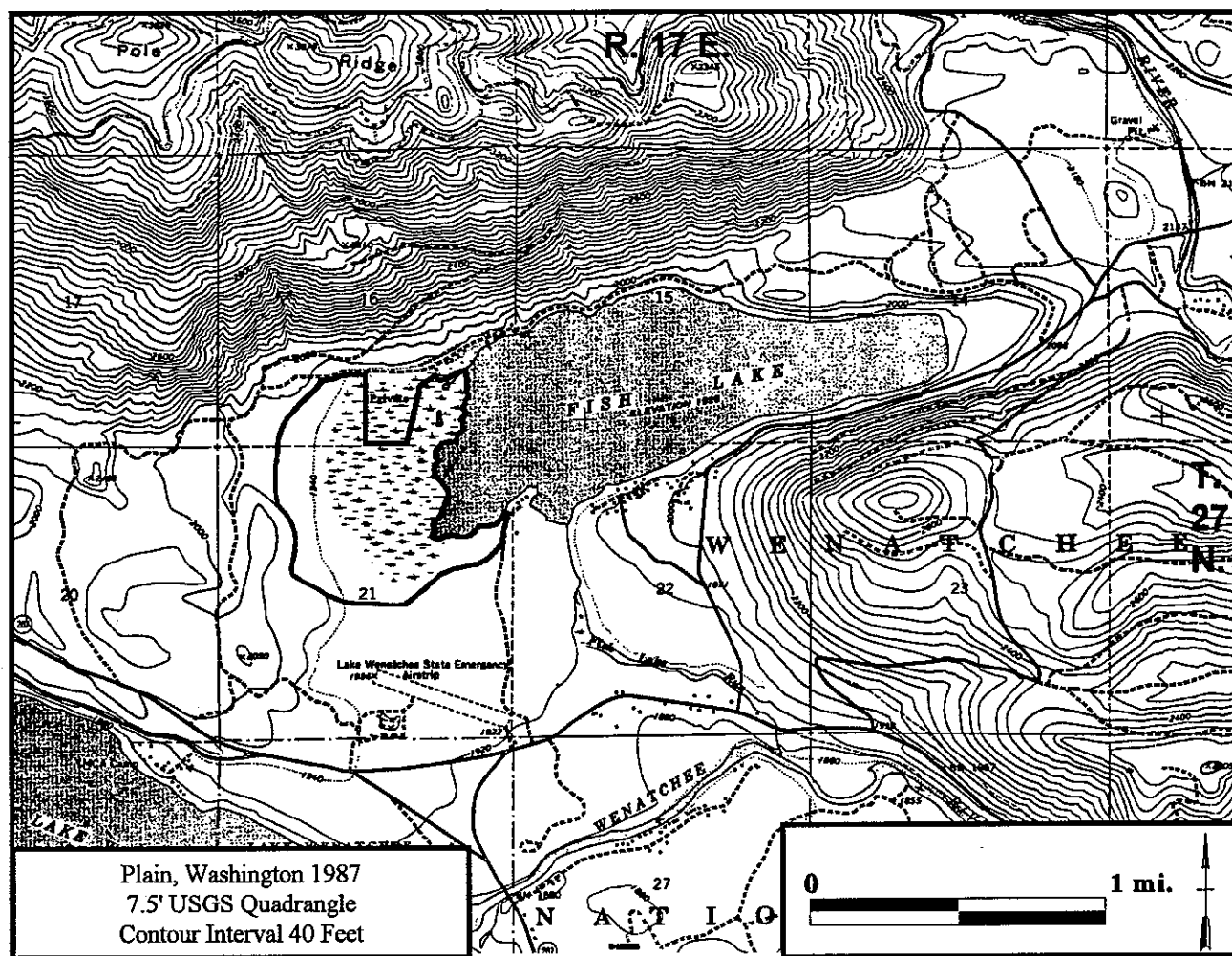
**Mineral Resources:** There are no reported hardrock mining claims in the RNA. The geology of the area does not lend itself to valuable mineral claims. Salable minerals, such as gravel, are potentially available on the RNA but recovery of these resources would be difficult due to the limited access to the area.

**Grazing:** Dry Mountain RNA is within the Green Butte grazing allotment but, because of the isolated nature of the site, there has been no recent cattle grazing on this part of the allotment.

**Timber:** The RNA has not been cruised to determine the volume of timber present but approximately half of the site contains 150-200 year old ponderosa pine in low to moderate densities.

**Recreation:** Dry Mountain RNA receives almost no recreation use therefore, establishment will have no effect on recreation.

**Figure 4: Fish Lake Bog RNA**



**Mineral Resources:** There are no known mineral resources within the RNA.

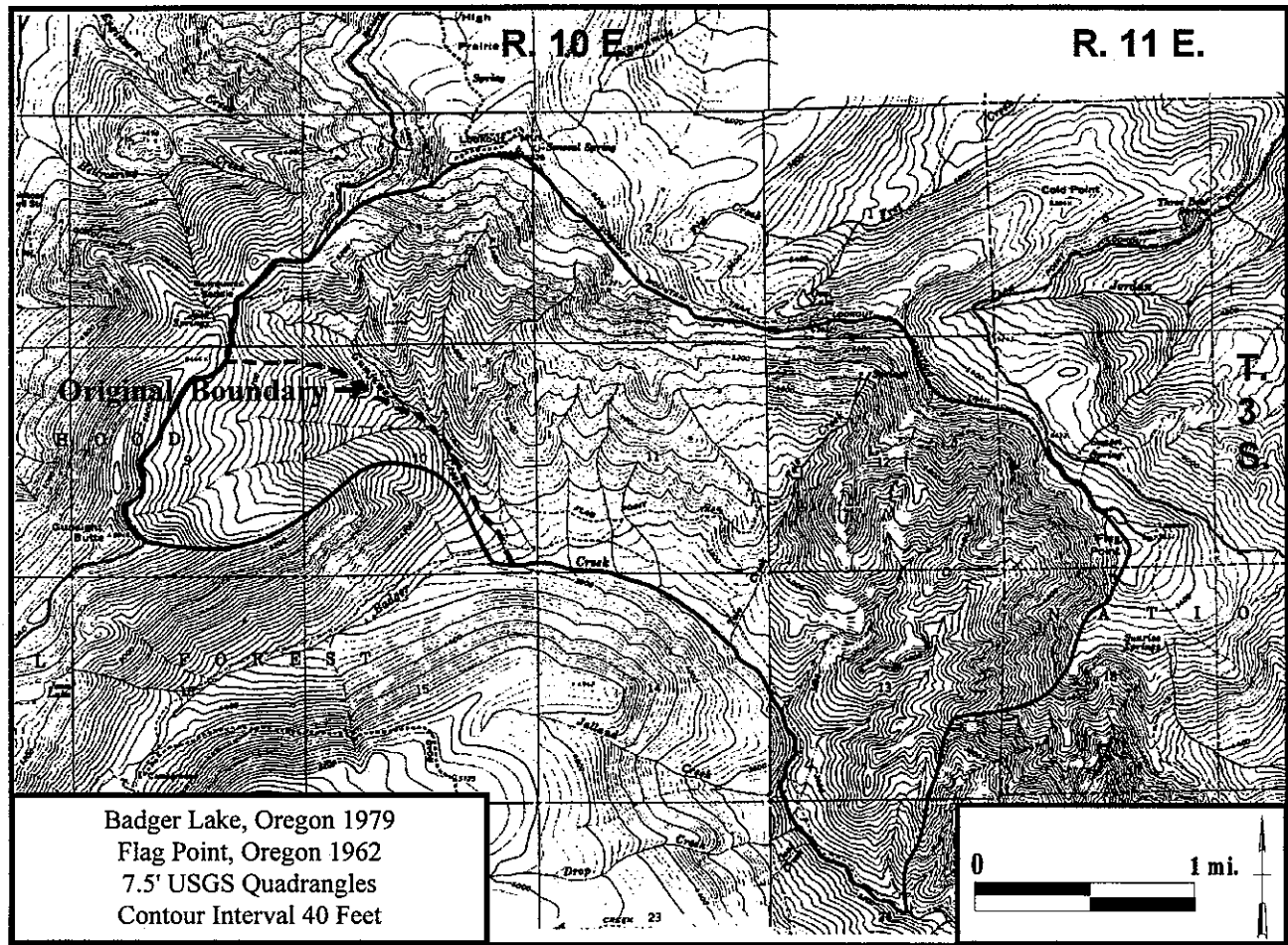
**Grazing:** There is no grazing allotment or potential for grazing associated with this RNA.

**Timber:** There about 64 acres of forest land within the RNA. This land was not included in the timber base for the Forest Plan therefore precluding timber harvest on these acres will have no effect on the probable sale quantity.

**Recreation:** Fish Lake which is adjacent to the RNA is a major fishing, boating, and snowmobiling area. There is a snowmobile trail along the western and northern boundaries of the RNA. This use is not expected to conflict with protection of RNA values. Because of the bog type of vegetation along the lake's boundary with the RNA there will be no impact on the water-based recreational uses of the lake.

**Private Land:** It is desirable to obtain the 44 acres of private land adjacent to the RNA in Section 16 in order to fully utilize the research potential of this RNA.

**Figure 5: Gumjuwac/Tolo RNA**



**Boundary Change:** The boundary was slightly modified during the establishment process to include all of Gumjuwac Creek. Since the whole RNA is within the Badger Creek Wilderness, this change is not expected to change the environmental consequences documented in the Final EIS.

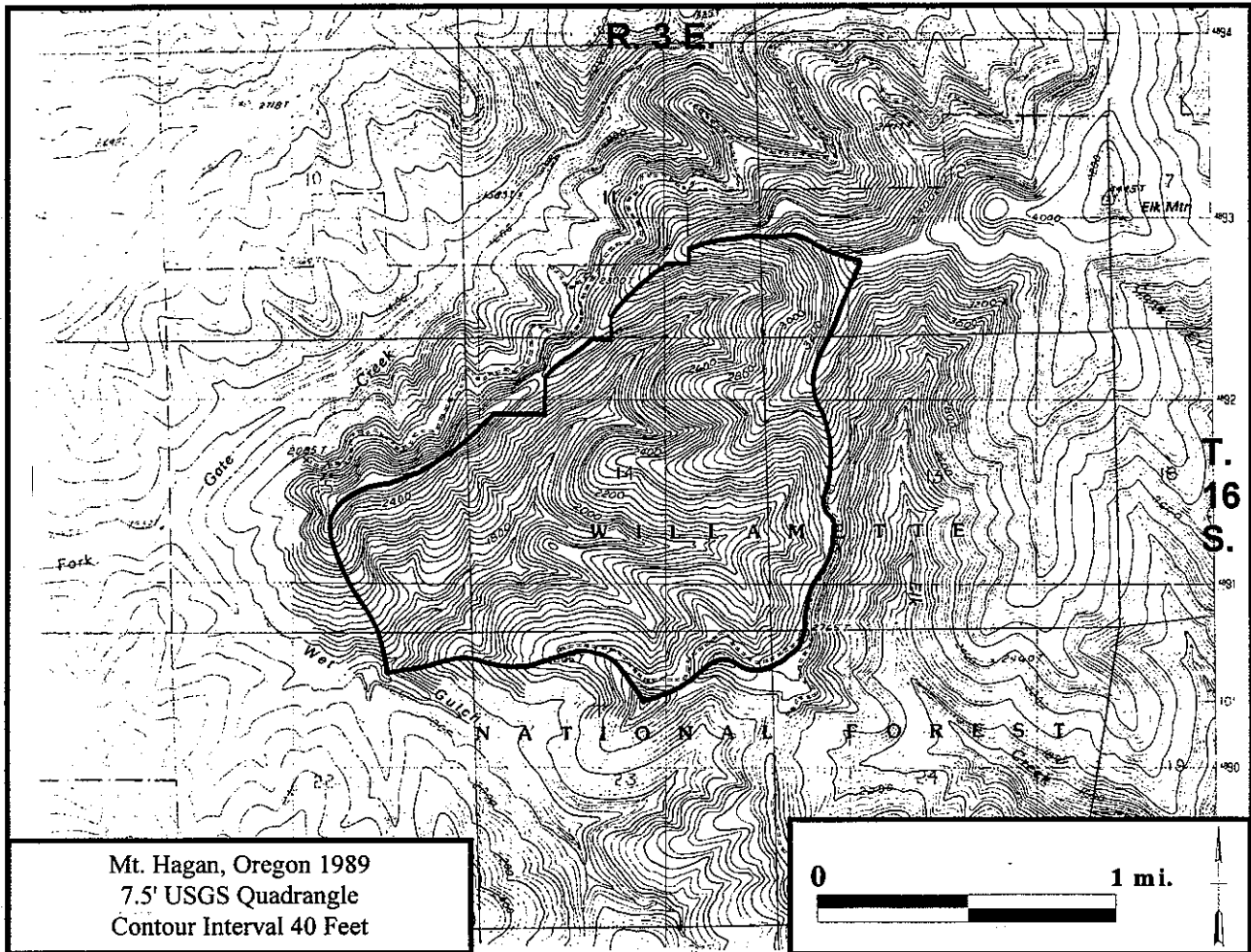
**Mineral Resources:** This area is considered to have low to very low potential for economic deposits of all minerals except construction rock. The RNA has already been withdrawn from future locatable mineral entry in conjunction with designation of the wilderness.

**Grazing:** No grazing allotments currently exist within the area.

**Timber:** There will be no change in the probable sale quantity by establishment of this RNA since the RNA lies entirely within the Badger Creek Wilderness, in which timber harvest is not permitted.

**Recreation:** Parts of several wilderness trails lie within the proposed RNA and roughly demarcate its perimeter. These trails receive relatively light use and do not appear to detract from the natural values of this area. Therefore, recreation use should not be effected by establishment of this RNA.

**Figure 6: Hagan RNA**



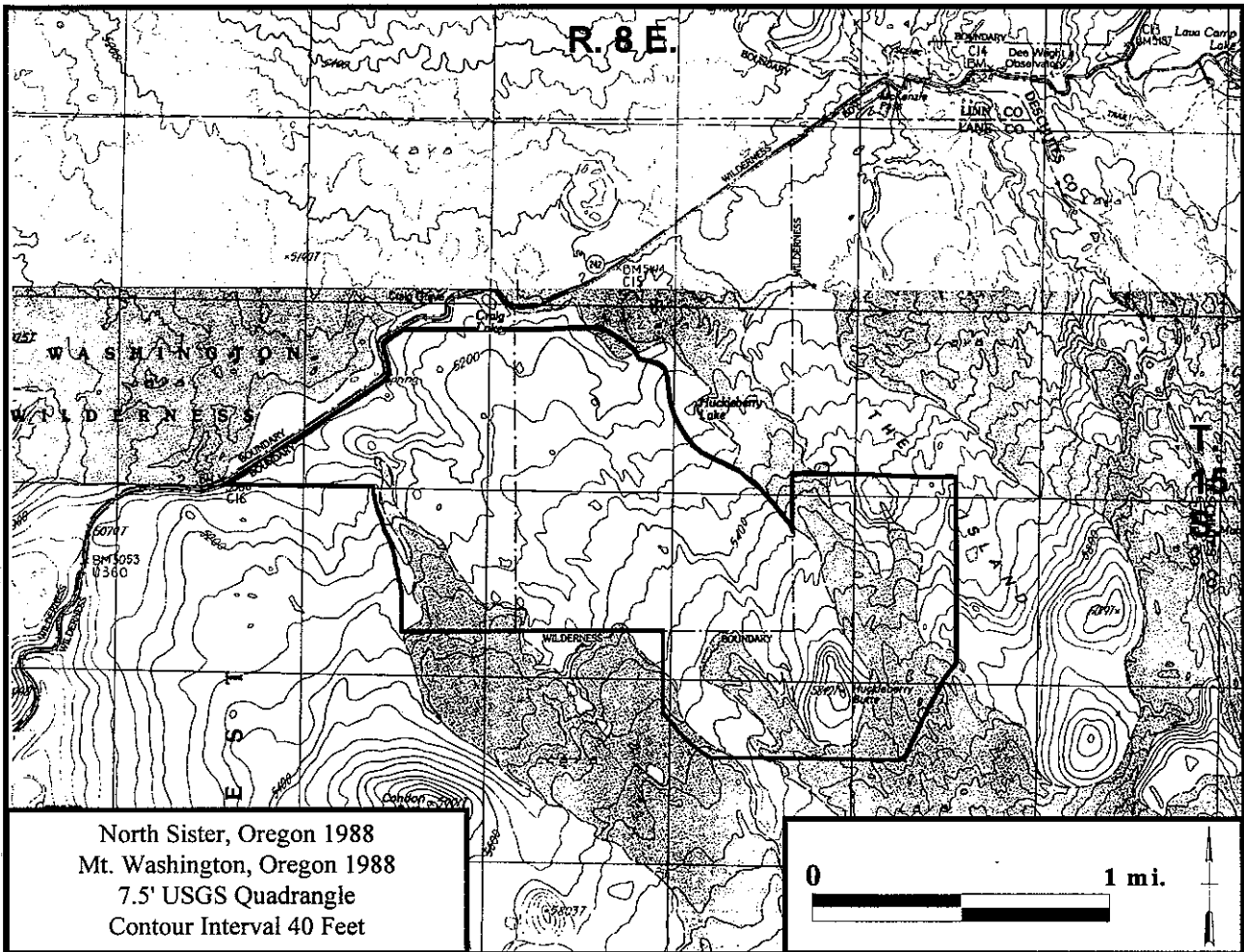
**Mineral Resources:** There are no known mineral resources in or adjacent to the RNA.

**Grazing:** There are no grazing allotments in or adjacent to the RNA.

**Timber:** The RNA includes 1126 acres of forested lands that meet the productivity requirements for commercial timber harvest. This land was not included in the timber base for the Forest Plan and is now within a Late-Successional Reserve. Therefore establishment will have no effect on probable sale quantity.

**Recreation:** Steep slopes and lack of public road access have limited recreational use of the RNA to some hunting use. Establishment is not expected to have any impact on this use.

**Figure 7: McKenzie Pass RNA**



**Mineral Resources:** There are no known mineral resources in or adjacent to the RNA.

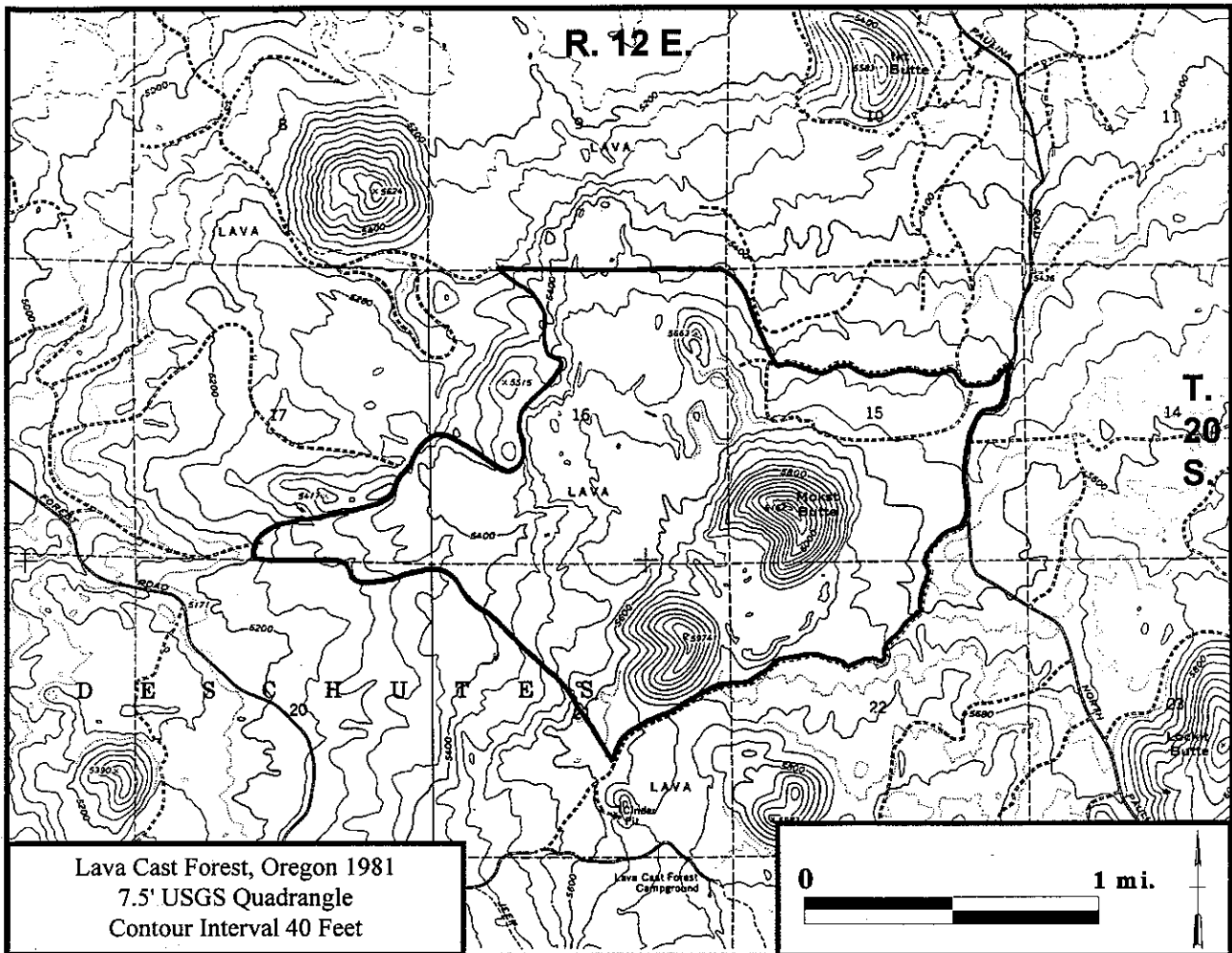
**Grazing:** There are no grazing allotments in or adjacent to the RNA because of lack of forage and inaccessibility of the area.

**Timber:** The RNA contains 926 acres (out of 1187 acres) of forested lands that meet the productivity requirements for commercial timber harvest. About half of these acres (471 acres) are in the Three Sisters Wilderness and are not available for harvest. The remainder were not included in the timber base for the Forest Plan. Therefore, establishment will have no effect on probable sale quantity.

**Recreation:** There is light to moderate use of the area by day hikers, mountain bikers, and hunters. Most of the use is concentrated around Craig Lake and Huckleberry Lake, both of which are outside the RNA boundary. The RNA includes 723 acres of the Three Sisters Wilderness. A trail in the eastern portion of the RNA that runs to Huckleberry Butte will continue to be used. No conflicts are anticipated with protection of RNA values therefore recreation use of the area will not be effected by establishment.



**Figure 8: Mokst Butte RNA**



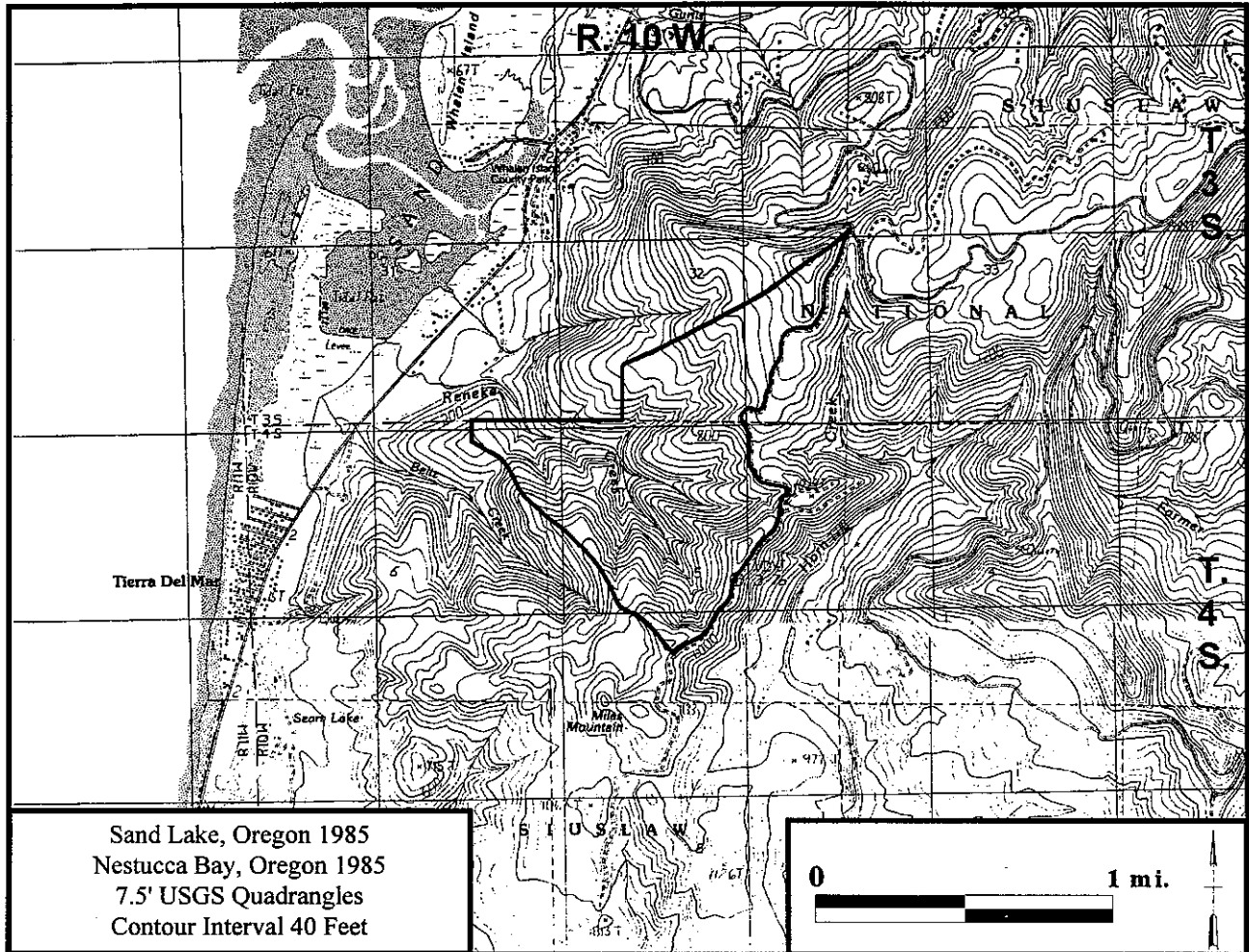
**Mineral Resources:** The State of Oregon has a mineral reservation covering 480 acres in section 16 of the RNA. The area is also withdrawn from mineral entry under the Newberry Crater National Volcanic Monument enabling legislation.

**Grazing:** There are two allotments adjacent to the RNA. Both are currently vacant and requirements for the Volcanic Monument already preclude grazing so establishment will have no effect on grazing.

**Timber:** The RNA contains approximately 500 acres (out of 1250 acres) of forested lands that meet the productivity requirements for commercial timber harvest. This land was not included in the timber base for the Forest Plan. Therefore, establishment will have no effect on probable sale quantity.

**Recreation:** The RNA receives limited recreation use, mostly hiking and dispersed camping. This use is not expected to conflict with protection of RNA values. Therefore, recreation use of the area will not be effected by establishment.

**Figure 9: Reneke Creek RNA**



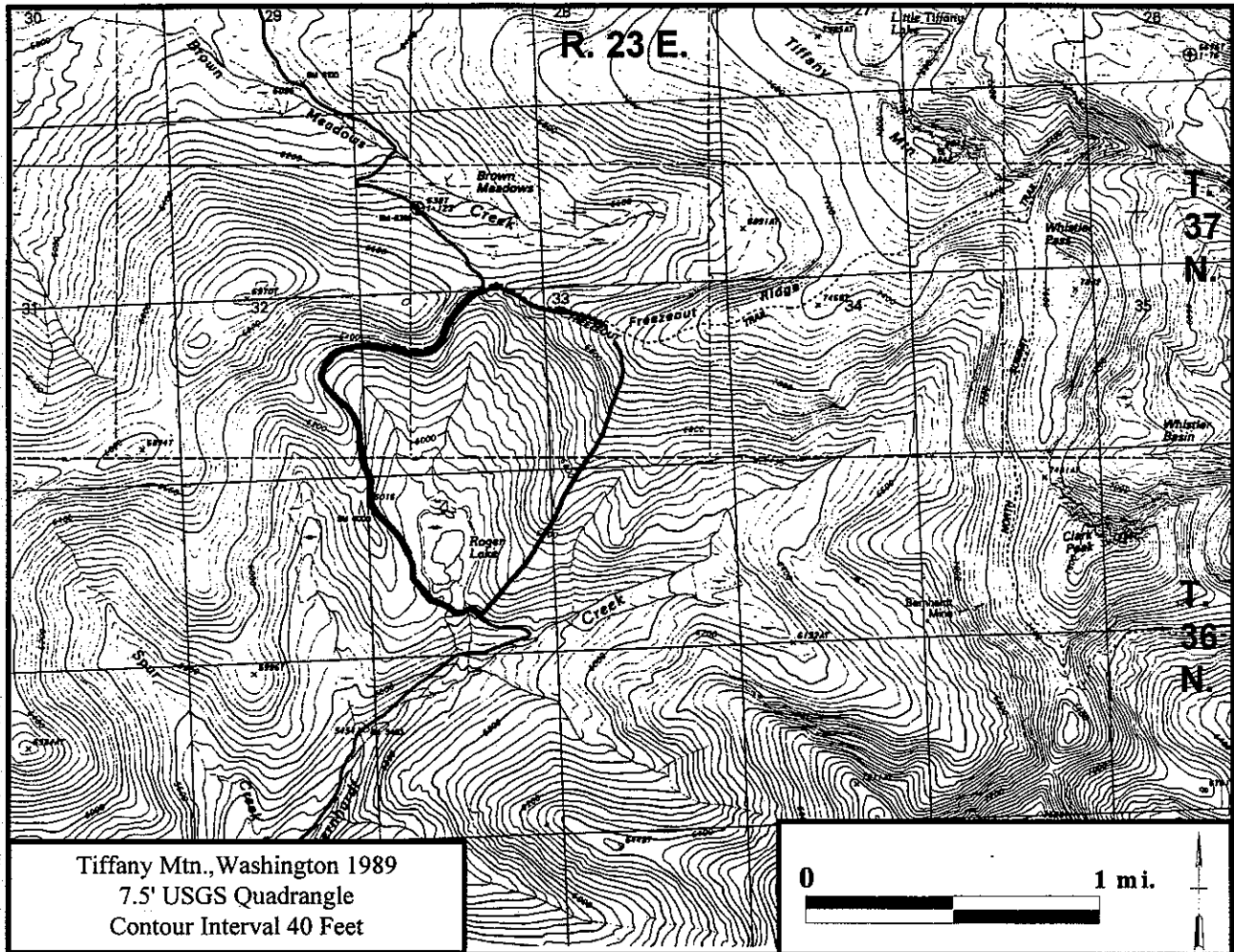
**Mineral Resources:** There are no known mineral resources in the RNA.

**Grazing:** There are no grazing allotments in or adjacent to the RNA.

**Timber:** The RNA is covered by forested lands that meet the productivity requirements for commercial timber harvest. This land was not included in the timber base for the Forest Plan and is within a Late-Successional Reserve. Therefore, establishment will have no effect on probable sale quantity.

**Recreation:** The RNA receives almost no recreation use. The site is not particularly inviting to hikers because it is densely forested and secluded by private lands. There is some use during hunting season. This use is not expected to conflict with protection of RNA values. Therefore, recreation use of the area will not be effected by establishment.

**Figure 10: Roger Lake RNA**



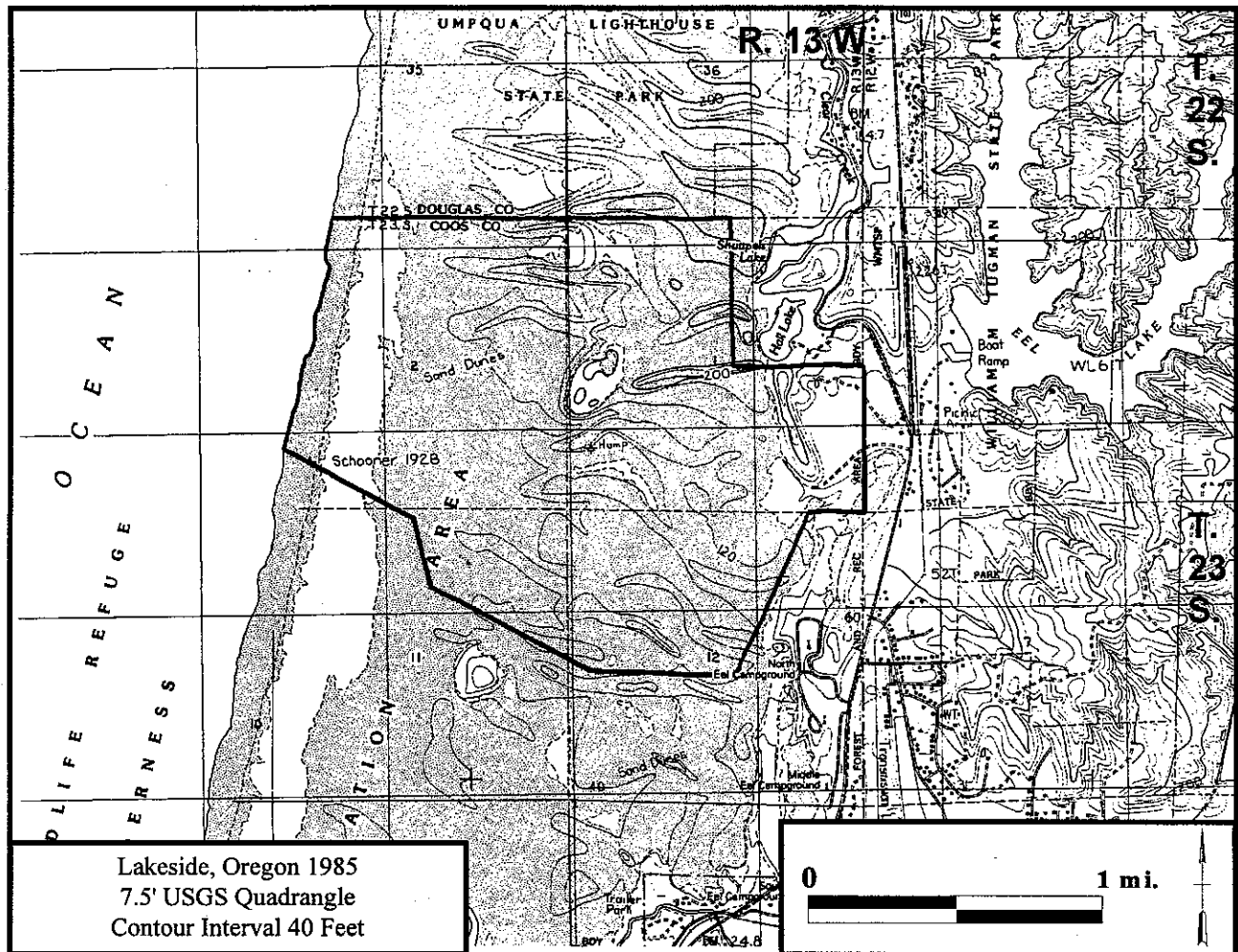
**Mineral Resources:** There are no known mineral resources in the RNA.

**Grazing:** The RNA is located within a grazing allotment that has not been grazed since 1987. If this allotment becomes active, the 436 acres in the RNA will be excluded from grazing.

**Timber:** Approximately 380 acres of the RNA are covered by forested lands that meet the productivity requirements for commercial timber harvest. This land was not included in the timber base for the Forest Plan. Therefore, establishment will have no effect on probable sale quantity.

**Recreation:** The RNA receives most of its recreation use in the area around Roger Lake where there is a parking area and two campsites. These facilities will be closed as required by the Forest Plan standards and guidelines. Dispersed recreation such as hunting and hiking will continue unless it reduces the research or educational values of the RNA.

**Figure 11: Tenmile Creek RNA**



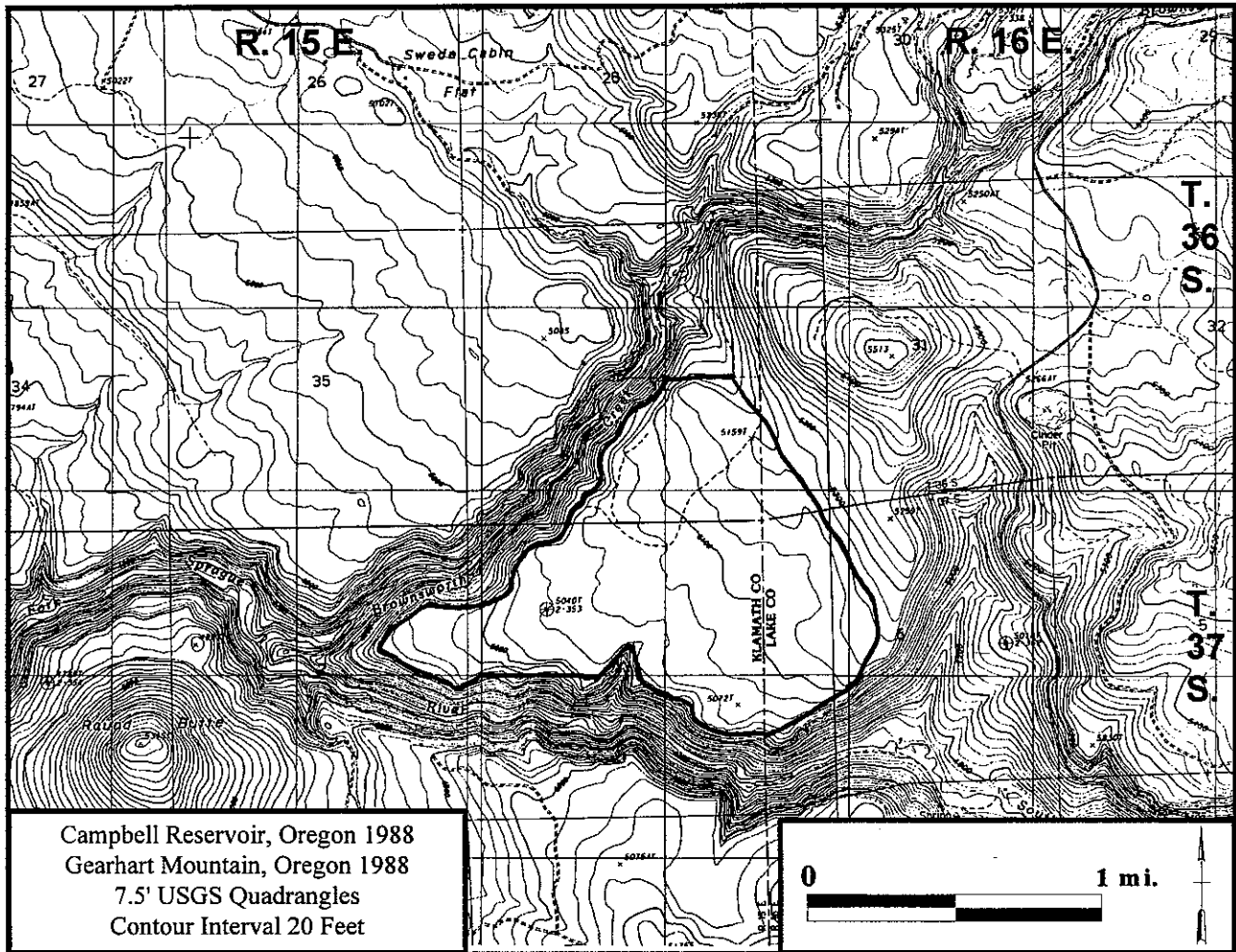
**Mineral Resources:** This area has been withdrawn from mineral entry as part of the Oregon Dunes National Recreation Area.

**Grazing:** There are no grazing allotments in or near the RNA.

**Timber:** A small portion of the RNA consists of timbered lands. These lands were considered unavailable for harvest during analysis for the Oregon Dunes Management Plan and EIS.

**Recreation:** The RNA receives some recreation use, mostly in the form of day hiking. Recreation in the RNA is a concern if use increases as expected in the Oregon Dunes National Recreation Area. It is anticipated that education of users will be used to minimize conflicts between continued recreational use of the RNA and protection of the research values of the RNA.

**Figure 12: Vee Pasture RNA**



**Mineral Resources:** There are no known mineral resources in this RNA.

**Grazing:** Livestock have used this area to only a limited extent due to natural barriers, rocky soil surface, and distance from water. It is not part of any grazing allotment.

**Timber:** This RNA is covered with grasslands therefore, establishment will have no effect on timber outputs.

**Recreation:** There is very limited recreational use within the RNA due to its inaccessibility. The most likely use is some hunting. This use is not expected to conflict with the research or educational values of the RNA.

