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Wilderness Study Report

Volume I

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Table of Contents

WSA Page

Devils Garden 1
Squaw Ridge 11
Four Craters 21
Sand Dunes 31
Diablo Mountain 39
Orejana Canyon 51
Abert Rim 59
Fish Creek 69
Guano Creek 81
Spaulding 91
Hawk Mountain 101
Sage Hen Hills 113
Malheur River/Bluebucket 121
Stonehouse 131
Lower Stonehouse 141
Sheepshead Mountain Group 151
- Sheepshead Mountains
- Wildcat Canyon
- Heath Lake
- Table Mountain
- West Peak
- Palomino Hills

Alvord Desert/East Alvord 171
Winter Range 191
Mahogany Ridge 199
Red Mountain 213
Pueblo Mountain 223
Rincon 241
Alvord Peak 255
Basque Hills 265
High Steens/Little Blitzen Gorge 277
South Fork of Donner and Blitzen River 301
Home Creek 311
Blitzen River 323
Bridge Creek 339
Strawberry Mountain 349
- Pine Creek
- Sheep Gulch
- Indian Creek

Aldrich Mountain 359
Castle Rock 367
Beaver Dam Creek 377
Camp Creek Group 385
- Camp Creek
- Cottonwood Creek
- Gold Creek
- Sperry Creek

Cedar Mountain 403
Dry Creek 413

Dry Creek Buttes 423
Owyhee Breaks 433
Blue Canyon 447
Upper Leslie Gulch 457
Slocum Creek 465
Honeycombs 473
Wild Horse Basin 487
Lower Owyhee Canyon 495
Saddle Butte 511
Bowden Hills 521
Clarks Butte 531
Jordan Craters 541
Trout Creek Mountains Group 553
- Willow Creek
- Disaster Peak
- Fifteenmile Creek
- Oregon Canyon
- Twelvemile Creek

Upper West Little Owyhee 575
Lookout Butte 587
Owyhee River Canyon 597
Thirtymile/Lower John Day 617
North Pole Ridge 631
Spring Basin 641
Deschutes Canyon/Steelhead Falls 651
Badlands 665
North Fork 677
South Fork/Sand Hollow 687
Gerry Mountain 701
Hampton Butte/Cougar Wells 709
McGraw Creek 719
Homestead 727
Sheep Mountain 737
Mountain Lakes 747
Soda Mountain 753
North Sisters Rocks and Zwagg Island 763

Devils Garden Wilderness Study Area

1. The Study Area —29,680 acres

The Devils Garden Lava Bed WSA (OR-1-2) is located in Lake County, about 60 miles southeast of Bend, Oregon, and 8 miles north of the small town of Fort Rock. The WSA contains 28,720 acres of BLM lands and 960 acres of split-estate land (see table 1). The boundaries are primarily defined on the east by private land, vehicle ways, and low standard dirt access roads associated with a powerline right-of-way. On the north, west and south, land ownership and low standard roads define the WSA boundary. A low-standard dead-end road extends 2 miles into a well in the Devils Garden, forming a part of the boundary.

Most of the WSA is extremely rugged terrain covered by geologically recent lava flows. An open sagebrush grassland of some 3,900 acres in the north-central portion is known locally as "The Devils Garden." The lava flows consist of aa lava, very sharp and broken in appearance, while smoother-textured, less rugged pahoehoe flows cover the south portion of the WSA.

The WSA supports juniper, mountain mahogany, ponderosa pine, varied native grasses and abundant shrubs. There are a number of lava tube caves in the WSA, the largest and best known being Derrick Cave near the northeast corner of the WSA. A number of cinder cones occur in the WSA. The most interesting cinder cone, known as the "Little Garden", is located in the northeast portion of the WSA. It is covered by ponderosa pine and dense stands of native bunchgrasses.

The WSA was studied under Section 603 of the Federal Land Policy and Management Act (FLPMA) and was included in the Final Oregon Wilderness Environmental Impact Statement filed in February 1990.

There were three alternatives discussed in the EIS for the WSA; all wilderness alternative; partial wilderness alternative proposing wilderness designation of 28,160 acres, with road closure and acquisition of 960 acres of split-estate from willing owners (which is the recommendation of this report); and no wilderness/no action alternative. These lands are shown on Map 1.

2. Recommendation and Rationale

—28,160 acres recommended for wilderness
1,520 acres recommended for nonwilderness

The recommendation is to designate 28,160 acres wilderness and to release 1,520 acres for uses other than wilderness. The environmentally preferable alternative is the all wilderness alternative as it will result in the least change from the natural environment over the long term. However, the recommendation would be implemented in a manner which would use all practical means to avoid or minimize environmental impacts.

The recommendation would preserve the natural ecological diversity on 28,160 acres, representing a variety of volcanic features, and a combination of vegetative communities reflecting the transition from the forest ecosystems to the north, and the sagebrush-desert zone to the south. The area has high wilderness values, is generally free of human activity, and appears to have been affected primarily by the forces of nature. The area also possesses outstanding opportunities for solitude due to its large size, rugged topographic features and vegetative screening.

Wilderness designation of the Devil's Garden WSA would add an ecosystem (Intermountain Sagebrush Province/Sagebrush-steppe) not presently represented in Oregon and represented in the National Wilderness Preservation System by only three areas.

Outstanding opportunities for primitive recreation include hiking, hunting, photography, spelunking (cave exploring), sightseeing and nature study. The extent and diversity of volcanic features, plant communities, ecological interrelationships, and recreation opportunities offer a unique matrix of wilderness values. A homestead site in the Devils Garden WSA adds historic significance to the recommendation.

Those public lands recommended nonsuitable for wilderness designation are located in the northwest (Area A), southeastern (Area B), and a small parcel of land on the southwest (Area C). Area A is land outside the main lava flow containing vehicle trails, fencelines and low wilderness value. Topography and ownership pattern would make controlling access difficult after designation, therefore the boundary has been drawn on an existing way at the edge of the flow. Area B in the southeast corner of the WSA contains a crested wheatgrass seeding which offers no opportunity for solitude. Area C on the southwest corner of the WSA presents an awkward ownership configuration and lacks wilderness values such as naturalness and solitude. These parcels are recommended as nonsuitable to improve wilderness manageability and exclude acreage not possessing wilderness character.

Conflicts with other resource uses of the WSA are limited. Livestock utilization of the Devils Garden emergency allotment on a temporary basis requires the periodic use of a gas motor to operate the well in the garden.

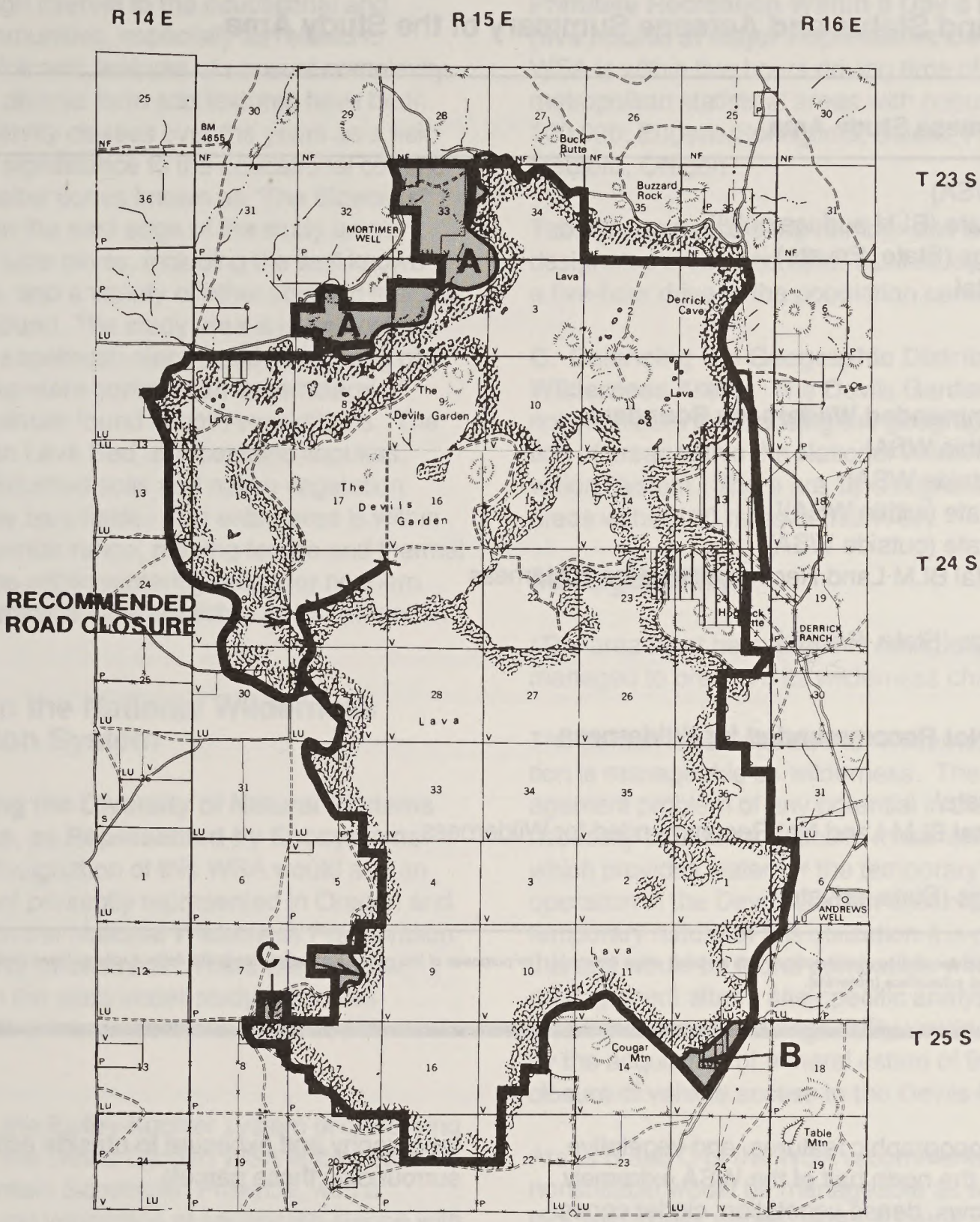
3. Criteria Considered in Developing the Wilderness Recommendations

Wilderness Characteristics

A. Naturalness : The Devils Garden WSA remains in a generally natural condition with much of the Lava Flow pristine. The area's large size, rugged topography and diverse vegetation enhance the natural perspective in the area. Fire scars within the area are a natural part of the ecosystem and are viewed as indication of natural cycles at work. Minor evidence of human activity appears in the "Devils Garden," the historic homestead, a seeding that has revegetated to a great degree with native vegetation, and several vehicle trails. There are two wildlife guzzlers at remote locations in the suitable area. Unnatural features affect less than one percent of the area recommended suitable. Signs of human activity, seedings, fencelines and trails influence Areas A, B, and C, leading in part to the deletion of these areas from the area recommended suitable for wilderness designation. Three high voltage powerlines in a corridor outside the east boundary influence approximately 1,200 acres inside the southeast boundary as an outside sight visible within the area.

The Devils Garden provides habitat for antelope, elk, over 5,000 deer, bobcat, porcupine, numerous bird species and a diverse range of small mammals, reptiles and other wildlife. There are occasional reports of black bear and cougar in the area.

B. Solitude: The Devils Garden WSA has outstanding opportunities for solitude due to its large



RECOMMENDED FOR WILDERNESS

RECOMMENDED FOR NONWILDERNESS

LAND OUTSIDE WSA RECOMMENDED FOR WILDERNESS (None)

SPLIT ESTATE

STATE (None)

PRIVATE (None)

-N-

0 1 2 3
MILES

Devil's Garden Lava Bed Proposal
MAP-1

OR-1-2
January, 1991

Table 1. Land Status and Acreage Summary of the Study Area

Within Wilderness Study Area	Acres
BLM (within WSA)	28,720
Split-Estate (BLM surface only)[1]	960
Inholdings (State, Private)	0
Total	29,680
Within Recommended Wilderness Boundary	
BLM (within WSA)	27,200
BLM (outside WSA)	0
Split-Estate (within WSA)[1]	960
Split-Estate (outside WSA)[1]	0
Total BLM Land Recommended for Wilderness	28,160
Inholdings (State, Private)	0
Within Area Not Recommended for Wilderness	
BLM	1,520
Split-Estate[1]	0
Total BLM Land Not Recommended for Wilderness	1,520
Inholdings (State, private)	0

[1]Appendix 1 is a detailed description of split-estate tracts included within the study. For purposes of this report, split- estate lands are defined only as those lands with federal surface and non-federal subsurface (minerals).

size, rugged topographic features, and vegetative screening. In the north half of the WSA extremely rugged lava flows, dense vegetation, cinder cones and highly broken terrain offer truly exceptional opportunities for solitude. Though the "Devils Garden" area is more open than the flow areas, it still has more than adequate topographic relief to warrant a high degree of solitude. The pahoehoe flows on the south half of the WSA at first appear open; however, the vast number of pockets, fissures and less dramatic elements of topographic relief in the area offer outstanding opportunities for solitude in this area as well. The "Little Garden" area in the northeast portion offers an overlook of the expanse of the Devils Garden while surrounded by ponderosa pine and lush native bunchgrasses. The aesthetics of the "Little Garden" represent the epitome of solitude.

Areas A,B, and C identified as nonsuitable for wilderness have little opportunity for solitude due to topography and exposure to outside activities surrounding these parcels.

C. Primitive and Unconfined Recreation: The WSA offers outstanding opportunities for hiking, photography, spelunking, wildlife observation and study of natural history, especially geology and volcanism. The area also offers outstanding opportunities for hunting, camping, and general sightseeing. Derrick Cave is one of the most popular caves in the region, drawing interest from outside the state within the speleological community. The diversity of opportunities in the WSA and the varied terrain and ecosystems represented, from dense forest to big sage, caves to open expanses, rugged lava flows to pine covered cinder cones, make it especially attractive for primitive recreation.

D. Special Features: The entire WSA is an Area of Critical Environmental Concern (ACEC) due to high geologic and zoological values.

The Devils Garden contains numerous geologic features of high interest to the educational and scientific communities, especially as related to volcanism. Volcanic features of unusual complexity representing diverse form and textures have been used by university classes over the years as a field laboratory of significance to the educational community. Two spatter cones known as "The Blowouts" are located on the east edge of the study area. Several lava tube caves, including the well known Derrick Cave, and a variety of other volcanic features can also be found. The study area is in an ecotone between the sagebrush steppe and ponderosa pine forest, and therefore contains an assemblage of plants and animals found in both ecosystems. The Devils Garden Lava Bed also contains kupukas, areas of undisturbed soils and native vegetation surrounded by lava fields. The entire area is within crucial deer winter range, offering forage and thermal cover, and lies within wintering range for northern bald eagle, which is federally listed as threatened in Oregon.

Diversity in the National Wilderness Preservation System

A. Expanding the Diversity of Natural Systems and Features, as Represented by Ecosystems: Wilderness designation of this WSA would add an ecosystem not presently represented in Oregon and represented in the National Wilderness Preservation System by only three areas. There are 66 other BLM areas in the state under study within this ecosystem. This information is summarized in Table 2.

According to the Bailey-Kuchler system of classifying ecosystems, the Devils Garden WSA is located in the Intermountain Sagebrush Province, with a potential natural vegetation of sagebrush-steppe with juniper. Vegetative communities listed in the High Lava Plains and Columbia Basin section of the Oregon Natural Heritage Plan and occurring in the WSA are: ponderosa pine/big sagebrush, ponderosa pine/bitterbrush/Idaho fescue, ponderosa pine/western juniper/big sagebrush, western juniper/big sagebrush/bluebunch wheatgrass, western juniper/bluebunch wheatgrass, western juniper, Idaho fescue, western juniper/big sagebrush/bitterbrush, big sagebrush/Idaho fescue, mountain mahogany and aspen.

B. Assessing the Opportunities for Solitude or Primitive Recreation Within a Day's Driving Time (five hours) of Major Populations Centers: The WSA is within five hours driving time of four standard metropolitan statistical areas with populations over 100,000: Eugene/Springfield, Salem, Portland, and Medford, Oregon.

Table 3 summarizes the number and acreage of designated areas and other BLM study areas within a five-hour drive of the population center.

C. Balancing the Geographic Distribution of Wilderness Areas: The Devils Garden WSA would not contribute to balancing the geographic distribution of areas within the National Wilderness Preservation System. There are 15 designated wilderness areas within 100 miles of this WSA.

Manageability

(The area must be capable of being effectively managed to preserve its wilderness character.)

The portion recommended for wilderness designation is manageable as wilderness. The only management problem of any potential in the area is the necessity to utilize a gasoline motor on the well which provides water for the temporary grazing operation in the Devils Garden allotment. Due to the temporary nature of this utilization it is probable that this use would be found compatible with wilderness management after a site-specific analysis. Under the recommendation, manageability would be enhanced by the acquisition of mineral estate of 960 acres and closure of vehicle access to the Devils Garden.

Areas B and C of the WSA recommended as nonsuitable would be manageable as wilderness, but lack wilderness values. Area A has a convoluted boundary with private land, numerous trails, a social history of vehicle use, and non wilderness types of camping and hunting activity that would make wilderness management impracticable within the parcel.

Energy and Mineral Resource Values

The U.S. Geological Survey (USGS) and Bureau of Mines prepared a mineral assessment for the Devils Garden WSA in 1988 (USGS Bulletin 1738-A).

Geothermal energy is the main potential energy resource in the area with a moderate rating based on indirect evidence of recent volcanism and above normal heat flow.

Table 2. Ecosystem Representation

Bailey-Kuchler Classification	NWPS Areas	NWPS Acres	Other BLM Studies Areas	Other BLM Studies Acres
Province/Potential Natural Vegetation				
	NATIONWIDE			
Intermountain Sagebrush/ Sagebrush Steppe	3	76,699	136	4,340,660
	OREGON			
	0	0	66	1,953,394

Table 3. Wilderness Opportunities for Residents of Major Population Centers

Population Centers	NWPS Areas	NWPS Acres	Other BLM Studies Areas	Other BLM Studies Acres
Eugene/Springfield, OR	42	2,859,994	4	770,436
Salem, OR	45	2,888,764	18	210,085
Portland, OR	48	4,537,392	16	91,762
Medford, OR	31	2,440,081	21	730,032

The WSA has a low potential for occurrence of metals based on direct evidence; and a moderate potential for silver, zinc and mercury based on indirect evidence. There is a moderate to high potential for cinders and slab lava used for decorative stone in the area.

There is no present production of any mineral or geothermal resource in the WSA. In summary, quantities of various minerals are unknown, but potential for occurrence is low to moderate as identified in maps on the mineral report.

As of May 1991, there were no mining claims within this WSA.. Recent USGS evidence suggests that the area may have moderate potential for hydrocarbons at depth.

Local Social and Economic Considerations

Livestock use at the current level of 914 AUMs and recreation use totaling 2,000 visitor use days per year are the primary resource outputs that generate economic activity in the WSA. Local personal income generated annually from these existing use levels amounts to approximately $11,000 for livestock grazing and $24,000 related to recreation use, for an overall total of approximately $35,000.

Under the recommendation, livestock grazing would remain at 914 AUMs. Recreation use is expected to increase by 20 visitor days per year due to population growth. Annual total personal income generated

from resource outputs in the WSA would increase by $240. There were no social issues identified by the study of this WSA.

Summary of WSA-Specific Public Comments

Public involvement has occurred throughout the wilderness review process. Certain comments received during the inventory process and early stages of the EIS preparation were used to develop significant study issues and various alternatives for the ultimate management of those lands found to have wilderness values.

During the inventory phase, 19 public comments were received which dealt with wilderness values on the Devils Garden. Eighteen commenters supported the recommendation that the area be a WSA and one commenter discussed the supplemental values of the area for wilderness without specifically recommending the area be a WSA. Seven comments suggested the Cherry Stem Road into the area be closed.

Thirty-three comments were received on the Draft EIS and its Supplement. Of these, 25 were written and 8 were oral; all support some portion or all of the area be designated as wilderness. One letter from the owner of the split-estate interests on the east side of the WSA specifically recommends that the entire area be designated as wilderness. One WSA-specific comment was received from the U.S. Forest Service. The Forest Service was concerned with fire management on their lands north of the WSA and the evaluation of wilderness character of the area as compared to existing Forest Service wilderness.

Two letters were received on the Final EIS specific to this WSA.

Impacts on Resources

The following comparative impact table summarizes the effects on pertinent resources for all alternatives considered, including designation and nondesignation of the area as wilderness.

Table 4. Comparative Summary of Impacts by Alternative

Issue Topics	Recommendation (Partial Wilderness Alternative w/Road Closure and Acquisition)
Impacts on Wilderness Values	Wilderness designation of 28,160 acres including 960 acres of acquired mineral estate and ACEC designation on remaining acreage would enhance wilderness values. Minor solitude impairment on 1,520 acres nonsuitable.
Impacts on Energy and Mineral	No impact to development since none is projected.
Impacts on Vegetation	17 miles of way and 2 miles of road would revegetate. No change in ecological status.
Impacts on Wildlife	Habitat and populations maintained on 28,160 acres with enhancement of deer winter range.
Impacts on Livestock Grazing	Use remains at 914 AUMs. Minor constraints on management practices due to closure of 17 miles of ways.
Impacts on Recreation Use	Change to primitive recreation use. Minor increase of 20 visitor days per year.
Impacts on Local Personal Income	Annual local personal income generated from resource outputs would increase by approximately $240.

All Wilderness Alternative	No Wilderness/No Action Alternative
Wilderness designation of 29,680 acres would protect and enhance wilderness values.	ACEC designation would preclude most impairing management actions. Minor solitude impairment from continued vehicle access.
No impact to development, since none is projected.	No impact to development, since none is projected.
20 miles of way would revegetate. No change in ecological status.	No change in ecological status. 20 miles of way would not revegetate.
Habitat and populations maintained throughout the area. Crucial deer winter range enhanced.	There would be a 30-acre forage improvement. Vehicle access would continue in habitat with minor impairment of habitat.
Use remains at 914 AUMs. Minor constraints on management practices due to closure of 20 miles of ways.	Use remains at 914 AUMs. No impact.
Change to primitive recreation use. Minor increase of 20 visitor days per year.	No change in types of recreation use. Minor increase of 20 visitor days per year.
Annual local personal income generated from resource outputs would increase by approximately $240.	Annual local personal income generated from resource outputs would increase by approximately $240.

Appendix 1 - Estimated Costs of Acquisition of Non-Federal Holdings Within Areas Recommended for Designation [1]

Legal Description (Prior to any Subdivision	Total Acreage	Number of Owners	Type of Ownership by Estate (Federal, State Private, other)		Presently Proposed for Acquisition (Yes, No)	Preferred Method of Acquisition (Purchase, Exchange, Other)	Estimated Cost of Acquisition[2]	
			Surface Estate	Subsurface Estate			Land Costs	Processing Costs
T. 24 S., R. 15 E.,								
Section 7: NE1/4NW1/4	40	1	Federal	Private	Yes	Purchase		$1,000[3]
Section 12: E1/2,	120	1	Federal	Private	Yes	Purchase		$1,000[3]
SESW1/4,								
Section 13: E1/2	440	1	Federal	Private	Yes	Purchase		$1,000[3]
E1/2NW1/4,								
NESW1/4								
Section 23: E1/2. NE1/4	80	1	Federal	Private	Yes	Purchase		$1,000[3]
Section 24: N1/2NE1/4,	360	1	Federal	Private	Yes	Purchase		$1,000[3]
SW1/4NE1/4,								
NW1/4,								
NE1/4SW1/4,								
NW1/4SE1/4								
T. 25 S., T. 15 E.,								
Section 13:	±10	1	Federal	Private	No	Purchase		[3]
						Total Costs		$5,000

[1] The estimated costs listed in this appendix in no way represent a formal appraised value of the land or mineral estate, but are rough estimates based on sales or exchanges of lands or mineral estates with similar characteristics to those included in the WSA. The estimates for purposes of establishing a range of potential costs to the government of acquiring non-Federal holdings and in no way represent an offer to purchase or exchange at the cost estimate included in this appendix. Processing costs are all miscellaneous expenses other than land costs. These include work month costs, appraisals, title work, escrow costs, etc. All lands identified in this table are in Oregon.

[2] Where exchange is proposed method, only administrative costs of processing the exchange are shown. Land costs are not applicable. Where direct purchase is proposed, estimate of both the land costs and the processing costs is provided.

[3] Total District processing costs approximately $5,000 for parcels as identified since acquired would be under one action in an exchange with the State of Oregon.

Squaw Ridge Wilderness Study Area

1. The Study Area —28,340 acres

The Squaw Ridge Lava Bed WSA (OR-1-3) is located approximately 80 miles southeast of Bend and 26 miles from State Highway 31 in Lake County, Oregon, and approximately 12 miles northeast of the town of Fort Rock. The study area contains 27,700 acres of BLM land, 640 acres of split-estate land, and a 320-acre State inholding near the eastern edge of the WSA (see Table 1). The boundaries are described by high standard gravel roads on the south, private land and 1.5 miles of low standard dirt road on the west, low standard dirt road on the north, and low and high standard dirt roads on the east. Small portions of the east and north boundaries are formed along private land.

The WSA, roughly circular in shape, is dominated by an extremely rugged basalt flow which issued from what is now called Lava Butte, and forms a flattened cone covering approximately two-thirds of the study area. Elevation ranges from 4,300 feet to 5,585 feet at the summit of Lava Butte near the center of the WSA. Vegetation consists primarily of western juniper/sagebrush/bunchgrass communities on the lava flow, and western juniper/big sagebrush-rabbitbrush communities surrounding the flow. Mountain mahogany, aspen, and ponderosa pine also occur at various locations within the lava flow.

The WSA was studied under Section 603 of the Federal Land Policy and Management Act, (FLPMA) and was included in the Final Oregon Wilderness Environmental Impact Statement filed in February of 1990.

Three alternatives were identified for the WSA: all wilderness, partial wilderness (the recommendation in this report), and no wilderness/no action. These lands are shown on Map 1.

2. Recommendation and Rationale

—21,010 acres recommended for wilderness
7,330 acres recommended for nonwilderness

The recommendation is to designate 21,010 acres as wilderness, and release 7,330 acres for uses other than wilderness. The all wilderness alternative is the environmentally preferable alternative. However, the recommendation would be implemented in

a manner using all practical means to avoid or minimize environmental impacts. The recommendation will preserve the portion of the WSA with high wilderness values, including volcanic features of scenic and educational value, extremely valuable wildlife habitat, and native bunchgrass communities, while releasing portions that have lower wilderness values.

The 21,010 acres recommended for wilderness offer significant ecological diversity represented by numerous vegetative communities. The Squaw Ridge Lava Flow lies in a transition zone adjacent to ponderosa pine forest to the north and sagebrush-steppe desert flora to the south. Mountain mahogany and juniper are the predominant tree species on the lava flow. Isolated pines and quaking aspen occur along the north end of the flow. Shrubs include big sagebrush, bitterbrush, wax currant, desert-sweet, rabbitbrush and gland ocean-spray. Native bunchgrasses are abundant in the WSA. Bluebunch wheatgrass forms pure stands in excellent condition on the cinder cones in the WSA, while Thurber's needlegrass, bottlebrush squirreltail, bluegrasses, Junegrass and Indian ricegrass represent valued populations of additional native species. These communities are less common outside the WSA.

The WSA is totally within crucial deer winter range, providing forage and thermal protection. It offers outstanding primitive recreation opportunities related to wildlife observation and sightseeing for natural resources such as botany and geology. Squaw Ridge Lava Flow offers outstanding opportunities to observe the complex interactions occurring within a diverse ecosystem.

Wilderness designation would add an ecosystem (Intermountain sagebrush/sagebrush-steppe) not presently represented in Oregon and represented in the National Wilderness Preservation System by only three areas.

The areas recommended as nonwilderness lie outside the lava flow on all four sides of the WSA. The primary rationale for unsuitable recommendations was to allow for future livestock development (see areas A, B, and C, Map 1). Area A to the north of the main lava flow is a sagebrush and juniper area containing scattered grazing developments such as trails, waterholes and fencelines. Area B is an isolated parcel on the west side of the WSA is bracketed by private land on two sides and would be awkward to manage as wilderness due to activities on private lands that would intrude on wilderness solitude and perceived naturalness in the area. Area C represents areas on the south between the lava flow and a county road right-of-way, as well as two small parcels between the flow and private lands forming the boundary on the southwest and east. Area C contains a waterhole in the southwest portion.

The conflicts with other resource uses of this WSA are limited. Grazing use of much of the area will be allowed to continue. The area has no known energy resources and the minerals known to exist in the area have low potential for occurrence with the exception of slab lava used for decorative stone. No development is projected in the foreseeable future.

The recommendation is preferred over the all wilderness alternative because it would allow maintenance of grazing and wildlife water projects outside the lava flow, while preserving the primary wilderness values within the flow.

3. Criteria Considered in Developing the Wilderness Recommendations

Wilderness Characteristics

A. Naturalness: The Squaw Ridge WSA appears to be predominantly natural with negligible human imprints. This natural character is emphasized by abundant native vegetation throughout the WSA and by undisturbed lava features. Peripheral to the lava flow, the WSA contains sagebrush, native grasses and forbs, with a minimal occurrence of exotic plant species. Scattered occurrences of aspen and ponderosa pine also add to the natural diversity of the area. A wildfire in 1986 burned approximately 500 acres at the northern edge of the WSA. The area is successfully revegetating on the majority of the burn with native bunchgrasses seeded naturally from surviving vegetation.

The Squaw Ridge WSA is within crucial deer winter range supporting approximately 10,000 deer in winter. Elk have also been moving into the area in recent years. Other wildlife which inhabit or frequent the area include cougar, bobcat, porcupine, badger, yellow-bellied marmot, ground squirrels, bats, western rattlesnake, gopher snakes, fence lizard and other reptiles. Avian species include bald eagle, red tailed and rough-legged hawk, prairie falcon, great horned owl, turkey vulture, raven, loggerhead shrike, western tanager, mountain bluebird, and other perching song birds.

R 16 E

R 17 E

T 23 S

T 24 S

T 25 S

RECOMMENDED FOR WILDERNESS

RECOMMENDED FOR NONWILDERNESS (None)

LAND OUTSIDE WSA RECOMMENDED FOR WILDERNESS (None)

SPLIT ESTATE

STATE

PRIVATE (None)

- N -

Squaw Ridge Lava Bed Proposal

MAP-1

0 1 2 3

MILES

OR-1-3

January, 1991

Table 1. Land Status and Acreage Summary of the Study Area

	Acres
Within Wilderness Study Area	
BLM (surface and subsurface)	27,700
Split-Estate (BLM surface only) [1]	640
Inholdings (State, private)	320
Total	28,660
Within the Recommended Wilderness Boundary	
BLM (within WSA)	20,890
BLM (outside WSA)	0
Split-Estate (within WSA) [1]	120
Split-Estate (outside WSA) [1]	0
Total BLM Land Recommended for Wilderness	21,010
Inholdings (State, private) [1]	0
Within the Area Not Recommended for Wilderness	6,810
Split-Estate[1]	520
Total BLM Land Not Recommended for Wilderness	7,330
Inholdings (State, private)[1]	320

[1] Appendix 1 is a detailed description of inholdings and split-estate tracts included within the study. For purposes of this report, split estate lands are defined only as those lands with federal surface and non-Federal subsurface (minerals).

Unnatural features in the WSA are minimal in size and impact, and are scattered through the lands not covered by lava, affecting approximately 500 acres, less than 2 percent of the WSA. The area within the recommendation contains approximately 3 miles of vehicle way and is bound by approximately 11 miles of vehicle ways. Area A contains four small reservoirs, four miles of fenceline and approximately 3 miles of vehicle way. The heavy cover of juniper and shrubs and the scattered low hills make the developments relatively unnoticeable. Area B contains two miles of fenceline. Area C contains approximately one mile of vehicle way and a reservoir. A 425-acre seeding (15 years old) in the southeast corner of the WSA has been invaded by sagebrush, rabbitbrush and native bunchgrasses, making it relatively unnoticeable to the average visitor.

B. Solitude: The opportunities for solitude are outstanding in the entire WSA. The very irregular topography of the lava flow and the abundant juniper, mountain mahogany and shrub cover readily isolate the visitor anywhere in the main body of the recommendation. One can have a feeling of total solitude just a few yards into the lava flow. Small areas within nonsuitable areas A and C offer slightly less opportunity for solitude due to the lower stature of vegetation and flat terrain. These areas still afford excellent solitude potential. Solitude potential is quite limited in nonsuitable area B.

The use of vehicles to haul water for cattle approximately twelve times during the grazing season in the Jack's Place pasture on the east side of the WSA has a temporary negative impact on the opportunities for solitude in the immediate vicinity.

C. Primitive and Unconfined Recreation: Outstanding opportunities for primitive and unconfined recreation such as day hiking, backpacking, tent-camping, sightseeing, photography, caving and exploring the lava features are present throughout

the WSA. The WSA offers the visitor outstanding views, abundant wildlife, a variety of geological features and a wide diversity of plants. Hiking within the lava flow is challenging due to the rough and irregular surface. The area outside the lava flow (Areas A and C) offer less rugged terrain for camping, and easier access for recreation. Area B has somewhat limited primitive recreation potential due toe the proximity to private lands and exposed terrain.

D. Special Features: The WSA is known for its variety of volcanic features, including; sharp and convoluted "aa" lava, flat-featured smooth-surfaced pahoehoe lava, collapses, tumuli (fractured basaltic domes), cinder cones, squeeze-ups (lava forced through fissures), spires and ropy lavas. Numerous geology students and classes visit the WSA annually to study the examples of volcanism.

The abundance and diversity of native vegetation in the WSA represents a somewhat unique feature. The WSA is located in an ecotone between the sagebrush steppe and ponderosa pine forest and thus contains an assemblage of plants found in both ecosystems. The high quality of the native vegetation is exemplified by the diversity of species and the abundance of plants on the surface of the flow. Desert-sweet, an uncommon shrub, is endemic to lava flows such as this. The cinder cones are covered almost exclusively with bluebunch wheatgrass. This type of plant community is uncommon in southeastern Oregon. The rest of the flow is covered with a wide array of other native bunchgrasses, wildflowers, colorful lichens, and numerous shrubs and trees including juniper, mountain mahogany, and some ponderosa pine and quaking aspen.

The area contains several kipukas—areas of relatively undisturbed native vegetation in the lava fields.

The Squaw Ridge WSA is crucial deer winter range for approximately 10,000 mule deer from the Devils Garden deer herd. Elk are also wintering in the area in increasing numbers.

Diversity in the National Wilderness Preservation System

A. Expanding the Diversity of Natural Systems and Features as Represented by Ecosystem: Wilderness designation of this WSA would add an ecosystem not presently represented in Oregon and represented in the National Wilderness Preservation System by only three areas. There are 66 other BLM areas in the state under study within this ecosystem.

According to the Bailey-Kuchler system of classifying ecosystems, the Squaw Ridge WSA is located in the Intermountain Sagebrush Province, with a potential natural vegetation of sagebrush steppe with juniper. This information is summarized in Table 2.

Vegetative communities listed in the High Lava Plains section of the Oregon Natural Heritage Plan and occurring in the WSA include western juniper/ Idaho fescue, big sagebrush/Idaho fescue, mountain mahogany, and Idaho fescue-bluebunch wheatgrass.

B. Assessing the Opportunities for Solitude or Primitive Recreation Within a Day's Driving Time (five hours) of Major Population Centers: There are four standard metropolitan statistical areas with populations over 100,000 within five hours' driving time of the Squaw Ridge WSA: Medford, Eugene/ Springfield, Salem, and Portland, Oregon. Table 3 summarizes the number and acreage of designated areas and other BLM study areas within a five-hour drive of the population centers.

C. Balancing the Geographic Distribution of Wilderness Areas: The Squaw Ridge WSA would not contribute to balancing the geographic distribution of areas within the National Wilderness Preservation System. There are 15 designated areas within 100 miles of this WSA.

Manageability

(The area must be capable of being effectively managed to preserve its wilderness characteristics.)

Given the rugged terrain and essentially pristine nature of the lava flow area, the recommended area would be easily managed as wilderness since lack of reasonable access for development or vehicle travel greatly limits the potential for incompatible use. The nonsuitable areas are also manageable as wilderness, although minor access problems to control vehicles in Area A would result with existing developments and vehicle ways.

Energy and Mineral Resource Values

Energy and mineral resources were evaluated by BLM using available geologic data, results of a BLM geologic/geochemical study, and data provided by Engineers International, Incorporated (EII), a consulting firm under contract to BLM. The data are contained in an EII report titled "Geological Investigation and Mineral Inventory of Devil's Garden, Four Craters, and Squaw Ridge in Lake County, Oregon." Additional information is drawn from the U.S. Geological Survey/ Bureau of Mines Bulletin 1738-A,

Table 2. Ecosystem Representation

Bailey-Kuchler Classification	NWPS Areas	NWPS Acres	Other BLM Studies Areas	Other BLM Studies Acres
Province/Potential Natural Vegetation				
NATIONWIDE				
Intermountain Sagebrush Province/ Sagebrush Steppe	3	76,699	136	4,342,000
OREGON				
	0	0	66	1,954,734

Table 3. Wilderness Opportunities for Residents of Major Population Centers

Population Centers	NWPS Areas	NWPS Acres	Other BLM Studies Areas	Other BLM Studies Acres
Medford, OR	31	2,440,081	21	730,038
Eugene/Springfield, OR	42	2,859,994	43	770,436
Salem, OR	45	2,888,764	23	210,083
Portland, OR	48	4,537,392	21	91,762

"Mineral Resources of the Devil's Garden Lava Bed, Squaw Ridge Lava Bed, and Four Craters Lava Bed Wilderness Study Areas, Lake County, Oregon" dated 1988.

The entire WSA is considered moderately favorable for the occurrence of geothermal resources based upon recent volcanism and above-normal heat flow characteristic of most of southeastern Oregon. No specific areas of geothermal potential have been identified.

Part of the WSA (1,740 acres) is rated highly or moderately favorable for the occurrence of slab lava. There are 400 acres rated highly favorable for the occurrence of cinders. Slab lava occurring near the margins of the Squaw Ridge lava flow is considered exploitable, while the interior deposits of slab lava and the cinder deposits are not accessible.

As of May 1991, there were no mining claims within the WSA.

Local Social and Economic Considerations

Livestock use at the current level of 1,175 AUMs and recreation use totaling 400 visitor days per year are the primary resource outputs that generate economic activity in the WSA. Local personal income generated annually from these existing use levels amounts

to approximately $14,100 for livestock grazing and $4,800 related to recreation use, for an overall total of $18,900.

Under the recommendation, livestock grazing would remain at 1,175 AUMs and local personal income derived from it would not change. Recreation use numbers are not expected to change substantially, therefore income derived from it would remain unchanged.

Annual local personal income generated from resource outputs (recreation use and livestock grazing) in the WSA would remain at approximately $19,000. There were no social issues identified in the study of this WSA.

Summary of WSA-Specific Comments

Public involvement has occurred throughout the wilderness review process. Certain comments received during the inventory process and early stages of the EIS preparation were used to develop significant study issues and various alternatives for the ultimate management of those lands found to have wilderness value. During formal public review of the Draft EIS and its Supplement, a total of 16 comments specifically addressing this WSA were received. Of those comments, 14 were written and 2 were oral comments received at the public hearings.

Five commenters supported the all wilderness alternative citing protection of natural resources, ecological diversity, and the uniqueness of the area as reasons.

One commenter supported an enhanced wilderness alternative and one commenter supported a greater than preferred alternative, both stating that the boundaries of the suitable recommendation were poorly drawn.

One commenter supported the no wilderness alternative stating that the area could not be managed as a wilderness because there was little solitude or primitive recreation opportunities.

Three commenters supported a greater than all wilderness alternative citing that the values of the area as wilderness (scenic value, recreation) outweigh the other values of the area.
No WSA-specific comments were received from federal or local agencies concerning the designation or nondesignation of the Squaw Ridge Lava Bed WSA.

Two letters were received on the Final EIS specific to this WSA.

Impacts on Resources

The following comparative impact table summarizes the effects on pertinent resources for all the alternatives considered including designation or nondesignation of the entire area as wilderness.

Table 4. Comparative Summary of Impacts by Alternative

Issue Topics	Recommendation (Partial Wilderness Alternative)
Impacts on Wilderness Values	Wilderness designation of 21,010 acres would protect wilderness values. Values directly impaired on 430 acres.
Impacts on Energy and Mineral Development	Slab lava sale foregone on 20 acres. No impact on energy development since none is projected.
Impacts on Vegetation	14 miles of ways would not revegetate; native vegetation preserved on 21,010 acres.
Impacts on Wildlife	Crucial deer winter range preserved on 21,010 acres. Habitat impacted by vehicles on 7,330 acres.
Impacts on Livestock Grazing	No change in use levels of 1,175 AUMs.
Impacts on Recreation Use	No substantial change in use. (10 visitor days/year due to population increase).
Impacts on Local Personal Income	Annual local personal income would remain at approximately $19,000.

All Wilderness Alternative	No Wilderness/No Action Alternative
Wilderness designation of 28,340 acres would protect or enhance existing wilderness values.	Projected management actions would impair the area's naturalness, solitude and recreation opportunities on 2,000 acres.
Slab lava sale foregone on 20 acres. No impact on energy development since none is projected.	Slab lava sale on 20 acres. No impact on energy development since none is projected.
14 miles of ways would revegetate; native vegetation preserved on 28,340 acres.	Vegetation altered on 520 acres.
Habitat and populations of all species, including crucial deer winter range, preserved on 28,340 acres.	There would be 500 acres seeded to enhance forage. One guzzler would be installed. Continued vehicle impacts on habitat.
Vehicle use on 13.5 miles of ways forgone. No change in use levels of 1,175 AUMs.	No impact.
Types of use would shift from motorized to primitive. No substantial change in visitor numbers.	No impact.
Annual local personal income would remain at approximately $19,000.	Local personal income would increase by and unknown amount above the present $19,000.

Appendix 1 - Estimated Costs of Acquisition of Non-Federal Holdings Within Areas Recommended for Designation [1]

Legal Description (Prior to any Subdivision	Total Acreage	Number of Owners	Type of Ownership by Estate (Federal, State Private, other)		Presently Proposed for Acquisition (Yes, No)	Preferred Method of Acquisition (Purchase, Exchange, Other)	Estimated Cost of Acquisition[2]	
			Surface Estate	Subsurface Estate			Land Costs	Processing Costs
Parcel No. 1, T. 24 S., R. 17 E. Section 16: W1/2	120	1	Federal	State	Yes	Exchange		$1,000[3]

[1] The estimated costs listed in this appendix in no way represent a formal appraised value of the land or mineral estate, but are rough estimates based on sales or exchanges of lands or mineral estates with similar characteristics to those included in the WSA. The estimates for purposes of establishing a range of potential costs to the government of acquiring non-Federal holdings and in no way represent an offer to purchase or exchange at the cost estimate included in this appendix. Processing costs are all miscellaneous expenses other than land costs. These include work month costs, appraisals, title work, escrow costs, etc. All lands identified in this table are in Oregon.
[2] Where exchange is the proposed acquisition method, only administrative costs of processing the exchange are shown. Land costs are not applicable.
[3] Total District processing cost approximately $1,000.00 for parcels as identified, since thay would be acquired under one action in the exchange.

Four Craters Lava Bed Wilderness Study Area

1. The Study Area —12,600 acres

The Four Craters Lava Bed Wilderness Study Area (WSA) (OR-1-22) is located in Lake County, Oregon, approximately 60 miles southeast of Bend, Oregon and 8 miles north of the small town of Christmas Valley. The WSA includes 11,960 acres of BLM land and 640 acres of split-estate land (see Table 1). Roughly oval in shape, the study area is bounded on the west and north by a low standard dirt road and on the east and south by private land. A low standard dirt road bounds the WSA on the southeast for approximately 2 miles. A dead-end road, approximately 1.7 miles in length, extends into the WSA forming part of the northern boundary.

The WSA is divided into two distinctive types of land areas, each covering about half the acreage. The first type is the rugged aa lava flows and cinder cones. The second type is sagebrush/grassland flats. About half of the acreage in the WSA contains rugged aa lava flows and cinder cones. The remaining acreage is sagebrush/juniper and sagebrush/grassland flats. The WSA contains the "Crack in the Ground," a large tension fracture in the basalt approximately 2 miles long and from 10 to 30 feet in depth. This crack reaches a maximum width of about 20 feet. Another tension fracture, volcanic spires and pressure ridges also occur in the lava flow.

The WSA was studied under Section 603 of the Federal Land Policy and Management Act and was included in the Final Oregon Wilderness Environmental Impact Statement (EIS) filed in February 1990.

Four alternatives were analyzed in the EIS: 1) all wilderness alternative; 2) partial alternative; 3) another partial alternative with acquisition (which is the recommendation of this report); and 4) no wilderness/no action alternative.

2. Recommendation and Rationale

9,100 acres recommended for wilderness
3,500 acres recommended for nonwilderness

The recommendation for this WSA is to designate 9,100 acres as wilderness, and to release 3,500

acres for uses other than wilderness. Acquisition of the 440 acres of mineral estate is included in the recommendation. The environmentally preferable alternative for this WSA is the all wilderness alternative as it would result in the least change from the natural environment over the long run. However, the recommendation would be implemented in a manner that would avoid or minimize environmental impacts.

The recommendation recognizes the high wilderness values of the area which are considered to outweigh use of the area for resource development such as cinder pits. It would preserve unique natural features in the lava flow evidencing relatively recent volcanism, including the four cinder cones (The Four Craters). The recommendation would enhance naturalness and opportunities for solitude in the area recommended suitable outside the lava flow by eliminating motorized vehicle access and closing two miles of ways. The recommendation would preserve opportunities for primitive and unconfined recreation within the lava flow, and enhance opportunities on the lava-free areas by eliminating vehicle use.

Wilderness designation of this WSA would add an ecosystem (intermountain sagebrush/sagebrush-steppe) not presently represented in Oregon, and represented in the National Wilderness Preservation System by only three areas.

The recommendation would release from wilderness consideration lands that would be difficult to manage as wilderness. The nonsuitable Area A on the east side of the WSA has a boundary convoluted by private land ownership, and is heavily influenced by activity on these lands adjacent to the WSA. Area A also lacks any substantial opportunities for solitude or primitive recreation and natural values are low. Nonsuitable area B, located on the south end of the WSA, is influenced by a number of activities and influences not suitable for wilderness designation. Livestock management activities requiring vehicles such as water hauling, and resource utilization such as juniper harvest (500 acres), could continue on the 3,500 acres not designated wilderness. Vehicle access for recreation would continue to the Crack in the Ground.

The recommendation would enhance manageability on the suitable portion by ensuring that mineral development activities do not degrade wilderness values.

3. Criteria Considered in Developing the Wilderness Recommendations

Wilderness Characteristics

A. Naturalness: The WSA is in a natural condition and is primarily affected by the forces of nature. The rugged terrain within the lava flow has precluded development opportunities and contributed to the preservation of this portion of the WSA in a pristine condition. The cinder cones are notable scenic features that appear to be primarily affected by the forces of nature, with only a small area encompassing a few square feet near the northernmost crater having been used for a cinder source.
The WSA is within a crucial winter range for mule deer and provides high quality and quantity native forage and thermal cover for between 2,000 and 3,000 deer. The WSA is within the range of bald eagles (a Federal listed threatened species in Oregon). Other birds include: great horned owl, mourning dove, quail, common flicker, red-tailed and rough-legged hawks, prairie falcon, American Kestrel, mountain bluebird, Townsend's solitaire, robins and many other passerine species.

Coyote, bobcat, marmot, black-tailed jackrabbit, cottontail, golden-mantled ground squirrel, least and yellow pine chipmunk, kangaroo rat, jumping mice, and various reptile species inhabit the area. Recent reports also indicate that a population of big eared bats *(Plecotus townsendii)*, a candidate species for protection under the Endangered Species Act, may inhabit the area.

There are 8.5 miles of vehicle ways outside the lava flow created by motorized vehicle use for livestock management and recreation. Approximately 5.5 miles of fenceline are well-masked by vegetation and have little impact on the area. A short way leads to the Crack-in-the-Ground, and traffic from high visitor use has impacted approximately 5 acres near the Crack.

Area A on the east side of the WSA contains minor impacts on naturalness. Area B on the south contains a fenceline which does not impair wilderness values, a vehicle way used for watering cattle and contains a heavy growth of cheatgrass which is not a natural species.

B. Solitude: Opportunities for solitude in the WSA are outstanding. The extremely rugged terrain of the

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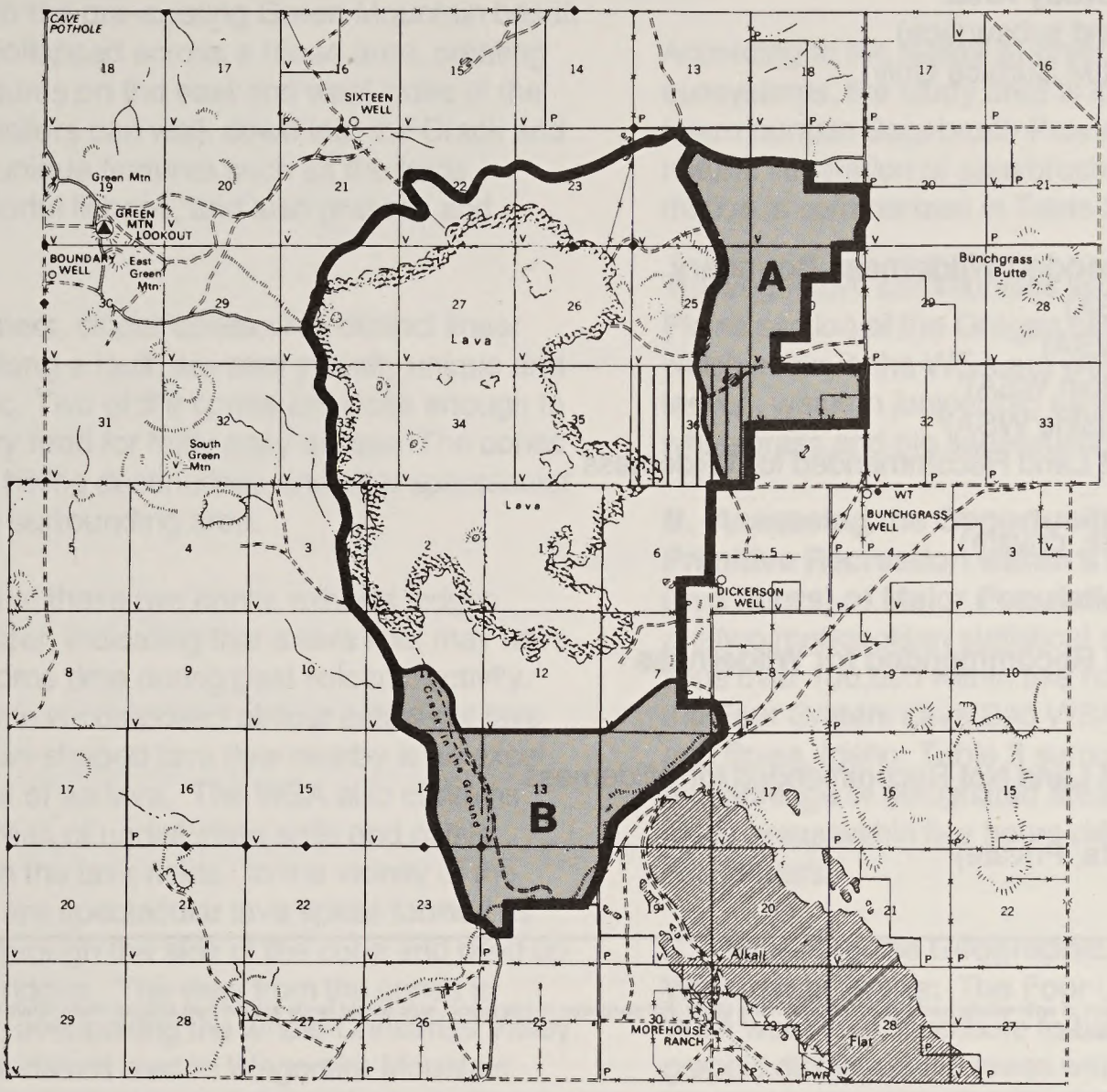

RECOMMENDED FOR WILDERNESS

RECOMMENDED FOR NONWILDERNESS

LAND OUTSIDE WSA RECOMMENDED FOR WILDERNESS (None)

SPLIT ESTATE

STATE (None)

PRIVATE (None)

-N-

Four Craters Lava Bed Proposal

MAP-1

0 1 2 3

MILES

OR-1-22

January, 1991

Table 1. Land Status and Acreage Summary of the Study Area

	Acres
Within Wilderness Study Area	
BLM (surface and subsurface)	11,960
Split-Estate (BLM Surface Only)	640
Inholdings	0
Total	12,600
Within the Recommended Wilderness Boundary	
BLM (within WSA)	8,660
BLM (outside WSA)	0
Split-Estate (within WSA)[1]	440
Split-Estate (outside WSA)[1]	0
Total BLM Land Recommended for Wilderness	9,100
Inholdings (State, private)	0
Within the Area Not Recommended for Wilderness	
BLM	3,300
Split-Estate[1]	200
Total BLM Land Not Recommended for Wilderness	3,500
Inholdings (State, Private)	0

[1]Appendix 1 is a detailed description of split-estate tracts included within the study. For purposes of this report, split-estate lands are defined only as those lands with federal surface and non-Federal subsurface (minerals).

lava flow readily isolates visitors. The sagebrush/juniper communities surrounding the lava flows generally provide adequate cover and terrain for solitude. The opportunity for solitude is somewhat constrained adjacent to the boundary road on the west side of the WSA, and at the Crack in the Ground, due to the high level of visitor use.

Area A on the east side of the WSA has low potential for solitude due in part to the configuration of the boundary around private lands and to the exposed nature of this parcel. Area B on the south has moderate potential to achieve solitude, except near the boundary roads on the south and west.

C. Primitive and Unconfined Recreation: Primitive recreation opportunities are outstanding within the WSA. Day hiking opportunities are plentiful throughout the area. Backpacking trips are also available within the entire WSA. The terrain is extremely rugged in the lava flows so campsites are somewhat limited. Areas outside, or along the edge of the flow, however, provide abundant campsites. Hunting occurs in the WSA as a primitive recreation opportunity not dependent upon vehicle use. Wildlife viewing and photographic opportunities are outstanding. The dramatic terrain, in conjunction with high wildlife numbers in the area, offer unique and spectacular settings, as well as the opportunity to closely approach wildlife for picture taking. Crack-in-the-Ground is a one-of-a-kind feature with cool temperatures, grasses, and ferns inside the crack in dramatic contrast to the desert landscape just above.

Area A on the east side of the WSA has low value for primitive recreation. Area B on the south does have potential for sightseeing, wildlife viewing and primitive hunting.

D. Special Features: Four Craters Lava Bed WSA has a variety of volcanic features which offer outstanding opportunities for education, sightseeing,

photography, and nature study. Among these is Crack in the Ground, a 2.5-mile-long tension fracture in the basalt which reaches a depth of 30 feet. The crack was formed approximately 1,000 years ago when the four craters erupted, releasing pressure from beneath the pre-existing Green Mountain basalt flow which collapsed across a broad area, creating tension fractures on the east and west sides of the collapse. Visitors can walk down into the Crack and observe its unique features such as the ferns, mosses, colorful lichens, and lush grasses and shrubs.

The four craters, cinder cones on a distinct linear alignment along a fault, are also visually unique and highly scenic. Two of the cones are close enough to the boundary road for fairly easy access. The cones are popular hiking destinations and offer spectacular views of the surrounding area.

The farthest of these two cones exhibits ledges inside its crater, indicating that a lava lake may have existed at some time during past volcanic activity. The third cone is composed almost entirely of lava bombs. A fan-shaped lava flow nearby is an excellent example of aa lava. The WSA also contains kipukas—areas of undisturbed soils and native vegetation in the lava fields. In the vicinity of the fourth cone are spectacular lava spires formed as lava broke through the side of the cone and piled up in pressure ridges. The view from the cones is spectacular, overlooking the whole Christmas Valley area and the desert east to Wagontire Mountain.

The study area is located in crucial deer winter range. Winter populations of mule deer in the WSA range from 2,000 to 3,000 depending on climate and overall herd numbers. Several cultural resource lithic sites and historic sites are also located in the WSA.

Diversity in the National Wilderness Preservation System

The Four Craters WSA would add some diversity to the NWPS. Although other lava flow areas do exist in the NWPS, the individual nature of each area geologically, botanical and within scenic and zoologic settings makes many of them distinct in character from others that may be geographically quite close. The Cinder cone alignment and Crack-in-the-Ground are unique features that would be added to the NWPS.

A. Expanding the Diversity of Natural Systems and Features as Represented by Ecosystem: Wilderness designation of the Four Craters WSA would add an ecosystem not presently represented in Oregon and represented in the National Wilderness Preservation System by only three areas. There are 66 other BLM areas in the state under study within this ecosystem.

According to the Bailey-Kuchler system of classifying ecosystems, the study area is located in the Intermountain Sagebrush Province with a potential natural vegetation of sagebrush steppe. This information is summarized in Table 2.

The vegetative communities listed in the High Lava Plains section of the Oregon Natural Heritage Plan which occur in the WSA are western juniper/Idaho fescue, western juniper/big sagebrush/bluebunch wheatgrass and big sagebrush/Idaho fescue.

B. Assessing the Opportunities for Solitude or Primitive Recreation within a Days' Driving Time (five hours) of Major Population Centers : There are two metropolitan statistical areas with populations over 100,000 within five hours' driving time of the Four Craters Lava Bed WSA: Medford, Oregon; and Boise, Idaho. Table 3 summarizes the number and acreage of designated areas and other BLM study areas within five hours drive of major population centers.

C. Balancing the Geographic Distribution of Wilderness Areas: The Four Craters Lava Bed WSA would not contribute to balancing the geographic distribution of areas within the National Wilderness Preservation System. There are 15 designated areas within 100 miles of this WSA.

Manageability

(The area must be capable of being effectively managed to preserve its wilderness characteristics.)

The WSA would be manageable as wilderness. The clear boundaries with extremely rugged terrain in the majority of the suitable area greatly aid in preserving that natural character of the land. Area A on the east side would be difficult to manage, with convoluted boundaries, and terrain and features not conducive to wilderness management. Livestock management activities on area B in the southern portion of the WSA would complicate wilderness management because of conflicts concerning water sources for livestock. Although no development is projected, acquisition of the mineral estate of the split-estate portion would assure that wilderness values would be protected.

Table 2. Ecosystem Representation

Bailey-Kuchler Classification	NWPS Areas	NWPS Acres	Other BLM Studies Areas	Other BLM Studies Acres
Province/Potential Natural Vegetation				
Intermountain Sagebrush				
	NATIONWIDE			
Sagebrush Steppe	3	76,699	136	4,357,740
	OREGON			
	0	0	66	1,970,474

Table 3. Wilderness Opportunities for Residents of Major Population Centers

Population Centers	NWPS Areas	NWPS Acres	Other BLM Studies Areas	Other BLM Studies Acres
Medford, OR	31	2,440,081	21	730,038
Boise, ID	16	4,741,570	126	5,060,460

Energy and Mineral Resource Values

Energy and mineral resources were evaluated by BLM using available geologic data and data provided by Engineer's International, Incorporated (EII), a consulting firm under contract with BLM. The EII data are in a report titled "Geologic Investigation and Mineral Inventory of Devil's Garden, Four Craters, and Squaw Ridge in Lake County, Oregon."

Additional data used were the results of a recent report from the U.S. Bureau of Mines (USBM) and the U.S. Geological Survey (USGS) Bulletin 1738 A "Mineral Resources of the Devil's Garden Lava Bed, Squaw Ridge Lava Bed, and Four Craters Lava Bed Wilderness Study areas, Lake County, Oregon" published in 1988.

Although no specific areas of geothermal potential have been identified in the WSA, the entire WSA is considered moderately favorable for the occurrence of geothermal resources, based upon recent volcanism and above-normal heat flow characteristics present throughout most of southeastern Oregon.

Portions of the WSA are considered to be highly favorable and moderately favorable for the occurrence of slab lava by BLM reports, while USGS/USBM reports the value as low. Slab lava occurring near the margins of the lava flow is considered exploitable to a minor degree; interior deposits are not readily accessible. Four separate sites within the WSA (40 acres) are rated as having a high potential for cinders. Two cinder deposits near the edge of the lava flow are accessible.

As of May 1991, there were no mining claims within the WSA.

Local Social and Economic Considerations

Livestock use at the current level of 623 AUMs and recreation use totaling 3,500 visitor days per year are the primary resource outputs that generate economic activity in the WSA. Local personal income generated annually from these existing use levels amounts to $7,476 for livestock grazing and $42,000 related to recreation use, for an overall total of $49,476.

Livestock grazing would remain at 623 AUMS. Recreation use is expected to increase by 50 visitor days per year due to population growth. The recommended action would result in a probable increase in annual local personal income of approximately $600 based on the recreation use increase. There were no social issues identified in the study of this WSA.

Summary of WSA-SpecificPublic Comments

Public involvement has occurred throughout the wilderness review process. Certain comments received during the inventory process and early stages of the EIS preparation were used to develop significant study issues and various alternatives for the ultimate management of the lands found to have wilderness value.

During formal public review of the Draft and Supplement to the Draft EIS, a total of 15 comments specifically addressing the Four Craters Lava Bed WSA were received. Of these, 14 were written and one was oral.

One commenter supported an expanded boundary alternative stating that the boundaries of the suitable portion were poorly drawn. Two commenters recommended no wilderness.

One commenter supported a greater-than-all wilderness alternative for protection of natural resources. One person supported an enhanced wilderness alternative for the same reason.

Two commenters supported a greater than preferred alternative for reasons such as the protection of deer winter range, the uniqueness of the area (Crack-in-the-Ground), and poorly drawn boundaries as reasons for the alternative.

Five commenters supported the all wilderness alternative stating reasons such as native vegetation of scientific interest, uniqueness of the area, invalid rationale for unsuitable area, and overstating manageability problems to support the alternative.

Three commenters supported the preferred alternative without stating reasons for their decision.

No WSA-specific comments were received from other agencies or local governments concerning the designation or nondesignation of the Four Craters WSA. One letter from Lake County did request continued access to a cinder source in the north end of the WSA.

Two comment letters were received on the Final EIS specific to this WSA.

Impacts on Resources

The following comparative impact table summarizes the effects on pertinent resources for all the alternatives considered including designation or nondesignation of the entire area as wilderness

Table 4. Comparative Summary of Impacts by Alternative

Issue Topics	Recommendation (Partial Wilderness with Acquisitions Alternative)	All Wilderness Alternative
Impacts on Wilderness Values	Wilderness designation of 9,100 acres would protect or enhance existing values. Loss or impairment of wilderness values would occur on 3,500 acres due to indirect impacts.	Wilderness designation of 12,600 acres would protect or enhance existing values.
Impacts on Energy and Mineral Development	One cinder pit would be foregone.	One cinder pit would be foregone.
Impacts on Vegetation	Little or no change would occur to existing vegetation. Juniper would be removed on 500 acres.	Vegetation would be preserved on 12,600 acres. An estimated 7.5 miles of ways would revegetate.
Impacts on Wildlife	Minimal impact to habitat expected due to possible wood cutting on 500 acres.	Habitat and populations for all species, including crucial deer winter range, would be preserved.
Impacts on Livestock Management	No change in use. Two miles of way closed.	No change in use. There would be 7.5 miles of way closed to routine management activities.
Impacts on Wood Products	Juniper harvest would be precluded on 1,000 acres.	Juniper harvest would be precluded on 1,500 acres.
Impacts on Recreation Use	Two miles of way closed. There would be a projected increase of 50 visitor days due to population growth.	There would be 8.5 miles of way closed. There would be a projected increase of 50 visitor days due to population growth.
Impacts on Local Personal Income	Local personal income generated from resource outputs in the WSA would increase by $600 per year.	Local personal income generated from resource outputs in the WSA would increase by $600 per year.

Partial Wilderness Alternative	No Wilderness/No Action Alternative
Wilderness designation of 5,130 acres would protect or enhance existing values. Loss or impairment of wilderness values would occur on 7,470 acres due to indirect impacts.	Wilderness values would be lost on 1,500 acres due to development actions. Loss or impairment of wilderness values would occur on 12,600 acres due to indirect impacts.
One cinder pit would be foregone.	One cinder pit would be developed.
Little or no change would occur to existing vegetation. Juniper would be removed on 1,500 acres.	Juniper would be removed on 1,500 acres.
Habitat would be disturbed on 1,500 acres.	Habitat would be disturbed on 1,500 acres.
No impact.	No impact.
No impact.	No impact.
There would be a projected increase of 50 visitor days due to population growth.	There would be a projected increase of 50 visitor days due to population growth.
Local personal income generated from resource outputs in the WSA would increase by $600 per year.	Local personal income generated from resource outputs in the WSA would increase by $600 per year.

Appendix 1 - Estimated Costs of Acquisition of Non-Federal Holdings Within Areas Recommended for Designation [1]

Legal Description (Prior to any Subdivision	Total Acreage	Number of Owners	Type of Ownership by Estate (Federal, State Private, other) Surface Estate	Subsurface Estate	Presently Proposed for Acquisition (Yes, No)	Preferred Method of Acquisition (Purchase, Exchange, Other)	Estimated Cost of Acquisition[2] Land Costs	Processing Costs
Parcel No. 1, T. 25S., R. 17 E. W1/2 W1/2E1/2 Portions,Sec. 36	440	2	Federal	State	Yes	Exchange		$1,000[3]

[1] The estimated costs listed in this appendix in no way represent a formal appraised value of the land or mineral estate, but are rough estimates based on sales or exchanges of lands or mineral estates with similar characteristics to those included in the WSA. The estimates for purposes of establishing a range of potential costs to the government of acquiring non-Federal holdings and in no way represent an offer to purchase or exchange at the cost estimate included in this appendix. Processing costs are all miscellaneous expenses other than land costs. These include work month costs, appraisals, title work, escrow costs, etc. All lands identified in this table are in Oregon.

[2] Where exchange is the proposed acquisition method, only administrative costs of processing the exchange are shown. Land costs are not applicable.

[3] Total District processing costs approximately $1,000.00 for parcels as identified since they would be acquired under one action in an exchange.

Sand Dunes Wilderness Study Area

1. The Study Area —16,440 acres

The Sand Dunes Wilderness Study Area (WSA OR-1-24) is located in Lake County, 9 miles northeast of the small town of Christmas Valley, Oregon and about 70 miles southeast of Bend, Oregon. It is approximately 30 miles north of Oregon Highway 31, and 30 miles west of U.S. Highway 395. The WSA contains 16,040 acres of BLM land and one parcel of split-estate land totaling 400 acres. (See Table 1).

Low standard roads define the boundaries on the north and east, a 750-kV powerline right-of-way on the west, and legal land subdivisions on the south. Much of the land outside the area is public land managed by the BLM and is used primarily for recreation and grazing.

The majority of the WSA is characterized by unstabilized sand dunes, which rise to a maximum height of about 60 feet. Pockets of vegetation exist between the dunes and surrounding ephemeral seeps. Sparse grasses grow on the dunes in late summer, and some juniper trees occur on the northern and eastern margin of the dunes near the boundaries. The area between the dunes and the north boundary road supports extensive areas of salt-grass and greasewood cover. A portion of the WSA inside the Lost Forest contains sagebrush, juniper and ponderosa pine. There is no perennial water in the area.

A 960-acre portion of the Lost Forest Research Natural Area (RNA) is within the WSA. The boundary road of the WSA separates this portion of the RNA from the remainder of the RNA. The RNA was designated in 1972 for research purposes and receives special management, including withdrawal from mineral entry. The RNA is within a "limited" off-road vehicle designation with vehicles restricted to roads or trails posted as open to travel. The sand dunes are "open" to vehicles equipped for travel across sand or snow. The Lost Forest consists of a disjunct stand of ponderosa pine occurring in a climate lower in rainfall than that normally associated with this vegetation community. The sand dunes, the sandy soils within the Lost Forest, and associated vegetation represent a complex and unique ecosystem.

All Research Natural Areas and Primitive Areas in existence at the time of the Federal Land Policy and Management Act (FLPMA) were designated as Instant Study Areas (ISA). They were so named

because the deadline for completion of the wilderness study was accelerated from the 1991 reporting date for the remaining wilderness study areas to be identified in inventories. The BLM Oregon State Director's 1979 report on the Lost Forest Instant Study Area concluded that the Lost Forest ISA did not have wilderness characteristics and should not be recommended for wilderness designation. The report did conclude that the roadless portion of the Lost Forest RNA/ISA within the Sand Dunes WSA should be incorporated for further study with the Sand Dunes WSA. A portion of the WSA includes part of the Fossil Lake paleontologic area vehicle closure, which continues to the west, outside the WSA. Some 4,160 acres of the WSA are within this fenced vehicle closure area.

The WSA was studied under Section 603 of the Federal Land Policy and Management Act and was included in the Final Oregon Wilderness Environmental Impact Statement (EIS) filed in February 1990.

Two alternatives were analyzed in the EIS: an all wilderness alternative; and a no wilderness/no action alternative, which is the recommendation in this report. The all wilderness alternative would recommend all 16,440 acres of public land in the WSA as suitable for wilderness. This assumes the mineral estate of 400 acres of split-estate lands would not be acquired and would remain open to mineral entry.

The no wilderness alternative would recommend the entire WSA nonsuitable as wilderness, and represents the situation most likely to occur without wilderness designation. These lands are shown on Map 1.

2. Recommendation and Rationale

0 acres recommended for wilderness
16,440 acres recommended for nonwilderness

The recommendation for this WSA is to release the entire area for uses other than wilderness. The environmentally preferable alternative is all wilderness, as it would result in the least change from the natural environment over the long term. However, the no wilderness alternative would be implemented in a manner which would use all practical means to avoid or minimize environmental impacts.

Wilderness values are limited to the central core of the dunes, and significant portions of the WSA do not contain substantial wilderness values. Although the central portion does offer outstanding solitude and opportunities for primitive recreation and a high degree of naturalness owing to the nature of the constantly moving dunes, the majority of the area lacks the degree of wilderness values necessary for a recommendation to designate the area as wilderness.

The area would also not be manageable as wilderness. The openness of the surrounding terrain, easy access from existing roads, and the long-standing tradition and public acceptance of off-road vehicle use in the area open to vehicles prior to the passage of FLPMA would require an extensive effort to attempt to manage the area as wilderness. Physical barriers, such as 15 miles of fencing with cable reinforcement, would be required to restrict vehicle access, along with nearly constant monitoring of the Wilderness boundary. The actions needed to enforce total ORV elimination would of themselves severely degrade any wilderness values such as naturalness and opportunities for primitive recreation.

The recommendation does take into consideration public comments on the management of sand dunes in other areas. Where areas of dunes have been closed, with nearby areas left open to vehicles, such closures have proven enforceable over time, with the acceptance of the public that recreational opportunities are not foregone. However, in the case of the Sand Dunes WSA, where no alternative recreation site is available, a closure would be extremely difficult to enforce, and many violations of the closure to motorized vehicular use could be expected.

3. Criteria Considered in Developing the Wilderness Recommendations

Wilderness Characteristics

A. Naturalness: The Sand Dunes WSA appears to be generally in a natural condition. The natural appearance is maintained in most of the WSA by the shifting sand which quickly alters evidence of human activity.

The United States Air Force has constructed a large backscatter radar site immediately adjacent to the

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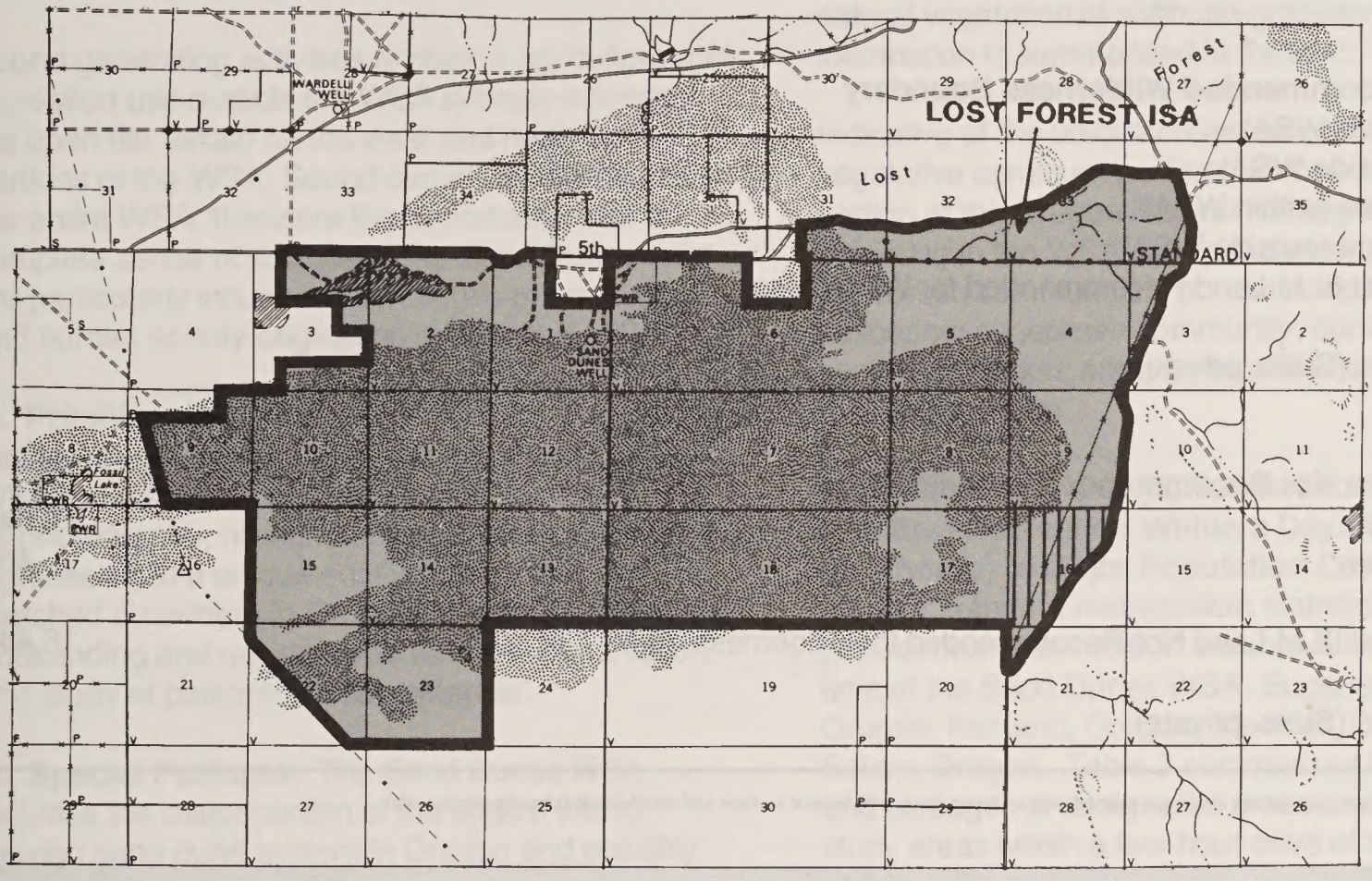
R 20 E



RECOMMENDED FOR WILDERNESS (None)

RECOMMENDED FOR NONWILDERNESS

LAND OUTSIDE WSA RECOMMENDED FOR WILDERNESS (None)

SPLIT ESTATE

STATE (None)

PRIVATE (None)

- N -

Sand Dunes Proposal
MAP-1

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MILES

OR-1-24
January, 1991

Table 1. Land Status and Acreage Summary of the Study Area

	Acres
Within Wilderness Study Area	
BLM (surface and subsurface)	16,040
Split-Estate[1]	400
Inholdings (State, private)	0
Total	16,440
Within the Recommended Wilderness Boundary	
BLM (within WSA)	0
BLM (outside WSA)	0
Split-Estate (within WSA)[1]	0
Split-Estate (outside WSA)[1]	0
Total BLM Land Recommended for Wilderness	0
Inholdings (State, private)	0
Within the Area Not Recommended for Wilderness	
BLM	16,040
Split-Estate[1]	400
Total BLM Land Not Recommended for Wilderness	16,440
Inholdings (State, private)	0

[1]For purposes of this report, split-estate lands are defined only as those lands with federal surface and non-federal subsurface(minerals).

south boundary of the WSA since the wilderness study began. The array of three radar panels, each one mile in length, and up to 135 feet high, is a significant visual impact from within the WSA when looking to the south. A 750-kV powerline paralleling the west boundary of the WSA is an unnatural outside influence that can be seen for a distance of approximately 1 mile within the WSA. There are 7 miles of fence located within the WSA, on the east and south boundary, and surrounding the Fossil Lake closure on the west. These fences do not have any substantial effect on the naturalness of the area. As a whole, however, the Fossil Lake fence is noticeable on the flatter open terrain in the deflation basin on the very west portion of the WSA. Approximately 15 acres are directly impacted by unnatural features within the WSA while less than 300 acres, or approximately 2 percent of the WSA, are visually impacted.

The WSA supports a few big game mammals such as deer and antelope, but supports a variety of non-game mammals in the different ecosystems available. Black-tailed hare and mountain hare (jackrabbits), pigmy rabbits, least and yellow pine chipmunks, Townsend and golden-mantled ground squirrels, deer mice, pocket mice, and northern grasshopper mice occur in various parts of the WSA. Coyotes are common in the area and badger occur in lesser numbers. Mountain lion and bobcat are occasionally reported in the area.

Birds species are widely varied and include horned larks, sparrows, blackbird, sapsucker, common flicker, and mountain bluebird. Larger, more prominent species include red-tailed hawk, prairie falcon and golden eagle. A large number of reptiles are known to occur in the area, though no complete species list has been compiled.

B. Solitude: The Sand Dunes WSA offers outstanding opportunities for visual solitude in the central core where the largest sand dunes occur. The distance from this core area to the boundary exceeds 1 mile and the core area contains approximately one-third of the WSA. On the northern and western fringes of the WSA, opportunities for solitude are limited by the open terrain. In the Lost Forest part of the WSA, visual isolation is aided by the juniper cover and scattered pines.

Sound generating activities related to agriculture and recreation use outside the WSA strongly influence the open flat terrain on the west and northern portions of the WSA. Sound carries readily across the entire WSA, therefore the opportunities for a complete sense of solitude in the Sand Dunes WSA are particularly influenced by sounds of equipment and human activity originating outside this WSA.

C. Primitive and Unconfined Recreation: Opportunities for primitive recreation in the Sand Dunes WSA are outstanding. These include activities such as photography, hiking, camping, nature study, and sightseeing in a unique ecosystem as they are not matched elsewhere in Oregon. The WSA also offers outstanding and unique opportunity for observation and study of paleontological materials.

D. Special Features: The Sand Dunes WSA includes the major portion of the largest inland moving sand dune system in Oregon and possibly the Pacific Northwest. This large sand dune system and the resulting complex soil conditions are projected by researchers to contribute to the preservation of the Lost Forest, a disjunct stand of ponderosa pine growing in an area of low rainfall (about 9.5 inches annually). Due to the sand dunes and water retention in the soils, the pine forest survives in this low-rainfall area, whereas a higher amount of rainfall (14 or more inches) is normally required for this species.

The area has numerous cultural and paleontological sites and has been recognized as extremely important for the study of Pleistocene-age animals. The Fossil Lake area is the "type site" (where a species is first discovered) for a number of fossil species. The area is unique in the archeological record of the Northern Great Basin.

Diversity in the National Wilderness Preservation System

A. Expanding the Diversity of Natural Systems and Features as Represented by Ecosystems: Wilderness designation of the Sand Dunes WSA would add an ecosystem not presently represented in Oregon, and represented in the National Wilderness Preservation System by only three areas. There are 18 other BLM areas in the state under study within this ecosystem.

According to the Bailey-Kuchler system of classifying ecosystems, the Sand Dunes WSA is located in the Intermountain Sagebrush province and has potential natural vegetation of saltbush-greasewood. This information is summarized in Table 2.

Indicative of the unique character of the area, the vegetative communities listed in the High Lava Plains portion of the Oregon Natural Heritage Plan and occurring in the WSA are: ponderosa pine/big sagebrush communities; ponderosa pine-western juniper/big sagebrush community; dunes and shifting sands vegetation; and playas and associated greasewood flats.

B. Assessing the Opportunities for Solitude or Primitive Recreation Within a Days Driving Time (five hours) of Major Population Centers. There are four standard metropolitan statistical areas with populations over 100,000 within five hours' driving time of the Sand Dunes WSA: Eugene/Springfield, Oregon; Portland, Oregon; Medford, Oregon; and Salem, Oregon. Table 3 summarizes the number and acreages of designated areas and other BLM study areas within a five-hour drive of the population center.

Balancing the Geographic Distribution of Wilderness Areas

The Sand Dunes WSA would not contribute to balancing the geographic distribution of areas within the National Wilderness Preservation System. There are 15 designated areas within 100 miles of this WSA.

Manageability

(The area must be capable of being effectively managed to preserve its wilderness character.)

The Sand Dunes WSA is not capable of being managed to preserve its wilderness characteristics. The openness of terrain, easy access from existing roads, and the long-standing public acceptance and encouragement of off-road vehicle use in the sand dunes would require an extensive range of actions to enforce ORV exclusion such as 15 miles of fencing with cable reinforcement. These measures would of

Table 2. Ecosystem Representation

Bailey-Kuchler Classification	NWPS Areas	NWPS Acres	Other BLM Studies Areas	Other BLM Studies Acres
Province/Potential Vegetation				
	NATIONWIDE			
Saltbush/Greasewood	3	45,553	37	1,015,167
	OREGON			
	0	0	18	552,227

Table 3. Wilderness Opportunities for Solitude or Primitive Recreation

Population Centers	NWPS Areas	NWPS Acres	Other BLM Studies Areas	Other BLM Studies Acres
Eugene/Springfield, OR	42	2,859,994	43	770,436
Portland, OR	48	4,537,392	16	91,762
Medford, OR	31	2,440,081	21	730,038
Salem, OR	45	2,888,764	18	210,085

themselves degrade many of the wilderness values, such as naturalness and opportunities for primitive recreation.

Energy and Mineral Resource Values

Energy and mineral resources were evaluated by BLM using available geologic data in a report prepared by the U.S. Geological Survey and U.S. Bureau of Mines titled "Mineral Resources of the Lost Forest Instant Wilderness Study Area, Oregon."

The WSA has moderate potential for geothermal energy based upon fairly recent volcanism and above-normal heat flow characteristic of most of southeastern Oregon. Based upon a statewide pattern of oil and gas potential, and the possibility of marine sedimentary rocks at depth, the entire WSA is rated with a moderate potential for the occurrence of oil and gas.

Most of the WSA has moderate potential for diatomite based on indirect evidence. No deposits are evident on the surface.

As of May 1991, there were no mining claims within the WSA.

Impacts on Resources

The following comparative impact table summarizes the effects on pertinent resources for all the alternatives considered including designation or nondesignation of the entire area as wilderness.

Local Social and Economic Considerations

Livestock use at the current level of 354 AUMs and recreation use totaling 3,000 visitor days per year are

Table 4. Comparative Summary of Impacts by Alternative

Issue Topics	Recommendation (No Wilderness/No Action Alternative)	All Wilderness Alternative
Impacts on Wilderness Values	Continued ORV use would preclude solitude potential during high use periods and adversely affect primitive recreation. Disturbance of natural values would continue. Potential mineral exploration could adversely affect wilderness values and multiple resource benefits.	Would add 16,440 acres to the NWPS and preserve unique paleontological, cultural, and natural features. Solitude would be enhanced by prohibiting vehicles.
Impacts on Energy and Mineral Development	No impact. WSA open to mineral development, except in 960 acres within RNA already closed to mineral location.	No impact to mineral development is expected since none is projected.
Impacts on Vegetation	Minor continued disturbance to vegetation.	Vegetation preserved. Vegetative recovery on 4 miles of vehicle ways closed.
Impacts on Livestock Grazing	No impact.	Minor change in management practices due to access limitations.
Impacts on Recreation Use	Potential increase in ORV use by approximately 2,000 visitor days annually. Sanitation facilities developed for users.	Loss of approximately 2,800 visitor days annually due to elimination of ORV use. Quality of primitive experience enhanced.
Impacts on Local Personal Income	Annual local personal income generated from resource outputs in the WSA would increase by $12,000.	Annual local personal income generated from resource outputs in the WSA would decrease by approximately $34,000.

the primary resource outputs that generate economic activity in the WSA. Local personal income generated annually from these existing use levels amounts to approximately $4,000 for livestock grazing and $36,000 related to recreation use, for an overall total of approximately $40,000.

Under the recommendation, livestock grazing would remain at 354 AUMs and annual recreation use is expected to increase by 2,000 visitor days. This would result in a probable increase in local personal income of approximately $12,000 per year due to resource outputs. There were no social issues identified in the study of this WSA.

Summary of WSA-Specific Public Comments

Public involvement has occurred throughout the wilderness review process. Certain comments received during the inventory process and early stages of the EIS preparation were used to develop significant study issues and various alternatives for the ultimate management of those lands found to have wilderness value.

During formal public review of the Draft and Supplement to the Draft EIS, a total of 77 comments specifically addressing the Sand Dunes WSA were received. Of these, 70 were written and 7 were oral and received during the 24 public hearings. Most of the comments, including some with multiple signatures, were received asking that the area not be designated wilderness due to the high recreation value of the dunes for off road vehicle use. There were 14 comment letters received recommending that the area did meet wilderness quality definitions and contained finite and unique resources.

No specific comments were received from other agencies or local governments regarding designation or nondesignation of the Sand Dunes WSA.

Two letters were received on the Final EIS specific to this WSA.

Diablo Mountain Wilderness Study Area

1. The Study Area —113,120 acres

The Diablo Mountain Wilderness Study Area (WSA) (OR-1-58) is located in Lake County, Oregon approximately 110 miles southeast of Bend, Oregon. The south end of the WSA is 5 miles northwest of the small town of Paisley.

Low standard BLM dirt roads form the boundaries on the east and south. The boundaries are formed by the medial line of Summer Lake on the west, private lands on part of the south and north, and a high standard BLM road on a portion of the north boundary. The Summer Lake State Game Management Area forms part of the northwest boundary.

The WSA contains 107,920 acres of BLM land, and approximately 5,200 acres of split-estate land. There are 640 acres of state land, and 1,170 acres of private land inside the WSA (See Table 1).

The Diablo Mountain WSA is characterized by several long north-to- south ridges, rising in elevation to the summit ridge of Diablo Mountain on the east side, where the steep scarp of Diablo drops some 1,500 to 2,000 feet. The western half of the WSA has low, rolling terrain and salt flats on the playa adjacent to Summer Lake.

Vegetation on the WSA presents a transition from salt flats on the far west, to salt desert shrub communities in the central portion, with sagebrush/grasslands in the higher elevations on the east.

The WSA was studied under section 603 of the Federal Land Policy and Management Act and was included in the Final Oregon Wilderness Environmental Impact Statement filed in February of 1990. A minor boundary adjustment was made in the northwest corner of the WSA when new map and corrected land status became available. This involved approximately 80 acres and affected a parcel adjacent to state lands that were originally thought to be BLM lands, but are still in state ownership.

There were five alternatives analyzed in the EIS: an all wilderness alternative, an all wilderness with acquisitions alternative, a proposed action alternative (the recommendation of this report), a partial wilderness with acquisitions alternative, and a no wilderness/no action alternative.

The all wilderness with acquisitions alternative for the Diablo Mountain WSA would recommend 113,120 acres of public land suitable for wilderness. The 1,170 acres of private inholdings, 640 acres of state inholdings and the mineral estate of 5,200 acres of split- estate lands would be acquired through purchase or exchange, if the owners are willing.

The partial wilderness with acquisition alternative for the WSA would recommend 51,160 acres suitable as wilderness, and the mineral estate of 3,680 acres of split-estate lands within the suitable area would be acquired through purchase or exchange from willing owners.

The recommendation would designate 90,050 acres suitable as wilderness, and 320 acres of private inholdings and 4,900 acres of mineral estate on split-estate land would be acquired from willing owners through purchase or exchange. Nonsuitable acreage totals some 23,070 acres. These lands are shown on Map 1.

2. Recommendation and Rationale

—90,050 acres recommended for wilderness

23,070 acres recommended for nonwilderness

The recommendation is to designate 90,050 acres wilderness and release 23,070 acres for uses other than wilderness. In addition, 320 acres of private inholdings and 4,900 acres of mineral estate on split-estate land would be acquired from willing owners through purchase or exchange. The environmentally preferable alternative is the all wilderness with acquisitions alternative as it would result in the least change from the natural environment over the long term. However, the recommendation would be implemented in a manner which would use all practical means to avoid or minimize environmental impacts.

The recommendation would serve to protect wilderness values on 90,050 acres. These values include outstanding opportunities for solitude, primitive and unconfined recreation (hiking, wildlife observation), and the preservation of wildlife habitat. The area is in a generally natural condition with only a few minor signs of human activities.

On this vast expanse of native desert range where there is a variation in topography and character from expansive salt flats, through unique volcanic flows, upward to the high mountain escarpment of Diablo Mountain, one can experience unlimited views of some of the harshest of environments, yet still realize the abundance of life forms that depend upon these outwardly barren lands.

The reintroduction of bighorn sheep and the presence of snowy plover upon the lakeshore demonstrates the difference between human and natural interpretations of liveability on desert lands.

The recommendation also recognizes the strong public support expressed for preservation of the area's high value for solitude, preservation of habitat for species such as bighorn sheep and snowy plover, and primitive and unconfined recreation in the form of hiking, photography, nature study and camping.

The recommendation would provide for the addition of a unique combination of ecosystems (Intermountain Sagebrush Province/Sagebrush Steppe and Saltbush-greasewood) to the National Wilderness Preservation System (NWPS). At present, there are no similar wilderness areas containing both of these ecosystems. Biological diversity would be added to the NWPS under the recommendation.

The recommendation, at the same time, would open up 23,070 acres of public land for uses other than wilderness. In Area C, landd would be available for exploration and development for their moderate potential for the occurrence of oil and gas and geothermal energy. One 12-megawatt geothermal power plant may be developed in Area C.

Nonsuitable Area A, on the north end of the WSA, would be available for completing land exchanges with the private landowner who has offered lands of value within the study area. This nonsuitable portion also would provide for enhancing wildlife management in the area through manipulations to accommodate snowy plover habitat.

The recommendation also allows for intensive grazing management on 5,600 acres on Area B, the southeast corner of the WSA. The remaining untreated burned area of about 5,000 acres, which resulted from the Sharptop fire, will be seeded to improve livestock forage and consolidate the management regimen within this pasture.

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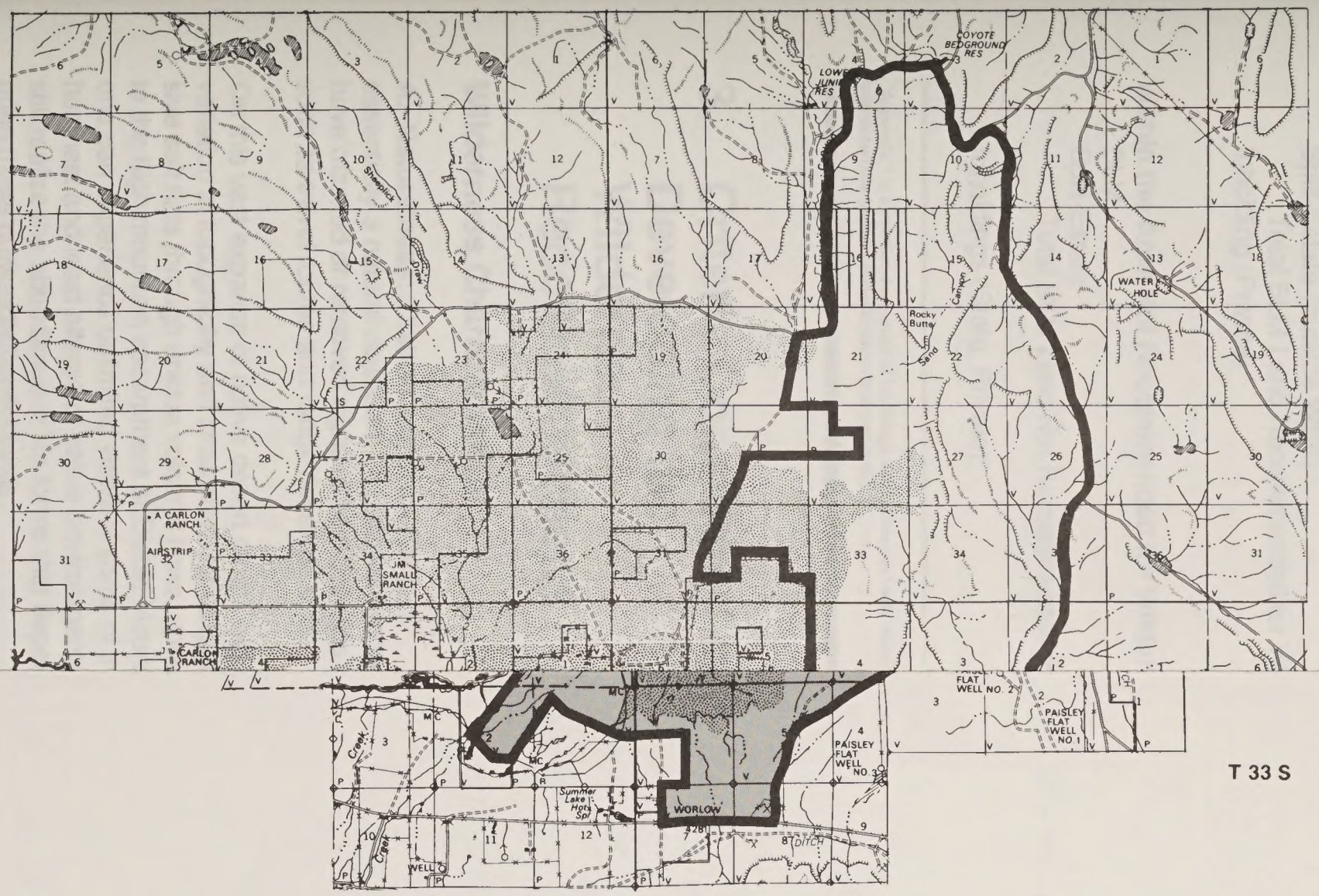

RECOMMENDED FOR WILDERNESS

RECOMMENDED FOR NONWILDERNESS

LAND OUTSIDE WSA RECOMMENDED FOR WILDERNESS (None)

SPLIT ESTATE

STATE

PRIVATE

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Diablo Mountain Proposal

MAP-1

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MILES

OR-1-58

January, 1991

The all wilderness with acquisitions alternative for the Diablo Mountain WSA would recommend 113,120 acres of public land suitable for wilderness. The 1,170 acres of private inholdings, 640 acres of state inholdings and the mineral estate of 5,200 acres of split- estate lands would be acquired through purchase or exchange, if the owners are willing.

The partial wilderness with acquisition alternative for the WSA would recommend 51,160 acres suitable as wilderness, and the mineral estate of 3,680 acres of split-estate lands within the suitable area would be acquired through purchase or exchange from willing owners.

The recommendation would designate 90,050 acres suitable as wilderness, and 320 acres of private inholdings and 4,900 acres of mineral estate on split-estate land would be acquired from willing owners through purchase or exchange. Nonsuitable acreage totals some 23,070 acres. These lands are shown on Map 1.

2. Recommendation and Rationale

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23,070 acres recommended for nonwilderness

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The recommendation would serve to protect wilderness values on 90,050 acres. These values include outstanding opportunities for solitude, primitive and unconfined recreation (hiking, wildlife observation), and the preservation of wildlife habitat. The area is in a generally natural condition with only a few minor signs of human activities.

On this vast expanse of native desert range where there is a variation in topography and character from expansive salt flats, through unique volcanic flows, upward to the high mountain escarpment of Diablo Mountain, one can experience unlimited views of some of the harshest of environments, yet still realize the abundance of life forms that depend upon these outwardly barren lands.

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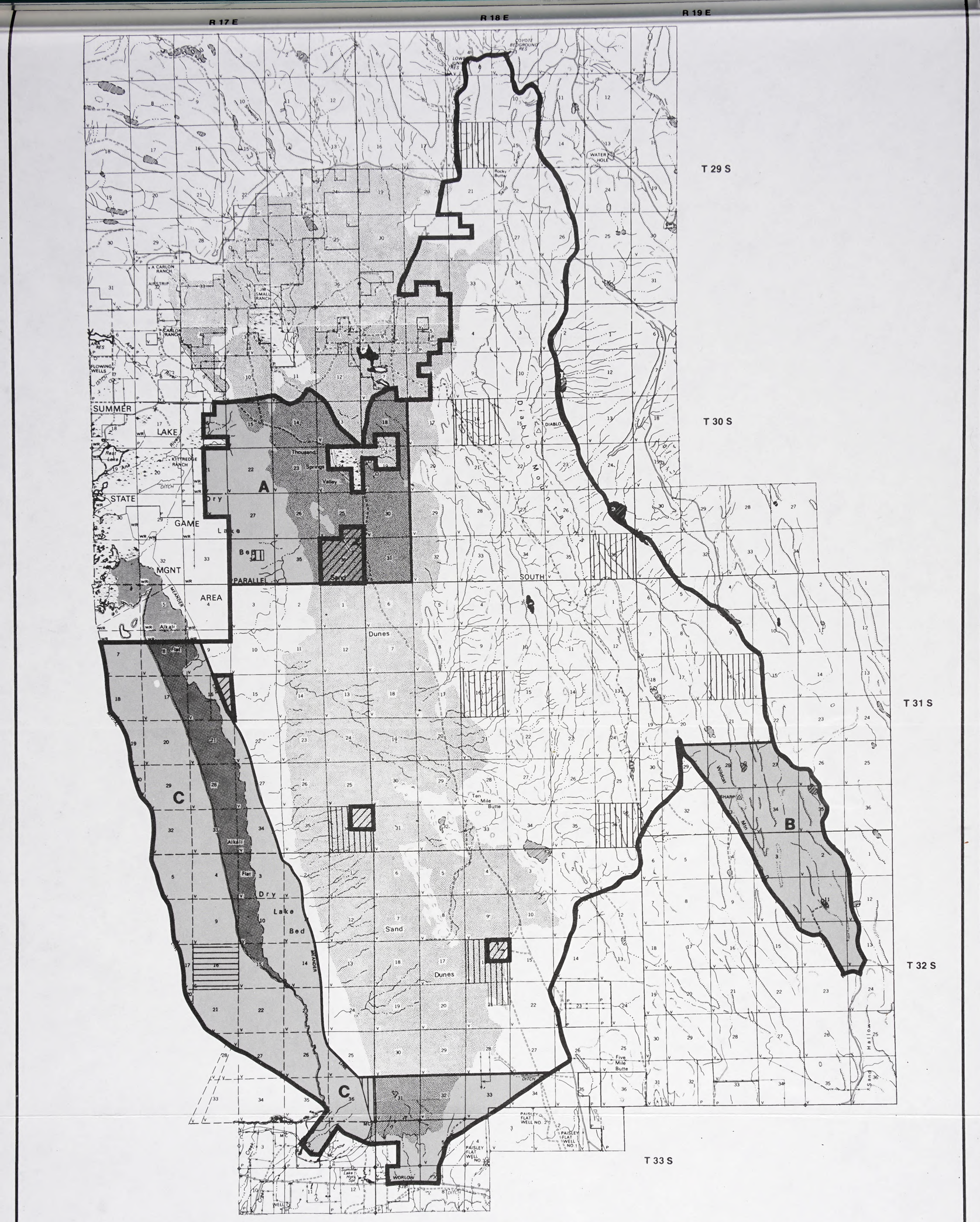
The recommendation would provide for the addition of a unique combination of ecosystems (Intermountain Sagebrush Province/Sagebrush Steppe and Saltbush-greasewood) to the National Wilderness Preservation System (NWPS). At present, there are no similar wilderness areas containing both of these ecosystems. Biological diversity would be added to the NWPS under the recommendation.

The recommendation, at the same time, would open up 23,070 acres of public land for uses other than wilderness. In Area C, landd would be available for exploration and development for their moderate potential for the occurrence of oil and gas and geothermal energy. One 12-megawatt geothermal power plant may be developed in Area C.

Nonsuitable Area A, on the north end of the WSA, would be available for completing land exchanges with the private landowner who has offered lands of value within the study area. This nonsuitable portion also would provide for enhancing wildlife management in the area through manipulations to accommodate snowy plover habitat.

The recommendation also allows for intensive grazing management on 5,600 acres on Area B, the southeast corner of the WSA. The remaining untreated burned area of about 5,000 acres, which resulted from the Sharptop fire, will be seeded to improve livestock forage and consolidate the management regimen within this pasture.



RECOMMENDED FOR WILDERNESS

RECOMMENDED FOR NONWILDERNESS

LAND OUTSIDE WSA RECOMMENDED FOR WILDERNESS (None)

SPLIT ESTATE

STATE

PRIVATE

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Diablo Mountain Proposal
MAP-1

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MILES

OR-1-58
January, 1991

Table 1. Land Status and Acreage Summary of the Study Area

Within Wilderness Study Area	Acres
BLM (surface and subsurface)	107,920
Split-Estate (BLM Surface Only)	5,200
Inholdings (State, Private)	1,810
Total	114,930
Within the Recommended Wilderness Boundary	
BLM (within WSA)	85,150
BLM (outside WSA)	0
Split-Estate (within WSA) [1]	4,900
Split-Estate (outside WSA) [1]	0
Total BLM Land Recommended for Wilderness	90,050
Inholding (Private) [1]	320
Within the Area Not Recommended for Wilderness	
BLM	22,770
Split-Estate[1]	300
Total BLM Land Not Recommended for Wilderness	23,070
Inholdings (State, Private)[1]	1,490

[1]Appendix 1 is a detailed description of inholdings and split-estate tracts included within the study. For purposes of this report, split-estate lands are defined only as those lands with federal surface and non-Federal subsurface (minerals).

3. Criteria Considered in Developing the Wilderness Recommendations

Wilderness Characteristics

A. Naturalness: Diablo Mountain WSA is in essentially a natural condition. The natural processes have masked or removed signs of past activities, such as travel routes and range developments.

On this vast expanse of native desert range, with variation in topography and character, from expansive salt flats through unique volcanic flows, upward to the high mountain escarpment of Diablo Mountain, one can experience unlimited views of some of the harshest and least altered of native environments yet still realize the abundance of life forms that depend upon these outwardly barren lands.

A variety of game and nongame species inhabit or frequent the WSA including antelope, mule deer, coyote, rabbits and other small mammals. Lack of water in the area limits available habitat and consequent numbers of animals in the larger species.

The escarpment facing east from Mount Diablo, and many smaller rims in the area are used by prairie falcon, red-tailed hawk, golden eagle and other raptors. Other bird species include raven, chukar, canyon wren, sage sparrow and sage thrasher. The western snowy plover, a notable shoreline bird and also a candidate species for listing as threatened under the Endangered Species Act, nests along Summer Lake. Among other shoreline birds that reside on the Summer Lake State Game Management Area adjacent to the northwest boundary are the avocet and killdeer.

The unnatural features that do exist influence less than 1,000 acres. These include earthwork mounds of seven livestock waterholes located in the east half of the WSA, 5 miles of fence in the southeast corner

of the WSA, and some 32 miles of vehicle ways inside the WSA. These developments are substantially unnoticeable in the WSA as a whole, and the terrain screens them from viewing outside of their immediate location.

B. Solitude: Outstanding opportunities for solitude are present throughout the Diablo Mountain WSA. The large size and the topography found within the WSA enhance opportunities for experiencing solitude in all locations of the WSA. Particularly effective in offering opportunities for solitude are the draws and broken ridges within the WSA from Sharptop to the peak of Diablo Mountain. Where traffic volumes are high on boundary roads, solitude is affected to a slight degree along the WSA boundary.

C. Primitive and Unconfined Recreation: Opportunities for primitive recreation are outstanding within the WSA. The diverse and broken terrain offers excellent opportunities for hiking and backpacking along the eastern half of the WSA in the draws and mountain areas. Wildlife observation offers chances to see wild horses, deer, antelope, and raptors which inhabit or frequent the WSA. Other activities include unique photographic opportunities and nature study. The harsh environs of the Diablo WSA present the opportunity to study rugged natural communities which survive beyond the influence of human capacities to alter or redefine the natural environment.

D. Special Features: The Diablo Mountain WSA has been selected by the Oregon Department of Fish and Wildlife for reintroduction of California bighorn sheep, a candidate species for Federal listing under the Endangered Species Act. The eastern shore of Summer Lake is potential nesting habitat for the snowy plover, another Federal candidate species. (This means that the listing as threatened or endangered may be appropriate, but current data is not conclusive. The primary impact to the species has been the loss of habitat over the years.) Raptors use the rims on the east side of the WSA for nesting.

Archaeologic sites are located within the WSA and there are also homesteads of historic interest in the WSA. Fossil mollusks have been found in sedimentary deposits around the Ten Mile Butte area, and there may be more fossils in the western two-thirds of the WSA.

Diversity in the National Wilderness Preservation System

A. Expanding the Diversity of Natural Systems and Features as Represented by Ecosystem: According to the Bailey-Kuchler system of classifying ecosystems, the Diablo Mountain WSA is located in the Intermountain Sagebrush Province and the potential natural vegetation is saltbush- greasewood and sagebrush steppe.

Wilderness designation of the Diablo Mountain WSA would add two ecosystems (using the Bailey-Kuchler system) not presently represented in the National Wilderness Preservation System (NWPS). This WSA contains two potential natural vegetation types: sagebrush steppe and saltwood-greasewood, an unusual occurrence. There are no designated areas within the NWPS containing this combination. Only sixteen other BLM areas in the nation and eleven areas in Oregon contain both of these ecosystems. This information is summarized in Table 2.

The WSA contains seven vegetative communities listed in the Basin and Range section of the Oregon Natural Heritage Plan: big sagebrush/bluebunch wheatgrass; big sagebrush-greasewood; low sagebrush/Sandberg's bluegrass; bare playa and playa margin; big sagebrush-spiny hopsage; greasewood-saltgrass and shadscale-spiny hopsage-budsage.

B. Assessing the Opportunities for Solitude or Primitive Recreation Within a Day's Driving Time (five hours) of Major Population Centers: There are four standard metropolitan statistical areas with populations over 100,000 within five hours' driving time of the Diablo Mountain WSA: Medford, Oregon; Salem, Oregon; Eugene/Springfield, Oregon; and Redding, California. Table 3 summarizes the number and acreage of designated areas and other BLM study areas within a five-hour drive of the population center.

C. Balancing the Geographic Distribution of Wilderness Areas: The Diablo Mountain WSA would not contribute to balancing the overall geographic distribution of areas within the National Wilderness Preservation System. There are ten designated areas within 100 miles of this WSA.

Manageability

(The area must be capable of being effectively managed to preserve its wilderness character.)

The Diablo Mountain WSA is capable of being managed to preserve its wilderness characteristics. The manageability would be enhanced by acquisition of two small private inholdings and mineral estate under 5,300 acres of split-estate parcels scattered throughout the WSA. Such acquisitions would

Table 2. Ecosystem Representation

Bailey-Kuchler Classification	NWPS Areas	NWPS Acres	Other BLM Study Areas	Other BLM Study Acres
Province/Potential Natural Vegetation				
	NATIONWIDE			
Intermountain Sagebrush Province/ Sagebrush Steppe & Saltbush-Greasewood	0	0	16	876,130
	OREGON			
	0	0	11	569,487

Table 3. Wilderness Opportunities for Residents of Major Population Centers

Population Centers	NWPS Areas	NWPS Acres	Other BLM Studies Areas	Other BLM Studies Acres
Medford, OR	31	2,440,081	21	730,038
Salem, OR	45	2,888,764	18	210,085
Eugene/Springfield, OR	42	2,859,994	43	770,436
Redding, CA	15	1,264,503	11	344,633

prevent potential adverse effects from access to, and incompatible surface-disturbing activities on, these parcels.

Impacts on Resources

The following comparative impact table summarizes the effects on pertinent resources for designation and nondesignation of the area as wilderness.

Energy and Mineral Resource Values

As reported in the United States Geological Survey (USGS) and Bureau of Mines (BM) report "Mineral Resources of the Diablo Mountain Wilderness Study Area Lake County, Oregon," USGS Open-File Report 90-0513, (1990), no energy or mineral resources were identified in the study area, but brines within lake and playa sediments contain concentrations of chemical components suitable for the production of soda ash, boron compounds, and sodium sulfate.

In the western part of the study area, the mineral resource potential is moderate for undiscovered resources of soda ash, boron compounds, salts, potash, bromine, lithium and tungsten associated with brines. In a small south-central part of the study area, the mineral resource potential is low for low-grade high-tonnage epithermal hot spring gold-silver deposits and for magnesium for dolomitic limestone.

The study area includes thermal springs and lies within 2 miles of the Summer Lake Known Geothermal Resource Area (KGRA), a Federally-defined area with specific boundaries within which geother-

Table 4. Comparative Summary of Impacts by Alternative

Issue Topics	Recommendation (Proposed Action Alternative)	All Wilderness Alternative
Impacts on Wilderness Values	Wilderness values protected or enhanced on 85,470 acres, lost on 250 acres, impaired on 7,000 acres.	Wilderness values protected or enhanced on 113,120 acres.
Impacts on Energy and Mineral Development	Geothermal plant developed, limestone mine foregone. Exploration foregone on 85,470 acres.	Geothermal plant and limestone mine foregone, exploration foregone.
Impacts on Vegetation	There would be 32 acres revegetated; 5,160 acres altered.	There would be 32 acres revegetated.
Impacts on Wildlife	Habitat altered on 5,160 acres. Most habitat preserved for plover, sheep, deer, and raptors.	Habitat preserved, one guzzler built.
Impacts on Livestock Grazing	588 AUMs retained, 32 miles of way closed, minor inconvenience.	588 AUMs retained, 32 miles of way closed, minor inconvenience.
Impacts on Recreation	No change in use level, change to primitive types of use.	No change in use level, change to primitive types of use.
Impacts on Local Personal Income	Local personal income would increase by an unknown amount due to energy development.	Local personal income would remain at approximately $8,000 per year.

All Wilderness with Acquisitions Alternative	Partial Wilderness with Acquisition Alternative	No Wilderness/No Action Alternative
Wilderness values protected or enhanced on 114,930 acres.	Wilderness values protected on 51,160 acres, degraded on 8,500 acres, lost on 250 acres.	Wilderness values lost on 5,460 acres. Short-term loss of solitude on 68,000 acres.
Geothermal plant and limestone mine foregone, exploration foregone.	Geothermal plant developed, limestone mine foregone. Exploration foregone on 51,160 acres.	Geothermal plant and limestone mine developed. No impact on exploration.
There would be 32 acres revegetated.	There would be 18 acres revegetated and 160 acres altered.	Vegetation would be altered on 5,460 acres.
Habitat preserved, one guzzler built.	Habitat preserved for plover, sheep, deer, and raptors.	Existing habitat preserved, one guzzler constructed.
588 AUMs retained, 32 miles of way closed, minor inconvenience.	588 AUMs retained, 18 miles of way closed, minor inconvenience.	No impact.
No change in use level, change to primitive types of use.	No change in use level, change to primitive types of use.	No impact.
Local personal income would remain at approximately $8,000 per year.	Local personal income would increase by an unknown amount due to energy and mineral development.	Local personal income would increase by an unknown amount due to energy and mineral development.

mal resources are known to exist. (Approximately 250 acres of the WSA in the nonsuitable portion is within the KGRA.) The resource potential for the entire study area is rated moderately favorable for low-temperature geothermal energy useful for agricultural and building heating, and is low for oil and gas.

Energy and mineral resources were initially evaluated by BLM using available geologic data and data provided in a report titled "Assessment of Geology, Energy, and Mineral Resources of the Summer Lake Geologic Resource Area" prepared by TERRADATA, a consulting firm under contract with BLM.

There also appeared to be moderate potential for oil and gas in the western two-thirds of the study area because of the possibility of oil and gas bearing rocks at depth, and some gas show in water wells.

Recent information from USGS indicates that there may be moderate potential for hydrocarbons at depth.

As of May 1991, there were no mining claims within the WSA.

Local Social and Economic Considerations

Livestock use at the current level of 588 AUMs and recreation use totaling less than 100 visitor days per year are the primary resource outputs that generate economic activity in the WSA. Local personal income generated annually from these existing use levels amounts to approximately $7,000 for livestock grazing and approximately $1,000 from recreation use, for an overall total of $8,000.

Under the recommendation, livestock grazing would remain at 588 AUMs and recreation use would remain at less than 100 visitor days per year. The recommended action would result in a probable increase in local personal income by an unknown amount above the current $8,000 due to projected energy development amounting to one 20-MW geothermal power plant with up to 12 production wells. There were no social issues identified with the study of this WSA.

Summary of WSA-Specific Public Comments

Public involvement has occurred throughout the wilderness review process. Certain comments received during the inventory process and early stages of the EIS preparation were used to develop significant study issues and various alternatives for the ultimate management of those lands found to have wilderness value.

During formal public review of the Draft EIS and its Supplement, a total of 24 comments specific to the Diablo Mountain WSA were received. Of these, 19 were written and 5 were oral comments received at the 24 public hearings on the EIS. Nine commenters supported the all wilderness alternative stating designation would preserve animal and plant habitat, and ensure ecological diversity.

Five commenters expressed support for the all wilderness with acquisitions alternative, explaining that this would preserve habitat, and that wilderness values of the area were more important than other uses.

Two commenters supported the no wilderness/no action alternative giving reasons such as the wilderness values of the area are too low, and that there are too many inholdings.

One commenter supported an all wilderness with contracted boundaries stating that the boundaries of suitable recommendation are poorly drawn, and that the BLM overstated manageability problems.

Four people expressed support for a greater than preferred alternative due to the uniqueness of the area and because it would not affect existing grazing privileges.

No comments were received on the Draft EIS or its Supplement from any federal or local agencies. Since the public review, however, the Oregon Department of Fish and Wildlife has demonstrated significant interest in the area after the Final EIS relevant to the reintroduction of California bighorn sheep and has expressed considerable interest with respect for management regarding the western snowy plover, water flows, and other management issues commensurate with management of the Summer Lake State Wildlife Management Area. They support the recommendation.

Three public comments on the Final EIS were received specific to this WSA.

Appendix 1 - Estimated Costs of Acquisition of Non Federal Holdings Within Areas Recommended for Designation[1, 2]

Legal Description	Total Acreage	Number of Owners	Type of Ownership		Presently Proposeed for Acquisition	Preferred Method of Acquisition	Estimated Costs of Acquisition	
			Surface Estate	Subsurface Estate			Land	Processing
T. 29 S., R. 18 E., Section 16	440	1	Federal	State	Yes	Exchange		[3]
T. 30 S., R. 18 E., Section 16	640	1	Federal	State	Yes	Exchange		[3]
T. 30 S., R. 18 E., Section 36	640	1	Federal	State	Yes	Exchange		[3]
T. 31 S., R. 18 E., Section 16	640	1	Federal	State	Yes	Exchange		[3]
T. 31 S., R. 18 E., Section 36 W1/2	320	1	Federal	State	Yes	Purchase		[3]
T. 31 S., R. 18 E., Section 36 E1/2	320	1	Federal	State	Yes	Exchange		[3]
T. 31 S., R. 17 E., Section 16, Lots 1-4, NENE	129	1	Private	Private	Yes	Exchange		[3]
T. 31 S., R. 17 E., Section 36 NE	160	1	Private	Private	Yes	Purchase	$12,000	$15,000
T. 31 S., R. 17 E., Section 36 NW, S1/2	480	1	Federal	State	Yes	Exchange		[3]
T. 31 S., R. 19 E., Section 16	640	1	Federal	State	Yes	Exchange		[3]
T. 32 S., R 17 E., Section 16 NE	160	1	Private	Private	Yes	Purchase	$12,000	$15,000
T. 31 S., R 19 E. Section 16, NW, S1/2	480	1	Federal	State	Yes	Exchange		[3]
T. 31 S., R. 19 E.,	160	1	Federal	State	Yes	Exchange		[3]

[1]The estimated costs listed in this appendix in no way represent a formal appraised value of the land or mineral estate, but are rough estimates based on sales or exchanges of lands or mineral estates with similar characteristics to those included in the WSA. The estimates are for purposes of establishing a range of potential costs to the government of acquiring non-Federal holdings and in no way represent an offer to purchase or exchange at the cost estimate included in this appendix. Processing costs are all miscellaneous expenses other than land costs. These would include work month costs, appraisals, title work, escrow costs etc. All lands identified in the table are in Oregon.
[2]Where exchange is the proposed method, only administrative costs of processing the exchange are shown. Land costs are not applicable. Where purchase is proposed, estimate of both the land costs and the processing costs are provided.
[3]Total District processing costs approximately $1,000.00 for each parcel as indentified, since they would be acquired under one action in an exchange.

Orejana Canyon Wilderness Study Area

1. The Study Area —24,600 acres

The Orejana Canyon Wilderness Study Area (WSA) (OR-1-78) is located in Harney County, Oregon, 30 miles northeast of the small town of Plush, Oregon. U.S. Highway 395 is located 35 miles to the west of the WSA, and Oregon State Highway 140 is approximately 40 miles to the south.

The WSA contains 24,600 acres, all of it BLM land, and except for a block of state land to the west, the surrounding lands are BLM. The southern, eastern and northern boundaries of the WSA are defined by low standard roads; the western boundary is defined by a low standard road for approximately 5 miles and by a way for approximately 7 miles along the base of Orejana Rim.

The WSA is characterized by the 500-foot-high Orejana Rim and the 8.5-mile-long Orejana Canyon, which runs most of the length of the WSA from north to south. Five small side canyons run along the length of Orejana Canyon. The vegetation in the study area is sagebrush/bunchgrass. The WSA is broken geographically, segregated into a large scale in the north called "the Basin," and the lower two-thirds of the area contain a high plateau known as "the island" and the confines of Orejana Canyon. A sagebrush/bunchgrass composes the area's vegetation.

The WSA was studied under Section 603 of the Federal Land Policy and Management Act and was included in the Final Oregon Wilderness Environmental Impact Statement (EIS) filed in February, 1990.

There were three alternatives analyzed in the EIS: an all wilderness alternative; a partial wilderness with road closure alternative (which is the recommendation of this report); and a no wilderness/no action alternative.

The recommendation recommends 14,800 acres of Orejana Canyon WSA suitable for wilderness, and a total of 9,800 acres would be recommended as nonsuitable. These lands are shown on Map 1.

2. Recommendation and Rationale

14,800 acres recommended for wilderness
9,800 acres recommended for nonwilderness

The recommendation is to designate 14,800 acres wilderness and to release 9,800 acres for uses other than wilderness. The environmentally preferable alternative is considered to be the all wilderness alternative as this would result in the least change to the natural environment over the long term. However, the recommendation would be implemented in a manner which would use all practical means to avoid or minimize environmental impacts.

The recommendation was supported by public comment, and would preserve the highest wilderness values of the canyon with its unique geologic features, the open expanse of the island, and paleontologic values along Orejana Rim. The outstanding opportunities for primitive recreation such as hunting and wildlife observation, and opportunity for solitude in this remote region would be preserved. Riparian habitat, habitat for sage grouse, and potentially expanded bighorn sheep habitat would also be preserved in a natural condition.

At the same time, the recommendation would allow for the development of the range resource in the nonsuitable portion that lacks wilderness values. Such development would include water developments and forage enhancement projects for livestock which would result in an increase of 226 AUMs.

Wilderness designation of this WSA would add an ecosystem not presently represented in Oregon and represented in the National Wilderness Preservation System by only three areas. In addition, wilderness designation of this WSA would contribute to balancing the geographic distribution of areas within the NWPS.

3. Criteria Considered in Developing the Wilderness Recommendations

Wilderness Characteristics

A. Naturalness: The Orejana Canyon WSA appears to be generally natural with the area within Orejana Canyon and on The Island being predominantly natural. The incised canyon meandering through high elevation table lands, with the large boulders along the Rim suggest not only naturalness, but a massive display of nature's grandness. The island stands open and wild, free of human encroachment, symbolic of a once grander landscape now reduced in scale across the West to determined remnants.

Although there are some minor intrusions in the recommendation area, the vegetation and topography provide screening from these.

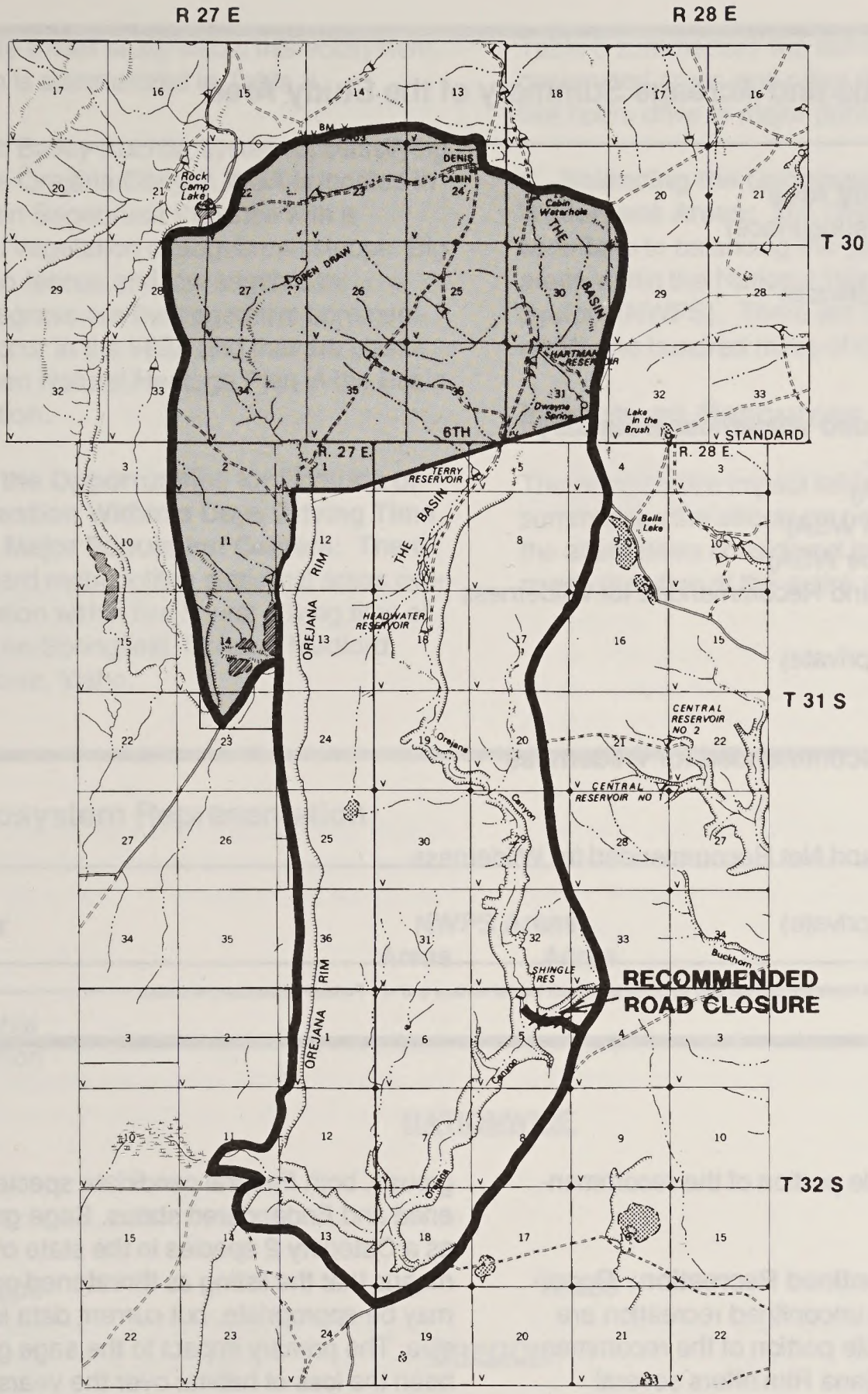
The nonsuitable area does contain vehicle trails, reservoir mounds and impacts of man that detract from the natural perspective of the landscape.

The WSA is frequented by mule deer and antelope and provides year-round habitat for chukar, partridge and quail, raptors such as golden eagle and red-tailed hawk, and other wildlife species. Bighorn sheep also frequent the area as they move north from Hart Mountain.

There are 11 reservoirs and waterholes in the WSA, many of which are unnoticeable as a whole. The berms resulting from the construction of Hartman Reservoir are quite noticeable within The Basin, which constitutes the majority of the nonsuitable area of the recommendation. There are also 11 miles of ways within The Basin area, with less than 2 miles of way in the remainder of the WSA. Altogether, unnatural features are visible from approximately two percent of the WSA.

B. Solitude: Outstanding opportunities for solitude are available in the Orejana Canyon and on The Island between Orejana Rim and the Canyon. Orejana Canyon is 8.5 miles in length and fairly wide with five small side canyons. This topography allows for isolation even with moderate levels of use.

Opportunities for solitude are limited in the Basin, and on the northwest corner of the WSA which



RECOMMENDED FOR WILDERNESS

RECOMMENDED FOR NONWILDERNESS

LAND OUTSIDE WSA RECOMMENDED FOR WILDERNESS (None)

SPLIT ESTATE (None)

STATE (None)

PRIVATE (None)

- N -

Orejana Rim Proposal

MAP-1

0 1 2 3

MILES

OR-1-78

January, 1991

Table 1. Land Status and Acreage Summary of the Study Area

	Acres
Within Wilderness Study Area	
BLM (surface and subsurface)	24,600
Split-Estate [1]	0
Inholdings (State, private)	0
Total	24,600
Within the Recommended Wilderness Boundary	
BLM (within WSA)	14,800
BLM (outside WSA)	0
Split-Estate (within WSA)[1]	0
Split-Estate (outside WSA)[1]	0
Total BLM Land Recommended for Wilderness	14,800
Inholdings (State, private)	0
Within the Area Not Recommended for Wilderness	
BLM	9,800
Split-Estate[1]	0
Total BLM Land Not Recommended for Wilderness	9,800
Inholdings (State, private)	0

[1]For purposes of this report, split-estate lands are defined only as those lands with federal surface and non-Federal subsurface (minerals).

constitute the nonsuitable portion of the recommendation.

C. Primitive and Unconfined Recreation: Opportunities for primitive and unconfined recreation are outstanding in the suitable portion of the recommendation. The face of Orejana Rim offers several unique opportunities for primitive recreation including sightseeing (obsidian flows and paleontological features) and hiking. Primitive recreation including hiking, photography and nature study is best in the canyon and along the rim.

Primitive recreation opportunities are limited in the nonsuitable portion.

D. Special Features: Orejana Rim is an example of the distinctive basin and range topography of southeastern Oregon. It contains exceptional geologic and paleontological features such as unique obsidian flows and fossil remains. This area provides habitat for California Bighorn Sheep and sage grouse, both Federal candidate species for Threatened and Endangered status. Sage grouse are listed as a Category 2 species in the state of Oregon. This means that the listing as threatened or endangered may be appropriate, but current data is not conclusive. The primary impact to the sage grouse has been the loss of habitat over the years. The area is used as winter and early spring range by approximately 100 bighorn rams, which move south onto Hart Mountain for most of the year. The rim also has high potential for supporting nesting raptors.

Diversity in the National Wilderness Preservation System

A. Expanding the Diversity of Natural Systems and Features as Represented by Ecosystem: Wilderness designation of this WSA would add an ecosystem not presently represented in Oregon and represented in the National Wilderness Preservation System by only 3 areas. There are 66 other BLM

areas in the state under study within this ecosystem. This information is summarized in Table 2.

According to the Bailey-Kuchler system of classifying ecosystems, the Orejana Canyon WSA is located in the Intermountain Sagebrush Province with a potential natural vegetation of sagebrush steppe. Big sagebrush/Idaho fescue and low sagebrush/ Sandberg's bluegrass are the vegetative communities known to occur in the WSA and that are classified in the Oregon Natural Heritage Plan in the Basin and Range section.

B. Assessing the Opportunities for Solitude or Primitive Recreation Within a Days Driving Time (five hours) of Major Population Centers: There are three standard metropolitan statistical areas over 100,000 population within five hours' driving time of the WSA: Eugene/Springfield, Oregon; Medford, Oregon; and Boise, Idaho.

Table 3 summarizes the number and acreage of designated areas and other BLM study areas within five hours drive of major population centers.

C. Balancing the Geographic Distribution of Wilderness Areas: The Orejana WSA would contribute to balancing the geographic distribution of areas within the National Wilderness Preservation System (NWPS). There are only 3 designated areas within one hundred miles of this WSA.

Impacts on Resources

The comparative impact table on pages 6 and 7 summarizes the effects on pertinent resources for all the alternatives considered including designation or nondesignation of the entire area as wilderness.

Table 2. Ecosystem Representation

Bailey-Kuchler Classification	NWPS Areas	NWPS Acres	Other BLM Studies Areas	Other BLM Studies Acres
Province/Potential Natural Vegetation				
NATIONWIDE				
Intermountain Sagebrush				
Sagebrush Steppe	3	76,699	136	4,345,740
OREGON				
	0	0	66	1,958,474

Table 3. Wilderness Opportunities for Residents of Major Population Centers

Population Centers	NWPS Areas	NWPS Acres	Other BLM Studies Areas	Other BLM Studies Acres
Medford, OR	31	2,440,081	21	2,730,038
Eugene/Springfield, OR	42	2,859,994	43	770,436
Boise, ID	16	4,741,570	126	5,060,460

Table 4. Comparative Summary of Impacts by Alternative

Issue Topics	Recommendation (Partial Wilderness With Road Closure Alternative)
Impacts on Wilderness Values	Wilderness designation would protect and enhance existing wilderness values on 14,800 acres. Projected actions would impair the wilderness values on 930 of the 9,800 acres nonsuitable for wilderness.
Impacts on Energy and Mineral Development	Exploration for tin in The Basin is expected.
Impacts on Vegetation	Little or no change to existing vegetation. Two miles of ways would revegetate.
Impacts on Wildlife	Habitat and populations would be maintained and habitat for bighorn sheep would be enhanced by the placement of 3 guzzlers.
Impacts on Livestock Grazing	Shift of 226 AUMs into WSA foregone. Restricted use of 2 miles of ways would cause a slight inconvenience to livestock operators.
Impacts on Recreation Use	Same as all wilderness for suitable 14,800 acres. No impact to nonsuitable portion.
Impacts on Local Personal Income	Local personal income generated from resource outputs would remain at approximately $10,300 per year.

All Wilderness Alternative	No Wilderness/No Action Alternative
Wilderness designation of 24,600 acres would result in protection and enhancement of existing wilderness values.	Projected management actions would impair the area's naturalness, solitude and recreation opportunities and special features over 2,640 acres.
No impact.	Exploration for gold on 2,800 acres and for tin in the Basin is expected.
Little or no change to existing vegetation. Nine Miles of ways would revegetate and 4 miles of ways would partially revegetate.	Vegetation would be altered on 960 acres by burn-for-release. A 226 AUM grazing increase within the WSA would reduce residual ground cover on 300 acres. Placement of 3 guzzlers would remove less than an acre of vegetation. Total impact approximately 1,260 acres.
Habitat and populations would be maintained and habitat for bighorn sheep would be enhanced by the placement of 3 guzzlers.	Deer and antelope habitat would improve on 960 acres; sage grouse habitat would decrease on 960 acres. Bighorn sheep habitat would be enhanced by the placement of 3 guzzlers. Some local habitat would be degraded by increase in livestock use.
Shift of 226 AUMs into WSA foregone. Restricted us on 13 miles of ways would cause some inconvenience to livestock operators.	Shift of 226 AUMs into WSA would be realized by a 960 acres burn-for-release project.
Use numbers would not change, but types of activity would shift from motorized to primitive types of recreation.	Use numbers would not change.
Local personal income generated from resource outputs in the WSA would remain at approximately $10,300 per year.	Annual local personal income generated by resource outputs would increase by approximately $2,700.

Manageability

(The area must be capable of being effectively managed to preserve its wilderness character.)

The Orejana Canyon WSA is capable of being managed to preserve its wilderness characteristics. The clear boundary on the south and east along the road, and well-defined remaining boundaries would make control and management within the area relatively simple. The terrain and size of the area also would make it easy to observe the area on foot or horseback patrols.

Energy and Mineral Resource Values

Energy and mineral resources were evaluated by BLM using available geologic data and data provided in a report by TERRADATA, a consulting firm under contract with BLM. The report is titled "Assessment of Geology, Energy, and Minerals Resources of the Mule Springs Valley Geologic Resource Area." Additional minerals information has been provided by the U.S. Bureau of Mines in a 1987 report entitled "Mineral Resources of the Orejana Canyon Study Area, Harney County, Oregon," and by the U.S. Geological Survey/Bureau of Mines in a 1988 report, Bulletin 1738-B, titled "Mineral Resources of the Orejana Canyon Wilderness Study Area, Harney County, Oregon."

No energy resources have been rated in these reports as having moderate or high potential for occurrence in the WSA.

There is a low potential for the occurrence of diatomite, gold, silver, lead and antimony on 2,800 acres based on indirect evidence (geochemical anomalies). Indirect evidence also indicates a low potential for tin in the northern portion of the WSA. There are no known commercial mineral deposits in the WSA or within several miles of the WSA.

As of May 1991, there were no mining claims within the WSA. Recent information from USGS indicates there may be moderate potential for hydrocarbons at depth.

Local Social and Economic Considerations

Livestock use at the current level of 777 AUMs and recreation use totaling fewer than 100 visitor days per year generate $9,324 and approximately $1,200 respectively. The overall total of local personal income is approximately $10,500.

Under the recommendation, livestock grazing would remain at 777 AUMs. Recreation use numbers are not expected to change. Annual local personal income generated from resource outputs in the WSA would remain at approximately $10,500. There were no social issues identified with the study of this WSA.

Summary of WSA-Specific Public Comments

Public involvement has occurred throughout the wilderness review process. Certain comments received during the inventory process and early stages of the EIS preparation were used to develop significant study issues and various alternative for the ultimate management of those lands found to wilderness value.

A total of 16 comments were received on the Draft EIS and supplement to the draft. Of these, 14 were written and 2 were oral comments received at the 2 4 public hearings.

Ten commenters supported the all wilderness alternative, saying designation would protect natural resources and prevent overgrazing. There was also concern that BLM overstated the value of other resources.

One person supported the wilderness alternative, stating that it would protect the ecological diversity, gene pool, and ecosystems.

One person expressed support for the no wilderness alternative, stating that the wilderness values are low.

One commenter supported an expanded boundary stating that the boundaries were poorly drawn.

No specific comments were received from other agencies or local governments regarding designation of the Orejana Canyon WSA.

No comment letters were received on the Final EIS specific to this WSA.

Abert Rim Wilderness Study Area

1. The Study Area —23,760 acres

The Abert Rim Wilderness Study Area (WSA OR-1-101) is located 26 miles north of Lakeview and 3 miles northeast of Valley Falls, in Lake County, Oregon. U.S. Highway 395 passes along the west boundary of the WSA.

The boundaries of the study area are defined by the right-of-way of Highway 395 and private land on the west, private land on the south, primarily low standard dirt roads and some private land on the east, and a powerline right-of-way on the north.

There are 23,280 acres of BLM land in the Abert Rim WSA and 480 acres of split-estate lands. There are no private inholdings. Table 1 summarizes land ownership within the WSA. The study area is 21 miles long and varies in width from 1.5 miles in the north to 4 miles in the south. It is dominated by Abert Rim, a high west-facing fault scarp rising over 2,000 feet above Lake Abert. Above the rim, the land slopes gently to the east. Several intermittent streams, ponds and springs occur in the WSA, and there is an isolated stand of ponderosa pine known as Colvin Timbers near the southeast boundary.

Vegetation in the WSA varies from salt-desert shrub communities at the base of the rim, with stringers of mountain mahogany, juniper, aspen on the face, and ponderosa pine along the uplands. The ponderosa pine is located in an isolated stand known as "Colvin Timbers". These trees are located 5 miles north of the Fremont National Forest boundary and are the most northerly location of pine in the Warner Mountains.

The WSA was studied under Section 603 of the Federal Land Policy and Management Act and was included in the Oregon Wilderness Final Environmental Impact Statement (EIS), filed in February of 1990.

Two alternatives were analyzed in the EIS: an all wilderness alternative which is the recommendation of this report, and a no wilderness/no action alternative. These lands are shown on Map 1.

2. Recommendation and Rationale

—23,760 acres recommended for wilderness
0 acres recommended for nonwilderness

The recommendation is to designate all 23,760 acres wilderness. This is considered to be the environmentally preferable alternative as it will result in the least change from the natural environment over the long term. A total of 23,280 acres of public land plus 480 acres of split-estate land are recommended for wilderness.

The recommendation recognizes that the high wilderness values of Abert Rim outweigh opportunities for minor timber harvest and reservoir construction associated with livestock management activities.

The Abert Rim WSA offers one of the most spectacular geologic sightseeing views in eastern Oregon. It rises vertically from Lake Abert over 2,000 feet above the traffic on U.S. Highway 395. It is one of the largest exposed fault scarps in North America and is a major attraction in this region of the state. The rim remains in a natural condition and supports a large herd of bighorn sheep, which gather on the lower slopes in winter, drawing visitors to both the unique wildlife and geologic features of the site.

The WSA offers outstanding primitive recreation opportunities with hiking and upland game bird hunting along the face, and opportunities for exceptional solitude, and primitive recreation such as camping, hiking, wildlife viewing, and spectacular sightseeing above the rim. The WSA also lies within the Lake Abert Archaeologic Zone listed in the National Register of Historic Places, with sites representing thousands of years of human occupation.

The proximity of the WSA to a major travel corridor adds regional and national value as a representation of wilderness accessible to the public.

The recommendation would preserve as wilderness the unique features of the Abert Rim WSA, such as the dramatic topographic relief, vegetative and wildlife diversity, cultural resource values, and the natural and scenic qualities of the area. In addition, outstanding opportunities for solitude and primitive types of recreation, including sightseeing, backpacking, photography, hunting and horseback riding exist in many portions of the WSA. These qualities have been determined to outweigh the benefits of other resource uses.

The recommendation would provide for the addition of a unique combination of ecosystems (Intermountain Sagebrush Province/sagebrush steppe and saltbush-greasewood) to the National Wilderness Preservation System (NWPS). At present, there are no similar wilderness areas containing both of these ecosystems. Biological diversity would be added to the NWPS under the recommendation.

The addition of this area to the NWPS would contribute to balancing the geographic distribution of wilderness areas. There are only three designated wilderness areas within 100 miles of this area.

The Abert Rim WSA is generally in a natural condition, as characterized by the good condition of the native plant communities and the unmarred face of the scarp. The area can be managed to preserve its wilderness character. The unnatural features in the study area are generally small, scattered and not visible from a great distance.

Conflicts with other resources uses of the WSA exist but do not outweigh the value of the WSA for wilderness. Grazing use of the area above the rim will be allowed to continue, but the construction of one reservoir to improve livestock distribution would be foregone. Salvage logging of Colvin Timbers in the event of disease or insect infestation would be precluded.

3. Criteria Considered in Developing the Wilderness Recommendation

Wilderness Characteristics

A.Naturalness: The study area generally appears to be in a natural condition and is primarily affected by the forces of nature. The dramatically scenic face of Abert Rim presents a natural vista to thousands of travelers along Highways 395 and 31. The large scale of the landscape overwhelms the minor disturbance found along Highway 395. Above the rim on the south, mountain mahogany groves, ponderosa pine, aspen groves, and even the broad appearance of low sage terrain focus perceptions upon the natural environment. Topography and

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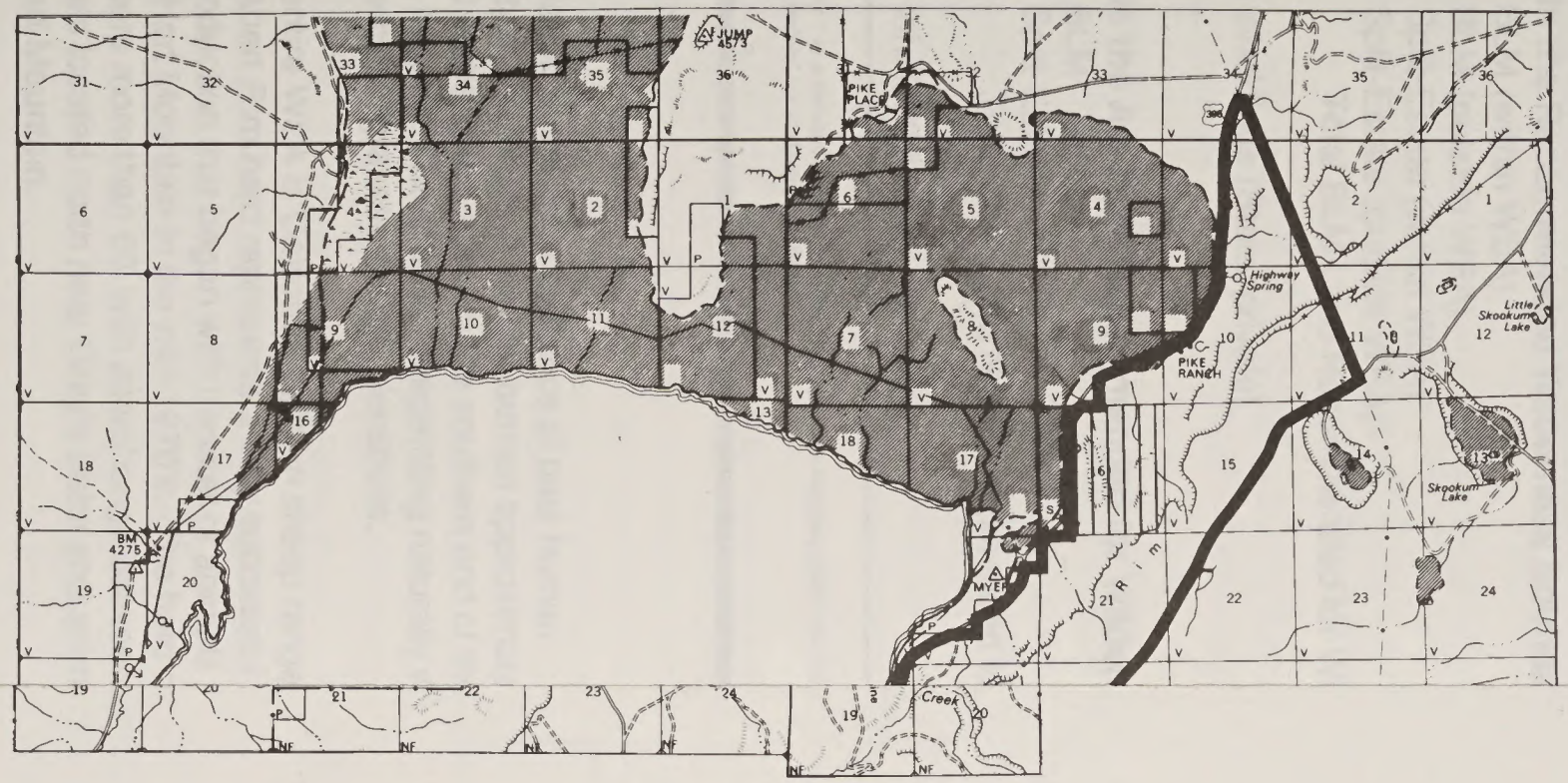

RECOMMENDED FOR WILDERNESS

RECOMMENDED FOR NONWILDERNESS (None)

LAND OUTSIDE WSA RECOMMENDED FOR WILDERNESS (None)

SPLIT ESTATE

STATE (None)

PRIVATE (None)

- N -

Abert Rim Proposal

MAP-1

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MILES

OR-1-101

January, 1991

2. Recommendation and Rationale

—23,760 acres recommended for wilderness
0 acres recommended for nonwilderness

The recommendation is to designate all 23,760 acres wilderness. This is considered to be the environmentally preferable alternative as it will result in the least change from the natural environment over the long term. A total of 23,280 acres of public land plus 480 acres of split-estate land are recommended for wilderness.

The recommendation recognizes that the high wilderness values of Abert Rim outweigh opportunities for minor timber harvest and reservoir construction associated with livestock management activities.

The Abert Rim WSA offers one of the most spectacular geologic sightseeing views in eastern Oregon. It rises vertically from Lake Abert over 2,000 feet above the traffic on U.S. Highway 395. It is one of the largest exposed fault scarps in North America and is a major attraction in this region of the state. The rim remains in a natural condition and supports a large herd of bighorn sheep, which gather on the lower slopes in winter, drawing visitors to both the unique wildlife and geologic features of the site.

The WSA offers outstanding primitive recreation opportunities with hiking and upland game bird hunting along the face, and opportunities for exceptional solitude, and primitive recreation such as camping, hiking, wildlife viewing, and spectacular sightseeing above the rim. The WSA also lies within the Lake Abert Archaeologic Zone listed in the National Register of Historic Places, with sites representing thousands of years of human occupation.

The proximity of the WSA to a major travel corridor adds regional and national value as a representation of wilderness accessible to the public.

The recommendation would preserve as wilderness the unique features of the Abert Rim WSA, such as the dramatic topographic relief, vegetative and wildlife diversity, cultural resource values, and the natural and scenic qualities of the area. In addition, outstanding opportunities for solitude and primitive types of recreation, including sightseeing, backpacking, photography, hunting and horseback riding exist in many portions of the WSA. These qualities have been determined to outweigh the benefits of other resource uses.

The recommendation would provide for the addition of a unique combination of ecosystems (Intermountain Sagebrush Province/sagebrush steppe and saltbush-greasewood) to the National Wilderness Preservation System (NWPS). At present, there are no similar wilderness areas containing both of these ecosystems. Biological diversity would be added to the NWPS under the recommendation.

The addition of this area to the NWPS would contribute to balancing the geographic distribution of wilderness areas. There are only three designated wilderness areas within 100 miles of this area.

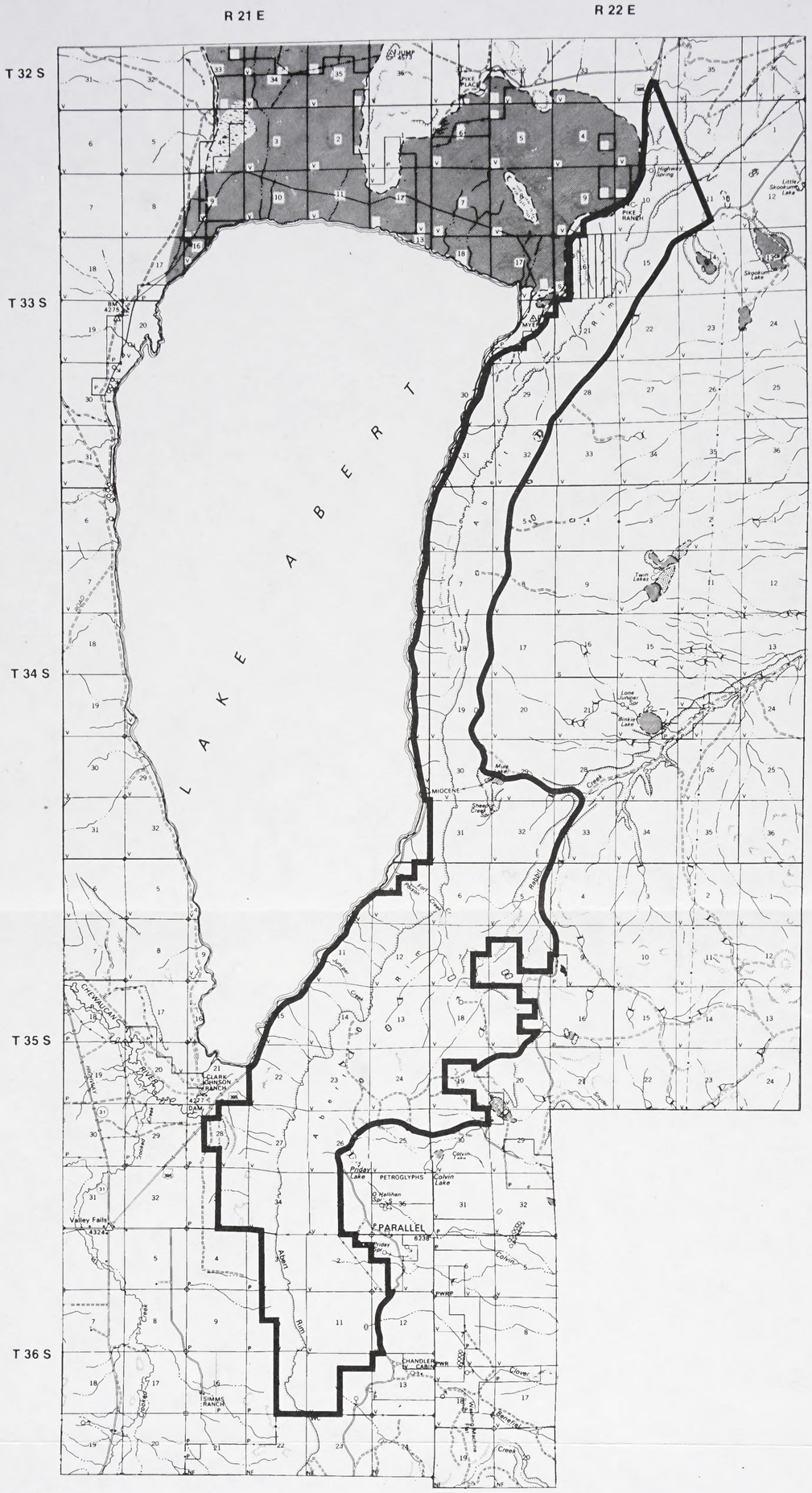
The Abert Rim WSA is generally in a natural condition, as characterized by the good condition of the native plant communities and the unmarred face of the scarp. The area can be managed to preserve its wilderness character. The unnatural features in the study area are generally small, scattered and not visible from a great distance.

Conflicts with other resources uses of the WSA exist but do not outweigh the value of the WSA for wilderness. Grazing use of the area above the rim will be allowed to continue, but the construction of one reservoir to improve livestock distribution would be foregone. Salvage logging of Colvin Timbers in the event of disease or insect infestation would be precluded.

3. Criteria Considered in Developing the Wilderness Recommendation

Wilderness Characteristics

A.Naturalness: The study area generally appears to be in a natural condition and is primarily affected by the forces of nature. The dramatically scenic face of Abert Rim presents a natural vista to thousands of travelers along Highways 395 and 31. The large scale of the landscape overwhelms the minor disturbance found along Highway 395. Above the rim on the south, mountain mahogany groves, ponderosa pine, aspen groves, and even the broad appearance of low sage terrain focus perceptions upon the natural environment. Topography and



RECOMMENDED FOR WILDERNESS

RECOMMENDED FOR NONWILDERNESS (None)

LAND OUTSIDE WSA RECOMMENDED FOR WILDERNESS (None)

SPLIT ESTATE

STATE (None)

PRIVATE (None)

N

Abert Rim Proposal

MAP-1

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OR-1-101

January, 1991

Table 1. Land Status and Acreage Summary of the Study Area

	Acres
Within Wilderness Study Area	
BLM (surface and subsurface)	23,280
Split-Estate (BLM surface only)[1]	480
Inholdings (State, private)	0
Total	23,760
Within the Recommended Wilderness Boundary	
BLM (within WSA)	23,280
BLM (outside WSA)	0
Split-Estate (within WSA)[1]	480
Split-Estate (outside WSA)[1]	0
Total BLM Land Recommended for Wilderness	23,760
Inholdings (State, private)	0
Within the Area Not Recommended for Wilderness	
BLM	0
Split-Estate[1]	0
Total BLM Land Not Recommended for Wilderness	0
Inholdings (State, private)	0

[1]Appendix 1 is a detailed description of split-estate tracts included within the study. For purposes of this report, split-estate lands are defined only as those lands with federal surface and non-federal subsurface (minerals).

vegetation mask most evidence of past human activity in the WSA. A wildfire burned approximately 3,000 acres of the scarp in the southern end of the WSA in 1985. The area is revegetating naturally with native bunchgrasses at high elevations.

The entire WSA is California bighorn sheep range. The Abert Rim herd represents a very successful reintroduction that began with transfer of animals from Hart Mountain in the mid-1970's. The herd now numbers more than 60, with interchange between animals located north near Grey's Butte and animals on Hart Mountain.

Abert Rim is an important raptor nesting area with prairie falcon nesting densities averaging one nest per mile, and golden eagles nesting at approximately two nests per mile. Nesting sites also occur for great horned owl and red-tailed hawk.

There is a wide variety of animal populations due to the diversity of vegetation and topography within the WSA. The lack of development in the area also contributes to the diversity of species composition. Abert Rim WSA provides habitat for 150 pronghorn antelope, bobcat, coyote and badger, rattlesnakes and other reptiles. Avian species also include burrowing and saw-whet owls, sage grouse (candidate threatened species in Oregon), chukar, quail, common flicker, downy and hair woodpeckers, Williamson's sapsucker, and a variety of song birds.

Unnatural features influence less than 8 percent of the WSA. They include 14 small waterholes and/or reservoirs, six wildlife guzzlers, three spring developments, 3 miles of fence and 6 miles of vehicle ways. Some tree stumps remain from selective logging in Colvin Timbers. Many of these features are small or difficult to locate, and certain vehicle ways are becoming overgrown. Livestock developments are scattered and do not have a significant impact on the area as a whole.

The only unnatural feature outside the WSA affecting opportunities for solitude is Highway 395 located at the base of the Rim, forming the western boundary of the WSA. Traffic along the highway can occasionally be heard inside the WSA to varying degrees depending upon wind currents. The highway is visible from much of the western portion of the study area and from the rim, but the panorama of Lake Abert and the landscape beyond tends to dwarf the narrow ribbon of roadway. In general the sporadic noise intrusion is significant only on the lower slopes below the scarp. A powerline forming the northern boundary is visible for approximately 0.5 mile within the WSA.

B. Solitude: Opportunities for solitude are outstanding in the WSA, especially in the southern half, both on the rim and along portions of the scarp. Here deeply-incised side canyons, foothills at the base of the scarp, and vegetative screening all help to isolate the visitor. The portion of the WSA north of Mule Lake and the portion along Highway 395 offer fewer opportunities for solitude due to the narrowness of the WSA on top of the rim, the lack of isolating land form, lower height of vegetation and proximity to noise from traffic.

C. Primitive and Unconfined Recreation: Opportunities for primitive types of recreation are outstanding in the WSA. Hiking, backpacking, hunting, camping, sightseeing, photography, wildlife observation and horseback riding opportunities are excellent. The visitor is rewarded with outstanding views, diverse wildlife (deer, antelope, bighorn sheep, eagles), a variety of geological features and a wide array of plants. Hiking can vary from flat easy terrain on top, to steep terrain on the scarp and in the canyons, such as along the undeveloped and rugged Poison Creek hiking trail.

The exhilarating scenic views, the variety of topography,and of wildlife and the wooded areas and springs offer outstanding recreation opportunities.

D. Special Features: Abert Rim is best known as one of the largest continuous fault scarps in North America. The scarp, which shows little erosion, rises over 2,000 feet above Lake Abert. It is a major scenic landmark which can be seen from both Highway 395 and Highway 31 for many miles. The area included in the WSA exhibits outstanding scenic qualities both above and below the rim.

A major portion of the WSA has been designated as an archeological district on the National Register of Historic Sites and Places because of the presence of high archeological values along the ancient shoreline of Lake Abert.

Colvin Timbers, an isolated group of ponderosa pines on 600 acres, represents the northernmost extension of ponderosa pine in the Warner Mountains.

The WSA supports a herd of California bighorn sheep, a candidate species for Federal listing as threatened or endangered in Oregon. The herd was introduced in 1974 to help perpetuate the species and now exceeds 60. The WSA also contains crucial mule deer winter range. The northern two-thirds of the rim is an important nesting area for prairie falcon, golden eagle, great-horned owl and red-tailed hawk.

The Abert Rim WSA is used yearly for both educational and scientific purposes by geology and archeology students.

Diversity in the National Wilderness Preservation System

A. Expanding the Diversity of Natural Systems and Features as Represented by Ecosystem: According to the Bailey-Kuchler system of classifying ecosystems, Abert Rim WSA is located in the Intermountain Sagebrush Province with a potential natural vegetation of saltbush-greasewood along the western edge and sagebrush steppe in the rest of the WSA.

Wilderness designation of the Abert Rim WSA would add two ecosystems (using the Bailey-Kuchler system) not presently represented in the National Wilderness Preservation System (NWPS). This WSA contains two potential natural vegetation types: sagebrush steppe and saltbush-greasewood, an unusual occurrence. There are no designated areas within the NWPS containing this combination. Only sixteen other BLM areas in the nation, eleven of which are in Oregon, contain both of these ecosystems. This information is summarized in Table 2.

The area is adjacent to the ponderosa/shrub forest-type to the south and includes a small portion of this community at Colvin Timbers. Vegetative communities listed in the Basin and Range section of the Oregon Natural Heritage Plan occurring in the WSA are: ponderosa pine savanna, western juniper/big sagebrush/bluebunch wheatgrass, big sagebrush/bluebunch wheatgrass, big sagebrush-greasewood, big sagebrush-bitterbrush/Idaho fescue, bitterbrush-sagebrush-snowberry, low sagebrush/Sandberg's bluegrass, silver sage, big sagebrush-spiny hopsage and mountain mahogany. Table 2 summarizes this information.

B. Assessing the Opportunities for Solitude or Primitive Recreation Within a Day's Driving Time (five hours) of Major Population Centers: There are three standard metropolitan statistical areas with populations over 100,000 within five hours' driving time of the Abert Rim WSA: Eugene/Springfield, Oregon; Medford, Oregon; and Redding, California. Table 3 summarizes the number and acreage of designated areas and other BLM study areas within five hours' drive of major population centers.

C. Balancing the Geographic Distribution of Wilderness Areas: The addition of Abert Rim to the NWPS would contribute to balancing the geographic distribution of wilderness areas. There are only three designated wilderness areas within 100 miles of the WSA.

Manageability

(The area must be capable of being effectively managed to preserve its wilderness characteristics.)

For the most part, the boundaries of the WSA are well defined and easily enforceable as wilderness, although recognition of the boundary on the south-east would require signing.

Table 2. Ecosystem Representation

Bailey-Kuchler Classification	NWPS Areas	NWPS Acres	Other BLM Studies Areas	Other BLM Studies Acres
Province/Potential Natural Vegetation				
Intermountain Sagebrush Province				
NATIONWIDE				
Sagebrush Steppe & Saltbush-Greasewood	0	0	16	965,490
OREGON				
	0	0	11	658,847

Table 3. Wilderness Opportunities for Residents of Major Population Centers

Population Centers	NWPS Areas	NWPS Acres	Other BLM Studies Areas	Other BLM Studies Acres
Eugene/Springfield, OR	42	2,859,994	43	770,436
Medford, OR	31	2,440,081	21	730,038
Redding, CA	15	1,264,503	11	344,633

Energy and Mineral Resource Values

Energy and mineral resources were evaluated by BLM using available geologic data and data provided by TERRADATA in, a consulting firm under contract with BLM. The data is contained in a report titled "Assessment of Geology, Energy and Minerals Resources of the Abert Rim Geologic Resource Area." Data from a U.S. Geological Survey (USGS) and Bureau of Mines (USBM) report titled "Mineral Resources of the Abert Rim Wilderness Study Area, Lake County, Oregon," USGS Bulletin 1738-C, 1988, supplements and updates previous information.

The USGS/BM report states that no mineral resources were identified in the Abert WSA, and that field studies revealed no areas of alteration that might be associated with mineralization. This resulted in lowering the potential for metals, gold, silver, and mercury, from moderate to low for the WSA. The entire area does have moderate potential for geothermal energy resources and low potential for oil and gas resources.

There were 28 mining claims within the WSA as of May 1991. Though geothermal potential is considered to be moderate, no wells have been drilled.

Recent information from the USGS regarding hydrocarbon "plays" in the region indicates that there may be moderate potential for hydrocarbons at depth.

Local Social and Economic Considerations

Livestock use at the current level of 708 AUMs and recreation use totaling 2,100 visitor days per year are the primary resource outputs that generate economic activity in the WSA. Local personal income generated annually from these existing use levels amounts to approximately $8,496 for livestock grazing and $25,200 related to recreation use of the WSA, for an overall total of $33,696.

Under the recommendation, livestock grazing would remain at 708 AUMs. Overall recreation use would increase by 200 visitor days per year. Annual local personal income generated from resource outputs in the WSA would increase by approximately $2400. There were no social issues identified with the study of this WSA.

Summary of WSA-Specific Public Comments

Public involvement has occurred throughout the wilderness review process. Certain comments received during the inventory process and early stages of the EIS preparation were used to develop significant study issues and various alternatives for the ultimate management of those lands found to have wilderness values.

During the formal public review of the Draft and Supplement to the Draft EIS, there were a total of 23 comments received specifically addressing the Abert Rim WSA. Of these comments, 20 were written and 3 were oral comments received at the 24 public hearings. Seven commenters supported all wilderness and six commenters favored designating an area greater than all wilderness. Four commenters opposed wilderness designation of the WSA.

Those supporting all wilderness cited protection of ecosystems and plant communities, wildlife species and ecological diversity as their reasons. Those favoring designation of an area larger than all wilderness advocated the inclusion of areas to the east and south (inventory unit 102).

Those opposing wilderness designation claimed that the area does not have sufficient wilderness values, that the area is too small, and that sounds from Highway 395 and evidence of past logging activities render the area unqualified for wilderness.

No specific comments were received from other agencies or local governments regarding designation or nondesignation of the Abert Rim WSA.

No public comments on the Final EIS were received specific to this WSA

Impacts on Resources

The following comparative impact table summarizes the effects on pertinent resources for both alternatives considered for the Abert Rim WSA.

Table 4. Comparative Summary of Impacts by Alternative

Issue Topics	Recommendation (All Wilderness Alternative)	No Wilderness/No Action Alternative
Impacts on Wilderness Values	Wilderness designation of 23,760 acres would result in projection and enhancement of existing wilderness values.	Projected management actions would impair wilderness values over approximately 1,700 to 2,900 acres.
Impacts on Energy and Mineral Development	No impact to energy or mineral development is expected.	There would be no impact to energy or mineral development.
Impacts on Vegetation	The 6 miles of ways would revegetate.	Vegetation would be altered on 7 acres by reservoir construction and an increase in concentration of livestock. Another 600 acres could be affected by salvage logging.
Impacts on Wildlife	Habitat and populations would be maintained throughout the area. Habitat enhancement of bighorn sheep and pronghorn habitat would occur.	Wildlife would sustain minor and temporary levels of disturbance due to vehicle use. Habitat for mule deer, raptors and cavity-nesting species would be reduced by salvage logging on 600 acres.
Impacts on Watershed	No impact to water quality.	Water availability improved by construction of one reservoir.
Impacts on Livestock Grazing	Continued improper livestock distribution due to loss of opportunity to construct one reservoir. Reduced vehicle use would cause a minor inconvenience to livestock operators.	Construction of one reservoir would improve livestock distribution.
Impacts on Wood Products	No salvage logging would be allowed.	Salvage logging could take place.
Impacts on Recreation Use	An increase in recreation by 200 visitor days per year is expected.	No change in the level or type of use is expected, except for a 1,000 visitor day increase if vehicle access is improved for logging operations.
Impacts on Local Personal Income	Annual local personal income would increase by more than $2,000.	Annual local personal income would increase by approximately $12,000.

Appendix 1 - Estimated Costs of Acquisition of Non-Federal Holdings Within Areas Recommended for Designation [1]

Legal Description (Prior to any Subdivision	Total Acreage	Number of Owners	Type of Ownership by Estate (Federal, State Private, other) Surface Estate	Subsurface Estate	Presently Proposed for Acquisition (Yes, No)	Preferred Method of Acquisition (Purchase, Exchange, Other)	Estimated Cost of Acquisition Land Costs	Processing Costs
T. 33 S., R. 22 E. E1.2, E1/2W1/2 Sec. 36	480	1	Federal	State	Yes	Exchange		$1,000[2]

[1] The estimated costs listed in this appendix in no way represent a formal appraised value of the land or mineral estate, but are rough estimates based on sales or exchanges of lands or mineral estates with similar characteristics to those included in the WSA. The estimates for purposes of establishing a range of potential costs to the government of acquiring non-Federal holdings and in no way represent an offer to purchase or exchange at the cost estimate included in this appendix. Processing costs are all miscellaneous expenses other than land costs. These include work month costs, appraisals, title work, escrow costs, etc. All lands identified in this table are in Oregon.

[2] Total District processing costs are approximately $1,000 for parcel identified, since it would be acquired under one action in an exchange with the State of Oregon.

Fish Creek Rim Wilderness Study Area

1. The Study Area —16,690 acres

The Fish Creek Rim Wilderness Study Area (WSA OR-1-117) is located immediately north of Adel, Oregon, and approximately 30 miles east of Lakeview, Oregon. Oregon State Highway 140 borders the study area on the south.

There are 16,070 acres of Bureau of Land Management (BLM) land within the Fish Creek Rim WSA; 620 acres are split-estate land. Table 1 summarizes land ownership within the WSA. The boundaries are defined by state and private lands on the north and east, mostly by a low standard dirt road on the west, and by powerline rights-of-way adjacent to State Highway 140 on the south. East of the WSA most land ownership is private; lands west of the WSA are mostly BLM. The east boundary roughly parallels the paved county road which runs between Adel and Plush. The study area is approximately 10 miles from north to south and varies from 0.5 to 5.5 miles in width.

The primary feature of the WSA is the east-facing scarp of Fish Creek Rim, which rises 1,500 to 2,000 feet above the Warner Valley. The area west of the rim is known as Monument Flat. This area is primarily a low sagebrush and juniper flat, sloping westward from the rim. The part of the WSA just west of the rim, in the central and north portions, contains minor broken rims tending northwest to southeast. South of this broken terrain the WSA is open, low sagebrush country. The southwest corner of the WSA contains Sweeney Canyon which drains southward into Deep Creek Canyon.

Vegetation includes dense stands of mountain mahogany, small aspen groves, scattered junipers west of the rim, and considerable juniper cover on the east face. There are a few white fir growing on and just below the rim. The gently-sloping southwestern portion of the WSA is primarily low sagebrush/grassland, dotted with western juniper.

The WSA was studied under Section 603 of the Federal Land Policy and Management Act and was included in the Oregon Wilderness Final Environmental Impact Statement (EIS) filed in February of 1990.

There were four alternatives analyzed in the EIS: an all wilderness alternative; a partial wilderness alternative with acquisition of 620 acres of split-estate and 400 acres of private land from willing landowners; another partial wilderness alternative

with acquisition of 620 acres of split-estate (the recommendation of this report); and a no wilderness/ no action alternative.

The partial alternative with acquisition of split-estate (recommended action) would designate 11,920 acres of public land in the WSA suitable for wilderness. This assumes acquisition of the mineral estate on 620 acres of split-estate land from willing owners through purchase or exchange. The boundary on the east would follow private land. The boundary at the northern end would be defined by a way; the boundary on the southern end would be defined by a way and a powerline right-of-way. The western boundary would follow a low standard dirt road. A total of 4,770 acres would be released for uses other than wilderness.

The other partial wilderness with acquisitions alternative would designate 15,740 acres of the Fish Creek Rim WSA for wilderness and assumes the acquisition of the mineral estate of the 620 acres of split-estate land and the acquisition of 400 acres of private land. A total of 1,350 acres at the southern end of the WSA would be recommended as nonsuitable and released for uses other than wilderness.

2. Recommendation and Rationale

—11,920 acres recommended for wilderness
4,770 acres recommended for nonwilderness

The recommendation is to designate 11,920 acres wilderness and to release 4,770 acres for uses other than wilderness. The environmentally preferable alternative for this WSA is the all wilderness alternative as it would result in the least change from the natural environment over the long term. However, the recommendation would be implemented in a manner which would use all practical means to avoid or minimize environmental impacts.

The rugged east-facing scarp some 2,000 feet high and uplands within the recommendation are in a natural condition with juniper, pine, and thickets of mountain mahogany, bitterbrush and other shrubs. Mule deer, bobcat, raptorial birds and many additional species of wildlife frequent the area. The sheer cliffs offer scenic beauty, as well as habitat for bighorn sheep, and potential for reintroduction of the peregrine falcon. The area contains numerous Native American rock art sites. There are excellent vantage points from which to observe birds and wildlife, as well as spectacular views of Warner Valley and desert landscape to the east.

Pronghorn antelope are abundant during spring, summer and fall, and the area provides crucial winter range for mule deer.

Native vegetation abounds, with a proposed Research Natural Area which could fill four high priority cells in the Oregon Natural Heritage Plan: mountain mahogany, low sage/Sandberg's bluegrass, low sage/Idaho fescue and big sage-bitterbrush/Idaho fescue.

There are three areas of the WSA recommended nonsuitable. Area A in the north contains uplands with many of the high values within the recommended area. Area A is separated from the recommendation area by a way that leads to a television repeater site serving the town of Plush. Nonsuitable area B on the south end of the WSA contains several powerline rights-of-way, fencelines, six livestock waterholes, and the dead end road leading to the microwave tower on the southernmost tip of the WSA. Area B also is exposed to high traffic volume on Highway 140 and lacks solitude over much of the segment. Area C is located on the east side of the WSA and is proposed for a seeding and pipeline to improve range management.

The recommendation would serve to protect wilderness values on 11,920 acres where these values are particularly high. The portion recommended suitable would preserve the area's high wilderness values which are considered to outweigh the benefits of developments for livestock, minor wood products harvest and geothermal development. These values include naturalness; scenic beauty; outstanding opportunities for solitude and primitive types of recreation (such as hunting for mule deer and antelope, hiking, horseback riding, camping, photography and nature study). Additional significant values relate to the provision of habitat for California bighorn sheep and sage grouse (both candidate threatened/ endangered species), and for potential reintroduction of peregrine falcon (Federal listed endangered species).

Wilderness designation of this WSA would add an ecosystem not presently represented in Oregon and represented in the National Wilderness Preservation System by only three areas. In addition, wilderness designation of this area would contribute to balancing the geographic distribution of areas within the NWPS.

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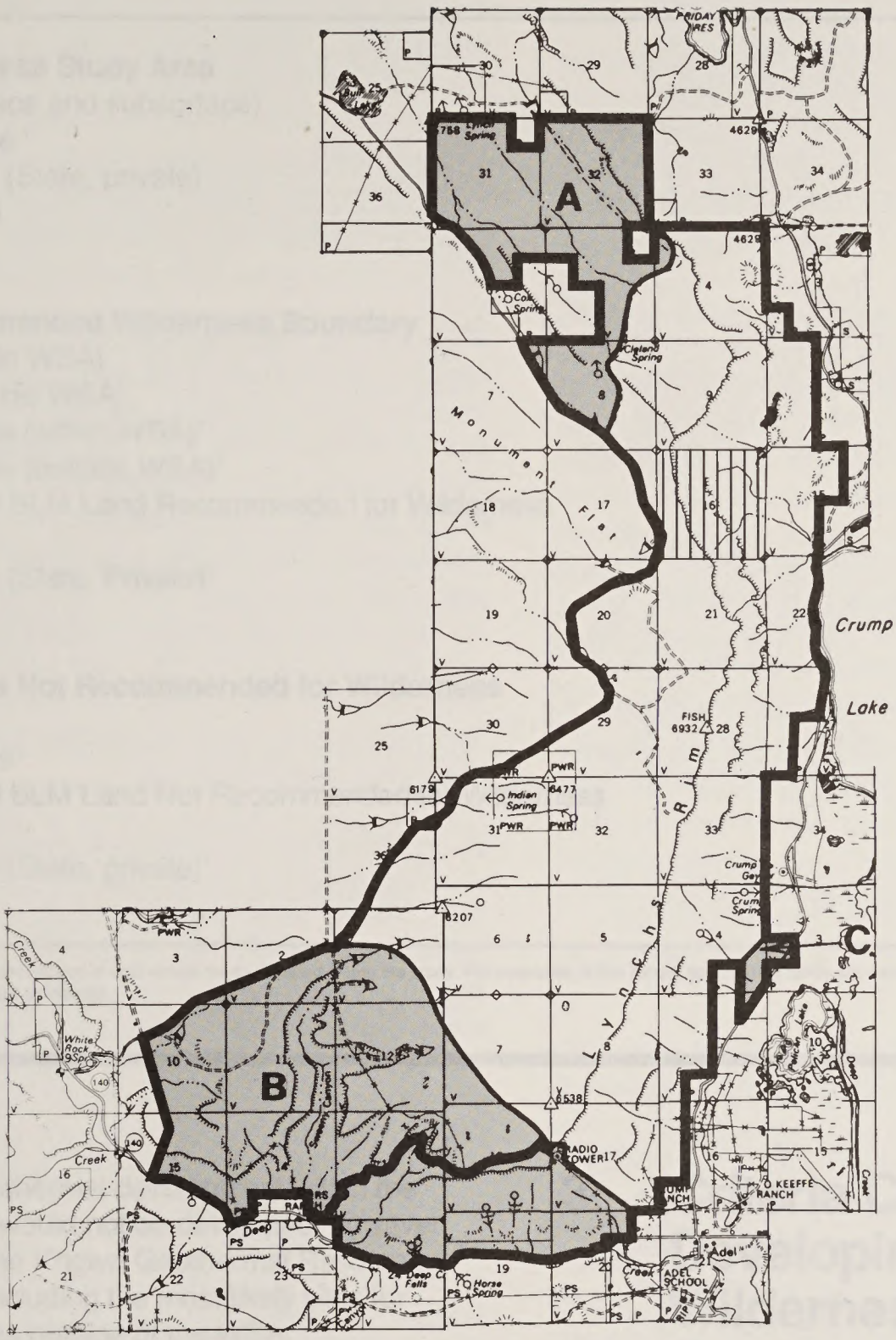

RECOMMENDED FOR WILDERNESS

RECOMMENDED FOR NONWILDERNESS

LAND OUTSIDE WSA RECOMMENDED FOR WILDERNESS (None)

SPLIT ESTATE

STATE (None)

PRIVATE (None)

- N -

Fish Creek Rim
Proposal
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OR-1-117
January, 1991

Table 1. Land Status and Acreage Summary of the Study Area

	Acres
Within Wilderness Study Area	
BLM (surface and subsurface)	16,070
Split-Estate [1]	620
Inholdings (State, private)	0
Total	16,690
Within Recommended Wilderness Boundary	
BLM (within WSA)	11,300
BLM (outside WSA)	0
Split-Estate (within WSA)[1]	620
Split-Estate (outside WSA)[1]	0
Total BLM Land Recommended for Wilderness	11,920
Inholdings (State, Private)[1]	0
Within the Area Not Recommended for Wilderness	
BLM	4,770
Split-Estate[1]	0
Total BLM Land Not Recommended for Wilderness	4,770
Inholdings (State, private)[1]	0

[1]Appendix 1 is a detailed description of split-estate tracts included within the study. For purposes of this report, split- estate lands are defined only as those lands with federal surface and non-Federal subsurface (minerals).

Potential for geothermal development within the suitable portion would not be developed; however, the majority of the Known Geothermal Resource Area (KGRA), including the most likely sites for development, lies outside of the WSA.

In the nonsuitable portion, conflicts with other resource uses of this WSA exist, but are not considered to outweigh the value of the area for wilderness. Grazing use will be allowed to continue, and an increase in livestock forage by 83 AUMs would take place in the nonsuitable portion. Private lands indenting the wilderness boundary along the suitable portion could cause manageability problems related to boundary identification and potential developments which could impair wilderness values. There would be 1,560 acres of forested land available for juniper harvest. It has been determined that the potential for geothermal development on 500 acres and the potential for increasing livestock forage by 83 AUMs are considered to outweigh the value of these 4,770 acres for wilderness.

3. Criteria Considered in Developing the Wilderness Recommendations

Wilderness Characteristics

A. Naturalnes: The Fish Creek Rim WSA is in an essentially natural condition and has been primarily influenced by the forces of nature. The rugged, east-facing scarp is in a completely natural condition with stands of juniper and pine and thickets of mountain mahogany, bitterbrush and other shrubs. Mule deer, bobcat, raptors, and many other species of wildlife inhabit or frequent this area. The sheer cliffs offer scenic beauty and nesting sites for raptors, including potential reintroduction sites for the endangered peregrine falcon. Along the rim itself are numerous rock art sites and excellent vantage points from which to observe birds and other wildlife.

The area above the rim includes juniper and mahogany thickets, aspen groves and broad sage flats. Pronghorn antelope are abundant during the spring, summer, and fall. Mule deer utilize the higher elevations during the summer and winter on the lower slopes at the southern end of the WSA (Sweeney Canyon and areas to the east). The entire WSA above the rim, about 12,100 acres, is year round habitat for sage grouse, a candidate species for Federal Threatened and Endangered status in Oregon.

The WSA now supports approximately 20 California bighorn sheep, 12 animals having been released in 1988 in an attempt to establish a self-sustaining population. Total habitat in the WSA is about 8,300 acres.

All of the WSA, except for a small portion of low sagebrush flats, is within the Deep Creek deer herd crucial winter range. The WSA, which is 17 percent of the herd's crucial winter range, supports approximately 500 deer during the winter months. Winter habitat conditions are fair to good on most of the area. The herd condition is good and numbers are increasing.

Between 150 and 175 antelope occupy most of the WSA during the spring, summer and fall seasons. There is a kidding ground in the southwest portion of the WSA (nonsuitable area B).

Native vegetation exists throughout the WSA. Central to the study area is a proposed Research Natural Area which would fill four high priority vegetation cells in the Oregon Natural Heritage Plan: mountain mahogany, low sage/Sandberg's bluegrass, low sage/Idaho fescue and big sage-bitterbrush/Idaho fescue. Another cell included in this proposed RNA is a birds of prey rimrock nesting area.

Nonsuitable portion A remains in a generally natural condition, with a minor spring development at Cleland Spring. Area B has several miles of fenceline and seven waterholes, but remains in a generally natural appearance on most of the acreage. Area C is in a generally natural condition.

Unnatural features which affect approximately two percent of the total study area include 22 small waterholes and reservoirs, 6 miles of ways, 4 miles of fence, one mile of powerline and two small TV antennae. There is also a small shed below the rim in the southern portion of the WSA which is associated with one of the TV antenna. All disturbances to naturalness are extremely localized.

Unnatural features outside the WSA that affect its naturalness to a limited degree include a 3-mile road, a microwave facility, and a 750-kV powerline. The road has little impact as it is well screened by topography. The microwave tower visually influences approximately 1,000 acres inside the southern portion of the WSA, primarily in unsuitable Area B. The powerline has a visual impact on approximately 600 acres within Area B. Highway 140 affects perceived naturalness in the southern portion of the WSA.

B. Solitude: Opportunities for solitude are outstanding within most of the WSA, particularly in the wooded areas containing mountain mahogany or juniper and below the rim. The low sagebrush flat area adjacent to the boundary road in the southern part of the area, nonsuitable Area B, contains less vegetative or topographic screening, but offers ample opportunity for solitude due to its large size. In nonsuitable Area B, exposure to traffic noise and intrusions on Highway 140 limits solitude on the slope between the highway and the top of the rim. Visitors can also easily isolate themselves in Sweeney Canyon however.

C. Primitive and Unconfined Recreation: Primitive recreational opportunities are outstanding in the WSA. Hiking terrain varies from very easy to extremely rugged, with the most challenging opportunities on the east-facing scarp. Many good camping areas are located above the rim in the mountain mahogany and aspen groves. The area offers excellent deer and antelope hunting opportunities. Opportunities for the observation and photography of mammals, birds, plants, geologic features and rock art are outstanding. Sightseeing from the rim is spectacular, with views of the Warner Lakes below on the east, Hart Mountain to the northeast, and the Warner Mountains and Drakes Peak and the Fremont National Forest to the west. From the southern slopes, the view into Deep Creek Canyon is also outstanding.

D. Special Features: Fish Creek Rim is one of a series of steep fault block scarps which form the basin and range topography of much of southeastern Oregon. It is a major scenic landmark.

Approximately 1,000 acres of a proposed 1,280-acre Research Natural Area (RNA) lie within the WSA. Five RNA high priority cells (plant groupings) in the Oregon Natural Heritage Plan are included in this RNA. They are birds of prey rimrock nesting area, mountain mahogany, low sage/Sandberg's bluegrass, low sage/Idaho fescue, and big sage-bitterbrush/Idaho fescue. The mountain mahogany are

some of the largest and best quality stands within the Basin and Range Province in Oregon. The raptor nesting area is high-density and is included as potential nesting habitat for the peregrine falcon, a species listed as endangered under the Endangered Species Act.

The Fish Creek Rim WSA contains a plant species of special interest, *Melica stricta* (strict onion grass or nodding melic), listed by the Oregon Natural Heritage Plan as threatened in Oregon but more common or stable elsewhere. It is considered rare in the Lakeview District. A small group of white fir on and below the rim is unique in that the main fir population in the Warner Mountains ends approximately 13 miles west of this location.

A band of California bighorn sheep (a candidate for listing under the Endangered Species Act Federal Threatened or Endangered species) now numbering approximately 20 animals inhabits the WSA year-round.

Sage grouse inhabit the area. Sage grouse are listed as a Category 2 species in the state of Oregon. This means that the listing as threatened or endangered may be appropriate, but current data is not conclusive. The primary impact to the sage grouse has been the loss of habitat over the years.

Most of the WSA is within the Deep Creek deer herd crucial winter range, and one antelope kidding ground is located within the study area.

The WSA contains numerous cultural resources, including rock art sites, primitive hunting blinds and at least one prehistoric bighorn sheep hunting complex.

Diversity in the National Wilderness Preservation System

A. Expanding the Diversity of Natural Systems and Features as Represented by Ecosystem: Wilderness designation of this WSA would add an ecosystem not presently represented in Oregon, and represented in the National Wilderness Preservation System (NWPS) by only three areas. There are 66 other BLM areas in the state under study within this ecosystem.

According to the Bailey-Kuchler system of classifying ecosystems, the Fish Creek Rim WSA is located in the Intermountain Sagebrush Province with a potential natural vegetation of sagebrush steppe. Table 2 summarizes this information.

Vegetation communities listed in the Basin and Range section of the Oregon Natural Heritage Plan which occur in the WSA are: mountain mahogany communities, aspen groves, low sagebrush/Idaho fescue, big sagebrush/bitterbrush/Idaho fescue and big sagebrush/bluebunch wheatgrass.

B. Assessing the Opportunities for Solitude or Primitive Recreation Within a Day's Driving Time (five hours) of Major Population Centers: There are three standard metropolitan statistical areas with populations over 100,000 within five hours' driving time of the Fish Creek Rim WSA: Medford, Oregon; Redding, California; and Reno, Nevada. Table 3 summarizes the number and acreage of designated areas and other BLM study areas within five hours drive of major population centers.

C. Balancing the Geographic Distribution of Wilderness Areas: The Fish Creek Rim WSA would contribute to balancing the geographic distribution of areas within the National Wilderness Preservation System (NWPS). There are only two designated areas within 100 miles of this WSA.

Manageability

(The area must be capable of being effectively managed to preserve its wilderness characteristics.)

The Fish Creek Rim WSA is capable of being managed to preserve its wilderness characteristics. Potential conflicts from developments or future developments on private land would be eliminated under the recommendation because the acreage on the north which is indented by three separate parcels of private land is not included in the recommendation. Management conflicts relating to existing developments in the southern portion of the WSA, 9 livestock watering facilities, three miles of fence, three miles of ways, and a powerline would also be eliminated.

Energy and Mineral Resource Values

Energy and mineral resources were evaluated by BLM using available geologic data and data provided in a report by TERRADATA, a consulting firm under contract with BLM. A United States Geological Survey (USGS) and Bureau of Mines report MLA 60-

Table 2. Ecosystem Representation

Bailey-Kuchler Classification	NWPS Areas	NWPS Acres	Other BLM Studies Areas	Other BLM Studies Acres
Province/Potential Natural Vegetation				
NATIONWIDE				
Intermountain Sagebrush/Sagebrush Steppe	3	76,699	136	4,353,650
OREGON				
	0	0	66	1,966,384

Table 3. Wilderness Opportunities for Residents of Major Population Centers

Population Centers	NWPS Areas	NWPS Acres	Other BLM Studies Areas	Other BLM Studies Acres
Medford, OR	31	2,440,081	21	730,038
Redding, CA	15	1,264,503	11	344,633
Reno, NV	45	4,967,230	175	6,904,809

87, "Mineral Resources of the Fish Creek Rim Study Area, Lake County, Oregon" completed in l987 has been incorporated into the U.S. Geologic Survey mineral assessment of the WSA (Open File Report 88-442). The WSA is within the Crump Lake geologic resource area which includes the Crump Geyser Known Geothermal Resource Area (KGRA). The KGRA encompasses 85,663 acres, of which 4,480 acres lie on and east of the rim within the Fish Creek Rim WSA. The KGRA is considered to have a high potential for the occurrence of geothermal energy.

After review of the TERRADATA study, BLM reviews and the recent cooperative study of the U.S. Bureau of Mines and the U.S. Geological Survey, the potential for the occurrence of diatomite, mercury, silver and gold is rated low in the WSA.

As of May 1991, there were no mining claims within the WSA. Recent information from the USGS indicates that there may be moderate potential for hydrocarbons at depth.

Local Social and Economic Considerations

Livestock use at the current level of 778 AUMs and recreation use totaling 500 visitor days per year are the primary resource outputs that generate economic activity in the WSA. Local personal income generated annually from these existing use levels amounts to approximately $9,000 for livestock grazing and $6,000 related to recreation use of the WSA, for an overall total of approximately $15,000.

The recommended action would result in a probable increase in local personal income of approximately $1,000 based on an increase in allocation of forage for livestock of 83 AUMs. Further increases in income would result from juniper harvest from 1,500 acres. Overall recreation use would remain at 500 visitor days per year.

Summary of WSA-Specific Public Comments

Public involvement has occurred throughout the wilderness review process. Certain comments received during the inventory process and early stages of the EIS preparation were used to develop significant study issues and various alternatives for the ultimate management of those lands found to have wilderness value.

During formal public review of the Draft EIS and its Supplement, a total of 22 comments specifically addressing the Fish Creek Rim WSA were received. Of these, 18 were in writing and 4 were oral comments received at public hearings. In general, 14 commenters supported wilderness designation for all or part of the WSA, or suggested an expansion of the area being considered for wilderness. Two commenters supported no wilderness for the WSA.

Eight commenters supported the enhanced wilderness alternative (Partial Wilderness Alternative with acquisition of split-estate and private lands), citing protection of wildlife habitat and wilderness values are higher than values for grazing, minerals and utility development. Inadequate explanation of rationale for selection of the partial alternative as the preferred alternative was also given as a reason for supporting the enhanced alternative. Simplification of management was also given as a reason for supporting the enhanced wilderness alternative. One commenter supported an expansion of the enhanced alternative to include lands to the west of the WSA because of their recreation and scenic values and for protection of threatened and endangered species.

Two commenters supported the all wilderness alternative for protection of plant communities and for the protection of habitat for reintroduction of the peregrine falcon. One commenter supported a greater than all wilderness recommendation, but did not give specific reasons.

One commenter supported the recommendation.

Two commenters opposed wilderness designation for this WSA, citing the powerline and the microwave facility as intrusions. Difficulty in controlling ORV use was another reason given for opposing wilderness.

No WSA-specific comments were received from federal or local agencies concerning the designation or nondesignation of the Fish Creek Rim WSA.

Two letters were received on the Final EIS specific to this WSA.

Impacts on Resources

The following comparative impact table summarizes the effects on pertinent resources for all the alternatives considered including designation or nondesignation of the entire area as wilderness.

Table 4. Comparative Summary of Impacts by Alternative

Issue Topics	Recommendation (Partial Wilderness Alternative With Acquisition of Split-Estate)	All Wilderness Alternative
Impacts on Wilderness Values	Wilderness designation of 11,920 acres would protect and enhance existing wilderness values on those acres.	Wilderness designation of 16,690 acres would protect and enhance existing wilderness values on those acres.
Impacts on Energy and Mineral Development	Development of 5 to 15 geothermal wells would be foregone.	Development of 5 to 15 geothermal wells would be foregone.
Impacts on Vegetation	Three miles of ways would revegetate. Vegetation would be altered on 600 acres by burn-and-seed treatments. Selected trees would be cut from 1,560 acres. Little or no change would occur to vegetation on the rest of the area.	Six miles of ways would revegetate. Little or no change would occur to vegetation on the rest of the area.
Impacts on Wildlife	Habitat and populations would be maintained on 11,920 acres. Antelope habitat would be enhanced on 200 acres. Sage grouse habitat would be altered on 600 acres. Juniper cutting in 1,560 acres would impact mule deer and cavity-nesting species. Peregrine falcon would be reintroduced.	Habitat and populations would be maintained throughout the area. Peregrine falcon would be reintroduced.
Impacts on Livestock Grazing	Potential increase of 81 AUMs foregone. Increase of 83 AUMs realized. Vehicle use on 3 miles of ways limited with slight inconvenience to livestock operators.	Potential increase of 164 AUMs foregone. Vehicle use on 6 miles of ways with some inconvenience and slight increase in cost to livestock operators.
Impacts on Wood Products	Harvest of juniper from 600 acres precluded.	Harvest of juniper from 2,160 acres precluded.
Impacts on Recreation Use	Recreation use level not affected. There would be changes to primitive nonmotorized types of recreation use on 11,920 acres recommended suitable for wilderness.	Recreation use level not affected. There would be a change to primitive nonmotorized types of recreation use.
Impacts on Local Personal Income	Annual local personal income would increase by approximately $1,000.	Annual local personal income would remain at approximately $15,000.

Partial Wilderness Alternative w/Acquisitions of Split-Estate and Private Lands	No Wilderness/No Action Alternative
Wilderness designation of 15,740 acres would protect and enhance existing wilderness values on those acres.	Projected management actions would impair wilderness values on 4,000 acres.
Development of 5 to 15 geothermal wells would be foregone.	No impact to mineral or energy development.
Six miles of ways would revegetate. Selected juniper would be cut from 440 acres in the nonsuitable portion. Little or no change would occur on the rest of the area.	Vegetation would be altered on 1,000 acres by vegetative manipulation, on 2,160 acres by juniper harvest, on 120 acres by geothermal development, on 2 acres by fence and reservoir construction. Forage utilization would increase by 164 AUMs with a corresponding decrease in ground cover.
Habitat and populations would be maintained on 15,740 acres. Selected cutting of juniper on 440 acres would impact mule deer and cavity-nesting species. Peregrine falcon would be reintroduced.	Wildlife would sustain minor seasonal disturbance due to vehicle use. Habitat for sage grouse would be altered on 1,000 acres. Antelope habitat would be improved on 200 acres. Mule deer and cavity-nesting species would be impacted by removal of selected juniper from 2,160 acres. Peregrine falcon would be reintroduced, with possible adverse impacts from geothermal development outside the WSA.
Potential increase of 164 AUMs foregone. Vehicle use on 6 miles of ways with some inconvenience and slight increase in cost to livestock operators.	Increase in livestock foregone allocation of 164 AUMs would be realized. One reservoir and 1 miles of fence to improve livestock distribution would be realized.
Harvest of juniper from 1,720 acres precluded.	Selected harvest could be juniper on 2,160 acres.
Recreation use level not affected. There would be a change to primitive nonmotorized types of recreation use on 15,740 acres recommended suitable for wilderness.	There would be no change in level or type of existing use.
Annual local personal income would remain at approximately $15,000.	Annual local personal income would increase by approximately $2,000.

Appendix 1 - Estimated Costs of Acquisition of Non-Federal Holdings Within Areas Recommended for Designation [1]

Legal Description (Prior to any Subdivision	Total Acreage	Number of Owners	Type of Ownership by Estate (Federal, State Private, other)		Presently Proposed for Acquisition (Yes, No)	Preferred Method of Acquisition (Purchase, Exchange, Other)	Estimated Cost of Acquisition[2]	
			Surface Estate	Subsurface Estate			Land Costs	Processing Costs
T. 38 S., R. 24 E., Section 16	620	1	Federal	State	Yes	Exchange		$1,000[3]

[1] The estimated costs listed in this appendix in no way represent a formal appraised value of the land or mineral estate, but are rough estimates based on sales or exchanges of lands or mineral estates with similar characteristics to those included in the WSA. The estimates for purposes of establishing a range of potential costs to the government of acquiring non-Federal holdings and in no way represent an offer to purchase or exchange at the cost estimate included in this appendix. Processing costs are all miscellaneous expenses other than land costs. These include work month costs, appraisals, title work, escrow costs, etc. All lands identified in this table are in Oregon.
[2]Where exchange is toe proposed acquisition method only administrative costs of processing the exchange are shown. Land costs are not applicable.
[3]Total District processing costs are approximately $1,000 for parcels identified, since thay would be acquired under one action in an exchange with the State of Oregon.

Guano Creek Wilderness Study Area

1. The Study Area —10,350 acres

The Guano Creek Wilderness Study Area (WSA) (OR-1-132) is located approximately 67 miles northeast of Lakeview, Oregon, in southern Lake County. Oregon State Highway 140 passes 12 miles south of the WSA.

All of the 10,350 acres within the WSA are BLM land. Table 1 summarizes land ownership within the WSA. The boundaries are defined by low standard dirt or gravel roads with the exception of approximately 1.5 miles along the eastern edge following the boundary of the U.S. Fish and Wildlife Service's Shirk Ranch (fence) and an indentation of private land in the north.

The study area is characterized by open and gently rolling, sage-covered terrain which is broken by shallow intermittent drainages, rims, and the canyon of Guano Creek. There are two ephemeral sink lakes (geologic features created by circular depressions in the lava) in the northern portion of the WSA. Vegetation is primarily low sagebrush and bunchgrass communities, with riparian vegetation along drainages and Guano Creek, and juniper/ shrub associations scattered on upland areas. There is a small stand of willow at the lower end of Guano Creek.

The WSA was studied under Section 603 of the Federal Land Policy and Management Act and was included in the Final Oregon Environmental Impact Statement (EIS) filed in February, 1990.

There were three alternatives analyzed in the EIS: an all wilderness alternative (which is the recommendation of this report); a partial wilderness alternative; and a no wilderness/no action alternative. The partial alternative would recommend 640 fewer acres than the all wilderness alternative. These lands are shown on Map 1.

2. Recommendation and Rationale

10,350 acres recommended for wilderness
0 acres recommended for nonwilderness

The recommendation is to designate all 10,350 acres wilderness. This is considered to be the environmentally preferable alternative as it will result

in the least change from the natural environment over the long term.

The recommendation preserves the WSAs notable wilderness values which are considered to outweigh benefits derived from construction of water developments for enhancement of water availability for livestock.

The recommendation would preserve significant natural values in the Guano Creek WSA such as the presence of rare plants and of native plant communities, paleontological resources, and habitat for the Sheldon tui chub, and sage grouse (a candidate species for listing under the Endangered Species Act). The WSA is in a natural condition overall. However, the Guano Creek Canyon is subject to heavy livestock grazing pressure on alternate years. The uplands north of the canyon are undisturbed except for grazing, and has two ephemeral lakes where large gentle depressions collect rainfall and snowmelt. These sink lakes are in a natural condition which is a rare situation due to extensive waterhole construction, and have been surveyed by the Pacific Northwest Research Natural Area Committee as a potential Research Natural Area (RNA).

Exposed tuffaceous soils provide for visual variety, as well as unique paleontological and botanical resources. Late Miocene vertebrate fossils have been found within these sediments and two rare plant species, *Eriogonum crosbyae* and *Ivesia rhypara*, are dependent upon these unique soils.

Wilderness designation of the Guano Creek WSA would add an ecosystem (Intermountain sagebrush/ sagebrush steppe) not presently represented in Oregon, and represented in the National Wilderness Preservation System by only three areas. In addition, wilderness designation of this area would contribute to balancing the geographic distribution of wilderness within the NWPS.

The recommendation would preserve opportunities for solitude which are excellent in the canyon and along the broken rims. Primitive recreation activities such as bow hunting, hiking and nature study are outstanding. The naturalness of adjacent lands to the south and north contribute to the quality of the wilderness experience within the WSA, as do the sweeping views to Hart Mountain, Beaty Butte and Guano Rim.

Minimal conflicts with other resource uses of this WSA exist, and what conflicts do exist are far outweighed by the value of the area for wilderness. Grazing use of the area will be allowed to continue, but construction of two small watering facilities which would increase water supply for livestock would be foregone. Realignment of one mile of road would have to be kept outside the wilderness.

3. Criteria Considered in Developing the Wilderness Recommendations

Wilderness Characteristics

A. Naturalness: The Guano Creek WSA is in a natural condition and has been primarily affected by the forces of nature. The area is characterized by undisturbed uplands, swales, and low rims with two undeveloped sink lakes. As most lakebeds in the vicinity have been developed with waterholes, the occurrence of such lakes in a natural condition is rare. Guano Creek represents a valuable desert resource that has been unaltered except for impacts to vegetation resulting from livestock grazing. Recent changes in management on the east end of the WSA have considerably improved the natural condition of the riparian resource. As home to the Sheldon tui chub, an isolated candidate for listing as threatened or endangered status, protection of the stream is particularly important.

The WSA receives summer antelope use, with resident numbers ranging from 10 to several hundred. It is estimated that 1,000 antelope use or pass through the area each year. Herd condition is good. Approximately 100 mule deer use or frequent the study area on a year-round basis. They tend to concentrate near the rimrock where juniper groves provide cover. Herd condition is good.

Waterfowl including gadwall, pintail, shoveler, mallard, and Canada goose nest in emergent vegetation on the two sink lakes and Guano Creek during wet years, producing as many as 25 broods of 6-10 young. These same areas provide resting and feeding habitat for these and other migrating birds each spring. The rims and canyons are likely habitat for raptors, but no nests have been observed. The WSA is also habitat for coyote, skunk, badger, porcupine, weasel, Stellar's jay, nighthawk, swift, flycatchers, numerous other birds, small mammals, and amphibians. Common reptiles include western rattlesnake, gopher snake, and fence lizard.

R 26 E

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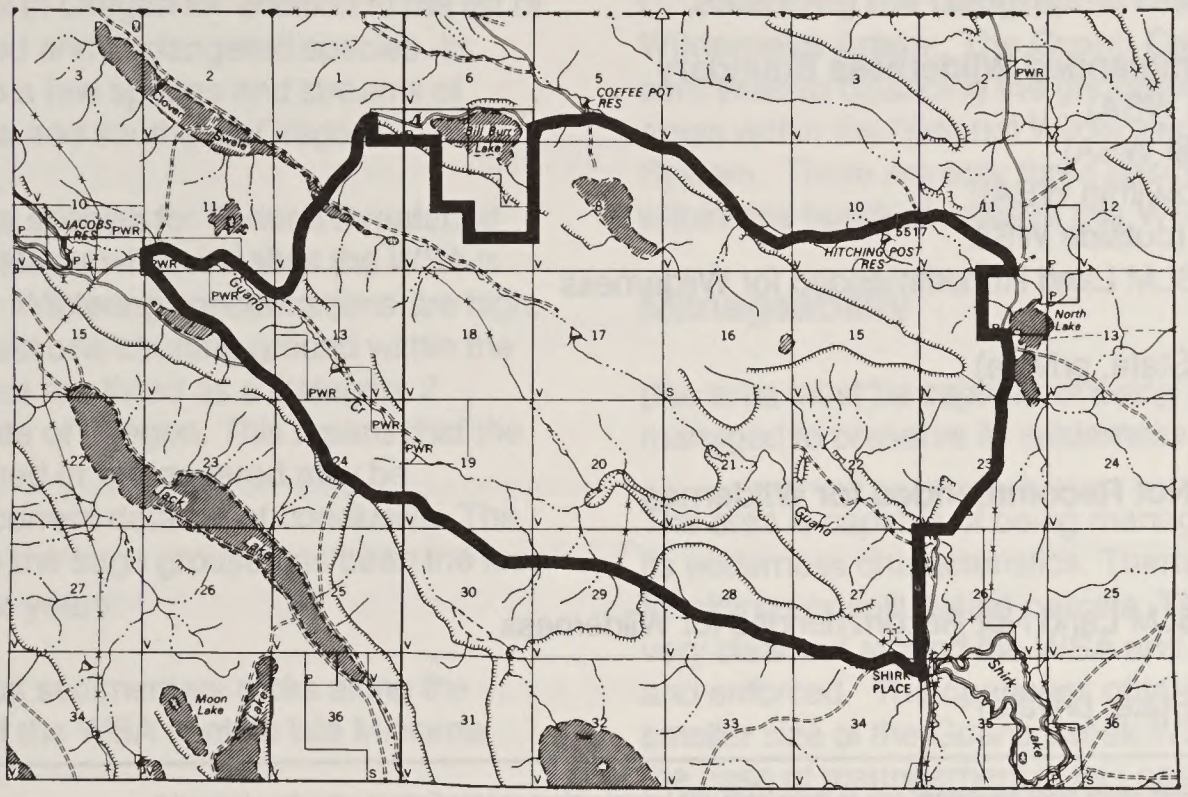


RECOMMENDED FOR WILDERNESS

RECOMMENDED FOR NONWILDERNESS (None)

LAND OUTSIDE WSA RECOMMENDED FOR WILDERNESS (None)

SPLIT ESTATE (None)

STATE (None)

PRIVATE (None)

- N -

Guano Creek Proposal

MAP-1

0 1 2 3

MILES

OR-1-132
January, 1991

Table 1. Land Status and Acreage Summary of the Study Area

	Acres
Within Wilderness Study Area	
BLM (surface and subsurface)	10,350
Split-Estate[1]	0
Inholdings (State, private)	0
Total	10,350
Within the Recommended Wilderness Boundary	
BLM (within WSA)	10,350
BLM (outside WSA)	0
Split-Estate (within WSA)[1]	0
Split Estate (outside WSA[1]	0
Total BLM Land Recommended for Wilderness	10,350
Inholdings (State, private)	0
Within the Area Not Recommended for Wildernes	
BLM	0
Split-Estate[1]	0
Total BLM Land Not Recommended for Wilderness	0
Inholdings (State, private)	0

[1]For purposes of this report, split-estate lands are defined only as those lands with federal surface and non-Federal subsurface (minerals).

The unnatural features which do exist are limited to three small reservoirs, 1.5 miles of fence and 5 miles of ways. The reservoirs are small, scattered and not noticeable for any distance. The vehicle ways are apparent only along their routes and do not significantly affect the natural scene. Disturbances impact directly and indirectly approximately only one percent of the study area.

B. Solitude: Outstanding opportunities for solitude exist in Guano Creek Canyon, along broken rims and in the vicinity of the tuffaceous cliffs in the eastern portion of the WSA. The sink lakes, bowl-like depressions in the basalt uplands, offer isolation in spite of the low vegetation. Secluded spots may also be found among juniper above the rimrock where there is less topographic screening. The remoteness of the study area, coupled with the naturalness of much of the surrounding lands, engenders a strong feeling of solitude even on the open sage flats.

C. Primitive and Unconfined Recreation: Outstanding opportunities for primitive recreation exist throughout the WSA. These opportunities include hiking, camping, horseback riding, wildlife observation and plant studies. Antelope hunting, popular in the area, is good. The variety of terrain, from open sage flats to rugged canyon and rimrock, from colorful soils and eroded tuffaceous formations to meandering stream, offers outstanding sightseeing and photographic opportunities as well.

D. Special Features: The two ephemeral sink lakes in the northern portion of the WSA are geological features which are unique to the basalt flows of southeastern Oregon. The significance of these two lakes is that they are undisturbed by water projects (few such unaltered lakes remain). These sink lakes have been surveyed as a potential Research Natural Area, but more inventory is needed before a recommendation is made on their eligibility for RNA status.

A population of *Eriogonum crosbyae* (Crosby's buckwheat) occurs on the east side of the WSA. The site is unique in soil and vegetative composition, with this species showing considerable variability. The species is known to exist in only two other

locations in Oregon and is a candidate for Federal listing under the Endangered Species Act.

Ivesia rhypara, a recently discovered species, also occurs in the WSA. It is on List 1 of the Oregon Natural Heritage Data Base, taxa endangered throughout range.

Guano Creek is habitat for the Sheldon tui chub, a candidate species in Oregon for addition to the list of Federal threatened and endangered species. Its range is limited to a few springs and streams of northwest Nevada and southeast Oregon.

Another candidate species for Federal threatened and endangered status which inhabits the WSA is the sage grouse. Wintering concentrations are high, and there is at least one strutting ground within the WSA. Sage grouse are listed as a Category 2 species in the state of Oregon. This means that the listing as threatened or endangered may be appropriate, but current data is not conclusive. The primary impact to the sage grouse has been the loss of habitat over the years.

Tertiary tuffaceous sedimentary rocks along the eastern portion of the WSA contain late Miocene vertebrate fossils.

Diversity in the National Wilderness Preservation System

A. Expanding the Diversity of Natural Systems and Features as Represented by Ecosystem: Wilderness designation of this WSA would add an ecosystem not presently represented in Oregon and represented in the National Wilderness Preservation System by only three areas. There are 66 other BLM areas in the State under study within this ecosystem.

According to the Bailey/Kuchler system of classifying ecosystems, the Guano Creek WSA is located in the Intermountain Sagebrush Province with a potential natural vegetation of sagebrush steppe. Table 2 summarizes this information.

Vegetative communities listed in the Basin and Range section of the Oregon Natural Heritage Plan which occur in the WSA are low sagebrush/ Sandberg's bluegrass, silver sagebrush, and big sagebrush/bluebunch wheatgrass.

B. Assessing the Opportunities for Solitude or Primitive Recreation Within a Days Driving Time (five hours) of Major Population Centers: There are four standard metropolitan statistical areas with populations over 100,000 within five hours' driving time of the WSA: Reno, Nevada; Boise, Idaho; Eugene/Springfield, Oregon; and Redding, California. Table 3 summarizes the number and acreage of designated areas and other BLM study areas within five hours' drive of major population centers.

C. Balancing the Geographic Distribution of Wilderness Areas: The Guano Creek WSA would contribute to balancing the geographic distribution of areas within the National Wilderness Preservation System. There are only three designated areas within one hundred miles of this WSA.

Manageability

(the area must be capable of being effectively managed to preserve its wilderness characteristics).

The area is capable of being managed to preserve its wilderness characteristics. There are no inholdings or split-estate parcels. The boundaries are very clear-cut around the WSA and easily located and enforced. The openness of terrain and relatively smaller size of the Guano Creek WSA would add to the ease of management in this case due to ease of observation for enforcement. The values in the area are high in value and relatively concentrated, making control procedures easier to effect.

Energy and Mineral Resource Values

Energy and mineral resources were evaluated by BLM using available geologic data and data provided in a report by TERRADATA, a consulting firm under contract with BLM. The report is titled "Assessment of Geology, Energy, and Minerals Resources of the Crump Lake Geologic Resource Area."

The U.S. Geological Survey and Bureau of Mines (USGS/USBM) report, "Mineral Resources of the Guano Creek Wilderness Study Area, Lake County, Oregon," Open File Report 88-0297, states no mineral resources were identified in the area. There is no potential for geothermal energy or energy mineral resources within the WSA. The study area has low mineral potential for zeolites and oil and gas.

The TERRADATA report did indicate moderate potential for mercury, gold, silver and diatomite in various areas within the WSA, but the difference from the USGS/USBM report is not significant to warrant any modification of the recommendation.

Table 2. Ecosystem Representation

Bailey/Kuchler Classification	NWPS Areas	NWPS Acres	Other BLM Studies Areas	Other BLM Studies Acres
Province/Potential Natural Vegetation				
Intermountain Sagebrush				
	NATIONWIDE			
Sagebrush Steppe	3	76,699	136	4,359,990
	OREGON			
	0	0	66	1,972,724

Table 3. Wilderness Opportunities for Residents of Major Population Centers

Population Centers	NWPS Areas	NWPS Acres	Other BLM Studies Areas	Other BLM Studies Acres
Reno, NV	45	4,967,230	175	6,904,809
Boise, ID	16	4,741,570	126	5,060,460
Eugene/Springfield, OR	42	2,859,994	43	770,436
Redding, CA	15	1,264,503	11	344,633

As of May 1991, there were no mining claims within the WSA.

Recent information from the USGS, based on reports of hydrocarbon "plays" in the region, indicates that there may be a moderate potential for hydrocarbons at depth.

Local Social and Economic Considerations

Livestock use at the current level of 575 AUMs and recreation use totaling less than 100 visitor days per year are the primary resource outputs that generate economic activity in the WSA. Local personal income generated annually from these existing use levels amounts to approximately $7,000 for livestock grazing and more than $1,000 related to recreation use of the WSA, for a total of $8,000.

Under the recommendation, livestock grazing would remain at 575 AUMs, and overall recreation use would remain at approximately 100 visitor days per year. The total effect on local personal income would be no net change from the current level. There were no social issues identified with the study of the WSA.

Summary of WSA-Specific Public Comments

Public involvement has occurred throughout the wilderness review process. Certain comments received during the inventory process and early stages of the EIS preparation were used to develop significant study issues and various alternatives for the ultimate management of those lands found to have wilderness qualities.

During formal public review of the Draft and Supplement to the Draft EIS, a total of 17 comments

specifically addressing the Guano Creek WSA were received. Of these, 14 were written and 3 were oral comments received at the 24 public hearings. Three commenters supported an expanded wilderness, while seven commenters supported all wilderness. Four commenters supported a partial wilderness of 9,890 acres; two commenters opposed wilderness designation.

Those supporting an expanded wilderness cited protection of raptor habitat and habitat for the Sheldon tui chub as reasons for their positions. Proponents of an all wilderness designation cited protection of the Sheldon tui chub, of antelope habitat, and of the sink lakes and riparian vegetation along Guano Creek. Protection of Guano Creek and its riparian zone is a concern of those who support a partial wilderness recommendation.

One opponent of wilderness designation stated that the area was too small, and that designation would adversely affect the minerals industry and powerline construction. Another opponent feels that the area is too large for hunters to pack out trophy animals without the use of a vehicle.

No WSA-specific comments were received from other agencies or local government concerning the designation or nondesignation of Guano Creek WSA.

No comments on the Final EIS were received specific to this WSA.

Impacts on Resources

The following comparative impact table summarizes the effects on pertinent resources for all the alternatives considered including designation or nondesignation of the entire area as wilderness.

Table 4. Comparative Summary of Impacts by Alternative

Issue Topics	Recommendation (All Wilderness Alternative)
Impacts on Wilderness	Wilderness designation of 10,350 acres would protect and enhance existing wilderness values.
Impacts on Energy and Mineral Development	No impact to energy and mineral development.
Impacts on Vegetation	Little or no change to vegetation throughout.
Impacts on Wildlife	Habitat and populations would be maintained throughout.
Impacts on Watershed	Water quality would remain in present condition throughout.
Impacts on Livestock Grazing	Vehicle use on 5 miles of ways would be limited resulting in minor inconvenience to livestock operator. Enhancement of water availability foregone.
Impacts on Recreation Use	Overall recreation use level not affected. There would be a change to nonmotorized types of recreation use.
Impacts on Local Personal Income	Local personal income would remain at $8,000 per year.

Partial Wilderness Alternative	No Wilderness/No Action Alternative
Wilderness designation would protect and enhance existing wilderness values on 9,890 acres. One acre of the nonsuitable portion would be affected by projected actions.	Projected management activities would impair the area's wilderness values on 1,430 acres.
No impact to energy and mineral development.	No impact to energy and mineral development.
Little or no change to vegetation in suitable area. One acre altered for road realignment.	Vegetation altered over 260 acres by waterhole and reservoir construction and by road realignment.
Habitat and populations would be maintained in the suitable portion. One acre of habitat would be altered by road realignment.	Waterhole construction in sink lake would reduce waterfowl production by 85 to 90 percent. Concentration of cattle at new water facilities would reduce nesting and escape cover. Road realignment would alter one additional acre.
Water quality would remain in present condition in the suitable portion. Short term impact to water quality and flow during road realignment.	Water quality and flow reduced on 2 miles of ephemeral stream. Water table lowered in 250 acre sink lake.
Vehicle use on 5 miles of ways would be limited, resulting in minor inconvenience to livestock operator. Enhancement of water availability foregone.	Two water facilities would be constructed.
Overall recreation use level not affected. There would be a change to non-motorized types of recreation use.	No change in use level or type.
Local personal income would remain at $8,000 per year.	Local personal income would remain at $8,000 per year.

Spaulding Wilderness Study Area

1. The Study Area — 69,530 acres

The Spaulding Wilderness Study Area (WSA OR-1-139) is located 18 miles east of Adel, Oregon, in both Lake and Harney counties. Its boundaries are defined by the right-of-way of Oregon State Highway 140 for approximately 3 miles on the southwest, a high standard dirt road on the west and low standard dirt roads on the north, east, and south. The WSA boundary extends up the dead-end road to Spaulding Reservoir and around a 320-acre parcel of private land adjacent to this road. All lands adjacent to the WSA are public.

The Spaulding WSA contains 69,530 acres of BLM land and 440 acres of private inholdings. Table 1 summarizes land ownership within the WSA.

The WSA is 17 miles long from north to south and from three to nine miles wide in a roughly oval shape with a panhandle on the south. The study area is characterized by rolling sagelands broken by low rimrock and interlaced by a network of intermittent stream drainages. Antelope Butte at the south end of the WSA rises to an elevation of 6,440 feet. Sage Hen Canyon, central to the study area, funnels outward from steep high rimrock to a broad swale near Spaulding Reservoir, which is excluded from the WSA boundary. West of the reservoir the drainage is also known as Spaulding Creek. At the south end of Sage Hen Canyon near the eastern WSA boundary is a one-mile series of pools known as The Potholes. These pools hold water after spring run-off well into the summer.

The western portion of the WSA is dominated by a 13 mile section of Guano Rim, also called Dougherty Rim, which reaches a height of 900 feet. The rim is incised by seven steep canyons and the major drainage known as Rocky Canyon. Eleven sink lakes are scattered throughout the area above and to the east of Guano Rim. Along the eastern boundary are a large erosion basin and a prominent landmark, Chimney Rock. Vegetation consists generally of sagebrush/bunchgrass communities, with some aspen groves beneath rims, scattered occurrence of mountain mahogany, and juniper growing at the base of some rims. Various shrub species occur in the canyons and among the rimrock.

The WSA was studied under Section 603 of the Federal Land Policy and Management Act and was included in the Final Oregon Wilderness Environmental Impact Statement filed in February 1990.

Three alternatives were analyzed in the EIS: an all wilderness alternative, a partial wilderness alternative, and a no wilderness/no action alternative (which is the recommendation in this report). The partial wilderness alternative would recommend 34,800 acres as suitable for wilderness, and 34,730 acres nonsuitable. These lands are shown on Map 1.

2. Recommendation and Rationale

—0 acres recommended for wilderness
69,530 acres recommended for nonwilderness

The recommendation for this WSA is to release the entire area of the Spaulding WSA for uses other than wilderness. The all wilderness alternative is considered to be the environmentally preferable alternative as it would result in the least change to the natural environment over the long term. However, the no wilderness/no action alternative would be implemented in a manner which would use all practical means to avoid or minimize environmental impacts.

The recommendation recognizes that the benefits of retaining options for increasing livestock forage production, improving deer and antelope habitat, and developing mineral resources outweigh the benefits of preserving the area's wilderness values. This would allow vegetative manipulation on 2,587 acres to increase forage production for livestock by 776 AUMs. Three reservoirs, two waterholes, 2 miles of pipeline and 7 miles of fence would improve livestock distribution and enhance livestock management. The 776-AUM increase in forage allocation would generate an additional $9,312 in local personal income annually.

Vegetative manipulation for wildlife would improve spring forage, and therefore nutrition, for mule deer and antelope. The installation of a wildlife guzzler would increase the available water for deer, antelope and other wildlife species. The projects would alter sage grouse habitat over 1,504 acres and introduce non-native grasses to the area.

The recommendation would permit the potential development of an open-pit gold mine which would increase local personal income by an unknown amount depending upon the quantity and quality of the ore extracted. If developed, the mine is projected to cover 160 acres and visually affect 600 acres.

Road construction for mining and livestock management activities is expected to increase motorized recreation in the area. The additional 50 visitor days per year projected would increase local personal income by $240.

It has been determined that these land uses and the income they generate outweigh the benefits of naturalness, opportunities for solitude and primitive types of recreation, vegetative diversity and water quality, as well as special features such as sage grouse habitat and cultural resources.

3. Criteria Considered in Developing the Wilderness Recommendation

Wilderness Characteristics

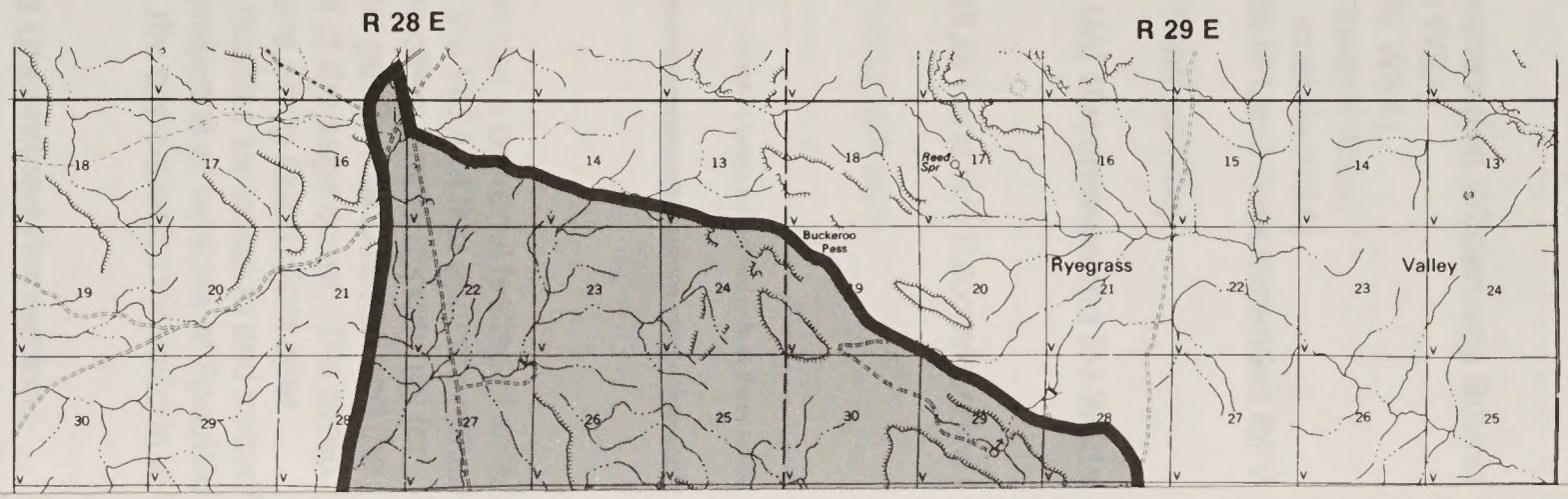
A. Naturalness: The WSA is in a predominantly natural condition and primarily affected by the forces of nature. The concentrations of native vegetation, especially in the undisturbed habitat of Sage Hen Canyon, and the large number of sage grouse in the area attest to its naturalness. There are several undisturbed sink lakes in the northern portion of the WSA.

Evidence of recent human activity is extremely isolated and unobtrusive when considering the area as a whole. There are two spring developments, 5 miles of fence, 11 small waterholes and reservoirs, and 13 miles of ways scattered within the 69,530 acres.

Unnatural features outside the WSA are State Highway 140 which forms 3 miles of the southern boundary ascending Guano Rim at Dougherty Slide, and livestock developments in Guano Valley which are visible from atop Guano Rim. These features are visible from only a small percentage of the study area and do not have a significant adverse effect on the naturalness of the WSA as a whole.

Approximately 80 mule deer and 250 antelope frequent the area. The area also supports badger, coyote, bobcat, mountain cottontail, and numerous other small mammals, bird species, and reptiles.

B. Solitude: Due to the large size and remote location of the Spaulding WSA, outstanding opportunities for solitude exist over most of the area. The northern portion contains broad, unobstructed



RECOMMENDED FOR WILDERNESS (None)

RECOMMENDED FOR NONWILDERNESS

LAND OUTSIDE WSA RECOMMENDED FOR WILDERNESS (None)

SPLIT ESTATE (None)

STATE (None)

PRIVATE

-N-

Spaulding Proposal
MAP-1

0 1 2 3
MILES

OR-1-139
January, 1991

Three alternatives were analyzed in the EIS: an all wilderness alternative, a partial wilderness alternative, and a no wilderness/no action alternative (which is the recommendation in this report). The partial wilderness alternative would recommend 34,800 acres as suitable for wilderness, and 34,730 acres nonsuitable. These lands are shown on Map 1.

2. Recommendation and Rationale

—0 acres recommended for wilderness
69,530 acres recommended for nonwilderness

The recommendation for this WSA is to release the entire area of the Spaulding WSA for uses other than wilderness. The all wilderness alternative is considered to be the environmentally preferable alternative as it would result in the least change to the natural environment over the long term. However, the no wilderness/no action alternative would be implemented in a manner which would use all practical means to avoid or minimize environmental impacts.

The recommendation recognizes that the benefits of retaining options for increasing livestock forage production, improving deer and antelope habitat, and developing mineral resources outweigh the benefits of preserving the area's wilderness values. This would allow vegetative manipulation on 2,587 acres to increase forage production for livestock by 776 AUMs. Three reservoirs, two waterholes, 2 miles of pipeline and 7 miles of fence would improve livestock distribution and enhance livestock management. The 776-AUM increase in forage allocation would generate an additional $9,312 in local personal income annually.

Vegetative manipulation for wildlife would improve spring forage, and therefore nutrition, for mule deer and antelope. The installation of a wildlife guzzler would increase the available water for deer, antelope and other wildlife species. The projects would alter sage grouse habitat over 1,504 acres and introduce non-native grasses to the area.

The recommendation would permit the potential development of an open-pit gold mine which would increase local personal income by an unknown amount depending upon the quantity and quality of the ore extracted. If developed, the mine is projected to cover 160 acres and visually affect 600 acres.

Road construction for mining and livestock management activities is expected to increase motorized recreation in the area. The additional 50 visitor days per year projected would increase local personal income by $240.

It has been determined that these land uses and the income they generate outweigh the benefits of naturalness, opportunities for solitude and primitive types of recreation, vegetative diversity and water quality, as well as special features such as sage grouse habitat and cultural resources.

3. Criteria Considered in Developing the Wilderness Recommendation

Wilderness Characteristics

A. Naturalness: The WSA is in a predominantly natural condition and primarily affected by the forces of nature. The concentrations of native vegetation, especially in the undisturbed habitat of Sage Hen Canyon, and the large number of sage grouse in the area attest to its naturalness. There are several undisturbed sink lakes in the northern portion of the WSA.

Evidence of recent human activity is extremely isolated and unobtrusive when considering the area as a whole. There are two spring developments, 5 miles of fence, 11 small waterholes and reservoirs, and 13 miles of ways scattered within the 69,530 acres.

Unnatural features outside the WSA are State Highway 140 which forms 3 miles of the southern boundary ascending Guano Rim at Dougherty Slide, and livestock developments in Guano Valley which are visible from atop Guano Rim. These features are visible from only a small percentage of the study area and do not have a significant adverse effect on the naturalness of the WSA as a whole.

Approximately 80 mule deer and 250 antelope frequent the area. The area also supports badger, coyote, bobcat, mountain cottontail, and numerous other small mammals, bird species, and reptiles.

B. Solitude: Due to the large size and remote location of the Spaulding WSA, outstanding opportunities for solitude exist over most of the area. The northern portion contains broad, unobstructed

RECOMMENDED FOR WILDERNESS **(None)**

RECOMMENDED FOR NONWILDERNESS

LAND OUTSIDE WSA RECOMMENDED FOR WILDERNESS (None)

SPLIT ESTATE (None)

STATE (None)

PRIVATE

N

Spaulding Proposal
MAP-1

0 1 2 3
MILES

OR-1-139
January, 1991

Table 1. - Land Status and Acreage Summary of the Study Area

Within Wilderness Study Area	**Acres**
BLM (surface and subsurface)	69,530
Split-Estate[1]	0
Inholdings (State, private)	440
Total	69,970
Within the Recommended Wilderness Boundary	
BLM (within WSA)	0
BLM (outside WSA)	0
Split-Estate (within WSA)	0
Split-Estate (outside WSA)	0
Total BLM Land Recommended for Wilderness	0
Inholdings (State, private)	0
Within the Area Not Recommended for Wilderness	
BLM	69,530
Split-Estate	0
Total BLM Land Not Recommended for Wilderness	
Inholdings (State, private)	440

[1]For purposes of this report, split-estate lands are defined only as those lands with federal surface and non Federal subsurface (minerals).

vistas which engender a powerful feeling of solitude. The south half of the WSA at first appears rather open, but the area offers ample opportunity for isolation due to the gently-rolling terrain and the variation in height of the sage cover. The steep convoluted canyons along Guano Rim offer exceptional opportunities for isolation and solitude. The intermittent presence of vehicles at Spaulding Reservoir affects the opportunities for solitude in that vicinity.

C. Primitive and Unconfined Recreation: Primitive recreation opportunities are outstanding for day hiking, backpacking, camping, nature study, photography, hunting, horseback riding and general sightseeing in most of the WSA. Sage Hen Canyon is a rugged and scenic area for hiking and offers opportunities for wildlife observation. The numerous canyons of Guano Rim offer birdwatching, photographic and sightseeing opportunities. Due to the large size of the WSA, primitive hunting and backpacking opportunities excel.

D. Special Features: Guano Rim is one of a series of high fault black scarps responsible for the distinctive basin and range topography of southeastern Oregon. The rim has potential for moderately-dense nesting by raptors, and many aeries are present on the steep face of the rim and on the rimrock of its canyons.

Approximately 85 percent of the study area has been identified as year-long sage grouse habitat. Inventories in 1980 and 1988 tabulated a total of 16 sage grouse strutting grounds within the WSA. Four of these strutting grounds contained more than 30 birds at the time of inventory. Approximately 80 percent of sage hens nest within 2 miles of the strutting ground where mating occurs. The sage grouse is a candidate for Federal listing as threatened or endangered in Oregon under the Endangered Species Act.

The southern half of the area is crucial antelope winter range and spring kidding grounds. Cultural resources, including a petroglyph site, are within the boundaries of the WSA.

Diversity in the National Wilderness Preservation System

A. Expanding the Diversity of Natural Systems and Features as Represented by Ecosystem: Wilderness designation of this WSA would add an ecosystem not presently represented in Oregon and represented in the National Wilderness Preservation System by only three areas. There are 66 other BLM study areas in the state within this ecosystem.

According to the Bailey/Kuchler system of classifying ecosystems, the Spaulding WSA is located in the Intermountain Sagebrush Province, with a potential natural vegetation of sagebrush steppe. Table 2 summarizes this information.

Vegetative communities listed by the Oregon Natural Heritage Plan in the Basin and Range section and occurring in the WSA include big sagebrush/Idaho fescue, low sagebrush/Idaho fescue, low sagebrush/Sandberg's bluegrass, silver sagebrush, aspen groves and mid- to high-level vernal (spring) ponds. Other communities in the WSA include a willow-grass community in a riparian area, and big sagebrush/Thurber's needlegrass community.

B. Assessing the Opportunities for Solitude of Primitive Recreation Within a Day's Driving Time (five hours) of Major Population Centers: There are four standard metropolitan statistical areas with populations over 100,000 within five hours' driving time of the Spaulding WSA: Medford, Oregon; Reno, Nevada; Boise, Idaho; and Redding, California. Table 3 summarizes the number and acreage of designated areas and other BLM study areas within a day's driving time of major population centers.

C. Balancing the Geographic Distribution of Wilderness Areas: The Spaulding WSA would contribute to balancing the geographic distribution of areas within the National Wilderness Preservation System. There are only three designated areas within 100 miles of this WSA.

Manageability

(The area must be capable of being effectively managed to preserve its wilderness character.)

The area is capable of being managed to preserve its wilderness characteristics. The boundaries are well defined by BLM roads and by fencing. Private inholdings do not currently affect the area's manageability and would not be anticipated to complicate management; the lands are currently used for livestock grazing operations with little or no development potential beyond current conditions that would conflict with wilderness management. The southern part of the WSA would require extra patrol efforts during hunting season to prevent vehicle incursions.

Table 2. Ecosystem Representation

Bailey/Kuchler Classification	NWPS Areas	NWPS Acres	Other BLM Studies Areas	Other BLM Studies Acres
Province/Potential Natural Vegetation				
NATIONWIDE				
Intermountain Sagebrush Province/ Sagebrush Steppe	3	76,699	136	4,300,810
OREGON				
	0	0	66	1,913,544

Table 3. Wilderness Opportunities for Residents of Major Population Centers

Population Centers	NWPS Areas		Other BLM Studies	
	Areas	Acres	Areas	Acres
Medford, OR	31	2,440,081	21	730,038
Reno, NV	45	4,967,230	175	6,904,809
Boise, ID	16	4,741,570	126	5,060,460
Redding, CA	15	1,264,503	11	344,633

Energy and Mineral Resource Values

Energy and mineral resources were evaluated by BLM using geologic data in BLM files, data in a report by TERRADATA (a consulting firm under contract with BLM), and a recent report from the United States Bureau of Mines.

The potential for occurrence of oil, gas, or geothermal resources is not considered to be significant.

According to a TERRADATA report, there is moderate potential for the occurrence of base and precious metals and bentonite over the entire WSA. There is also moderate potential for the occurrence of diatomite on 21,500 acres, mostly in the northern portion, with some acreage surrounding Antelope Butte in the southern portion. Based on a U.S. Bureau of Mines mineral investigation, 5,640 acres in the northern portion has high potential for the occurrence of pozzolanic tuffs, and there may be potential for base and precious metals in the center of the study area and near Chimney Rock.

As of May 1991, there were no mining claims within the WSA. Recent U.S. Geological Survey (USGS) information based on generalized data tied to hydrocarbon plays in the region indicates that there may be moderate potential for hydrocarbons at depth.

Local Social and Economic Considerations

Livestock use at the current level of 3,580 AUMs and recreation use totaling 200 visitor days annually are the primary resource outputs resulting from economic activity in the WSA. Approximately $42,960 of local personal income is generated each year from livestock grazing. Another $2,400 is generated annually from recreation use, for an overall total of $45,360.

Under the recommendation, an increase in forage allocation for livestock by 776 AUMs would generate an increase of approximately $9,300 in local personal income. An additional increase in local personal income would be expected from mineral development, with the amount of increase being dependent upon the quantity and quality of the minerals extracted. An increase would also be realized from an increase in annual recreation use. Total annual local personal income generated from resource outputs in the WSA would increase by at least $9,900. There were no social issues identified in the study of this WSA.

Summary of WSA-Specific Public Comments

Public involvement has occurred throughout the wilderness review process. Certain comments received during the inventory process and early stages of the EIS preparation were used to develop significant study issues and various alternatives for the ultimate management of those lands found to have wilderness value.

During formal public review of the Draft EIS and its Supplement, a total of 25 comments specifically addressing the Spaulding WSA were received. Of these, 20 were written and 5 were oral comments received at the 24 public meetings. Eleven commenters supported recommendation for all of the WSA; two commenters favored an expanded wilderness designation. The recommendation was supported by three commenters.

Table 4. Comparative Summary of Impacts by Alternative

Issue Topics	Recommendation (No Wilderness/No Action Alternative)
Impacts on Wilderness Values	Projected actions would impair wilderness values over approximately 5,000 acres of the WSA.
Impacts on Energy and Mineral Development	No impact to mineral development. Development of one open pit mine would be realized.
Impacts on Vegetation	Projected actions would alter native vegetation on 3,860 acres, with a slight decrease in residual ground cover resulting from a 776 AUM increase in livestock grazing.
Impacts on Wildlife	Antelope and deer habitat improved by vegetative manipulation by installation of a guzzler. Sage grouse habitat altered on 3,860 acres with decline in reproductive success.
Impacts on Watershed	Watershed and water quality degraded on 160 acres at the Potholes.
Impacts on Livestock Grazing	Livestock use would increase by 776 AUMs. Three reservoirs, two miles of pipeline and 7 miles of fence would be constructed. No restrictions on vehicle access.
Impacts on Recreation Use	Slight increase in recreation use numbers, with vehicle oriented use increasing and primitive use decreasing.
Impacts on Local Personal Income	Annual local personal income would increase by at least $9,900.

All Wilderness Alternative	Partial Wilderness Alternative
Wilderness designation of 69,530 acres would result in protection and enhancement of existing wilderness values.	Wilderness designation would protect and enhance wilderness values on 34,800 acres. In the nonsuitable portion, projected actions would directly impair wilderness values on 2,100 acres.
Development of one open pit mine would be foregone.	Development on 34,800 acres with moderate potential for precious metals foregone. Development on an open pit mine would occur in the nonsuitable portion. No impact to development of diatomite, bentonite or pozzolanic tuffs.
Existing native vegetation retained and 13 miles of ways would revegetate.	Native vegetation preserved on 34,800 acres. In nonsuitable portion, 2,100 acres altered by proposed management actions.
Habitat and populations would be maintained throughout the area.	Existing habitat would be preserved on 34,800 acres. Antelope and deer habitat would be improved on 660 acres in the nonsuitable portion; negative impacts to sage grouse habitat on the same acreage.
No change from present condition.	Watershed and water quality degraded on 160 acres at the Potholes.
Minor inconvenience and slight increase in cost to operators due to restrictions on 13 miles of ways.	There would be a 332-AUM increase in forage allocation; 2 waterholes and 2 miles of pipeline would be constructed.
No change or slight decline in recreation use numbers. Type of use would shift from vehicle oriented to primitive.	Use level not affected. Shift from vehicle oriented to primitive recreation in suitable portion due to closure of 2.5 miles of ways.
Annual local personal income would remain at approximately $45,400.	Annual local personal income would increase by at least $4,000.

Impacts on Resources

The following comparative impact table summarizes the effects on pertinent resources for all of the alternatives considered, including designation or nondesignation of the entire area as wilderness.

Those favoring wilderness designation for the entire WSA cited protection of sage grouse and antelope habitat and of streamside habitat for wildlife in general. Five commenters stated that mineral values were overstated and three commenters felt that potential livestock projects were not a valid rationale for a no wilderness recommendation. Proponents of an expanded wilderness felt that areas beyond the WSA boundary met wilderness criteria.

Of those opposing wilderness designation, two commenters did not give reasons for their opposition. One commenter stated that the area is too small for wilderness, and that designation would adversely affect the mineral industry and would interfere with powerline construction.

No WSA-specific comments were received from federal or local agencies concerning the designation or nondesignation of Spaulding WSA.

One public comment was received on the Final EIS specific to this WSA.

Hawk Mountain Wilderness Study Area

1. The Study Area —69,640 acres

The Hawk Mountain Wilderness Study Area (WSA OR-1-146A) is located in southern Harney County, approximately 73 miles east of Lakeview, Oregon. U.S. Highway 140 passes 5 miles southwest of the WSA.

The boundaries are described by a high standard gravel road on the northwest, private land and a fenceline on the north, low standard dirt roads on the northeast and southwest, and the Charles Sheldon National Wildlife Refuge (fence located on the Nevada State line) on the south. The adjacent lands are public except for some private lands along the northern boundary at Acty Mountain. A dead-end road extends 2.5 miles to a horsetrap near the northwest corner of the WSA. The road and horsetrap site are excluded from the WSA.

The study area contains 68,360 acres of BLM land and two 640-acre parcels of split-estate lands. Approximately two-thirds of the study area is in the BLM's Lakeview District and approximately one-third is in the Burns District. The west side of the WSA is characterized by rolling sagebrush hills and low broken rimrock grading eastward toward the lake basin known as Hawksie Walksie. The steeper ridges and peaks of Acty Mountain, Hawk Mountain and Lone Juniper Mountain flank the basin to the north and northeast. To the east are buttes of partially exposed columnar basalt, areas of colorful volcanic soils and stone, and high tablelands incised by rocky draws. Elevation ranges from 5,600 feet in Hawksie Walksie Basin to 7,234 feet at the summit of Hawk Mountain.

Vegetation in the WSA is composed primarily of big sagebrush-bunchgrass communities with low sagebrush flats on the western-most portion and on the high plateaus of the southeast. Mountain shrub communities occur on northern slopes at higher elevations. Tree species are limited to scattered junipers and one grove of mountain mahogany. Excellent examples of native bunchgrass communities exist in several areas within the WSA.

Relative to the review of Hawk Mountain WSA, it was appropriate to consider the recommendation of Fish and Wildlife Service for Big Springs Table located in Nevada, to the south of the Hawk Mountain WSA. Their recommendation was that Big Springs Table was suitable for wilderness designation.

The Hawk Mountain WSA was studied under Section 603 of the Federal Land Policy and Management Act (FLPMA) and was included in the Final Oregon Wilderness Environmental Impact Statement filed in February, 1990.

There were three alternatives analyzed in the EIS: an all wilderness alternative (which is the recommendation of this report), a partial wilderness alternative, and a no wilderness/no action alternative. In the partial wilderness alternative, 42,280 acres in the eastern portion of the WSA would be considered suitable for wilderness, with acquisition of the 1,280 acres of split-estate land, while 27,360 acres in the west would be considered nonsuitable. These lands are shown on Map 1.

2. Recommendation and Rationale

—69,640 acres recommended for wilderness
0 acres recommended for nonwilderness

The recommendation is to designate all 69,640 acres as wilderness. This is considered to be the environmentally preferable alternative as it will result in the least change from the natural environment over the long term. A total of 68,360 acres of public land plus 1,280 acres of split-estate land are recommended for wilderness. This recommendation for wilderness would apply to these inholdings in the event they were acquired through purchase or exchange with willing owners. Appendix 1 lists the split-estate lands and provides additional information on acquisition of those tracts.

The recommendation would help to preserve the very natural condition of Hawk Mountain WSA. These wilderness values would outweigh the benefits that would be foregone from any energy and mineral development or livestock developments. The Hawk Mountain WSA appears to have been affected primarily by the forces of nature, as evidenced by the abundance, diversity, and vigor of the native bunchgrasses and their associated plant communities. Approximately 300 acres of the 440-acre Long Draw Research Natural Area (RNA) lie within the WSA. The RNA was established to protect, for scientific and educational purposes, an excellent Indian ricegrass/Thurber's needlegrass community, identified as the best example of such a community in Oregon. Another proposed RNA in the north central portion of the WSA hosts a unique assemblage of native plants.

The variety of soil types in the WSA support an array of plants and communities not found in such proximity elsewhere in Oregon. Plant species include the sensitive *Astragalus alvordensis, Astgragalus tetrapterus, Caulanthus crassicaulus,* and *Cymopterus purpurascens.*

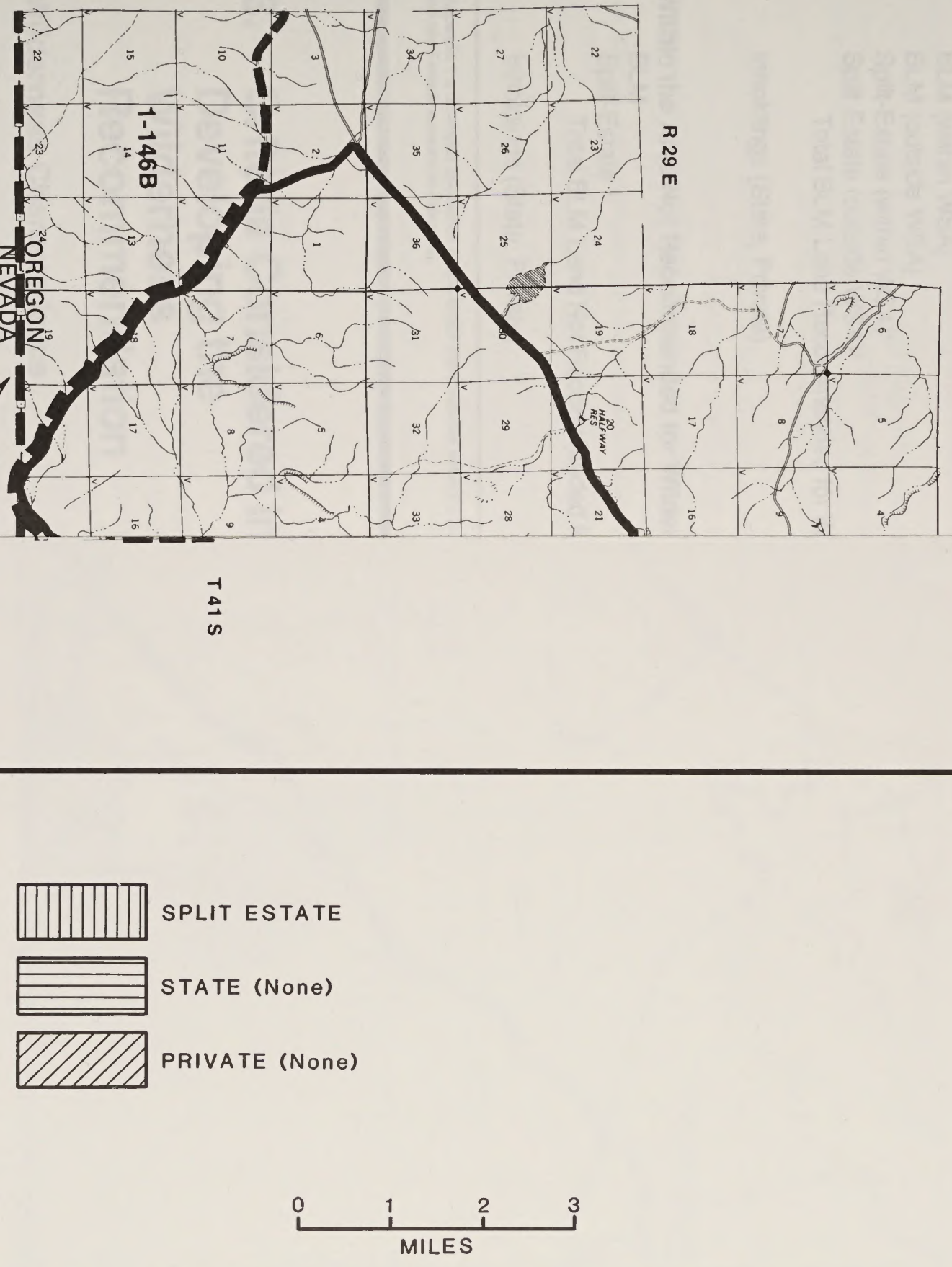
Wilderness designation of the Hawk Mountain WSA would add an ecosystem (Intermountain sagebrush/sagebrush-steppe) not presently represented in Oregon, and represented in the National Wilderness Preservation System (NWPS) in only three areas. In addition, designation of this area as wilderness would contribute toward balancing the geographic distribution of areas within the NWPS.

Only a few minor human developments are found within the boundaries of the Hawk Mountain WSA. This large area encompasses a variety of distinctive landforms, supports a wild horse herd, and provides substantial native habitat for antelope and other wildlife. The occurrence of ferruginous hawk nests in the area proves there to be a high value to preserving native habitat for this species in an unaltered condition, free of human disturbance.

Opportunities for solitude and primitive recreation are outstanding throughout the WSA. The northern and eastern portions provide mountainous terrain with steep sided draws, hidden valleys, and high ridges overlooking an immense expanse of native terrain in which to isolate oneself from the world of human encroachment. The large size of the interior drainage to the Hawksie Walksie lakebed and the gentler landscape rises westward to low sage country offer an open expanse of high desert that contribute significantly to the feeling of solace and solitude available only in such few remaining areas unaffected or unsettled by humans.

The receipt of 25 public comments specific to the Hawk Mountain WSA calling for either all or expanded wilderness designations in the area represents significant public interest in the WSA. This demonstrates a high degree of public support for the recommendation.

The area can be managed as wilderness. The boundaries are primarily easily identifiable roads and fencelines, and there are minor conflicts with other resource uses such as grazing.



RECOMMENDED FOR WILDERNESS

RECOMMENDED FOR NONWILDERNESS (None)

LAND OUTSIDE WSA RECOMMENDED FOR WILDERNESS (None)

SPLIT ESTATE

STATE (None)

PRIVATE (None)

N

Hawk Mountain Proposal

MAP-1

0 1 2 3

MILES

OR-1-146A

January, 1991

The Hawk Mountain WSA was studied under Section 603 of the Federal Land Policy and Management Act (FLPMA) and was included in the Final Oregon Wilderness Environmental Impact Statement filed in February, 1990.

There were three alternatives analyzed in the EIS: an all wilderness alternative (which is the recommendation of this report), a partial wilderness alternative, and a no wilderness/no action alternative. In the partial wilderness alternative, 42,280 acres in the eastern portion of the WSA would be considered suitable for wilderness, with acquisition of the 1,280 acres of split-estate land, while 27,360 acres in the west would be considered nonsuitable. These lands are shown on Map 1.

2. Recommendation and Rationale

—69,640 acres recommended for wilderness
0 acres recommended for nonwilderness

The recommendation is to designate all 69,640 acres as wilderness. This is considered to be the environmentally preferable alternative as it will result in the least change from the natural environment over the long term. A total of 68,360 acres of public land plus 1,280 acres of split-estate land are recommended for wilderness. This recommendation for wilderness would apply to these inholdings in the event they were acquired through purchase or exchange with willing owners. Appendix 1 lists the split-estate lands and provides additional information on acquisition of those tracts.

The recommendation would help to preserve the very natural condition of Hawk Mountain WSA. These wilderness values would outweigh the benefits that would be foregone from any energy and mineral development or livestock developments. The Hawk Mountain WSA appears to have been affected primarily by the forces of nature, as evidenced by the abundance, diversity, and vigor of the native bunchgrasses and their associated plant communities. Approximately 300 acres of the 440-acre Long Draw Research Natural Area (RNA) lie within the WSA. The RNA was established to protect, for scientific and educational purposes, an excellent Indian ricegrass/Thurber's needlegrass community, identified as the best example of such a community in Oregon. Another proposed RNA in the north central portion of the WSA hosts a unique assemblage of native plants.

The variety of soil types in the WSA support an array of plants and communities not found in such proximity elsewhere in Oregon. Plant species include the sensitive *Astragalus alvordensis, Astgragalus tetrapterus, Caulanthus crassicaulus,* and *Cymopterus purpurascens.*

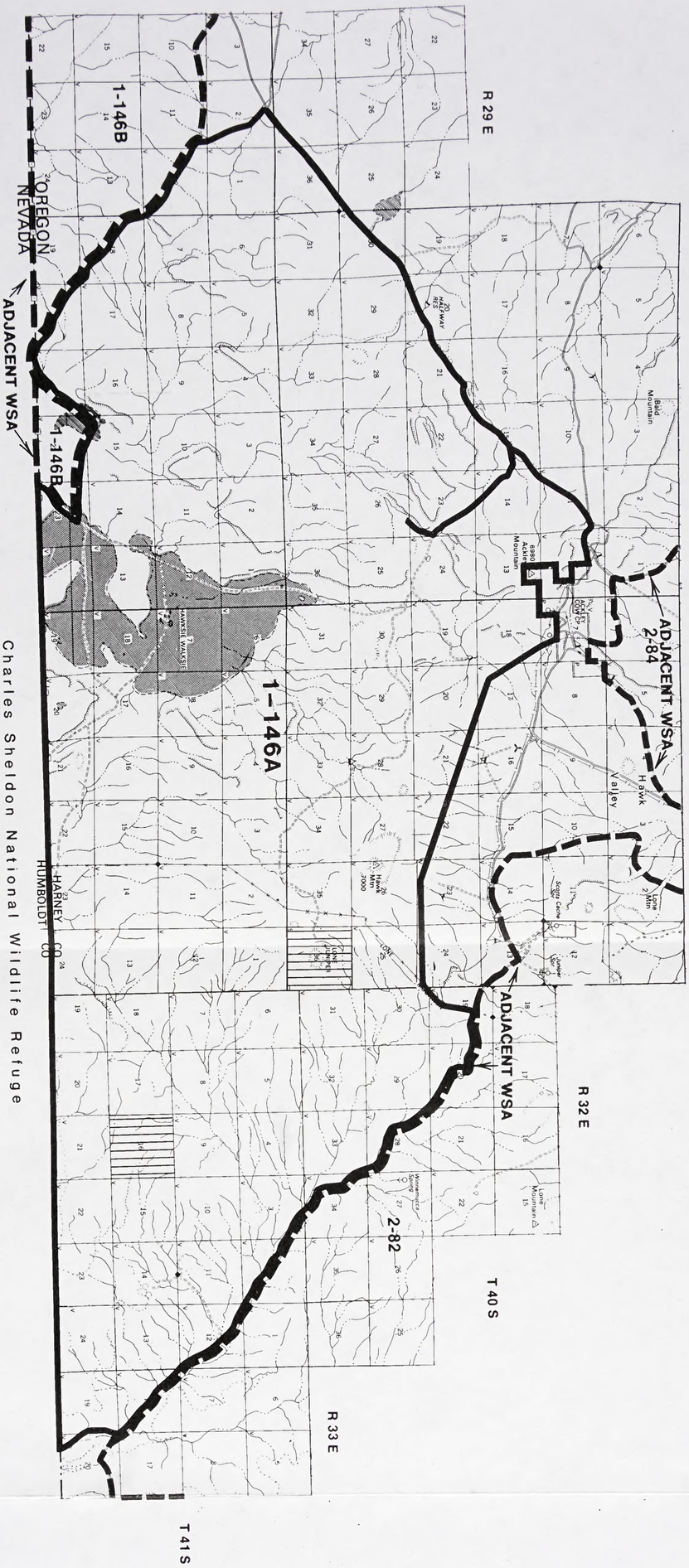
Wilderness designation of the Hawk Mountain WSA would add an ecosystem (Intermountain sagebrush/sagebrush-steppe) not presently represented in Oregon, and represented in the National Wilderness Preservation System (NWPS) in only three areas. In addition, designation of this area as wilderness would contribute toward balancing the geographic distribution of areas within the NWPS.

Only a few minor human developments are found within the boundaries of the Hawk Mountain WSA. This large area encompasses a variety of distinctive landforms, supports a wild horse herd, and provides substantial native habitat for antelope and other wildlife. The occurrence of ferruginous hawk nests in the area proves there to be a high value to preserving native habitat for this species in an unaltered condition, free of human disturbance.

Opportunities for solitude and primitive recreation are outstanding throughout the WSA. The northern and eastern portions provide mountainous terrain with steep sided draws, hidden valleys, and high ridges overlooking an immense expanse of native terrain in which to isolate oneself from the world of human encroachment. The large size of the interior drainage to the Hawksie Walksie lakebed and the gentler landscape rises westward to low sage country offer an open expanse of high desert that contribute significantly to the feeling of solace and solitude available only in such few remaining areas unaffected or unsettled by humans.

The receipt of 25 public comments specific to the Hawk Mountain WSA calling for either all or expanded wilderness designations in the area represents significant public interest in the WSA. This demonstrates a high degree of public support for the recommendation.

The area can be managed as wilderness. The boundaries are primarily easily identifiable roads and fencelines, and there are minor conflicts with other resource uses such as grazing.



RECOMMENDED FOR WILDERNESS

RECOMMENDED FOR NONWILDERNESS (None)

LAND OUTSIDE WSA RECOMMENDED FOR WILDERNESS (None)

SPLIT ESTATE

STATE (None)

PRIVATE (None)

N

Hawk Mountain Proposal

MAP-1

0 1 2 3

MILES

OR-1-146A

January, 1991

Table 1. Land Status and Acreage Summary of the Study Area

	Acres
Within Wilderness Study Area	
BLM (surface and subsurface)	68,360
Split-Estate[1]	1,280
Inholdings (State, Private)	0
TOTAL	69,640
Within the Recommended Wilderness Boundary	
BLM (within WSA)	68,360
BLM (outside WSA)	0
Split-Estate (within WSA)[1]	1,280
Split-Estate (outside WSA)[1]	0
Total BLM Land Recommended for Wilderness	69,640
Inholdings (State, Private)	0
Within the Area Not Recommended for Wilderness	
BLM	0
Split-Estate [1]	0
Total BLM Land Not Recommended for Wilderness	0
Inholdings (State, Private)	0

[1]Appendix 1 is a detailed description of split-estate tracts included within the study. For purposes of this report, split-estate lands are defined only as those lands with federal surface and non Federal subsurface (minerals).

3. Criteria Considered In Developing the Wilderness Recommendation

Wilderness Characteristics

A. Naturalness: The Hawk Mountain WSA is in a very natural condition and appears to be primarily affected by the forces of nature. Plant communities and assemblages within the study area are healthy and diverse. Native bunchgrasses, in particular, are well represented. The Long Draw Research Natural Area in the eastern portion has been identified as the best example of an Indian ricegrass/Thurber's needlegrass community in Oregon. Another proposed RNA hosts a unique assemblage of native plants. The variety of soil types within the WSA support an array of plants, including the sensitive *Astragalus alvordensis, Astragalus tetrapterus, Caulanthus crassicaulus,* and *Cymopterus purpurascens.*

The area's naturalness is further demonstrated by the diversity of wildlife. Pronghorn antelope are abundant, as the WSA is on the migration route between the Hart Mountain and Charles Sheldon National Wildlife Refuges, summer and winter antelope range respectively. Two sensitive raptor species, Swainson's hawk and the ferruginous hawk, nest in the WSA. Sage grouse can be found throughout the western portion, and migratory waterfowl use the central lakebed in the spring. Cougar, mule deer, coyote, bobcat, porcupine, badger and many species of reptiles and rodents are also present.

At various times of the year hummingbirds, shrike, owl, golden eagle and bats may also be seen. The WSA is in the northern range of the kit fox, but no individuals have been sighted in the area for a number of years.

Except for the seeding to the north, the lands surrounding the Hawk Mountain WSA have few developments, enhancing one's perception of naturalness as one looks across the landscape from vantage points within the WSA.

Unnatural features—five waterholes, two concrete water storage tanks, 6 miles of fence and 25 miles of ways—influence approximately 1.5 percent of the study area. Two waterholes, the concrete storage tanks, and approximately 15 miles of the ways are screened from view either by topography or vegetation. Three waterholes and approximately 10 miles of ways that are in the open play area central to the WSA are visible from the surrounding hills.

B. Solitude: Opportunities for solitude are outstanding throughout the study area. The north, northeast and eastern portions of the WSA have mountainous terrain with draws, valleys, ridges and canyons among which one can easily isolate oneself. The far western portion has less dramatic topography, but still offers ample solitude due to its large area, its sinks, draws and low rimrock. The lakebed, although flat and open, engenders a feeling of isolation because hills, mountains and plateaus surround and enclose it.

C. Primitive and Unconfined Recreation: There are outstanding opportunities for a wide range of primitive recreation activities including day hiking, backpacking, horseback riding, hunting and camping. The eastern half of the WSA offers the more rugged and challenging hiking terrain, while the central and western portions offer the most opportunities for wildlife observation.

Sightseeing and photographic opportunities are present throughout. The WSA offers a diversity of form and content representative of much of the high desert country, including alkali flats, sagebrush communities, badlands and high desert peaks. Wild horses are common, as are antelope, deer, raptors, small birds and mammals. Views from higher terrain are expansive and often dramatic. Two areas on the east side in Long Draw contain unique rock formations, and there are also three balanced rocks atop a colorful, eroded sedimentary deposit in one of the more remote draws.

Primitive hunting opportunities are good. Antelope, mule deer, and chukar are present. The WSA is particularly suited to hunting by horseback due to its large size and lack of roads.

D. Special Features: The Long Draw area, located along the eastern border of the WSA, contains a number of special features. One such feature is the scenic contrast in color of exposed soils and the various types of vegetation on the hills flanking the draw. Buck Buttes on the north flank of the draw have exposed columnar basalt on which are several raptor nests. Some very unusual eroded pinnacles occur in a small draw between the two buttes.

The Long Draw Research Natural Area includes two uncommon plant communities (big sagebrush/needle-and-thread grass/Indian ricegrass and winterfat) and a plant species which is threatened in Oregon, *Cymopterus purpurascens*.

Two other acreages within the WSA are being considered for RNA status because of their unusual plant assemblages and excellent productivity and condition of their plant communities.

The study area contains migratory corridor, winter range and kidding grounds for pronghorn antelope. It also contains nesting and feeding habitat for Swainson's and ferruginous hawks and for other raptors, as well as habitat for sage grouse, including a number of sage grouse strutting grounds. (Sage grouse is a candidate threatened species in Oregon.) The ephemeral lake in Hawksie Walksie Basin provides a resting place for migratory waterfowl each spring. The WSA also provides habitat for cougar.

Significant cultural resource including a large lithic manufacture site have also been located within the WSA.

Diversity in the National Wilderness Preservation System

A. Expanding the Diversity of Natural Systems and Features as Represented by Ecosystem: Wilderness designation of the Hawk Mountain WSA would add an ecosystem not presently represented in Oregon, and represented in the National Wilderness Preservation System (NWPS) by only three areas. There are 66 other BLM areas in the state under study within this ecosystem. Table 2 summarizes this information.

According to the Bailey/Kuchler system of classifying ecosystems, the study area is in the Intermountain Sagebrush Province, with potential natural vegetation of sagebrush steppe. The vegetative community listed in the Basin and Range section of the Oregon Natural Heritage Plan and occurring in the WSA are: big sagebrush/Idaho fescue, big sagebrush/bluebunch wheatgrass, low sagebrush/Idaho fescue, low sagebrush/Sandberg's bluegrass, silver sagebrush, black sagebrush, bare play and play margin

Table 2. Ecosystem Representation

Bailey/Kuchler Classification	NWPS Areas	NWPS Acres	Other BLM Studies Areas	Other BLM Studies Acres
Province/Potential Natural Vegetation				
NATIONWIDE				
Intermountain Sagebrush Province/				
Sagebrush Steppe	3	76,699	136	4,300,700
OREGON				
	0	0	66	1,913,434

Table 3. Wilderness Opportunities for Residents of Major Population Centers

Population Centers	NWPS Areas	NWPS Acres	Other BLM Studies Areas	Other BLM Studies Acres
Medford, OR	31	2,440,081	21	730,038
Boise, ID	16	4,741,570	126	5,060,460
Reno, NV	45	4,967,230	175	6,904,809

communities, winterfat, mountain mahogany in southern basin and range, bitterbrush-sagebrush/snowberry, and Indian ricegrass/needlegrass. Two other native communities not included in the Natural Heritage Plan are big sagebrush/creeping wildrye grass and big sagebrush/Thurber's needlegrass.

B. Assessing the Opportunities for Solitude or Primitive Recreation Within a Day's Driving Time (five hours) of Major Population Centers: Hawk Mountain WSA is located within 5 hours' driving time of three standard metropolitan statistical areas with populations over 100,000: Medford, Oregon; Boise, Idaho; and Reno, Nevada. Table 3 summarizes the number and acreage of designated areas and other BLM study areas within five hours drive of major population centers.

C. Balancing the Geographic Distribution of Wilderness Areas: Hawk Mountain WSA would contribute to balancing the geographic distribution of areas within the National Wilderness Preservation System. There are only three designated areas within 100 miles of this WSA.

Manageability

(The area must be capable of being effectively managed to preserve its wilderness character.)

The entire WSA as recommended would be manageable as wilderness. The boundaries are easily identifiable and the resource conflicts are limited to the potential development of an open-pit mine on the split-estate land. In this event, surface-disturbing exploration and mining in the immediate vicinity of the impacted area could cause manageability problems, as solitude and naturalness would be affected. Acquisition of split-estate, as proposed, would enhance manageability of the area.

Energy and Mineral Resource Values

Energy and mineral resources were evaluated by BLM using available geologic data from the United States Geological Survey (USGS), and information provided in a report by TERRADATA, a consulting firm under BLM contract. The report is entitled, "Assessment of Geology, Energy, and Minerals Resource of the Lone Mountain Geologic Resource Area." Additional information from a joint USGS/ Bureau of Mines report dated 1989 titled "Mineral Resources of the Hawk Mountain Wilderness Study Area, Harney County, Oregon," has been incorporated into this analysis.

Energy resources are not postulated to exist in economic quantities in the WSA.

Based on general evidence that altered rocks in the region may host deposits, there is a moderate potential for the occurrence of gold, silver, and mercury. The USGS/Bureau of Mines report 1740-F indicates there is low potential for gold in epithermal deposits in the west half of the WSA. No exploration has occurred.

As of May 1991, there were no mining claims within the WSA. Recent information relative to oil and gas plays in the region from USGS indicates there may be moderate potential for hydrocarbons at depth.

Local Social and Economic Considerations

Livestock use at the current level of 3,994 AUMs and recreation use totaling 200 visitor days per year are the primary resource outputs that generate economic activity in the WSA. Local personal income generated annually from these existing use levels amounts to approximately $47,640 for livestock grazing and $2,400 related to recreation use of the WSA, for an overall total of $50,040.

Under the recommendation, livestock grazing would remain at 3,994 AUMs. Overall recreation use would increase by approximately 20 visitor days per year. The recommended action would result in a probable increase in local personal income of approximately $240 per year due to an increase in recreational use of the area. There were no social issues identified with the studying of this WSA.

Summary of WSA-Specific Comments

Public involvement has occurred throughout the wilderness review process. Certain comments received during the inventory process and early stages of the EIS preparation were used to develop significant study issues and various alternatives for the ultimate management of those lands found to have wilderness value.

During formal public review of the Draft EIS and its Supplement, a total of 28 comments specifically addressing the Hawk Mountain WSA were received. Of these, 25 were written and 3 were oral and received during the 24 public hearings. Eighteen commenters supported the all wilderness alternative for this WSA and one supported the concept of wilderness in general. Six commenters supported an expanded wilderness to incorporate the adjacent Sage Hen Hills WSA. One of these six commenters also included the adjacent Rincon WSA in an expanded wilderness proposal. Four commenters supported no wilderness for the WSA.

Those supporting all wilderness cited the importance of preserving antelope and sage grouse habitat, cultural values, and native plant communities. Nine comments specifically addressed the importance of preserving the native bunchgrass communities occurring in the WSA.

Those supporting an expanded wilderness stated that the road between Hawk Mountain and Sage Hen Hills WSAs is not necessary for fence maintenance and that its closure would protect cultural values and the naturalness of the area. Protection of antelope and sage grouse habitat and of the native grasslands was also cited as a reason for expanding the wilderness recommendation.

Four commenters requested that the name of this WSA be changed back to Hawksie Walksie WSA.

Reasons listed for opposing wilderness designation for this WSA included concerns about existing roads and fences, and the difficulty in managing livestock, wild horses and burros.

No comments were received from other agencies with regard to the Hawk Mountain WSA; however,

the U.S. Fish and Wildlife Service (Sheldon National Antelope Refuge) was consulted to coordinate potential management impacts of wilderness designation. No letters were received on the Final EIS specific to this WSA.

Impacts on Resources

The following comparative impact table summarizes the effects on pertinent resources for all the alternatives considered including designation and nondesignation of the entire area as wilderness.

Table 4. Comparative Summary of Impacts by Alternative

Issue Topics	Recommendation (All Wilderness Alternative)
Impacts on Wilderness Values	Wilderness designation of 69,640 acres would protect and enhance existing wilderness values.
Impacts on Energy and Mineral Development	Development precluded on 68,360 acres.
Impacts on Soils	Fragile soils protected.
Impacts on Vegetation	Existing vegetation preserved throughout. 25 miles of ways would revegetate.
Impacts on Wildlife	Wildlife habitat and populations preserved. Projects on 1,665 acres would be precluded which might result in a continued loss of some animals in stress years.
Impacts on Livestock Grazing	Opportunity to increase livestock forage by 440 AUMs foregone. Minor inconvenience to livestock operators from vehicle restrictions on 25 miles of ways.
Impacts on Recreation	Use levels not expected to change. Change from motorized to primitive use.
Impacts on Local Personal Income	Annual local personal income would increase to approximately $50,300.

Partial Wilderness Alternative	No Wilderness/No Action Alternative
Wilderness designation would protect and enhance wilderness values on 42,280 acres. Acquisition of mineral estate would further preserve these values. Projected actions in the nonsuitable portion would impair wilderness values on 1,103 acres.	Projected management actions would impair wilderness values on 4,900 acres over the long term, and on 4,000 acres over the short term.
Development precluded on 41,100 acres plus an additional 1,280 acres if mineral estate is acquired. No impact to mineral develpoment in the nonsuitable portion.	No impact.
Fragile soils in the eastern portion protected. 183 acres disturbed in nonsuitable portion by projected actions.	Fragile soils disturbed on 22 acres 206 acres disturbed in other portions of the WSA.
Vegetation preserved in suitable area. 19 miles of ways would revegetate in the nonsuitable portion, projected actions would adversely affect 1,143 acres.	Vegetation composition changed on 2,585 acres. An additional 62 acres affected by construction of watering and facilities and increased grazing.
Wildlife habitat and populations preserved on 42,280 acres. Habitat improved on 920 acres in nonsuitable portion. Mineral development and vehicle use could impact antelope and raptor habitat.	Proposed wildlife projects allowed on 1,665 acres to improve forage for wildlife, but possible sage grouse population losses. Possible impacts to raptor nesting habitat due to vehicle use and mineral development.
Opportunity to increase livestock forage by 440 AUMs foregone. Two reservoirs constructed in the nonsuitable portion. Minor inconvenience to livestock operators due to restrictions on 19 mile of ways.	Grazing use level increased by 440 AUMs. Livestock redistribution realized. Four reservoirs and 9 miles of pipeline constructed.
Use levels not expected to change.	Use levels not expected to change.
Annual local personal income would increase over the current $50,400 by an unknown amount attributable to projected mineral development.	Annual local personal income would increase $5,000.

Appendix 1 - Estimated Costs of Acquisition of Non-Federal Holdings Within Areas Recommended for Designation [1]

Legal Description (Prior to any Subdivision	Total Acreage	Number of Owners	Type of Ownership by Estate (Federal, State Private, other) Surface Estate	Subsurface Estate	Presently Proposed for Acquisition (Yes, No)	Preferred Method of Acquisition (Purchase, Exchange, Other)	Estimated Cost of Acquisition[2] Land Costs	Processing Costs
Parcel No. 1, T. 40 S., R. 31 E. Section 36	640	1	Federal	State	Yes	Exchange		$1,000[3]
Parcel No. 2 T. 41., R. 32 E., Section 16	640	1	Federal	State	Yes	Exchange		$1,000[3]

[1] The estimated costs listed in this appendix in no way represent a formal appraised value of the land or mineral estate, but are rough estimates based on sales or exchanges of lands or mineral estates with similar characteristics to those included in the WSA. The estimates for purposes of establishing a range of potential costs to the government of acquiring non-Federal holdings and in no way represent an offer to purchase or exchange at the cost estimate included in this appendix. Processing costs are all miscellaneous expenses other than land costs. These include work month costs, appraisals, title work, escrow costs, etc.

[2] Where exchange is the proposed acquisition method, only administrative costs of processing the exchange are shown. Land costs are not applicable.

[3] Total District processing costs approximately $2,000 for parcels as identified since they would be acquired under one action in an exchange with the State of Oregon.

Sage Hen Hills Wilderness Study Area

1. The Study Area —8,520 acres

The Sage Hen Hills Wilderness Study Area (WSA) (OR-1-146B) is located in southwestern Harney County, Oregon, approximately 73 miles east of Lakeview, Oregon. The WSA includes 8,520 acres of BLM land (See Table 1). State Highway 140 is adjacent to the southwest corner of the WSA. The triangularly-shaped study area is bounded by a high standard gravel road on the west and by a low standard dirt road on the northeast. A fence at the northern edge of the Charles Sheldon National Wildlife Refuge in Nevada forms the southern boundary of the WSA. The adjacent areas on the north, east and west are also public lands.

The WSA is characterized by low, rolling sagebrush hills with moderate topographic relief. Elevation is approximately 6,000 feet. A small canyon cuts across the central portion of the WSA. Vegetation in the WSA is a mixture of big sagebrush/bunchgrass and low sagebrush/bunchgrass communities.

The WSA was studied under Section 202 of the Federal Land Policy and Management Act (FLPMA) and was included in the Final Oregon Wilderness Environmental Impact Statement (EIS), filed in February 1990. The Sage Hen Hills WSA was studied under Section 202 because it is considered to have wilderness character only in conjunction with the Sage Hen Hills Unit of the Sheldon National Wildlife Refuge to the south. The Sheldon Refuge unit is currently administratively endorsed for wilderness consideration by the U.S. Fish and Wildlife Service.

This endorsement resulted from initial studies after the Wilderness Act called for inventory of refuge lands, and is noted in the Renewable Natural Resources Management Plan, Final EIS, date of issue: August, 1980. No Congressional action has been implemented to date with respect to designating areas on the Sheldon Refuge as wilderness.

Two alternatives were analyzed in the EIS: an all wilderness alternative; and a no wilderness/no action alternative, which is the recommendation of this report. The all wilderness alternative which would recommend all 8,520 acres for wilderness designation, is predicated upon the designation of the adjoining Sage Hen Hill Unit (21,800 acres) of the Sheldon National Wildlife Refuge. Under the no wilderness alternative, none of the 8,520 acres of BLM land would be designated as wilderness. These lands are shown on Map 1.

2. Recommendation and Rationale

0 acres recommended for wilderness
8,520 acres recommended for nonwilderness

The recommendation is to release the entire area of the Sage Hen Hills WSA for uses other than wilderness. The environmentally preferable alternative is all wilderness, as it would result in the least change from the natural environment over the long term. However, the no wilderness alternative would be implemented in a manner which would use all practical means to avoid or minimize environmental impacts.

The benefits derived from 900 acres of burn and seed range developments for livestock and wildlife, and projected mineral development, are judged to outweigh the limited wilderness values found on the BLM portion of the Sage Hen Hills. Development of the recommendation was done in coordination with the U.S. Fish and Wildlife Service on an ongoing basis throughout the wilderness inventory and study processes.

The recommendation would allow the projected development of one open pit mine and a 900-acre burn and seed project to enhance range management objectives and provide for an increase in 249 AUMs. This would be accomplished in an area that does not have outstanding opportunities for solitude or primitive and unconfined recreation unless considered in conjunction with adjacent lands in Nevada managed by the U.S. Fish and Wildlife Service.

3. Criteria Considered in Developing the Wilderness Recommendations

Wilderness Characteristics

A. Naturalness: The WSA is in a natural condition, and is primarily affected by the forces of nature. The big and low sagebrush communities have been affected only slightly by grazing activities as is evidenced by the wide variety of native bunchgrasses and forbs, and the lack of established livestock trails.

There is one unnatural feature, a small reservoir near the northeast boundary road, within the 8,520 acres. A fenceline runs along the southern boundary. The area affected by unnatural features within the WSA is about 20 acres.

A variety of wildlife can be seen within the WSA including mule deer, pronghorn antelope, coyote, bobcat, badger, weasels, marmot, black-tailed jackrabbit, cottontail rabbit,, ground squirrel, bats, and possibly cougar. Historically, the range of the kit fox extended into the Sage Hen Hills. Western rattlesnake, fence lizard and other reptiles can also be found within the WSA.

Sage Hen Hills WSA is located on the main travel route of antelope moving between Hart Mountain Refuge and the Sheldon Refuge. As a consequence, different herds of antelope use the study area at different times of the year. The number of animals can vary from a few individuals to 100 or more in a single herd. Herd condition is good throughout the refuge and on BLM lands used by the animals. Relatively small numbers of mule deer use the area year-round. Observed condition of the deer is also good.

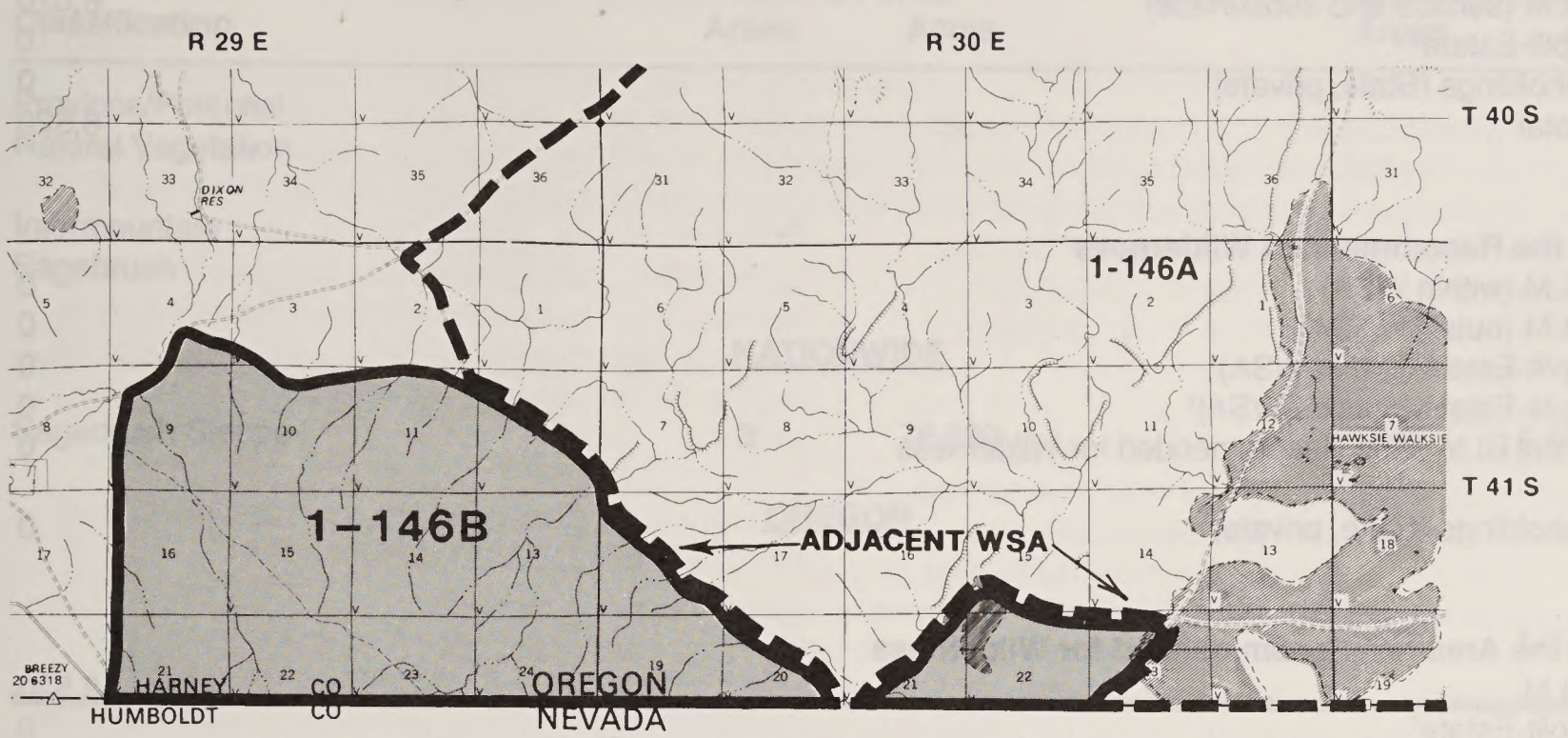
Bird species in the area include; sage grouse, red-tailed hawk, rough legged hawk, prairie falcon, American kestrel, turkey vulture, burrowing owl, raven, loggerhead shrike, mourning dove, sage sparrow and rock wren.

B. Solitude: Opportunities for solitude within the study area are not considered outstanding due to moderate topographic relief and low vegetative cover of most of the area. Solitude opportunities would be outstanding only in conjunction with the added lands on the Sheldon Refuge.

There is one small canyon and several shallow draws offering visual screening from other visitors. The remoteness of the WSA and the adjacent wildlands do contribute to a feeling of solitude.

C. Primitive and Unconfined Recreation: Outstanding opportunities for backpacking, day hiking, horseback riding, camping and wildlife observation exist only when the Sage Hen Hills WSA is considered in conjunction with the adjacent refuge lands, but such opportunities are not outstanding within the 8,520-acre WSA itself.

D. Special Features: Sagegrouse inhabit the area, and one sage grouse strutting ground has been identified within the WSA boundaries. Sage grouse



Charles Sheldon National Wildlife Refuge

RECOMMENDED FOR WILDERNESS (None)

RECOMMENDED FOR NONWILDERNESS

LAND OUTSIDE WSA RECOMMENDED FOR WILDERNESS (None)

SPLIT ESTATE (None)

STATE (None)

PRIVATE (None)

- N -

Sage Hen Hills

Proposal

MAP-1

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MILES

OR-1-146B

January, 1991

Table 1. Land Status and Acreage Summary of the Study Area

	Acres
Within Wilderness Study Area	
BLM (surface and subsurface)	8,520
Split-Estate[1]	0
Inholdings (State, private)	0
Total	8,520
Within the Recommended Wilderness	
BLM (within WSA)	0
BLM (outside WSA)	0
Split-Estate (within WSA)[1]	0
Split-Estate (outside WSA)[1]	0
Total BLM Land Recommended for Wilderness	0
Inholdings (State, private)	0
Within the Area Not Recommended for Wilderness	
BLM	8,520
Split-Estate[1]	0
Total BLM Land Not Recommended for Wilderness	8,520
Inholdings (State, private)	0

[1]For purposes of this report, split-estate lands are defined only as those lands with federal surface and non-federal subsurface (minerals).

is a Federal candidate species for listing as threatened or endangered in Oregon under the Endangered Species Act, as they have been impacted by a loss of habitat. Kit fox historically inhabited the WSA, but no sightings of this species have been reported for a number of years.

Diversity in the National Wilderness Preservation System

A. Expanding the Diversity of Natural Systems and Features as Represented by Ecosystem: Wilderness designation of the Sage Hen Hills WSA would add an ecosystem not presently represented in Oregon, and represented in the National Wilderness Preservation System by only three areas. There are 66 other BLM areas in the state under study within this ecosystem. Table 2 summarizes this information.

According to the Bailey-Kuchler system of classifying ecosystems, the study area is in the Intermountain Sagebrush Province, with potential natural vegetation of sagebrush steppe. The vegetative community listed in the Basin and Range section of the Oregon Natural Heritage Plan and occurring in the WSA is low sagebrush/Sandberg's bluegrass. Some portions of the study area support big sagebrush as well.

B. Assessing the Opportunities for Solitude or Primitive Recreation Within a Days' Driving Time (five hours) of Major Population Centers: There are three standard metropolitan statistical areas with populations over 100,000 within five hours' driving time of the Sage Hen Hills WSA: Medford, Oregon; Boise, Idaho; and Reno, Nevada. Table 3 summarizes the number and acreage of designated areas and other BLM study areas within five hours drive of major population centers.

C. Balancing the Geographic Distribution of Wilderness Areas: Sage Hen Hills WSA would contribute towards balancing the geographic distribution of areas within the National Wilderness Preservation System. There are only three designated areas within 100 miles of this WSA.

Table 2. Ecosystem Representation

Bailey-Kuchler Classification	NWPS Areas	NWPS Acres	Other BLM Studies Areas	Other BLM Studies Acres
Province/Potential Natural Vegetation				
Intermountain Sagebrush				
	NATIONWIDE			
Sagebrush Steppe	3	76,699	136	4,361,820
	OREGON			
	0	0	66	1,974,554

Table 3. Wilderness Opportunities for Residents of Major Population Centers

Population Centers	NWPS Areas	NWPS Acres	Other BLM Studies Areas	Other BLM Studies Acres
Medford, OR	31	2,440,081	21	730,038
Boise, ID	16	4,741,570	126	5,060,460
Reno, NV	45	4,967,230	175	6,904,809

Manageability

(The area must be capable of being effectively managed to preserve its wilderness character.)

The WSA would be manageable as wilderness both on its own and in association with the adjoining wilderness proposal for the Sage Hen Hills Unit of the Sheldon National Wildlife Refuge. Boundaries of the BLM portion are easily identifiable. The single existing livestock development within the study area, a small reservoir, could easily be maintained by mechanized equipment driven in on the boundary road. The reservoir is only a few dozen feet from this road. The impact on wilderness values would be minimal as the reservoir is visible only in its immediate vicinity.

Energy and Mineral Resource Values

Energy and mineral resources were evaluated by the BLM using available geologic data and a report titled "Assessment of the Geology, Energy, and Minerals Resources of the Lone Mountain Geologic Resource Area," prepared by TERRADATA, a firm under contract with BLM.

Energy resources are not postulated to exist in economic quantities in the WSA.

The entire WSA is considered to have a moderate potential for the occurrence of copper, mercury, silver and gold based on indirect evidence. There is also considered to be a moderate potential for the occurrence of diatomite in three portions of the WSA totaling 1,000 acres.

As of May, 1991, there were no mining claims within the WSA.

Recent information from the U.S. Geological Survey based on hydrocarbon "plays" in the region indicates there may be a moderate potential for hydrocarbons at depth.

Local Social and Economic Considerations

The current livestock use level of 485 AUMs generates approximately $5,820 of local personal income annually, while approximately $1,000 of local personal income is generated annually from the fewer than 100 visitor days of recreation activity. The overall total from these activities is approximately $6,820.

The recommendation would result in a probable increase in local personal income of at least $3,000, based on an increase in forage allocation for livestock of 249 AUMs. An additional increase in local personal income would be expected from mineral development. The amount of this increase would depend upon the quantity and quality of the ore extracted. There were no social issues identified in the study of this WSA.

Summary of WSA-Specific Public Comments

Public involvement has occurred throughout the wilderness review process. Certain comments received during the inventory process and early stages of the EIS preparation were used to develop significant study issues and various alternatives for the ultimate management of those lands found to have wilderness value.

During the formal public review of the Supplement to the Draft EIS, a total of 18 comments specifically addressing the Sage Hen Hills WSA were received. Of these, 17 were written comments and 1 was an oral comment received at a public hearing. All 18 supported wilderness designation.

Eight commenters noted that this WSA would complement the adjacent recommended Hawk Mountain WSA and that it should be included with it by closing the road between the two. Nine cited protection of sage grouse habitat, pronghorn antelope habitat, plant communities and other natural resources as reasons for wilderness designation for the Sage Hen Hills WSA. Other comments addressing this WSA supported the concept of wilderness in general.

No comments opposing wilderness designation for this WSA were received.

No WSA-specific comments were received from other agencies of local governments regarding designation or nondesignation of the Sage Hen Hills. However, during the study process, the evaluation of the Sage Hen Hills WSA was closely coordinated in meetings and oral communications with the U.S. Fish and Wildlife Service staff on the Sheldon National Wildlife Refuge.

There were two letters received on the Final EIS specific to this WSA.

Impacts on Resources

The following comparative impact table summarizes the effects on pertinent resources for designation and nondesignation of the entire area as wilderness.

Table 4. Comparative Summary of Impacts by Alternative

Issue Topics	Recommendation (No Wilderness/No Action Alternative)	All Wilderness
Impacts on Wilderness Values	Projected management actions would impair the area's naturalness, solitude, primitive and unconfined recreation opportunities and its sage grouse habitat on 1,063 acres.	Wilderness designation of 8,520 acres would result in protection and enhancement of existing wilderness values. The proposal is dependent on wilderness designation of the adjacent national wildlife refuge wilderness proposal.
Impacts on Energy and Mineral Development	One 160-acre open pit mine would be developed.	Development would be precluded on 8,520 acres with moderate potential for gold, silver, mercury and copper and 1,000 acres with moderate potential for diatomite.
Impacts on Vegetation	Vegetative diversity would be reduced on 900 acres by vegetative manipulation and removed from 163 acres by mineral development. Utilization would increase with a corresponding decrease in ground cover.	Vegetation would be preserved in natural condition.
Impacts on Wildlife	A 900-acre burn and seed for livestock and removal of 163 acres of vegetation for mineral development would reduce sage grouse habitat and potential kit fox habitat. Nesting and escape cover would be reduced due to additional allocation for livestock.	Habitat and populations would be maintained throughout the area.
Impacts on Livestock Grazing	Potential increase of 249 AUMs for livestock would be realized.	Burn and seed project would be precluded and opportunity to increase forage by 249 AUMs foregone.
Impacts on Recreation Use	Development of an open pit mine would reduce primitive recreation opportunities.	Recreation use level would not be affected.
Impacts on Local Personal Income	Annual local personal income would increase by approximately $3,000, plus an unknown increase due to mineral development.	Annual local personal income would remain at approximately $6,800.

Malheur River/Bluebucket Wilderness Study Area

1. The Study Area —5,560 acres

The Malheur River/Bluebucket Wilderness Study Area (WSA) (OR-2-14) is located 35 miles northeast of Burns, Oregon, and about 11 miles northwest of the community of Drewsey in Harney County. The WSA is 21 miles north of U.S. Highway 20.

The study area contains 5,560 acres, all of which is BLM land (see Table 1). It is shaped roughly like a horseshoe with an extremely irregular boundary configuration.

The boundary on the south, west and northeast is along legal subdivisions adjacent to private land. Part of the northern boundary abuts the Malheur National Forest, while the southeastern boundary is formed by a road. Also forming part of the boundary are two dead-end roads, one which penetrates the WSA from the north for 2 miles; the other extending into the area for less than 0.5 mile from the east. The road that forms the southeastern boundary line and the two dead-end roads that enter the WSA and form additional segments of the boundary line, are all low standard dirt roads.

The WSA's topography is primarily a high tableland, deeply-cut by two major drainages: the Middle Fork of the Malheur River and Bluebucket Creek. The Middle Fork of the Malheur River is a perennial stream flowing from north to south through about 2.25 miles of BLM land.

The Middle Fork of the Malheur River Canyon is rugged and steep, with a depth varying from 600 feet in the north to 800 feet in the south. The canyon's width varies from 0.5 to 1 mile. Bluebucket Creek, also a perennial stream, flows east to west, joining the Malheur River near the center of the WSA. Basalt rimrock forms the upper edges of the Bluebucket Creek Canyon walls which slope sharply to the bottom of the drainage.

West of the Malheur River Canyon, in the northern portion of the WSA, the terrain rises gradually to an elevation of 5,200 feet, the highest point in the WSA. This part of the study area is characterized by rolling hills and several small, intermittent streams which drain east into the Middle Fork of the Malheur River.

Battle Mountain, a relatively flat-topped plateau edged with rimrock, forms the southwestern corner, or "leg" of the study area. The southern end of this plateau slopes down toward the southern boundary

line where the WSA reaches its lowest elevation of 3,900 feet.

Like Battle Mountain, Moffet Table to the east of the river and south of Bluebucket Creek is a relatively flat rimrock-edged plateau which forms the southeastern leg of the study area.

The WSA contains a variety of vegetation. Some of the most common species are big sagebrush, juniper, mountain mahogany and ponderosa pine.

The WSA was studied under Section 603 of the Federal Land Policy and Management Act (FLPMA), and was included in the final Oregon Wilderness Environmental Impact Statement (EIS) filed in February 1990.

There were two alternatives analyzed in the EIS; an all wilderness alternative that would designate 5,560 acres of BLM land, and a no wilderness/no action alternative which is the recommendation in this report. These lands are shown on Map 1.

2. Recommendation and Rationale:

—0 acres recommended for wilderness,
5,560 acres recommended for nonwilderness

The recommendation for this WSA is the no wilderness/no action alternative, which would release the entire area for uses other than wilderness. The all wilderness alternative is the environmentally preferable alternative as it would result in the least change from the natural environment over the long term. The no wilderness alternative would be implemented in a manner which would use all practical means to avoid or minimize environmental impacts.

The recommendation would allow a stream habitat improvement project to be carried out, would allow for harvest of timber in a portion of the area and would avoid wilderness management difficulties associated with this area.

Selection of the no wilderness alternative does not mean that the natural environment of this area would be endangered. The current land use plan provides for an off-highway vehicle closure of 2,000 acres along the drainages of this WSA. The closure area is also off limits to timber harvest and to construction of powerlines or pipelines.

These restrictions have been carried forward into the draft Three Rivers RMP/EIS, dated October 1989. In addition, the preferred alternative of this RMP recommends designation of the core area of the Malheur River/Bluebucket Creek WSA (1,730 acres) as a part of the Wild and Scenic River system.

The proposal of no wilderness is a change from the Proposed Action of all wilderness in the draft EIS. This change is based upon a reassessment in the Final EIS of the area's wilderness characteristics and BLM's conclusion that although the area could be managed for wilderness, the manageability problems associated with its narrow and irregular configuration, the influence from surrounding private lands and from existing improvements and human-caused changes are considered to be more significant than previously identified. The irregular horseshoe shape of the WSA would restrict movement of visitors. Visitor use would be concentrated in the drainages, and the area's small size would make it difficult to find a secluded spot if several parties were in the area. The narrow "legs" in the south are plateaus which also have limited solitude opportunities in the event of several individuals or groups visiting simultaneously.

In addition, the no wilderness alternative is proposed because the potential value of the area for fisheries enhancement would be realized best under continued no wilderness designation. The recommendation would allow stream habitat improvement projects to be implemented which would allow for improved redband trout habitat along 2.25 miles of the Middle Fork of the Malheur River. Redband trout is a candidate species for Federal listing under the Endangered Species Act.

Twenty-two acres of commercial timberland, which have been partially harvested in the past, would also remain in the District's allowable cut base and be available for harvest under the no wilderness alternative.

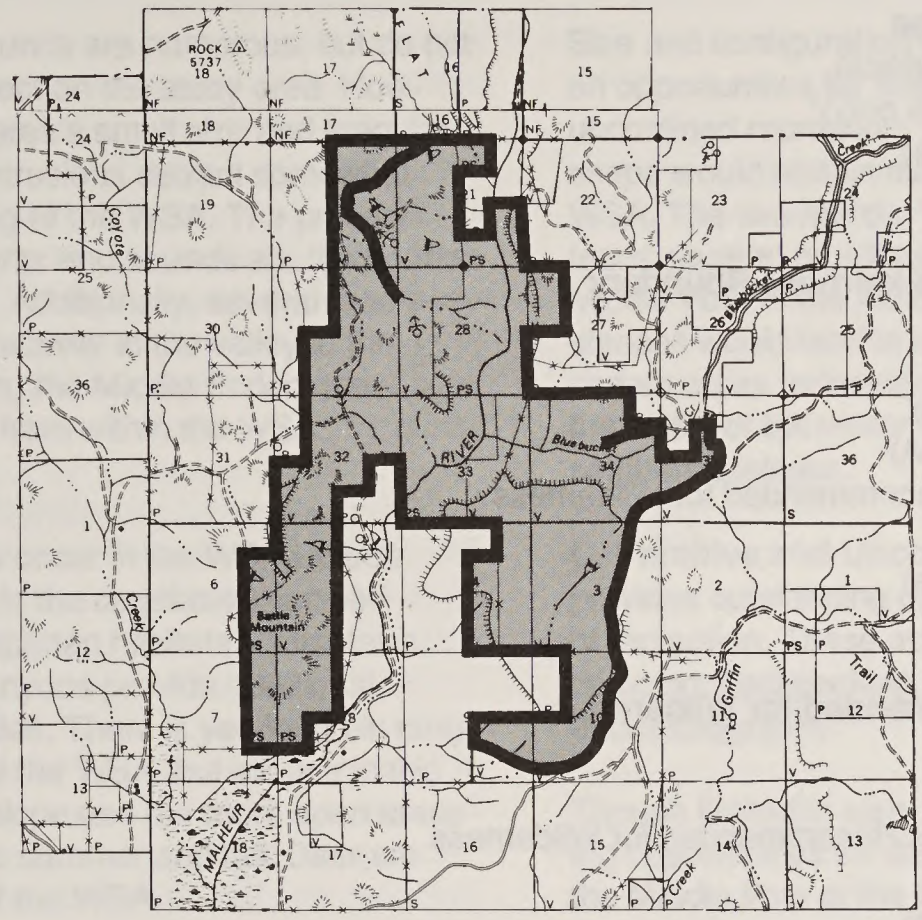
3. Criteria Considered in Developing the Wilderness Recommendation

Wilderness Characteristics

A. Naturalness: Malheur River/Bluebucket Creek WSA is in a relatively natural condition. This WSA contains a high tableland deeply cut by two major

R 33½ E

R 34 E



T 18 S

T 19 S

RECOMMENDED FOR WILDERNESS (None)

RECOMMENDED FOR NONWILDERNESS

LAND OUTSIDE WSA RECOMMENDED FOR WILDERNESS (None)

SPLIT ESTATE (None)

STATE (None)

PRIVATE (None)

-N-

Malheur River-Bluebucket Creek Proposal

MAP-1

0 1 2 3

MILES

OR-2-14

January, 1991

Table 1. Land Status and Acreage Summary of the Study Area

Within Wilderness Study Area	Acres
BLM (surface and subsurface)	5,560
Split-Estate (BLM surface only)[1]	0
Inholdings (State, Private)	0
Total	5,560
Within the Recommended Wilderness Boundary	
BLM (within WSA)	0
BLM (outside WSA)	0
Split-Estate (within WSA)	0
Split-Estate (outside WSA)	0
Total BLM Land Recommended for Wilderness	0
Inholdings (State, Private)	0
Within the Area Not Recommended for Wilderness	
BLM	5,560
Split-Estate	0
Total BLM Land Not Recommended for Wilderness	5,560
Inholdings (State, Private)	0

[1] For purposes of this report, split-estate lands are defined only as those lands with Federal surface and non-Federal subsurface (minerals).

drainages. The Middle Fork of the Malheur River Canyon is rugged and steep, with a depth of 600 feet in the north and 800 feet in the south. Basalt rimrock form the upper edges of the Bluebucket Creek Canyon walls which slope sharply to the bottom of the drainage. In the northern portion of the WSA, the terrain rises gradually and is characterized by rolling hills and several small intermittent streams. Battle Mountain, a relatively flat-topped plateau edged with rimrock, forms the southwestern corner of the study area.

None of the unnatural features within the study area are substantially noticeable and most of the features can be seen only from small portions of the WSA. The WSA contains 19 developments, which influence approximately 7 percent of the study area. Of this total there are six reservoirs, three developed springs, five ways totaling about 4 miles, five fences totaling about 1.75 miles and two dead-end roads totaling 2.5 miles.

The northwest third of the WSA contains four of the six reservoirs, the three developed springs, 3.5 miles of ways and 2 miles of a dead-end road. Even though there are many developments in this area, the topographic and vegetative screening help to limit the area of influence.

The area of past timber harvest is only visible from the immediate area, as vegetative screening limits the area of influence. This harvest took place 32 years ago and vegetation has reestablished in the vicinity.

The fences in Bluebucket Creek Canyon, and north of Battle Mountain Ridge, are well screened by topography and vegetation, while the fences on Moffet Table and on Battle Mountain plateau occur in relatively flat terrain and lack sufficient vegetative screening.

A reservoir on the east side of Moffet Table can be seen from the slightly higher land around it. A way, about 0.12 mile in length, leads to the reservoir and is relatively unnoticeable.

A reservoir on the west side of Battle Mountain plateau can be seen from a ridge to the northeast. A way, less than 0.5 mile in length, leads to this development.

Outside sights and sounds are numerous, but do not have a dominating effect on the study area. However, because of the area's small size and irregular configuration, these intrusions detract somewhat from the natural setting of the WSA. The primary sources of outside sights and sounds are the boundary roads and fences. Additionally, several reservoirs, ways, ranching activity in the valley to the south and a ditch along the Middle Fork of the Malheur can be seen from within the WSA.

Wildlife species which occur in the WSA include those normally found in the sagebrush, juniper/ponderosa pine and riparian habitats. Cliffs, talus slopes and rugged canyons provide additional habitat for many species. There is yearlong elk range in the northern third of the WSA, but elk use in this area is sporadic. Antelope use the more open areas of the WSA during the summer and fall. Deer are also found throughout the WSA.

The Middle Fork of the Malheur River and Bluebucket Creek support redband trout (a native fish having a limited range and declining habitat), rainbow trout and mountain whitefish. Redband trout is a candidate species for Federal listing under the Endangered Species Act.

One sage grouse strutting ground occurs in the Moffet Table area, in the southeastern part of the WSA. Sage grouse nest within a 2-mile radius of the strutting ground. Sage grouse is a candidate for Federal listing as threatened or endangered.

B. Solitude: Opportunities for solitude in the Malheur/Bluebucket Creek WSA are outstanding. The opportunities are enhanced by topographic and vegetative screening, but are somewhat limited by the size and configuration of the WSA.

The northern plateau has diverse topography with rugged side drainages, which provide good topographic screening. The Malheur River Canyon and Bluebucket Creek Canyon, coupled with their intermittent drainages and steep side slopes all serve to provide numerous screening opportunities. The flat southern plateaus do not provide any topographic screening.

Vegetative screening, which enhances solitude, occurs in Bluebucket Creek and portions of the Malheur River Canyon. There are scattered areas of vegetative screening on the northern plateau, but Moffet Table and Battle Mountain plateau contain very limited vegetative screening.

Size and configuration of the WSA have an impact on opportunities for solitude and primitive and unconfined recreation. The irregular horseshoe shape would restrict movement of a visitor in the WSA. The two narrow "legs" in the south are plateaus situated on either side of private land along the Middle Fork of the Malheur River. These circumstances would tend to concentrate visitor use in certain areas (primarily the drainages) and reduce the ability of the visitor to find a secluded spot on the southern plateaus.

C. Primitive and Unconfined Recreation: The area provides outstanding opportunities for primitive types of recreation. These activities include day hiking, camping, backpacking, fishing, hunting, sightseeing and photography.

Though limited in size, the WSA provides outstanding opportunities for day hiking. Major attractions are the Middle Fork of the Malheur River and Bluebucket Creek. Hikers would use a drainage on the northeast side of Moffet Table to reach Bluebucket Creek. A challenge to the hiker, this entry drainage is steep, interesting and heavily vegetated.

These features would also be attractive to the backpacker and camper. Level areas suitable for camping are found along the Malheur River and in a few places along Bluebucket Creek. Water is available throughout the study area. The small size of the WSA would limit most trips to 1-2 days.

Opportunities for fishing are fair along the Middle Fork of the Malheur River. Fishing opportunities would be limited to about 2.25 miles of river, because an angler would encounter private land on both the northern and southern WSA boundary lines. Bluebucket Creek supports fewer and smaller trout than the Malheur River, but it provides a fair opportunity for fishing.

Game species which can be hunted include mule deer, elk, antelope and upland game birds. Opportunities for deer hunting are good, but they are limited by the small size of the area. Elk hunting opportunities range from poor to fair, and are associated with Malheur National Forest lands to the north. Antelope hunting opportunities are fair. Of the several upland game species present, hunting for blue grouse and ruffed grouse provide the best opportunities.

Opportunities for sightseeing and photography are also outstanding in the WSA. Beautiful terrain can be seen both within and outside the WSA. The rugged rimrock-lined Middle Fork of the Malheur River Canyon and Bluebucket Creek Canyon, with their diverse vegetation, provide many subjects for photography.

D. Special Features: Wildlife values are the special features of this WSA. The area contains redband trout (a native fish with limited range) and a sage grouse strutting ground, with accompanying nesting sites. Redband trout and sage grouse are both candidates for Federal listing under the Endangered Species Act.

Diversity in the National Wilderness Preservation System

A. Expanding the Diversity of Natural Systems and Features as Represented by Ecosystems: Wilderness designation of this WSA would add an ecosystem (using Bailey-Kuchler classification) not presently represented in Oregon and represented in the National Wilderness Preservation System by only three areas. There are 66 other BLM areas in the state under study with this ecosystem. The information is summarized in Table 2.

According to the Bailey-Kuchler system of classifying ecosystems, the WSA is in the Intermountain Sagebrush Province and the potential natural vegetation is sagebrush-steppe.

Nine plant communities listed in the Ochoco, Blue and Wallowa Mountains section of the Oregon Natural Heritage Plan occur in this WSA. On the tablelands, the communities are big sagebrush/bunchgrass, low sagebrush/bunchgrass and rigid sagebrush scabland. On the slopes and hillsides, the communities are western juniper/bluebunch, western juniper/big sagebrush, ponderosa pine/bitterbrush/bunchgrass and a ponderosa pine/bunchgrass community, with separate areas of Idaho fescue and bluebunch wheatgrass. A mountain mahogany/bunchgrass community is scattered throughout the area, and along the streams the community is a low elevation riparian forest with cottonwood, hawthorne and alder.

B. Assessing the Opportunities for Solitude or Primitive Recreation Within a Day's Driving Time (5 hours) of Major Population Centers: The study area is within 5 hours driving time of two standard metropolitan centers. Table 3 summarizes the number and acreage of destination areas and other BLM study areas within 5 hours drive of the population centers.

C. Balancing the Geographic Distribution of Wilderness Areas: The Malheur River/Bluebucket Creek WSA would not contribute to balancing the geographic distribution of areas within the National Wilderness Preservation System. There are five designated wilderness areas within 100 miles of this WSA.

Table 2. Ecosystem Representation

Bailey-Kuchler Classification	NWPS areas	NWPS acres	Other BLM Studies areas	Other BLM Studies acres
Province/Potential Natural Vegetation				
	NATIONWIDE			
Intermountain Sagebrush Province/Sagebrush Steppe	3	76,699	136	4,364,780
	OREGON			
	0	0	66	1,977,514

Table 3. Wilderness Opportunities for Residents of Major Population Centers

Population Centers	NWPS areas areas	NWPS areas acres	Other BLM Studies areas	Other BLM Studies acres
Boise, ID	16	4,741,570	126	5,060,460
Richland/Kennewick/Pasco, WA	45	5,816,707	8	67,186

Manageability

(The area must be capable of being effectively managed to preserve its wilderness character.)

The Malheur River/Bluebucket Creek WSA could be managed as wilderness, however, significant manageability problems could be expected.

The shape of this WSA is irregular with narrow, finger-like protrusions into surrounding private lands. This is especially the case in the southern half of the study area where the WSA is no more than 0.75 mile wide. Much of the area is bounded by private lands. Although nearly half of the boundary can be identified by fences, the rest has no identifying features whatsoever. Visitors to the area may wander onto private land if the boundary is not marked, but the problem could be lessened by posting signs along the boundary lines. The greatest need for signs would be where the major drainages cross the northern, eastern and southern boundary. These areas would receive the most recreation use.

The development of the adjacent private lands could also be a manageability problem. Although no development is planned at this time, development of adjacent lands to the south of the WSA would be visible from various points in the study area and could have an adverse effect on the perception of the naturalness of the area.

The roads that enter the WSA could cause manageability problems if vehicle use increased. Presently these roads are used by ranchers and for hunting and fishing access, and the situation is not expected to substantially change in the near future.

The entire portion of the Middle Fork Malheur River and Bluebucket Creek that flows through the WSA (Malheur River - 3 miles, Bluebucket Creek - 1.4 miles) was inventoried by BLM in 1989 for possible inclusion as components of the National Wild and Scenic River System. If the river and creek were nationally designated as a Wild and Scenic River this would withdraw from mineral location and leasing of all public lands within 0.25 mile on each side of the river (approximately 1,400 acres within the WSA).

Energy and Mineral Resource Values

Energy and mineral classifications and evaluations for potential are in a mineral resources assessment report, "Castle Rock Geologic Resource Area (GRA)," Grant, Harney and Malheur Counties, Oregon, prepared by Terradata in 1982, a consulting firm under contract with BLM.

The WSA is within the Castle Rock GRA which has been classified according to a rating system that indicates both the potential for occurrence (geologic favorability) of certain minerals, as well as the quantity and quality of data on which the rating is based (confidence level).

The entire WSA has a moderate potential for the occurrence of oil and gas, based on favorable source and host rocks present beneath the thick cover of tertiary volcanics and sediments.

Sedimentary rocks beneath the younger basalt flows in the WSA are rated as having a moderate potential for the occurrence of diatomite. Significant deposits of diatomite occur in similar sedimentary rocks southeast of the WSA. During a brief field examination, no exposures of diatomite were observed in the WSA.

As of May, 1991, there were no mining claims within this WSA.

Impacts on Resources

The following comparative impact table summarizes the effects on pertinent resources for all the alternatives considered including designation and nondesignation of the entire area as wilderness.

Table 4 - Comparative Summary of the Impacts by Alternatives

Issue Topics	Recommendation (No Wilderness/No Action Alternative)	All Wilderness Alternative
Impacts on Wilderness Values	In the absence of wilderness designation, projected management actions would directly and indirectly impair wilderness values over approximately 775 acres of the WSA. The riparian fence and stream habitat improvement projects would enhance wilderness values through increased riparian vegetation and native fish populations (redband trout).	Wilderness designation of the entire 5,560 acres within the Malheur River/Bluebucket Creek WSA would result in the protection and enhancement of the existing wilderness values.
Impacts on Energy and Mineral Development	No impact to energy or mineral development.	No impact to energy or mineral development is expected.
Impacts on Vegetation	Timber harvesting methods currently in practice would change the 22 acres of available commercial forest to an early seral community with a ponderosa pine and Douglas fir mixture.	The 4 miles of ways would eventually revegetate. Riparian vegetation within the riparian fencing project would improve. The overall vegetation, which is in the mid-seral stage, of the WSA would remain unchanged.
Impacts on Wildlife	Wildlife habitat would be maintained over most of the area. Logging 22 acres would increase disturbance to some wildlife species due to the eventual conversion of the 22 acres to an early seral stage. Construction of 2 miles of riparian fencing would allow for the improvement of 3.6 miles of riparian habitat. The stream habitat improvement project would allow for improved redband trout habitat along 2.25 miles of the Middle Fork of the Malheur River.	Wildlife habitat and populations would be maintained on 5,560 acres designated wilderness. The construction of 2 miles of fence would improve riparian habitat and enhance redband trout habitat.
Impacts on Wood Products Harvest	Twenty-two acres of forested land could be harvested and would contribute 1.5 Mbf of timber per year.	Twenty-two acres of harvestable timber which would produce 1.5 Mbf/year would not be harvested.

Table 4 - Comparative Summary of the Impacts by Alternatives

Issue Topics	Recommendation (No Wilderness/No Action Alternative)	All Wilderness Alternative
Impacts on Watershed	Most of the watershed in the WSA would remain unchanged. Some bank stabilization would occur from the reestablishment of riparian vegetation in the riparian fencing project.	Some bank stabilization would occur over time in the riparian fencing project area. Water quality of perennial waterways would improve slightly. Watershed would remain unchanged over the remainder of the WSA.
Impacts on Livestock Grazing	Livestock use would remain at the current estimated level of 650 AUMs. Vehicle use on 4 miles of ways and 2.5 miles of dead-end roads would continue for livestock management and facility maintenance.	Livestock use would remain at the current estimated level of 650 AUMs. Vehicle use on 4 miles of ways would be precluded, resulting in a slight inconvenience and some additional expense to livestock operators.
Impacts on Recreation Use	The area's current recreation use level of 100 visitor days per year would not be substantially affected.	Wilderness designation would not substantially affect the overall recreation use of the WSA, and is expected to remain at the current recreation use level of 100 visitor days per year.
Impacts on Local Personal Income	Annual local personal income would remain at approximately $9,000.	Annual local personal income would decrease by approximately $400.

Local Social and Economic Considerations

Livestock use at the current level of 650 AUMs, timber harvest of an average annual volume of 1.5 Mbf and recreation use totaling 100 visitor days per year are the primary resource outputs that generate economic activity in the WSA. Local personal income generated annually from these existing use levels amounts to approximately $7,800 for livestock grazing, $405 for timber production and $1,200 related to recreation use of the WSA, for an overall total of $9,405.

Under the recommendation, annual local personal income generated from resource outputs in the WSA would remain at approximately $9,000.

There were no social issues identified with the study of this WSA.

Summary of WSA-Specific Public Comments

Public involvement has occurred throughout the wilderness review process. Certain comments received during the inventory process and early stages of the EIS preparation were used to develop significant study issues and various alternatives for the ultimate management of those lands found to have wilderness values.

During formal public review of the draft EIS and its Supplement, a total of 22 comments specifically addressing this WSA were received. Of those, 19 were written and three were oral statements received at the 24 public hearings on the EIS. In general, five comments supported wilderness designation for all or part of the WSA. Thirteen comments supported no wilderness for the WSA, while four comments addressed the relative merits of the EIS, but took no formal position on wilderness designation.

Those favoring wilderness commented on the need to protect unique natural resources found in the WSA such as redband rainbow trout and natural plant communities. Others believed that wilderness would enhance ecosystems through ecological diversity, maintain and sustain gene pools, and improve habitat for nongame wildlife.

Those opposing wilderness were concerned that resources would be wasted, such as the harvest of timber. Another concern was the potential for adverse impact on the livestock industry or individual livestock operators. Some felt there were too many intrusions, which would lead to trespass creating manageability problems. Others stated that wilderness preservation would not be in the best interest of the land, and that the overall size and boundaries were too small and too irregular to be designated as wilderness.

There were no specific comments from Federal or State agencies regarding wilderness designation of the Malheur River/Bluebucket Creek WSA. The County Court for Harney County recommends that the WSA be designated as nonsuitable for wilderness because it is believed that it would have significant impacts on the development of adjacent private and public lands. The Burns Paiute Reservation is also opposed to wilderness designation as their concerns were the same as the County Court for Harney County.

There were no letters received on the final EIS on this WSA.

Stonehouse Wilderness Study Area

1. The Study Area —21,325 acres

The Stonehouse Wilderness Study Area (WSA) (OR-2-23L) is located about 50 miles southeast of Burns, Oregon, in Harney County. The area is adjacent to the county road which runs between Oregon State Highway 78 (at Folly Farm) and Fields. The State Highway is 8 miles northeast of the WSA.

The study area contains 21,000 acres of BLM land in an elongated, roughly crescent shape. The WSA is 13 miles long, about 2 miles wide at the points of the crescent and 5.5 miles wide at the middle. The boundary is irregular; a small head-shaped peninsula protrudes from the northern end. The study area contains three parcels of private land, totaling 920 acres, located in the northern half of the WSA. The WSA contains one 320-acre and one 5-acre parcel of split estate land (see Table 1).

On all sides of the study area, the boundary is formed by a combination of private land and low standard dirt roads. In addition, a dead-end road which enters the WSA for 1.5 miles and a 160-acre parcel of private land form part of the northwestern boundary.

Topography in the Stonehouse WSA varies from very steep rock walls to wide, flat basins. The WSA is located on the northern end of the Steens Mountain fault block. The area has a high, steep, east-facing escarpment and gentle, open, west slopes. The highest elevation in the WSA is 7,200 feet at Stonehouse Peak. The lowest point is 4,100 feet at the base of the escarpment near the eastern boundary.

Steens Rim with its 2,000-foot rise dominates the study area, running northeast along the eastern side of the WSA. The rim is cut by many shallow but steep east-flowing drainages. Squaw Creek, near the center of the WSA, is the largest of the two perennial streams in the area. Stonehouse Creek, the other perennial stream, runs along the southern boundary. The other streams are spring-fed and intermittent.

The northwestern and central portions of the WSA contain gently-rolling hills and depressions, all sloping west. There are three shallow, intermittent lakes in the center of the area, partially surrounded and separated by rocky escarpments rising as high as 400 feet. The largest of these lakes is Squaw Lake.

The northern quarter of the area is noticeable different from the rest. This part contains Oriana Flats (a wide, open valley) as well as numerous other flat areas and rolling hills.

Vegetation in the study area includes scattered dense juniper stands on the east-facing slopes and sides of the drainages. Some mountain mahogany is mixed with the juniper in the higher elevations and a few stands of aspen grow in the wetter locations near springs and drainages. Big and low sagebrush, as well as a variety of grasses, are found throughout the area.

The WSA was initially studied under Section 603 of the Federal Land Policy and Management Act (FLPMA). Lands added after the wilderness inventory were studied under Section 202, also of FLPMA. These areas were included in the final Oregon Wilderness Environmental Impact Statement (EIS) filed in February 1990.

The Stonehouse WSA was modified to include a 320-acre parcel and 5-acre parcel of land acquired in an exchange with the State of Oregon after completion of the wilderness inventory phase. These lands were included in the study process under authority granted in Section 202 of FLPMA.

There were three alternatives analyzed in the EIS: an all wilderness alternative that designates 21,325 acres of BLM land; a partial wilderness alternative that designates 20,315 acres of BLM land and 2,575 acres of private land; and a no wilderness/no action alternative, which is the recommendation of this report. These lands are shown on Map 1.

2. Recommendation and Rationale:

—0 acres recommended for wilderness,
21,325 acres recommended for nonwilderness

The recommendation for this WSA is to release the entire 21,325 acres for uses other than wilderness. The environmentally preferable alternative is the all wilderness as it would result in the least change from the natural environment over the long term. However, the recommended alternative of no wilderness alternative would be implemented in a manner which would utilize all practical means to avoid or minimize environmental impacts.

The recommendation would allow continuation of the long-established vehicle use in the area which impact the area's wilderness manageability and would allow a range development project which would result in the increased availability of 205 AUMs of forage. This is considered to outweigh the benefits of preserving the wilderness values of the WSA.

The Stonehouse WSA is in a natural condition and has outstanding opportunities for solitude and primitive recreation. Although the area could be managed as wilderness, it would be difficult to manage due to the traditional vehicle-oriented use by hunters, the lack of identifiable boundaries, private inholdings and split-estate that could be developed, and the WSA's long and narrow configuration, which somewhat constrains opportunities for solitude.

In the recommendation, a proposed brush control project on 1,010 acres in an old crested wheatgrass seeding would be implemented creating an increase of 205 AUMs.

3. Criteria Considered in Developing the Wilderness Recommendations

Wilderness Characteristics

A. Naturalness: Stonehouse WSA is in a relatively natural condition. This WSA contains a wide variety of physical features including rolling hills, steep escarpments, ridgelines, canyons, and flat basins. The most spectacular feature is the Steens Rim which offers spectacular views, colors and topography in and of itself.

Most of the summer antelope use occurs in the northern third of the WSA. Mule deer, elk and antelope all use the higher elevations of the WSA during the summer. Deer summer over all of the upper elevations while elk use is light. The lower elevations of the WSA provide winter habitat for mule deer and also summer habitat for antelope ranging within and outside of the WSA.

The steep slopes on the east side of this WSA provide excellent habitat for chukar, and populations in these areas are high.

R 35 E

R 36 E

T 29 S

T 30 S

T 31 S

2-23L

2-72F

2-23M

ADJACENT WSA

RECOMMENDED FOR WILDERNESS (None)

RECOMMENDED FOR NONWILDERNESS

LAND OUTSIDE WSA RECOMMENDED FOR WILDERNESS (None)

SPLIT ESTATE

STATE (None)

PRIVATE

- N -

0 1 2 3

MILES

Stonehouse Proposal

MAP-1

OR-2-23L

January, 1991

Table 1. Land Status and Acreage Summary of the Study Area

Within Wilderness Study Area	Acres
BLM (surface and subsurface)	21,000
Split-Estate (BLM surface only) [1]	325
Inholdings (State, Private)	920
Total	22,245
Within the Recommended Wilderness Boundary	
BLM (within the WSA)	0
BLM (outside the WSA)	0
Split-Estate (within the WSA) [1]	0
Split-Estate (outside the WSA) [1]	0
Total BLM Land Recommended for Wilderness	0
Inholdings (Private)	0
Within the Area Not Recommended for Wilderness	
BLM	21,000
Split-Estate [1]	325
Total BLM Land Not Recommended for Wilderness	21,325
Inholdings (State, Private)	920

[1]For purposes of this report, split-estate lands are defined only as those lands with Federal surface and non-Federal subsurface (minerals).

Golden eagle, American kestrel, prairie falcon and great horned owl are common raptor species. Other wildlife species include coyotes, mountain cottontail, common raven, common flicker, Say's phoebe, western meadowlark and sagebrush lizard.

Waterfowl, primarily Canada geese, mallards, cinnamon teal and other dabbling ducks, use Squaw Lake as a migration rest area and for nesting. Greater sandhill cranes occasionally use Squaw Lake, although it may dry up during years of low precipitation.

There are 30 unnatural features which influence approximately 12 percent of the WSA: 12 reservoirs, 13 ways totaling about 14 miles, two ditches totaling about 2 miles, two fences totaling 1 mile and one airplane landing strip. None of the unnatural features, however, are substantially noticeable.

The airplane landing strip located above Tommies Place in the northwest corner is one of the larger developments. It is adjacent to the boundary road and is considerably less noticeable than the road. Sagebrush has been bladed off for the landing area, but the strip has not been cut into the hillside and is not substantially noticeable.

The 12 reservoirs are scattered throughout the WSA with a small concentration on the western side. Most of the reservoirs are small and screened by vegetation or topography, so they only slightly influence the area. However, two of the reservoirs are the most noticeable developments within the WSA. The northern-most reservoir in the WSA is noticeable because of the surrounding open, flat country. The other reservoir, at the south end of Burnt Flat, is visible from a large area because of the high ridge and peak to the southeast, and its location in the flat area. In addition to the 12 reservoirs on public lands, there are four reservoirs on private inholdings.

Two fences cross the western portion of the WSA. Both fences enter from the western boundary and

end at the top of the high ridge. One fence is immediately west of Stonehouse Peak. The other one enters the study area from private property and extends southeast to a high point on the ridge. These fences have only a minor visual influence due to topographic and vegetative screening.

The 13 ways (which total 14 miles) are substantially unnoticeable because they are overgrown with sagebrush. Four ways end at the east rim of the WSA and are less than 1 mile long. Two of the ways go to springs, while six of the ways lead to reservoirs and one to a private inholding.

Within the WSA are two unnatural features, a water ditch and an old seeding, that were overlooked during the WSA inventory process. A water ditch is located adjacent to the east-central boundary at T. 30 S., R. 36 E., Section 17 along the northeast quarter. An old seeding is located in the southeast corner of the WSA at T. 31 S., R. 35 E., Section 2 (southeast quarter) and Section 3 (southwest quarter).

An off-highway vehicle closure is in effect closing 6,500 acres of the WSA to motorized vehicle use (existing "ways" in this designation are still open). This area is located in the central portion of the WSA along the western boundary. The designation closes four ways (totaling approximately 4 miles) which provide access off the western boundary road.

Outside sights and sounds have a very minor effect on the study area. Sources of outside sights and sounds are the boundary roads, four reservoirs, a cabin and, from high points, the county road and ranches to the east. These features do not detract from the wilderness character of the study area.

B. Solitude: The Stonehouse WSA has outstanding opportunities for solitude; however, the configuration of the WSA may constrain movement within the study area, particularly in the northern end.

Topographic screening is provided by the Steens Mountain ridgeline which bisects the WSA. The west side of the area is screened from the east side by the ridgetop peaks. Small areas within the center of the study area are screened by broken ridges and rolling hills. Shallow drainages throughout the WSA also enhance the opportunity for solitude.

Vegetative screening enhances opportunities for solitude. Juniper is scattered throughout the study area and aspen occurs in small groves along ridge slopes in the north, creating places for solitude. The steep east slopes of the Steens ridge also have dense juniper stands, but the steepness of this area would make it extremely difficult for most visitors to use the area.

C. Primitive and Unconfined Recreation: The WSA provides outstanding opportunities for primitive forms of recreation. These activities include day hiking, backpacking, camping, hunting and sightseeing. However, the WSA currently receives little primitive recreation use not associated with hunting.

The major attraction for day hiking would be the main ridge which overlooks Juniper, Tudor and Fifteen Cent Lakes, outside the study area to the east. Short loop hikes are possible by hiking along the main east face rim and returning by other drainages, or by traversing the various west slopes. The steep east face would be a very challenging hike.

These features would also be of interest to the backpacker or camper. Stonehouse WSA provides an opportunity for 3- to 4-day trips. Adequate campsites are available and water is found throughout the WSA, but is not abundant.

Game species which can be hunted within the WSA include mule deer, antelope, elk, valley quail and chukars. Waterfowl are found on Squaw Lake during wet years, but are rarely hunted. Opportunities for hunting are excellent throughout the WSA.

The east rim of Steens Mountain provides spectacular views of the surrounding area including the Alvord Basin and Sheepshead Mountains. The rocky cliff faces, the steep east-facing escarpment and the shallow lakes within the central portion of the area provide outstanding opportunities for sightseeing within the WSA.

D. Special Features: A special wilderness feature of the Stonehouse WSA is the escarpment's outstanding scenic quality. The escarpment is highly visible and has a variety of landform, color and vegetation. The escarpment is one of a series of steep fault scarps which form the Basin and Range topography of much of southeastern Oregon. Other special features are the small, intermittent lakes, the crucial deer winter range and sage grouse, a candidate for Federal listing as threatened or endangered under the Endangered Species Act as they have been impacted by loss of habitat.

Most of the WSA is in the Riddle Mountain Wild Horse Herd Management Area (HMA), and a small area on the eastern edge is in the Heath Creek-Sheepshead HMA. Management of the HMAs would

not be significantly affected by any of the alternatives.

Diversity in the National Wilderness Preservation System

A. Expanding the Diversity of Natural Systems and Features as Represented by Ecosystems: Wilderness designation of this WSA would add a combination of ecosystems (Bailey-Kuchler classification) not presently represented in the entire National Wilderness Preservation System. There are only two other BLM areas in the state under study with these ecosystems. The information is summarized in Table 2.

According to the Bailey-Kuchler system of classifying ecosystems, the study area is in the Intermountain Sagebrush Province. The potential natural vegetation is sagebrush-steppe, alpine meadows and barren communities.

Nine ecosystems listed in the Basin and Range section of the Oregon Natural Heritage Plan occur in this study area. The tree communities are western juniper/big sagebrush/bluebunch wheatgrass, western juniper/bluebunch wheatgrass, and aspen groves. The sagebrush communities are big sagebrush/bluebunch wheatgrass, big sagebrush/Idaho fescue, low sagebrush/bluebunch wheatgrass, low sagebrush/Idaho fescue, low sagebrush/Sandberg's bluegrass, and silver sage community.

B. Assessing the Opportunities for Solitude or Primitive Recreation Within a Day's Driving Time (5 hours) of Major Population Centers: The study area is within a 5-hour drive of one standard metropolitan statistical area with a population over 100,000: Boise, Idaho. Table 3 summarizes the number and acreage of destination areas and other BLM study areas within 5 hours drive of the population center.

C. Balancing the Geographic Distribution of Wilderness Areas: The Stonehouse WSA would contribute to balancing the geographic distribution areas within the National Wilderness Preservation System. There are three designated wilderness areas within 100 miles of this WSA.

Manageability

(The area must be capable of being effectively managed to preserve its wilderness character.)

The Stonehouse WSA can be managed as wilderness to preserve values now present in the area; however, the study area does have some manageability problems and concerns. These include the long-standing use of vehicles for recreation on the area's ways, the presence of several private inholdings and parcels of split-estate land, and the substantial amount of adjacent private land, all in an elongated area with narrow configuration.

Table 2. Ecosystem Representation

Bailey-Kuchler Classification	NWPS areas	NWPS acres	Other BLM Studies areas	Other BLM Studies acres
Province/Potential Natural Vegetation				
NATIONWIDE				
Intermountain Sagebrush Province/ Sagebrush Steppe, Alpine Meadows and Barren	0	0	0	0
OREGON				
	0	0	2	79,140

Table 3. Wilderness Opportunities for Residents of Major Population Centers

Population Centers	NWPS areas		Other BLM Studies	
	areas	acres	areas	acres
Boise, ID	16	4,741,570	126	5,060,460

Hunting is a popular recreational activity throughout most of this WSA. Many of the hunters use vehicles to gain access within the upper elevations of the area (western side). Although much of this vehicle use is confined to the boundary roads, the use of ways also occurs, and it would be extremely difficult to control cross-country vehicle travel, as numerous violations have occurred in the past.

The private inholdings and split estate land within the study area could present management difficulties if the area were designated as wilderness. Development on these parcels, although not known to be planned at this time, and the potential need for access across public lands would make it hard to manage this area to preserve its wilderness qualities. These lands are not fenced or otherwise identified on the ground. Acquisition of the private parcels and mineral estate of the split estate portion would improve manageability.

Energy and Mineral Resource Values

Energy and mineral resources were evaluated by BLM using available geologic data and information provided in a 1982 report by Terradata, a consulting firm under contract with BLM. Also incorporated into the evaluation was a BLM report on the energy and mineral resources.

The WSA is within the South Harney GRA which has been classified according to a rating system that indicates both the potential for occurrence (geologic favorability) of certain minerals, as well as the quantity and quality of data on which the rating is based (confidence level).

The entire WSA is considered to have moderate potential for the occurrence of oil and gas.

The eastern border of the WSA has moderate favorability, but no direct evidence, for the occurrence of diatomite. The environment necessary for the accumulation of diatomite is found in tuffaceous lake sediments which are present in the WSA. These sediments are similar to units found in other Tertiary basins in southeastern Oregon that are known to contain diatomite.

Aside from abundant road aggregate sources, there are no known occurrences of mineral deposits within the WSA.

As of May 1991, there were no mining claims within this WSA.

Impacts on Resources

The following comparative impact table summarizes the effects on pertinent resources for all the alternatives analyzed including designation and nondesignation of the entire area as wilderness.

Local Social and Economic Considerations

Livestock use at the current level of 2,307 AUMs and recreation use totaling 200 visitor days per year are the primary resource outputs that generate economic activity in the WSA. Local personal income generated annually from these existing use levels amounts to approximately $27,684 for livestock and $2,400 related to recreation use of the WSA, for an overall total of $30,084. The Statewide EIS volume discusses the term local personal income and how income figures have been derived.

Under the recommendation, livestock grazing would increase by 205 AUMs. Overall recreation use would remain at 200 visitor days per year. Total effect on

Table 4 - Comparative Summary of the Impacts by Alternatives

Issue Topics	Recommendation (No Wilderness/No Action Alternative)
Impacts on Wilderness Values	In the absence of wilderness designation, projected activities and continued uses would impair wilderness values both directly and indirectly over approximately 4,800 acres, with further declines from other potential uses over the long term.
Impacts on Energy and Mineral Development	No impact to energy or mineral development is expected.
Impacts on Vegetation	The projected brush control project would remove the native vegetation on 1,010 acres. There would be no change to vegetation in the remainder of the WSA.
Impacts on Wildlife	Wildlife habitat and populations would be maintained on 21,325 acres. The 300 acres of deer winter range in the portion of the proposed 1,010-acre brush control project above 4,300 feet elevation and nongame species at lower elevations would be adversely affected, while antelope habitat would be improved. Wildlife populations of game and nongame species would sustain minor and temporary levels of harassment due to human activity associated with casual mining exploration. The level of disturbance to wildlife would continue during the hunting season by allowing vehicle access routes to remain open.
Impacts on Watershed	No change in condition of the water shed is expected.
Impacts on Livestock Grazing	Livestock use would be increased by 205 AUMs by implementing the proposed 1,010-acre brush control project. Vehicle and heavy equipment would be allowed on all ways and roads, except within the 6,500-acre ORV closure.
Impacts on Recreation Use	Recreation use would remain at the current level of 200 visitor days per year.
Impacts on Local Personal Income	Annual local personal income would increase by approximately $2,500.

All Wilderness Alternative	Partial Wilderness Alternative
Wilderness designation of the entire 21,325 acres within the Stonehouse WSA would result in protection and enhancement of existing wilderness values.	Wilderness designation of 22,890 acres (assuming acquisition of 2,575 acres of private property) would enhance existing wilderness values. Within the 1,010 acres not designated wilderness, projected activities would impair wilderness values over that many acres with further declines from other potential uses over the long term.
No impact to energy or mineral development is expected.	No impact to energy or mineral development is expected.
The 9 miles of ways affecting 10 surface acres would revegetate naturally. Little or no change would occur to vegetation in the rest of the area.	In the suitable area, the 9 miles of ways and 1.5 miles of road totaling 13 surface acres would revegetate. In the nonsuitable area, a brush control project would remove native vegetation on 1,010 acres. Little or no change would occur to vegetation in the rest of the area.
Wildlife habitat and populations would be maintained on 21,325 acres designated wilderness. Closure of ways would reduce vehicle use and disturbance to wildlife during the hunting seasons.	Wildlife habitat and populations would be maintained on 22,890 acres designated wilderness. Antelope habitat in the nonsuitable portion would be improved, but 300 acres of deer winter range in the portion of the area above 4,300 feet elevation and nongame species at lower elevations would be adversely affected. Disturbance to wildlife on the split estate and private lands would be precluded. Closure of 9 miles of ways and 1.5 miles of dead-end road would reduce vehicle use and disturbance to wildlife.
Little change in condition of the watershed is expected.	Little change in condition of the watershed is expected.
Livestock use would remain at 2,307 AUMs. Precluding the brush control project would result in foregone production of an additional 205 AUMs of livestock forage. Some inconvenience and increased costs for livestock management would be expected by precluding vehicle use on 9 miles of ways.	In the suitable portion, livestock grazing use would continue at the current level. Livestock use would increase by 205 AUMs in the nonsuitable portion of the WSA. Increased expense and inconvenience for livestock management would be expected by precluding vehicle use on 9 miles of ways and 1.5 miles of dead-end road.
Wilderness designation would result in a net reduction in the area's annual recreation use level from approximately 200 visitor days to less than 100 visitor days per year.	Wilderness designation would result in a net reduction in the area's overall recreation use from approximately 200 visitor days to less than 100 visitor days per year. Deer hunting opportunities would decrease in the nonsuitable area where a 1,010-acre brush control project would be developed, but antelope hunting opportunities would increase.
Annual local personal income would decrease by approximately $1,200.	Annual local personal income would decrease by approximately $1,300.

local personal income generated from resource outputs would be a net increase of $2,500 per year.

There were no social issues identified with the study of this WSA.

Summary of WSA-Specific Public Comments

Public involvement has occurred throughout the wilderness review process. Certain comments received during the inventory process and early stages of the EIS preparation were used to develop significant study issues and various alternatives for the ultimate management of those lands found to have wilderness values.

During formal public review of the draft EIS and its Supplement, a total of 30 comments specifically addressing this WSA were received. Of those, 25 were written and five were oral statements received at the 24 public hearings on the EIS. In general, 18 commenters supported wilderness designation for all or part of the WSA. Twelve commenters supported no wilderness for the WSA, while five commenters addressed the relative merits of the EIS but took no formal position on wilderness designation.

Those favoring wilderness commented that wilderness designation would preserve resources, including minerals, for future emergency use. Others felt that either closing roads or eliminating any potential road construction would help prevent potential serious soil erosion along with improving the quality of primitive hunting. Some believed that the area should be designated wilderness because it possesses outstanding scenic qualities.

Those opposing wilderness commented that the area should not be designated wilderness because natural resources, such as mineral potential, would be wasted. Others believed that the imprint of past human activity, such as a crested wheatgrass seeding, created an unnatural appearance and that wilderness designation was inappropriate in this case.

The Idaho Air National Guard commented that they do not wish to discourage the designation of wilderness areas; however, they have expressed concern over the possible conflict between low altitude overflights and the feeling of solitude sought by the wilderness area users. The military route that crosses this WSA is said to be one of several that are of vital importance to combat training and readiness. The route crosses through the center of the WSA (Flight route - IR 304).

Both Harney County and the Burns Paiute Reservation oppose wilderness designation due primarily to the low-level military training flights directly over this WSA which they believe degrade the environment so as to prevent a meaningful wilderness experience.

There was one comment letter received on the final EIS for this WSA.

Lower Stonehouse Wilderness Study Area

1. The Study Area
8,090 acres

The Lower Stonehouse Wilderness Study Area (WSA) (OR-2-23M) is located about 60 miles southeast of Burns in Harney County and 16 miles south of Oregon State Highway 78, along the county road which runs from Oregon State Highway 78, near Folly Farm, to Fields.

The study area contains 8,090 acres of BLM land in a somewhat rectangular shape, 6 miles long and 2.5 miles wide. In addition, there is one parcel of private land in the WSA totaling 160 acres (see Table 1).

Private lands form part of the study area's boundary on all sides. A parcel of split- estate land lies adjacent to the area on the southwest. Roads form most of the remainder of the boundary except along the eastern side where a portion of the boundary follows the edge of two crested wheatgrass seedings. Low standard dirt roads form the northern and western boundary lines and a high standard gravel county road occurs along 1.7 miles of the southeastern boundary.

The Lower Stonehouse WSA is located along the northern portion of the Steens Mountain fault block. The topography of this area is similar to that of other study areas along the eastern face of the mountain. The WSA includes a portion of the steep east-facing Steens escarpment as well as gentle, westerly sloping areas. The Steens ridgeline, rising an average of 2,000 feet, is the dominant topographic feature running lengthwise through the center of the area.

The highest points in the study area occur where two high points on the ridgeline reach an elevation of over 7,300 feet. One of these peaks, the highest point in the WSA at 7,352 feet, is just within the study area along the western boundary. The lowest elevation in the WSA is 4,280 feet and occurs on the southeastern boundary.

West of the ridgeline the topography is gentle with broad, rolling, open terrain. However, this part of the WSA is less than a quarter of the study area.

Many spring-fed intermittent streams flow to the southeast, from the top of the ridge down the face toward the eastern boundary. Stonehouse Creek, one of the more prominent drainages, is in the northern portion of the study area.

The vegetation in the study area includes western juniper, mountain mahogany, aspen, big and low sagebrush, and a variety of grasses and forbs. Juniper is the major tree species and occurs on the eastern slope of the ridge and along the sides of the drainages. In the higher elevations, mountain mahogany is commonly associated with juniper and occasionally occurs in small dense clusters. Scattered groves of aspen are found in the northwestern portion of the study area.

The WSA was studied under Section 603 of the Federal Land Policy and Management Act (FLPMA), and was included in the Final Oregon Wilderness Environmental Impact Statement filed in February 1990.

There were three alternatives analyzed in the final EIS: (1) An all wilderness alternative which would designate all 8,090 acres of BLM land as wilderness; (2) A partial alternative, with acquisition, which would recommend 7,375 acres of BLM land in the WSA suitable for wilderness designation. This alternative would also include an attempt to acquire the 360 acres of private land in four parcels (one inholding and three adjacent parcels) and the 250 acres of mineral estate on the split-estate portion. Total acreage added to the National Wilderness Preservation System (NWPS) would then be 7,735 acres, assuming acquisition of 360 acres of private land; and (3) A no wilderness/no action alternative, which is the recommendation of this report. These lands are shown on Map 1.

2. Recommendation and Rationale:

0 acres recommended for wilderness
8,090 acres recommended for non-wilderness

The recommendation for this WSA is to release the entire 8,090 acres for uses other than wilderness. The environmentally preferable alternative is the all wilderness alternative as it would result in the least change from the natural environment over the long term. However, the no wilderness alternative would be implemented in a manner which would utilize all practical means to avoid or minimize environmental impacts.

The no wilderness/no action alternative is the recommendation because the benefits of preserving the moderate wilderness values in an area that would be difficult to manage as wilderness are offset by the benefits derived from more intensive rangeland management. Opportunities associated with range management include 780 acres of sagebrush control and two miles of fence construction. These actions would result in improved watershed quality and an improvement in vegetative condition in portions of the area.

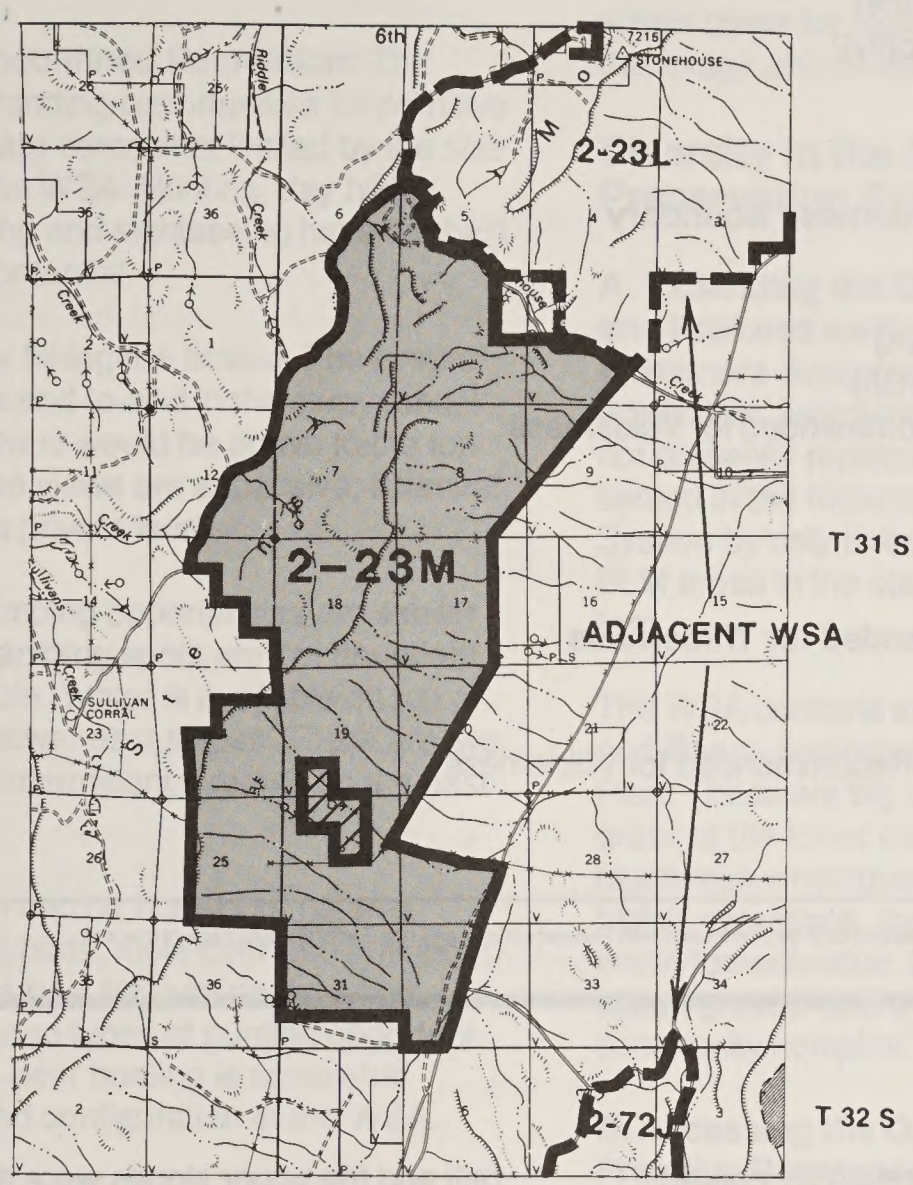
The recommendation also acknowledges potential manageability problems associated with wilderness designation due to the area's relatively small size and its narrow configuration. Limited usable acreage would be available for wilderness-related recreational activities due to the steep slopes located primarily in the eastern portion of the WSA and also the narrow width of the remaining usable WSA area. Wilderness values are present, but opportunities for solitude and primitive recreation are somewhat constrained in this small WSA because of the area's steep topography and narrow configuration.

3. Criteria Considered in Developing the Wilderness Recommendation:

Wilderness Characteristics

A. Naturalness: The eastern escarpment and the high plateau on the western side of the WSA provide an area with a high degree of naturalness. This east-facing escarpment is highly scenic and combines a variety of landforms, color and vegetation, which represents the most outstanding natural features found in this WSA. Along 1.5 miles of the WSA's eastern boundary is a county road, the major travel route from Fields to Folly Farm. This road can be seen from the upper elevations, but is approximately 2 miles from vantage points along the rim. Ranching developments can also be seen from the high elevations within the WSA, but are miles away and are part of the vista background.

This WSA contains a wide variety of wildlife species due to its diversity of habitat types. Wildlife species range from those using low elevation big sagebrush to those using aspens. Cliffs, rimrocks, and the narrow riparian zones along the streams offer additional habitat types. Mule deer, antelope, and Rocky Mountain elk use the WSA. Nongame species include coyote and numerous species of birds.



RECOMMENDED FOR WILDERNESS (None)

RECOMMENDED FOR NONWILDERNESS

LAND OUTSIDE WSA RECOMMENDED FOR WILDERNESS (None)

SPLIT ESTATE (None)

STATE (None)

PRIVATE

N

Lower Stonehouse Proposal

MAP-1

0 1 2 3

MILES

OR-2-23M
January, 1991

Table 1. Land Status and Acreage Summary of the Study Area

	Acres
Within Wilderness Study Area	
BLM (surface and subsurface)	8,090
Split-Estate (BLM surface only)[1]	0
Inholdings (private)	160
Total	8,250
Within the Recommended Wilderness Boundary	
BLM (within the WSA)	0
BLM (outside the WSA)	0
Split-Estate (within the WSA)[1]	0
Split-Estate (outside the WSA)[1]	0
Total BLM Land Recommended for Wilderness	0
Inholdings (State, private)	0
Within the Area Not Recommended for Wilderness	
BLM	8,090
Split-Estate[1]	0
Total BLM Land Not Recommended for Wilderness	8,090
Inholdings (private)	160

[1] For purposed of this report, split-estate lands are defined only as those lands with Federal surface and non-Federal subsurface (minerals).

Lower Stonehouse WSA is in a relatively natural condition. The WSA contains seven unnatural features: three reservoirs, a fence 1.25 miles long, two ways totaling 1.75 miles and an old 780-acre crested wheatgrass seeding. These unnatural features influence about 4 percent of the study area.

Two of the reservoirs, near the western boundary road, are small, difficult to detect and have no vehicular access. The third reservoir lies in the northwest corner at the head of a drainage and is substantially unnoticeable due to the topography and trees in the vicinity.

The fence runs from the eastern boundary, due west, up the lower east slopes of the Steens face and is relatively unnoticeable. The vehicle way closely parallels the southeast boundary road and is generally unnoticeable.

The seeding is in the southeast corner of the study area and is barely visible. It was seeded in 1965 as a result of a burn. The lower slopes were seeded by a drill and the upper slopes were aerially seeded. The average visitor is not likely to notice the seeding from a distance because sagebrush and other species are growing within the seeded area. Inside the seeding, the drill rows are discernible but not enough to appear obviously unnatural.

B. Solitude: Opportunities for solitude are outstanding. Both topography and vegetation provide screening, but the area would support only a limited number of users. On the whole, about two-thirds of the area has sufficient topographic screening to enhance a visitor's opportunity for solitude. The ridge that makes up most of the study area would screen visitors on one side from those on the other.

Areas with the greatest potential for solitude are in the drainages of the east-facing escarpment, as well as a few places on the top of the ridge where shallow drainages and small hills provide enough screening for a small number of visitors. Other portions of the WSA, on top of the ridge and in the southeast corner, provide insufficient topographic screening to enhance solitude.

Juniper stands on the east face and the northwest ridgetop offer vegetative screening. Juniper also grows in the shallow drainages and wet areas on the western slope. A few aspen groves grow in wet areas in the northwest corner of the study area. This screening enhances solitude in the WSA.

C. Primitive and Unconfined Recreation: The study area has outstanding opportunities for primitive recreation, but they are somewhat limited by the size and topography of the WSA. Hunting, day hiking, backpacking, camping and sightseeing have the best primitive recreation potential.

Opportunities for day hiking are limited. The longest hike on the rim, from end-to-end in the study area, would be 5 miles. Hikers would be drawn to the top of the ridge where the views are expansive; however, this hike would cross private land.

Backpacking and camping opportunities are similar to those of hiking. Camping spots are not abundant, but areas are available. Water is available on top of the ridge and in the lower east slopes. There are two springs and several intermittent streams on the east slopes.

Game species which can be hunted in the area include upland game birds, mule deer and antelope. The opportunities are best for hunting deer and chukars. Although these types of hunting opportunities are outstanding, deer hunting is somewhat limited by the size and configuration of the WSA.

Opportunities for sightseeing are best on the top of the ridge, which offers views for many miles in all directions, including other portions of Steens Mountain and the Alvord Desert to the south and the Sheepshead Mountain area to the east. The most attractive feature within the study area itself is the impressive east-facing escarpment.

D. Special Features: Several features in the WSA which add to the value of the area as wilderness include scenic quality, and botanical and wildlife values.

The east-facing escarpment is highly scenic and combines a variety of landforms, color and vegetation. It is one of a series of steep fault scarps which form the Basin and Range topography of much of southeastern Oregon.

Lupinus biddlei, a plant that is a candidate for Federal listing as threatened or endangered, occurs at the lower elevations. Sage grouse, also a candidate for Federal listing as threatened or endangered in Oregon under the Endangered Species Act as they have been impacted by a loss of habitat, are found at upper elevations.

Wildlife values are special features in this WSA because the lower slopes of the east side are crucial winter range for mule deer. Deer are dependent on the forage and cover in the area.

Diversity in the National Wilderness Preservation System (NWPS)

A. Expanding the Diversity of Natural Systems and Features as Represented by Ecosystems: Wilderness designation of this WSA would add an ecosystem (using the Bailey-Kuchler classification) not presently represented in Oregon, and represented in the National Wilderness Preservation System by only three areas. There are 136 other BLM areas in the state under study with this ecosystem.

The WSA contains six ecosystems listed in the Basin and Range section of the Oregon Natural Heritage Plan. These are big sagebrush/bluebunch wheatgrass at the lower elevations and western juniper/bluebunch wheatgrass on the steep slopes. At the higher elevations, the ecosystems are big sagebrush/Idaho fescue, low sagebrush/Idaho fescue, aspen groves, and a snowbrush and bittercherry community complex.

B. Accessing the Opportunities for Solitude or Primitive Recreation within a Day's Driving Time (5 hours) of Major Population Centers: The WSA is within 5 hours driving time of one standard metropolitan statistical area with a population over 100,000: Boise, Idaho. Table 3 summarizes the number and acreage of destination areas and other BLM study areas within 5 hours drive of the population center.

C. Balancing the Geographic Distribution of Wilderness Areas: The Lower Stonehouse WSA would contribute to balancing the geographic distribution of areas within the National Wilderness Preservation System. There are only three designated wilderness areas within 100 miles of this WSA.

Manageability

(The area must be capable of being effectively managed to preserve its wilderness character.)

The area would be manageable as wilderness under both the all wilderness and partial alternatives.

Table 2. - Ecosystem Representation

Bailey-Kuchler Classification	NWPS areas areas	NWPS areas acres	Other BLM Studies areas	Other BLM Studies acres
Province/Potential Natural Vegetation				
		NATIONWIDE		
Intermountain Sagebrush				
Sagebrush Steppe	3	76,699	136	4,362,250
		OREGON		
Sagebrush Steppe	0	0	66	1,974,984

Table 3. - Wilderness Opportunities for Residents of Major Population Centers

Population Centers	NWPS areas areas	NWPS areas acres	Other BLM Studies areas	Other BLM Studies acres
Boise	16	4,741,570	126	5,060,460

However, the area's relatively-small size and its configuration could cause manageability problems. The study area is primarily a very steep ridge with only a small amount of land on either side available for wilderness users. In addition, portions of the study area are bounded by parcels of private land on all sides. This boundary is not readily identifiable and in places, particularly along the western side, it cuts into the WSA far enough to preclude easy access along the top of the ridgeline.

Under the partial alternative, the manageability of the area would be improved with the addition of a 160-acre inholding and private and split estate lands on the boundary. This would improve access along the ridgeline. However, management problems could still occur on the east and west as a result of poorly defined boundaries with adjacent private land. These problems could be reduced with signing or fencing.

Energy and Mineral Resource Values

The geology, energy and mineral resources of the Lower Stonehouse WSA were evaluated by interpreting existing literature, reviewing mining claims and mineral leasing records, correlating rock units in the WSA with similar environments in areas known to contain mineral resources, and evaluating a geochemical sampling program conducted by BLM. Technical details of the evaluation are in a mineral resources assessment report titled "Sheepshead Mountain Geologic Resource Area (GRA)," Harney

County, Oregon, prepared by Terradata in 1982, a consulting firm under contract with BLM, and in a BLM report on the "Fields GRAs."

Based upon indirect evidence, the entire WSA is considered to have no potential for the occurrence of geothermal resources and low potential for the occurrence of oil and gas. Because of youthful vulcanism and above-normal heat flow, most of southeastern Oregon is generally considered favorable for thermal waters for direct heat use. Smaller areas within this area are favorable for high temperature geothermal resources; however, none have yet been identified within the WSA.

The southeastern portion of the WSA has moderate favorability for the occurrence of diatomite.

As of May 1991, there were no mining claims within this WSA.

Local Social and Economic Considerations

Livestock use at the current level of 530 AUMs and recreation use totaling 100 visitor days per year are the primary resource outputs that generate economic activity in the WSA. Local personal income generated annually from these existing use levels amounts to approximately $6,360 for livestock grazing and $1,200 related to recreation use of the WSA, for an overall total of $7,560.

Under the recommendation, livestock grazing would remain at 530 AUMs. Overall recreation use would remain at 100 visitor days per year. Annual local personal income generated from resource outputs in the WSA would remain at approximately $8,000.

There were no social issues identified with the study of this WSA.

Summary of WSA-Specific Public Comments

Public involvement has occurred throughout the wilderness review process. Certain comments received during the inventory process and early stages of the EIS preparation were used to develop significant study issues and various alternatives for the ultimate management of those lands found to have wilderness values.

During formal public review of the draft EIS and supplement to the draft EIS, a total of 14 comments specifically addressing this WSA were received. Of those, 10 were written and four were oral statements received at the 24 public hearings on the EIS. In general, eight commenters supported wilderness designation for all or part of the WSA. Two commenters supported no wilderness for the WSA, while four commenters addressed the relative merits of the EIS, but took no formal position on wilderness designation.

Those favoring wilderness commented that the value of wilderness of this WSA outweighs other values. Others believed that the nation needs more wilderness areas and designating this WSA would help contribute to the existing National Wilderness Preservation System. Some believed that the WSA is a unique area that possesses high scenic values and can be best preserved by creating a wilderness area. A few commenters believed that the adjacent WSA to the north (Stonehouse WSA, OR-020-023L) should be combined with this WSA.

Those opposing wilderness commented that wilderness values are low and designating this WSA as a wilderness area would adversely impact the local range industry or individual livestock operator. It is believed by some that wilderness designation will increase the cost of ranching expenses.

Both Harney County and the Burns Paiute Reservation concur with the BLM's recommendation of no wilderness for this WSA. The benefits of preserving the area as a wilderness area are offset by the benefits to the public of keeping it open to flexible resource development options. Opportunities associated with range management, improved watershed quality, mineral exploration and continued vehicle access by motor vehicles would be available.

No WSA-specific comments were received from Federal or State agencies.

There was one comment letter received on the final EIS for this WSA.

Impacts on Resources

The following comparative impact table summarizes the effects on pertinent resources for all the alternatives considered including designation and nondesignation of the entire area as wilderness.

Table 4. Comparative Summary of the Impacts by Alternative

Issue Topic	Recommendation (No Wilderness/No Action Alternative)
Impacts on Wilderness Values	In the absence of wilderness designation, projected activities would both directly and indirectly impair wilderness values over approximately 1,100 acres, with further declines from other potential uses over the long term.
Impacts on Energy and Mineral Development	No impact to energy or mineral development is expected.
Impacts on Vegetation	Vegetation would change from mid-seral to late seral over 1,900 acres and over a small riparian area due to improved grazing management. Sagebrush control over 780 acres would increase grass. *Lupinus biddlei* would not be affected.
Impacts on Wildlife	Habitat for most species would be maintained. Projected sagebrush control to improve livestock forage would decrease deer winter range quality. Antelope habitat would improve due to sagebrush control. Sage grouse would not be affected.
Impacts on Livestock Grazing	Livestock grazing use would remain at 530 AUMs. All range improvements would be constructed including 2 miles of fence and 780 acres of sagebrush control. Vehicle use would continue on all ways and roads.
Impacts on Recreation Use	Recreation use would remain the same at the current level of 100 visitor days per year.
Impacts on Local Personal Income	Annual local personal income would remain at approximately $8,000.

All Wilderness Alternative	Partial Wilderness Alternative
Wilderness designation of the entire 8,090 acres within the Lower Stonehouse WSA would result in the protection of existing wilderness values with slight enhancement of these values.	Wilderness designation of 7,735 acres (assuming acquisition of 360 acres of private land) would result in the protection of most existing wilderness values and enhancement of those values. Crucial deer winter range would be impacted on 400 acres of brush control. Further declines from other potential uses in the nonsuitable portions of the WSA could occur in the long term on 965 acres.
No impact to energy or mineral development is expected.	No impact to energy or mineral development is expected
Vegetation would be maintained over 7,310 acres. Sagebrush would continue to increase in the 780-acre crested wheatgrass seeding. *Lupinus biddlei* would be preserved.	Vegetation in areas designated wilderness would be maintained. Big sagebrush would be treated on 780 acres decreasing big sagebrush and allowing an increase in grass. *Lupinus biddlei* would not be affected.
Wildlife habitat and populations would be maintained on 8,090 acres designated wilderness. Increased big sagebrush cover on the 780-acre seeding would improve deer and nongame habitat while antelope habitat would deteriorate.	Wildlife habitat and populations would be maintained on 7,735 acres designated wilderness. Projected sagebrush control to improve livestock forage would decrease deer winter range quality. Antelope habitat would improve due to sagebrush control. Sage grouse would not be affected.
Livestock grazing use would remain at 530 AUMs. Vehicle use on 1.75 miles of ways would be precluded resulting in some inconvenience and additional expense to livestock operators.	Livestock grazing use would be 530 AUMs. Vehicle use on .25 mile of ways would be precluded resulting in some inconvenience and additional expense to livestock operators. The 780 acres of sagebrush in an old crested wheatgrass seeding would be treated to remove sagebrush. This would result in an increase in livestock forage, but livestock use would not increase.
Recreation use would remain the same at the current level of 100 visitor days per year.	Recreation use would remain the same at the current level of 100 visitor days per year.
Annual local personal income would remain at approximately $8,000.	Annual local personal income would remain at approximately $8,000.

Sheepshead Mountains Group Study Areas

1. The Study Areas —213,467 acres

Six Wilderness Study Areas (WSAs) are located in the Sheepshead Mountains Group:

Sheepshead Mountains (2-72C), 51,120 acres plus 3,270 acres of spli -estate lands. In addition, this study area contains inholdings of private land totaling 800 acres;

Wildcat Canyon (2-72D), 32,720 acres plus 2,110 acres of split-estate lands. In addition, this study area contains inholdings of private land totaling 80 acres;

Heath Lake (2-72F), 20,100 acres plus 420 acres of split-estate lands;

Table Mountain (2-72I), 38,600 acres plus 1,992 acres of split-estate lands;

West Peak (2-72J), 7,900 acres plus 635 acres of spli -estate lands; and,

Palomino Hills (3-114), 50,560 acres plus 4,040 acres of spli -estate lands. (see Table 1).

The study areas are located about 65 miles southeast of Burns and about 4 miles northwest of Burns Junction in Harney and Malheur Counties, Oregon. The nearest major highway is Oregon State Highway 78, which forms the northern boundary of the Sheepshead Mountains and Palomino Hills WSAs.

The six study areas are located within an area 25 miles long (north to south) and 27 miles wide (east to west). The outside boundary of the combined area is formed primarily by roads, including Oregon State Highway 78 on the north, and a standard gravel county road on the northwest, and small scattered parcels of private land on all sides.

All of the study areas are separated by a network of BLM low standard dirt roads. These roads are used and maintained on an as-needed basis by BLM personnel and range users. The roads are also used by private landowners and recreationists. In addition, the area contains numerous parcels of split-estate land and several parcels of private land.

An area of BLM land totaling 15,200 and 1,200 acres of split-estate land is located along the western side of the group of WSAs and is referred to in this report as the Sulphur Springs area. Although not designated as a wilderness study area, the Sulphur

Springs area is bounded on three sides by three WSAs and is included in one of the alternatives analyzed in the EIS.

The Sheepshead Mountains Group contains a variety of topographic features. The eastern and southern portions of the area include a plateau with elevation mostly above 5,000 feet. The eastern edge of this plateau is characterized by rolling hills and broad, gentle alluvial fans which slope down to the 4,000-foot level. On the southern edge of the plateau, the descent to the lower elevations is much more abrupt and is typified by steep, south-facing ridgelines and a few deeply-cut canyons.

The western edge of the Sheepshead Mountains Group is much different in character. Like the southern portion of the area, the plateau ends abruptly near the center of the area along steep ridgelines which, in this part of the area, have west-facing slopes. The remainder of the western side of the Sheepshead Mountains Group contains a series of steep east-facing ridgelines with gentle western slopes, separated by low basins or depressions. Most of the ridgelines in this part of the Sheepshead Mountains Group reach an elevation of about 5,000 feet with the depression areas occurring at the 4,000-foot-level, or slightly lower. Several of the basins are playa lakebeds which are seasonally flooded in early spring.

The dominant vegetation in all of the study areas is big sagebrush and bluebunch wheatgrass. Within portions of the individual study areas, other species are dominant. These include shadscale, greasewood, low sagebrush and silver sagebrush. Generally these species occur in small localized areas.

The WSA complex was initially studied under Sections 603 and 202 of the Federal Land Policy and Management Act (FLPMA). Lands added after the wilderness inventory were studied under Section 202, also of FLPMA. These lands were included in the final Oregon Wilderness Environmental Impact Statement (EIS) filed in February 1990.

These six WSAs were modified to include 12,467 acres of land acquired since completion of the wilderness inventory phase in an exchange with the state of Oregon since completion of the wilderness inventory phase. The state of Oregon has retained the subsurface mineral estate, resulting in split-estate (Federally managed surface, state-managed subsurface or mineral rights) lands within the WSA.

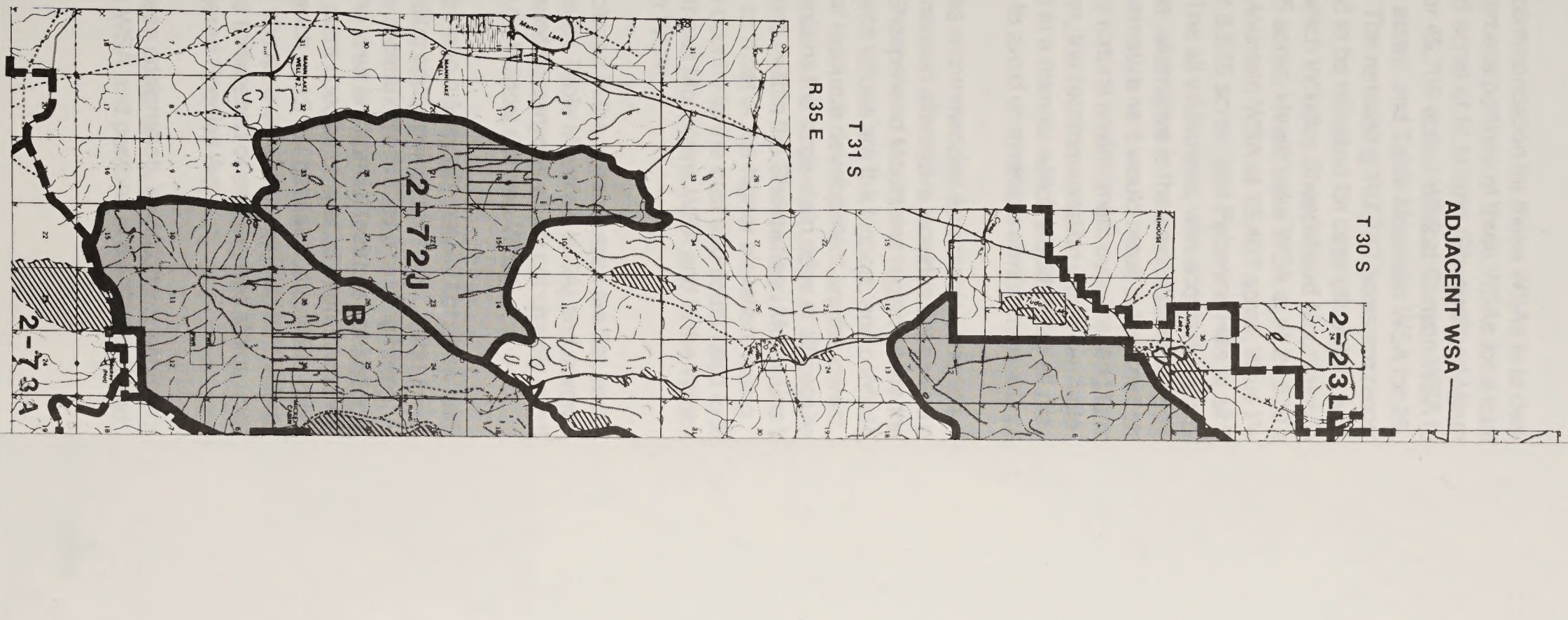
There were four alternatives analyzed in the EIS:

1. An all wilderness alternative designating all 213,467 acres of public land within all six WSAs as suitable for wilderness (each study area would be recommended suitable as separate wilderness).

2. Another all wilderness, with acquisition and road closures, alternative. The six WSAs would be combined and all 213,467 acres of BLM land in the WSAs, plus 16,400 acres of BLM land outside of the WSAs (Sulphur Springs area), would be recommended suitable for wilderness designation. In addition, an attempt would be made to acquire 1,580 acres of the private inholdings and adjacent lands, as well as the mineral estate of the 13,667 acres of split-estate parcels within the recommended suitable boundary. Assuming acquisition of the private land and the addition of BLM land in the Sulphur Springs area, the total area recommended suitable under this alternative would be 231,447. The roads that now separate the WSAs would be closed.

3. A partial alternative with additions and road road closures, which is the recommendation of this report, would designate a total of 105,720 acres of BLM land, including Sheepshead Mountains WSA for 45,705 acres, Wildcat Canyon WSA for 34,830 acres and Table Mountain WSA for 25,185 acres (these three areas would be managed as separate areas but most of the dead-end roads which enter them would be closed. An attempt would be made to acquire 435 acres of private land through purchase or exchange with willing landowners in the Sheepshead Mountains WSA. There is also 80 acres of private land located in the Wildcat Canyon WSA that would either be purchased or exchanged with willing landowners. An attempt would also be made to acquire the mineral estate of 5,340 acres of split-estate land within these WSAs. Assuming acquisition of private land, the total area recommended suitable under this alternative would be 106,235 acres (this figure varies slightly from the final EIS due to the inclusion of one 80-acre parcel of private land inholdings).

4. A no wilderness/no action alternative. These lands are shown on Map 1.



RECOMMENDED FOR WILDERNESS

RECOMMENDED FOR NONWILDERNESS

LAND OUTSIDE WSA RECOMMENDED FOR WILDERNESS (None)

SPLIT ESTATE

STATE (None)

PRIVATE

N

Sheepshead Mountains Proposal

MAP-1

0 1 2 3

MILES

OR-2-72C,72D,72F,72I,72J, & 3-114

January, 1991

Springs area is bounded on three sides by three WSAs and is included in one of the alternatives analyzed in the EIS.

The Sheepshead Mountains Group contains a variety of topographic features. The eastern and southern portions of the area include a plateau with elevation mostly above 5,000 feet. The eastern edge of this plateau is characterized by rolling hills and broad, gentle alluvial fans which slope down to the 4,000-foot level. On the southern edge of the plateau, the descent to the lower elevations is much more abrupt and is typified by steep, south-facing ridgelines and a few deeply-cut canyons.

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The dominant vegetation in all of the study areas is big sagebrush and bluebunch wheatgrass. Within portions of the individual study areas, other species are dominant. These include shadscale, greasewood, low sagebrush and silver sagebrush. Generally these species occur in small localized areas.

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These six WSAs were modified to include 12,467 acres of land acquired since completion of the wilderness inventory phase in an exchange with the state of Oregon since completion of the wilderness inventory phase. The state of Oregon has retained the subsurface mineral estate, resulting in split-estate (Federally managed surface, state-managed subsurface or mineral rights) lands within the WSA.

There were four alternatives analyzed in the EIS:

1. An all wilderness alternative designating all 213,467 acres of public land within all six WSAs as suitable for wilderness (each study area would be recommended suitable as separate wilderness).

2. Another all wilderness, with acquisition and road closures, alternative. The six WSAs would be combined and all 213,467 acres of BLM land in the WSAs, plus 16,400 acres of BLM land outside of the WSAs (Sulphur Springs area), would be recommended suitable for wilderness designation. In addition, an attempt would be made to acquire 1,580 acres of the private inholdings and adjacent lands, as well as the mineral estate of the 13,667 acres of split-estate parcels within the recommended suitable boundary. Assuming acquisition of the private land and the addition of BLM land in the Sulphur Springs area, the total area recommended suitable under this alternative would be 231,447. The roads that now separate the WSAs would be closed.

3. A partial alternative with additions and road road closures, which is the recommendation of this report, would designate a total of 105,720 acres of BLM land, including Sheepshead Mountains WSA for 45,705 acres, Wildcat Canyon WSA for 34,830 acres and Table Mountain WSA for 25,185 acres (these three areas would be managed as separate areas but most of the dead-end roads which enter them would be closed. An attempt would be made to acquire 435 acres of private land through purchase or exchange with willing landowners in the Sheepshead Mountains WSA. There is also 80 acres of private land located in the Wildcat Canyon WSA that would either be purchased or exchanged with willing landowners. An attempt would also be made to acquire the mineral estate of 5,340 acres of split-estate land within these WSAs. Assuming acquisition of private land, the total area recommended suitable under this alternative would be 106,235 acres (this figure varies slightly from the final EIS due to the inclusion of one 80-acre parcel of private land inholdings).

4. A no wilderness/no action alternative. These lands are shown on Map 1.

R 36 E
R 37 E
R 38 E
R 39 E
T 29 S
T 30 S
T 30½ S
T 31 S
T 32 S
T 33 S
R 35 E

ADJACENT WSA

2-23L

2-72F

2-72C

A

RECOMMENDED ROAD CLOSURE

3-114

2-72I

RECOMMENDED ROAD CLOSURE

2-72D

2-72J

B

2-73H

ADJACENT WSA

2-74

2-73A

OR-2-72C,72D,72F,72I,72J, & 3-114
January, 1991

RECOMMENDED FOR WILDERNESS

RECOMMENDED FOR NONWILDERNESS

LAND OUTSIDE WSA RECOMMENDED FOR WILDERNESS (None)

SPLIT ESTATE

STATE (None)

PRIVATE

0 1 2 3
MILES

Sheepshead Mountains Proposal
MAP-1

2. Recommendation and Rationale:

—105,720 acres recommended for wilderness,
107,747 acres recommended for nonwilderness

The recommendation for these WSAs is to designate as wilderness portions of three WSAs for a total of 105,720 acres of BLM land (Sheepshead Mountains WSA for 45,705 acres; Wildcat Canyon WSA for 34,830 acres; and Table Mountain WSA for 25,185 acres). The remaining 107,747 acres are recommended to be released for uses other than wilderness, which includes Sheepshead Mountains WSA at 8,685 acres; Heath Lake WSA at all 20,520 acres; Table Mountain WSA at 15,407 acres; West Peak WSA at 8,535 acres; and Palomino Hills at all 54,600 acres. The all wilderness, with acquisitions and road closures, alternative is the environmentally preferable alternative as it would result in the least change from the natural environment over the long term. However, the recommendation would be implemented in a manner which would utilize all practical means to avoid or minimize environmental impacts.

The area recommended as suitable under the recommended alternative includes the central portion of the Sheepshead Mountains region where the wilderness values are the highest, and conflicts with potential resource development are the lowest. This area contains the large main ridge of Sheepshead Mountains (within the Sheepshead Mountains WSA) as well as most of the higher elevation, rolling plateau country to the east and south (also in the Sheepshead Mountains WSA and in the Wildcat Canyon WSA).

Also included in the suitable area are flat, rock-edged plateaus (in Table Mountain WSA) and several steep, winding canyons which cut sharply into the plateau (in Wildcat Canyon WSA).

This area is in a basically natural condition and has outstanding opportunities for solitude and several primitive recreation activities including hiking. Also within the area are special features consisting of several plant species of special interest and wildlife values such as kit fox habitat and suitable range for bighorn sheep, a candidate species for Federal listing as threatened or endangered status under the Endangered Species Act.

Wilderness designation, as proposed within Wildcat Canyon WSA and portions of the Sheepshead Mountain and Table Mountain WSAs, would protect and maintain wilderness values and special features within an area which is capable of being managed to preserve these qualities. The boundary, as defined under the recommendation, would also help to eliminate possible conflicts with geothermal energy development. Manageability of these WSAs would be improved with the acquisition of private land inholdings, boundary parcels and mineral estate of the split-estate lands. The 9.75 miles of proposed road closures would provide better manageability of the wilderness boundary and would lessen the sights and sounds of human influence within the interior of the recommended wilderness area. These roads proposed for closure presently have low public use, except one dead-end.

The recommendation would add a combination of ecosystems not presently represnted in the National Wildernss Preservation System (NWPS), therefore providing a greater range of biological diversity to the NWPS than exists presently. In addition, the recommendation would contribute to balancing the geographic distribution of lands within the NWPS.

In the portion of the Sheepshead Mountains group that is proposed as nonsuitable for wilderness designation, the benefits of leaving the area open for the projected development of one 10-megawatt geothermal power plant along with needed range improvement projects would offset the benefits of preserving wilderness values.

The northern portion of the Sheepshead Mountains WSA (Area A on Map 1) is recommended nonsuitable because the sights and sounds of vehicle use on the adjacent state highway lessen the wilderness values of this part of the study area.

The northern part of the study area also contains a parcel of private land which extends into the WSA as part of the boundary. This parcel, and some other private lands which form parts of the northern boundary, could cause minor manageability problems. The wilderness values in this part of the WSA are not sufficient to warrant acquisition of these private lands, nor are they sufficient to outweigh the value of leaving this area open to other uses.

Almost all of the area recommended as nonsuitable in the southern end of the Table Mountain WSA (Area B on Map 1) has been identified as having high potential for the occurrence of geothermal resources with the remainder of the area having moderate geothermal favorability. A 10-megawatt geothermal powerplant is projected for possible development in this portion.

Part of the area near Mickey Basin of Table Mountain WSA (In Area B on Map 1) has been proposed as a site for the construction of a waterfowl habitat project. Although this part of the Table Mountain WSA has good wilderness values, other resource values are also high. By leaving the area open to other resource uses, overall land management capabilities could be fully recognized and utilized. This would provide for the needed flexibility to initiate projects not necessarily allowed in wilderness areas for the enhancement of Mickey Basin, such as a projected waterfowl habitat project.

The Palomino Hills WSA is recommended as nonsuitable for wilderness primarily because of the limited wilderness values throughout a large part of the area. Although the area is large enough to provide opportunities for solitude, much of the northern and eastern portions are influenced by the state highway which forms much of this boundary. The highway, the use it receives, the developments which occur within its right-of-way, and the general lack of topographic or vegetative screening reduce the wilderness values in this portion of the WSA.

There are somewhat more impressive wilderness values in the southern and western portions of the Palomino Hills study area, but they are insufficient to offset the value of leaving the area open to improve range management through the development of reservoirs.

Within the areas recommended nonsuitable as wilderness, the following range improvements and wildlife enhancement projects are foreseen once the lands are released from further wilderness review. A proposed sagebrush control, seeding and water developments identified for livestock, could improve antelope habitat over 7,300 acres in the Heath Lake, West Peak and Palomino Hills WSAs, by changing the sagebrush cover to a herbaceous cover and by providing additional water. These changes could allow an increase of up to 35 antelope. Range improvements are needed to improve livestock distribution and provide additional forage to relieve grazing pressure in areas not within the WSAs. An additional 4,420 AUMs of available but unallocated forage would be allocated to livestock in the nonsuitable portions providing the following range improvements occur: nine reservoirs constructed, 5 miles of pipeline constructed, one well drilled, 9 miles of fence constructed, 2,280 acres of brush control without seeding and 2,500 acres of brush control that would be seeded to adaptable forage species created.

3. Criteria Considered in Developing the Wilderness Recommendations

Wilderness Characteristics

A. Naturalness: All six WSAs exhibit a high degree of naturalness. The Sheepshead WSAs include steep-faced ridgelines, plateaus, rolling hills, broad and gentle fans, low basins and playa lakebeds. The vast areas, spectacular views and diverse topography add to the naturalness of the area.

In all six WSAs, most of the wildlife are nongame species which inhabit the big sagebrush, low sagebrush and salt desert shrub habitats covering most of the area. Coyotes, bobcats, black-tailed jackrabbits, least chipmunk, antelope ground squirrel, sage sparrow, Brewer's sparrow, horned lark and western rattlesnake are a few of the species found in the area. Raptors common to the area include golden eagle, prairie falcon and American kestrel, but numbers are low. Chukars are found near water and rimrocks during most years, but chukars are not abundant in the WSAs. Most deer use occurs when winter snow accumulates on Steens Mountain and deer move to the lower elevations in the WSAs. Most of the winter deer use occurs in the Sheepshead Mountains, Heath Lake, Table Mountain and West Peak WSAs. Summer deer use is limited by the lack of water, lack of thermal cover and poor forage.

The Mickey Basin area in the Table Mountain WSA has an abundance of springs, seeps and wet meadows and contains species not found over most of the rest of this WSA. The Townsend pocket gopher, montane meadow mouse, common snipe and killdeer are common. The playa in the basin is occasionally flooded during the spring and is used by a few migrating shorebirds and waterfowl. Long-eared owls nest in buffalo berry found near springs in the basin. The Sulphur Springs area has light use by deer and antelope during the winter. Extremely high water years may cause Tudor Lake to overflow into a playa near Sulphur Springs. Migrant waterfowl use this playa when flooding occurs.

Much of the study areas are devoid of unnatural features. Most of the developments are unobtrusive because they are small and usually screened by either topography or vegetation.

Table 1. Land Status and Acreage Summary of the Study Area

	Sheepshead Mountains (2-72C) Acres	Wildcat Canyon (2-72D) Acres	Heath Lake (2-72F) Acres	Table Mountain (2-72I) Acres	West Peak (2-72J) Acres	Palomino Hills (3-114) Acres	Total
Within Wilderness Study Areas							
BLM (surface and subsurface)	51,120	32,720	20,100	38,600	7,900	50,560	201,000
Split-estate (BLM surface only) [1]	3,270	2,110	420	1,992	635	4,040	12,467
Inholdings (State, Private)	800	80	0	0	0	0	880
Total	55,190	34,910	20,520	40,592	8,535	54,600	214,347
Within the Recommend Wilderness Boundary							
BLM (within the WSA)	43,115	32,720	0	24,545	0	0	100,380
BLM (outside the WSA)	0	0	0	0	0	0	0
Split-estate (within the WSA) [1]	2,590	2,110	0	640	0	0	5,340
Split-estate (outside the WSA) [1]	0	0	0	0	0	0	0
Total BLM Land Recommended.for Wilderness	45,705	34,830	0	25,185	0	0	105,720
Inholdings (State, Private) [1]	435	80	0	0	0	0	515
Within the Area Not Recommended for Wilderness							
BLM	8,005	0	20,100	14,055	7,900	50,560	100,620
Split-estate [1]	680	0	420	1,352	635	4,040	7,127
Total BLM Land Not Recommended for Wilderness	8,685	0	20,520	15,407	8,535	54,600	107,747
Inholdings (State, Private) [1]	365	0	0	0	0	0	365

1 Appendix 1 is a detailed description of inholdings and split-estate tracts included within the study. For purposes of this report, split estate lands are defined only as those lands with Federal surface and non-Federal subsurface (minerals).

Unnatural developments in the six WSAs include ways, fences, water troughs, spring developments, reservoirs, wells, borrow pits, a crested wheatgrass seeding, some corrals, and cabins. The majority of the developments in the Sheepshead Mountains WSA are in the northeastern part of the study area. However, there are seven small earthen reservoirs located in the southern end of the WSA. These reservoirs and some of the ways are generally minor disturbances and are screened by topography. Many of the ways in the rest of the WSA are visible from the higher terrain.

One access route (part road and part way) in the Sheepshead Mountains WSA leads to a horse trap site. There are no physical structures at the location. The site now has a minimal influence on the naturalness of the area, although the access route to the site is quite visible from the top of the Sheepshead ridgeline.

In the Wildcat Canyon WSA, the reservoirs are scattered throughout the study area, with the heaviest concentration on the western side. The reservoirs are generally small and screened by topography. The ways are also generally screened by topography, but in the eastern part of the WSA several ways are located within broad, shallow valleys and are visible from the surrounding area.

The reservoirs and ways in Heath Lake WSA are small, but frequently visible from the surrounding higher terrain. The fences are relatively unnoticeable.

In the Table Mountain WSA, ways are the primary influence on naturalness of the area. The ways frequently follow the base of the escarpments and are visible from the surrounding higher terrain, making the ways visible from a greater distance. The water developments are generally small and inconspicuous; however, some are easily viewed from

surrounding higher terrain. The water developments in the southwestern corner (in Area B on Map 1) are the most visible because they are located at the base of a broad, open slope.

In the West Peak WSA, unnatural developments have a very slight influence. They are generally minor disturbances and screened by topography.

Roads and ways have the greatest influence in Palomino Hills WSA and are generally concentrated in the northern half of the WSA. Seven borrow pits are also located here. Ten reservoirs, scattered throughout the WSA, are well screened by topography.

Developments in the Sulphur Springs area are scattered throughout the area. They are generally small, but can sometimes be viewed from the higher elevations.

Within the WSAs are four unnatural features (three water wells and an old dirt airstrip) that were overlooked during the WSA inventory process. One water well is located in the Wildcat Canyon WSA (2-72D) in T. 32 S., R. 37 E., Sec. 15 SE of the SE1/4. The other three unnatural and uninventoried features are located within the Table Mountain WSA (2-72I): a water well located in T. 33 S., R. 35 E., Sec. 1 NW NW1/4; and an old dirt airstrip and water well, both located at T. 32 S., R. 35 E., Sec. 24 N1/2 NW1/4. BLM's recommended proposal would place the three non-inventoried features outside the wilderness boundary within the Table Mountain WSA and would place the one well located in the Wildcat Canyon WSA on the boundary of BLM's recommended wilderness proposal.

The primary source of outside sights and sounds for these WSAs are the boundary roads. Oregon State Highway 78 affects the northern part of Sheepshead Mountains WSA and the entire northern side of Palomino Hills WSA. In Palomino Hills WSA, the highway's influence extends well inside the WSA, to ridges and hilltops over a mile away.

In Heath Lake and West Peak WSAs, the area west of the main ridge is influenced by the Folly Farm to Fields county road and the ranching activities at Juniper and Mann Lake Ranches. The other WSAs are not substantially influenced by outside sights and sounds.

B. Solitude: Each of the six WSAs is large enough to allow dispersed use and provide outstanding opportunities for solitude. The primary screening factor within each WSA is topography.

Excellent topographic screening exists in nearly half of the Sheepshead Mountains WSA and opportunities for solitude are outstanding. The major topographic feature is the Sheepshead ridge running north-south through the center of the study area. In the south and west, rolling hills and small drainages add to the topographic diversity and enhance opportunities for solitude. The northern and southeastern areas are relatively flat and have few opportunities for solitude.

Opportunities for solitude are outstanding in the western, central and southern parts of the Wildcat Canyon WSA because of the topographic screening provided by rimrocks and the canyons of Wildcat, Mickey and Bone Creeks. The remainder of the area consists primarily of rolling hills that provide slight topographic screening.

In Heath Lake WSA, opportunities for solitude are outstanding. The hills, buttes, and ridges in the northeastern and southeastern portions of the study area provide moderate amounts of topographic screening and enhance opportunities for solitude.

Opportunities for solitude in the Table Mountain WSA are outstanding due to the excellent topographic screening throughout the area. Table Mountain, Mickey Butte and the other steep escarpments provide topographic diversity and enhance the opportunities for solitude. The Mickey Basin area does not contain much topographic screening, but tall shrubs provide vegetative screening.

The West Peak WSA has outstanding opportunities for solitude. The main ridgeline, the peak and the small hills and buttes on the east side of the WSA provide sufficient screening to enhance opportunities for solitude.

Opportunities for solitude in the Palomino Hills WSA are also outstanding. The western two-thirds contains most of the topographic screening. The drainages of Palomino, Antelope and Johnny Creeks, as well as the relief of Saddle Butte Lava Field, enhance the opportunities for solitude.

The Sulphur Springs area does not provide outstanding opportunities for solitude. With the exception of the ridgeline (Coffin Butte) which runs along its eastern side there is little topographic diversity or screening to enhance solitude.

Military jet aircraft use the Sheepshead Mountains Group area frequently for low altitude training flights. The influence of these flights on a visitor's perception of solitude and, to some degree, naturalness, is

extreme for a short period of time (one minute or less), but it is also quite temporary. These flights do not have a long lasting, adverse effect on a visitor's opportunity to find solitude.

C. Primitive and Unconfined Recreation: The six study areas provide excellent opportunities for primitive and unconfined types of recreation. The major drainages and ridges provide a number of day hiking, backpacking and horseback riding routes that vary greatly in distance and difficulty. Campsites along these routes are abundant, but the availability and quality of water is a problem and would be a limiting factor. Interesting geological formations and panoramic desert vistas provide opportunities for sightseeing and photography.

Good opportunities for day hiking, backpacking, camping and sightseeing occur throughout the Sheepshead Mountains WSA. Primary attractions would be Steens Mountain and the Alvord Desert as viewed from the Sheepshead ridge and the challenging hiking provided by the ridge and the Heath Creek drainage.

In Wildcat Canyon WSA, the opportunities for hiking, backpacking, camping and sightseeing are good. Most day hiking and backpacking would occur in the scenic and rugged Mickey, Bone and Wildcat Canyons. Scenic views of the Alvord Desert and Steens Mountain are also available.

The best opportunity for primitive recreation in the Heath Lake WSA is sightseeing. Scenic vistas of the surrounding area include Steens Mountain and Sheepshead Mountains. These views are excellent and show the expansive and open nature of this area. Day hiking and backpacking opportunities are available but are only of moderate quality.

Table Mountain WSA has good opportunities for a variety of primitive recreational activities, including day hiking, backpacking, camping, horseback riding and sightseeing. Due to the topographic diversity in the area, there are many interesting and challenging areas to hike. The Mickey Basin area would be attractive to those wanting an easy but interesting hike. Mickey Butte (in the southwestern corner), Table Mountain, and the other escarpments around it would provide a longer, more challenging hike. Horseback riding is also good, with the existing vehicle ways providing routes through some of the steeper areas. Broad vistas of the Steens Mountain, Trout Creek and Pueblo Mountains and the Alvord Desert are available from the many high points and offer good opportunities for sightseeing and photography.

There are good opportunities in the West Peak WSA for day hiking and sightseeing. The main north/south ridgeline with its east-facing escarpment offers a variety of challenges for hikers. Spectacular views of Steens Mountain, Sheepshead Mountains and Alvord Desert offer excellent opportunities for photography and sightseeing.

Palomino Hills WSA contains opportunities for day hiking, backpacking, horseback riding and sightseeing, but they are only of moderate quality. Few unique or attractive areas exist in this WSA, but the Saddle Butte Lava Field and drainages of Palomino, Antelope and Johnny Creeks would be of interest for some users.

Opportunities for day hiking and sightseeing are available within the Sulphur Springs area but these are only of moderate quality.

D. Special Features: The west face of Sheepshead Mountains in the Sheepshead Mountains WSA is one of a series of steep fault scarps which form the Basin and Range topography of much of southeastern Oregon.

Uncommon vegetation, wildlife and outstanding scenic quality are special wilderness features in some areas.

Plant species of special interest grow in four of the six WSAs.

The entire area is habitat for kit fox, which is on the Oregon Department of Fish and Wildlife's (ODFW's) list of threatened species, but the best habitat is in the southern end of Palomino Hills WSA and Wildcat Canyon WSA.

ODFW has also identified Sheepshead Mountains WSA and Table Mountain WSA as potential habitat for bighorn sheep, which were once native to the area.

Scenic quality is a special wilderness feature of Heath Lake WSA and West Peak WSA. The areas west of the main ridgeline have outstanding scenic quality. The view in these areas is west to the top of Steens Mountain and includes Mann Lake, Juniper Lake and other lakes. This view features high quality and contrasting visual characteristics.

Diversity in the National Wilderness Preservation System

A. Expanding the Diversity of Natural Systems and Features as Represented by Ecosystems:

Wilderness designation of these WSAs would add a combination of ecosystems (Bailey-Kuchler classification) not presently represented in the entire National Wilderness Preservation System . There are 11 other BLM areas in the state under study with the Intermountain sagebrush/sagebrush-steppe and saltbush-greasewood combination of ecosystems. This information is summarized in Table 2.

According to the Bailey-Kuchler System of classifying ecosystems, all six WSAs are in the Intermountain Sagebrush Province. The potential natural vegetation of these WSAs and Sulphur Springs area is sagebrush-steppe. Distributed throughout the Wildcat Canyon, Table Mountain, West Peak and Palomino Hills WSAs and the Sulphur Springs area are small islands of saltbush-greasewood communities.

Vegetation communities in the Sheepshead Mountains Group varies from those associated with alkaline basins and playas to those on the steep, rocky slopes and tops of the Sheepshead Mountains.

The most extensive community over the whole area is big sagebrush/bluebunch wheatgrass. It occurs on the gently-rolling uplands and on the steep slopes throughout the WSAs. Species currently present in this community include Thurber's needlegrass, Sandberg's bluegrass, cheatgrass, rabbitbrush and big sagebrush. Spiny hopsage grows in the lower elevation fans of this community. Bluebunch wheatgrass occurs on the steeper slopes and on the uplandds at the highest elevations.

B. Assessing the Opportunities for Solitude or Primitive Recreation within a Day's Driving Time (5 hours) of Major Population Centers: The WSA is within 5 hours driving time of one standard metropolitan statistical area with a population over 100,000: Boise, Idaho. Table 3 summarizes the number and acreage of destination areas and other BLM study areas within a 5-hour drive of the population center.

C. Balancing the Geographic Distribution of Wilderness Areas: The Sheepshead Mountains Group WSAs would contribute to balancing the geographic distribution of areas within the National Wilderness Preservation System. There are only three designated wilderness areas within 100 miles of these WSAs.

Manageability

(The area must be capable of being effectively managed to preserve its wilderness character.)

All of the wilderness study areas in the Sheepshead Mountains area would be manageable as wilderness areas under the all wilderness alternative. Manageability problems could occur in several of the study areas due to the presence of scattered split-estate and private land.

The manageability problem concerning the private and split-estate parcels affects five of the six WSAs in the group. The Heath Lake WSA is the only one that does not contain a private or split-estate parcel or have a boundary parcel which protrudes into the study area.

Although no developments are planned for any of the parcels at this time, some of the private and split-estate parcels are within areas which have moderate to high potential for the occurrence of geothermal resources, or high potential for diatomite. If development were to occur on any of these parcels, management of the area to preserve its wilderness values could be difficult.

The roads which separate the study areas and the dead-end roads which enter four of the WSAs would not present substantial problems in managing the area as wilderness. Although vehicle use of the roads would have an adverse effect on opportunities for solitude, such use is relatively infrequent. In addition, most vehicle use is confined to the existing roads. The roads are not normally or significantly used as access points for off-highway vehicle activities.

Most of these manageability problems would be eliminated under both the all wilderness with acquisitions and road closures alternative and the recommendation. Land and mineral estate acquisition, road closures, and boundary adjustments proposed under either of these alternatives would reduce or eliminate the probable management problems under the all wilderness alternative. The areas recommended as suitable under these alternatives would be manageable as wilderness.

Energy and Mineral Resource Values

The U.S. Geological Survey (USGS) and U.S. Bureau of Mines (USBM) evaluated the areas recommended for wilderness in the Sheepshead Mountains Group and some of the adjacent land

Table 2. Ecosystem Representation

Bailey-Kuchler Classification	NWPS areas Areas	NWPS areas Acres	Other BLM Studies Areas	Other BLM Studies Acres
Province/Potential Natural Vegetation				
	NATIONWIDE			
Intermountain Sagebrush Province/ Sagebrush Steppe and Saltbush-Greasewood	0	0	16	775,783
	OREGON			
	0	0	11	469,140

Table 3. Wilderness Opportunities for Residents of Major Population Centers

Population Centers	NWPS areas areas	NWPS areas acres	Other BLM Studies areas	Other BLM Studies acres
Boise, ID	16	4,741,570	126	5,060,460

recommended nonsuitable for wilderness. Their 1988 report is titled "Mineral Resources of the Sheepshead Mountains, Wildcat Canyon, and Table Mountain Wilderness Study Areas, Malheur and Harney Counties, Oregon" and is published as USGS Bulletin 1739. The other three WSAs in the Sheepshead Mountains Group (Heath Lake, West Peak, and Palomino Hills WSAs) do not contain any areas recommended suitable for wilderness.

The USGS/USBM study found low resource potential for gold and silver in the eastern half of Sheepshead Mountain WSA, the northwestern corner of Wildcat Canyon WSA, an area of approximately 2 square miles in the south-central part of Wildcat Canyon WSA, and an area of approximately one-square-mile in the south-central part of Table Mountain WSA.

They found high resource potential for diatomite in the eastern part of Wildcat Canyon WSA and low potential for diatomite in the south-central part of Wildcat Canyon WSA. Geothermal potential for direct heat utilization was rated moderate along the west side of Sheepshead Mountain WSA, the west side of Table Mountain WSA, and the south side of Table Mountain and Wildcat Canyon WSAs. The entire area was found to have low potential for oil and gas.

The EIS reported moderate potential for gold, silver, copper and mercury in parts of Sheepshead Mountain, Wildcat Canyon, Heath Lake, Table Mountain and West Peak WSAs. It noted moderate potential for diatomite in all six WSAs and moderate potential for zeolites in parts of the Sheepshead Mountains

and Palomino Hills WSAs. The geothermal potential was rated high in the southern portions of Table Mountain and West Peak WSAs, moderate in the remainder of West Peak WSA and parts of Table Mountain and Wildcat Canyon WSAs, and low in the other four WSAs. A geothermal development scenario was presented in the EIS. All of the six WSAs were considered to have moderate potential for oil and gas.

The USGS/USBM study included geologic mapping, geochemical studies, and a gravity survey. The study found that anomalous metal concentrations were too low to define mineralization at shallow depth and noted that the mineralized formation exposed in the Steens-Pueblo mining district to the west is here buried beneath several thousand feet of barren lava flows. Microscopic analysis of diatomite in most of the six WSAs revealed too many impurities to be acceptable for industrial or commercial use. No economic occurrences of zeolites were found. The USGS/USBM study did not rate geothermal potential as high in any part of the area recommended for wilderness because no areas of hot springs, alteration, silification or sinter were found, the area is in uplands, and no evidence of hydrologic connection to Mickey Hot Springs, located 7 miles to the southwest, was found. The USGS/USBM study did not include the southern part of Table Mountain WSA which is within the Alvord Desert Known Geothermal Resource Area (KGRA) and is in lowlands adjacent to Mickey Hot Springs. Oil and gas potential was rated low by USGS/USBM because source or reservoir rocks are not indicated in surface exposures and are unlikely to be present at depth.

The Sheepshead Mountains Group contains high potential for diatomite in one part of the area, low potential for other minerals, moderate potential for geothermal development for direct heat utilization in the area recommended for wilderness, high potential for geothermal development in the southern part of Table Mountain WSA, and low potential for oil and gas resources.

As of May 1991, there were no mining claims in any of these WSAs.

Local Social and Economic Considerations

Livestock use at the current level of 8,613 AUMs and recreation use totaling 300 visitor days per year are the primary resource outputs that generate economic activity in the WSA. Local personal income generated annually from these existing use levels amounts to approximately $103,356 for livestock grazing and $3,600 related to recreation use of the WSA, for an overall total of $106,956.

Under this recommendation, livestock grazing use would increase by 7,229 AUMs and recreation use would decrease by 100 visitor days per year. Annual local personal income generated from resource outputs in the WSA would increase by approximately $86,000.

There were no social issues identified with the study of these WSAs.

Summary of WSA-specific Public Comments

Public involvement has occurred throughout the wilderness review process. Certain comments received during the inventory process and early stages of the EIS preparation were used to develop significant study issues and various alternatives for the ultimate management of those lands found to have wilderness values.

During formal public review of the draft EIS and its Supplement, a total of 41 comments specifically addressing these six WSAs were received. Of those, 36 were written and five were oral statements received at the 24 public hearings on the EIS. In general, 23 commenters supported wilderness designation for all or part of the WSAs. Ten commenters supported no wilderness for the WSAs, while eight commenters addressed the relative merits of the EIS, but took no formal position on wilderness designation.

Those favoring wilderness commented that wilderness designation of these WSAs would protect ecosystems, enhance ecological diversity, maintain a gene pool and help protect and promote nongame wildlife along with their habitat. Others felt that the WSAs meet wilderness criteria and should be included in the National Wilderness Preservation System. Some believed that the nation as a whole needed more wilderness and that by designating these WSAs as wilderness we would enhance and diversify the existing wilderness system. A few individuals who responded believed that wilderness would help protect against livestock overgrazing. Several responders supported the "Sage wilderness" proposal which recommended study of approximately 5 million acres.

Those opposing wilderness designation were concerned that wilderness designation would adversely impact the range industry and/or individual livestock operators. Others believed that wilderness

values were too low for the area to be considered a wilderness area. Some commented that there were too many existing human intrusions to justify classification as a wilderness area. Some opposed wilderness designation, claiming the area is wild and will remain so regardless of restrictive designation; that low altitude training flights said to number 2,400 per year are incompatible with wilderness; and that wilderness is for the elite, and locks out the old, young and handicapped.

The Idaho Air National Guard, not wanting to discourage the designation of wilderness areas, did however express concern over the possible conflict between low altitude overflights and the feeling of solitude sought by the wilderness area users. The military route that crosses this WSA is said to be one of several that are of vital importance to combat training and readiness. The route is said to cross Table Mountain (2-72I) WSA (flight route - VR 1301); Wildcat Canyon (2-72D) WSA (flight route - VR 1301); and, Sheepshead Mountains (2-72C) WSA (flight route - VR 316/319). These routes are all under 2,000 feet as measured from above the ground level (AGL).

The Oregon Department of Geology and Mineral Industries (DOGAMI) commented on the Sheepshead Mountains WSA (2-72C) and the Table Mountain WSA (2-72I). They contend that these units have not been investigated in detail and that potential for mineral resources therefore cannot be confidently evaluated. However, each of the units contains extensive areas of fresh water lake sediments of the type which, elsewhere in southeastern Oregon, are known to include no metallic mineral resources such as bentonite and diatomite. Since receipt in 1987 of DOGAMI's letter of concern, the U.S. Geological survey published the "Mineral Resources of the Sheepshead Mountains, Wildcat Canyon and Table Mountain WSAs, Malheur and Harney Counties, Oregon" in 1988. This publication is included in the reporting package of these WSAs and is summarized in this report.

ODFW had these comments specifically addressing Wildcat Canyon (2-72D): This WSA is a key segment in a good antelope hunting area. Hunter access would be restricted with wilderness designation, limiting access to not only this area but to Sheepshead Mountains (2-72D) WSA and Table Mountain (2-72I) WSA. Their recommendation is to reduce the overall acreage of the three proposed WSAs to be designated as wilderness by 32,720 acres.

Both Harney County and the Burns Paiute Reservation opposed any wilderness designation of the Sheepshead Mountains Group WSAs for the following reasons:.

—serious conflicts with oil, gas, geothermal, mineral and range development.

—major problems with split-estate mineral and energy resources with the State of Oregon.

—all are within known military low-flying training areas of the U.S. Air Force and the Idaho National Guard. Anyone who has had one of these planes fly over would have a hard time qualifying it as a wilderness experience.

—All six of these areas would have significant impacts on development of adjacent private and public lands.

—Manageability, boundary marking, small size and odd shape are some of the major problems of these areas.

—These areas have no public or special features or ecologically significant resources that are not represented in areas that the County and Reservation are recommending as suitable for wilderness.

—The highest and best use of these areas would be to continue them in the present multiple-use management.

There were three comment letters received on the Final EIS for these WSAs.

Impacts on Resources

The following comparative table summarizes the effects on pertinent resources for all the alternatives considered including designation and nondesignation of the entire area as wilderness.

Table 4 - Comparative Summary of the Impacts by Alternative

Issue Topics	Recommendation (Partial Wilderness with Acquisitions and Road Closures Alternative)	All Wilderness Alternative
Impacts on Wilderness Values	Wilderness designation of the 105,720 acres would result in protection and enhancement of the existing wilderness values in the area. The 107,747 acres recommended nonsuitable would be subject to projected activities that would impair wilderness values over approximately 107,000 acres, with further declines from other potential use over the long term.	Wilderness designation of the entire 213,467 acres within the six WSAs would result in the protection and enhancement of the existing wilderness values.
Impacts on Energy and Mineral Development	A 10-megawatt geothermal powerplant would be developed in the nonsuitable portion of Table Mountain WSA as projected. No impact to mineral development is expected.	Wilderness designation would result in foregone energy production from one projected 10-megawatt geothermal powerplant within the Table Mountain WSA. No impact to mineral development is expected.
Impacts on Vegetation	The 63 miles of ways and 9.75 miles of dead-end roads in the area recommended suitable would naturally revegetate. The projected developments in the nonsuitable portion would directly disturb vegetation along 5 miles of pipeline and 9 miles of fence. Vegetative composition would change on 5,800 acres and be removed from where the nine reservoirs, one well and the 10-megawatt powerplant would be located.	The 121 miles of closed ways totaling approximately 120 acres would naturally revegetate. Overall vegetation would remain unchanged.
Impacts on Wildlife	Wildlife habitat and populations would be maintained on 105,720 acres designated wilderness. Bighorn sheep would be reintroduced. In the area recommended nonsuitable, antelope habitat would be improved over 7,300 acres. Aquatic habitat would be created on 20 acres. Nongame habitat (including kit fox) would be degraded on 4,780 acres.	Wildlife habitat and populations would be maintained on 213,467 acres designated wilderness. Bighorn sheep would be reintroduced. Precluded seeding, guzzlers and wetland projects would result in foregone improvement of antelope, bighorn sheep, aquatic birds and nongame species' habitat on 1,020 acres.

All Wilderness with Acquisitions and Road Closures Alternative	No Wilderness/No Action Alternative
Wilderness designation of the 231,447 acres would result in the protection and enhancement of existing wilderness values.	In the absence of wilderness designation, projected management actions would directly impair wilderness values over approximately 20,600 acres of all six WSAs, and would indirectly influence all 213,467 acres within the area with further declines from other potential uses over the long term.
Wilderness designation would result in foregone energy production from one projected 10-megawatt geothermal powerplant within the Table Mountain WSA. No impact to mineral development is expected.	One 10-megawatt geothermal powerplant would be constructed as projected. No impact to mineral development is expected.
Overall vegetation would remain unchanged. The 125 miles of ways, 26 miles of dead-end roads, and 70 miles of boundary roads totaling approximately 320 acres would naturally revegetate.	None of the roads or ways would revegetate. Vegetation manipulation projects would change the vegetation composition on 20,500 acres. Vegetation would be removed from 40 acres.
Wildlife habitat and populations would be maintained on 231,447 acres designated wilderness. Bighorn sheep would be reintroduced. Precluded seeding, guzzlers and wetland projects would result in foregone improvement of antelope, bighorn sheep, aquatic birds and nongame species' habitat on 1,020 acres.	Bighorn sheep would be reintroduced. Antelope habitat would be improved on 24,000 acres. Aquatic habitat would be created on over 20 acres. Nongame species' habitat (including kit fox) would be degraded on 19,500 acres.

Table 4 - Comparative Summary of the Impacts by Alternative (continued)

Issue Topics	Recommendation (Partial Wilderness with Acquisitions and Road Closures Alternative)	All Wilderness Alternative
Impacts on Horse Trap Access	The 10 miles of vehicle routes would continue to be used as access to the Heath Creek horse trap.	Closure of the 4 miles of way would make the horse trap inaccessible to motorized vehicles, thus increasing the time, manpower and cost of gathering excess wild horses.
Impacts on Livestock Grazing	Livestock grazing use would increase from 8,613 to 15,842 AUMs (addition of 7,299 AUMs). There would be some inconvenience and some additional expense to livestock operators due to closing of the ways and roads.	Livestock grazing would remain at the current level of 8,613 AUMs of total use. There would be an inconvenience and additional expense to livestock operators due to closing of 121 miles of ways.
Impacts on Recreation Use	Wilderness designation would result in a reduction in the areas' overall recreation use, from the current level of 300 visitor days per year to 200 visitor days per year.	Wilderness designation would result in a net reduction in the areas' current recreation use level of 300 visitor days per year to 200 visitor days per year.
Impacts on Local Personal Income	Annual local personal income would increase by approximately $86,000.	Annual local personal income would decrease by approximately $1,000.

All Wilderness with Acquisitions and Road Closures Alternative	No Wilderness/No Action Alternative
Closure of the entire 10 miles of access route would make the horse trap inaccessible to motorized vehicles, thus increasing the time, manpower and cost of gathering excess wild horses.	The 10 miles of vehicle routes would continue to be used as access to the Heath Creek horse trap.
Livestock grazing would remain at the current level of 9,447 AUMs of total use in the WSA and the Sulphur Springs area. There would be a major inconvenience and considerable expense to livestock operators due to closing the boundary roads.	Livestock grazing use would increase to 17,492 AUMs, including 4,459 AUMs from projected range improvements and 4,420 AUMs of available but unallocated forage. Vehicle use for livestock management and maintenance would continue on all roads and ways.
Wilderness designation would result in a reduction in the areas' overall recreation use, from the level of 300 visitor days per year to 100 visitor days per year.	The areas' overall recreation use level of 300 days per year would not be substantially affected under this alternative.
Annual local personal income would decrease by approximately $2,000.	Annual local personal income would increase by approximately $107,000.

Appendix 1 - Estimated Costs of Acquisition of Non-Federal Holdings Within Areas Recommended for Designation [1]

Legal Description (Prior to any Subdivision)	Total Acreage	Number of Owners	Type of Ownership by Estate (Private)		Presently Proposed for	Preferred Method of Acquisition Acquisition Other)	Estimated Cost of Acquisition [2] (Purchase, Exchange,	
			Surface Estate	Subsurface Estate	(Yes, No)		Land Costs	Processing Costs
Parcel No. 1, T. 30 S., R. 37 E., Section 23, Eastern 1/2, Section 24 SE1/4 of the SE1/4, Section 26 NE1/4 of the NW1/4. Private	395	1	Vale (private)	Private	No	Purchase	16,000	3,000
Parcel No. 2, T. 30 S., R. 37 E., Section 15 SE1/4 of the SW1/4, Private	40	1	Vale (private)	Private	No	Purchase	2,000	3,000
Parcel No. 3, T. 31 S., R. 37 E., Section 25 SE1/4 of the SE1/4, Section 36 NW1/4 of the NW1/4. Private	80	1	Vale (private)	Private	No	Purchase	4,000	3,000
Parcel No. 4, (split estate) T. 29 S., R. 36 E., Section 36, south 1/2	435		Burns Federal	non-Federal	No	Purchase	22,000	3,000
Parcel No. 5, (split estate) T. 30 S., R. 37 E., Section 16	640		Vale (Federal)	non-Federal State	No	Exchange		3
Parcel No. 6, (split estate) T. 30 S., R. 36 E., Section 36	620		Burns Federal	non-Federal	No	Purchase	31,000	3,000
Parcel No. 7, (split estate) T. 30 1/2 S., R. 37 E. Section 16 ? 31 S.	640		Vale (Federal)	non-Federal State	No	Exchange		3

Appendix 1 - Estimated Costs of Acquisition of Non-Federal Holdings Within Areas Recommended for Designation [1]

Legal Description (Prior to any Subdivision)	Total Acreage	Number of Owners	Type of Ownership by Estate (Private)		Presently Proposed for	Preferred Method of Acquisition Acquisition Other)	Estimated Cost of Acquisition [2] (Purchase, Exchange,	
			Surface Estate	Subsurface Estate	(Yes, No)		Land Costs	Processing Costs
Parcel No. 8, (split estate) T. 31 S., R. 37 E., Section 36	625	1	Vale Federal	non-Federal (Private)	No	Exchange		3
Parcel No. 9, (split estate) T. 31 1/2 S., R. 37 E., Section 36	640	1	Vale Federal	non-Federal (State)	No	Exchange		3
Parcel No. 10, (split estate) T. 31 1/2 S., R. 38 E., Section 16	640	1	Vale Federal	non-Federal (State)	No	Exchange		3
Parcel No. 11, (split estate) T. 31 1/2 S., R. 37 E., Section 16, NE 1/4	160	1	Federal	non-Federal (State)	No	Purchase	8,000	3,000
Parcel No. 12, (split estate) T. 31 S., R. 36 E., Section 36	640	1	Burns Federal	non-Federal	No	Purchase	32,000	3,000
Parcel No. 13, (split estate) T. 30 S., R. 37 E. Section 36 western half	220	1	Vale Federal	non-Federal (State)	No	Exchange		3
Parcel No. 14, (split estate) T. 29 S., R. 37 E., Section 36 SW 1/4 of the SE 1/4	80	1	Federal	non-Federal (State)	No	Purchase	4,000	3,000 [3]
Parcel No. 15, (split estate) T. 32 S., R. 38 E., Section 36 NW 1/4	160	1	Federal	non-Federal (State)	No	Exchange		2,400

[1] The estimated costs listed in this appendix in no way represent a formal appraised value of the land or mineral estate, but are rough estimates based on sales or exchanges of lands or mineral estates with similar characteristics to those included in the WSA. The estimates for purposes of establishing a range of potential costs to the government of acquiring non-Federal holdings and in no way represent an offer to purchase or exchange at the cost estimate included in this appendix. Processing costs are all miscellaneous expenses other than land costs. These include work month costs, appraisals, title work, escrow costs, etc.

[2] Only administrative costs are shown for exchanges. Land costs are not applicable.

[3] State minerals would be included in a District-wide or statewide exchange.

Alvord Desert and East Alvord Wilderness Study Areas

1. The Study Areas
Alvord Desert (OR-2-74), 251,060 acres, and East Alvord (OR-2-73A), 22,240 acres.

The Alvord Desert and East Alvord Wilderness Study Areas (WSAs) are located approximately 70 miles southeast of Burns in Harney and Malheur Counties. The eastern side of the Alvord Desert WSA is about 5 miles southwest of Burns Junction. The nearest highway is U.S. Highway 95, which forms much of the eastern boundary of the Alvord Desert study area. The western edge of the Alvord Desert WSA is partially bounded by the county road which runs from Oregon State Highway 78, at Folly Farm (over 40 miles to the north), to Fields and Denio.

About two-thirds of the study area (on the east and south) is within the Vale District. All of the East Alvord WSA and the remainder of the Alvord Desert WSA are in the Burns District.

The Alvord Desert WSA contains 221,847 acres of BLM land. In addition, there are 70 parcels of split-estate lands totaling 29,213 acres. The WSA contains 34 parcels of private land that total 5,370 acres (see Table 1). The irregularly-shaped area is 37 miles long from east to west, and 20 miles wide, north to south, at the extremes, narrowing to 3 miles or less in three locations.

The East Alvord WSA contains 21,600 acres of BLM land. In addition, one parcel of split-estate land (640 acres) is in the study area (see Table 1). The area is roughly "T" shaped, being widest in the north, narrowing in the center, and widening slightly again in the south. The area is 8.5 miles from north to south and 6.5 miles from east to west.

Roads and private land make up the boundaries of the two study areas. The northern boundary of the Alvord Desert WSA is formed entirely by BLM dirt roads, including the section of road which it shares with the East Alvord WSA. On the east, the boundary includes private land along legal subdivisions, U.S. Highway 95 and a small amount of land at the Rome airport. The southern boundary is a combination of private land, BLM dirt roads and the graveled county road from Pueblo Valley to U.S. Highway 95 (the Whitehorse Road). The western boundary is formed along legal subdivisions with private land, a 1 mile section of county road, a BLM road and a powerline.

With the exception of one small parcel of private land, the boundary of the East Alvord WSA is formed entirely by BLM dirt roads.

Also forming part of the boundary of the Alvord Desert study area are seven dead-end roads, totaling 15.5 miles, which enter the WSA. Four of these dirt roads enter the WSA from the northern boundary while three enter the area from the south. There are no dead-end roads penetrating the perimeter of the East Alvord WSA.

The two WSAs are within an area of closed drainage basins and desert plateaus. The Alvord Desert WSA consists of a prominent basin and a desert plateau lying east of the 9,700-foot ridge of Steens Mountain. The dominant feature of the study area is the Alvord Desert. The desert is a large (more than 35 square miles within the WSA), clay-bottomed playa which catches seasonal runoff from the east side of the Steens, but is generally dry for nearly two-thirds of the year. The playa was flooded year-round from 1982 through 1985 due to unusually high snowpack in the Steens Mountain and subsequent runoff; since then it has only been seasonally flooded.

Also within the basin on the east side of the playa is a substantial area of sand dunes containing both shifting and stabilized dunes. The basin, including the playa and dunes, covers the western quarter of the WSA and, at 4,000 feet elevation, is the lowest point within the study area.

Directly east of the Alvord Basin is a large, steep, west-facing escarpment which rises to a plateau and forms part of the basin's boundary. The plateau is the highest point within the study area, reaching an elevation of 4,974 feet. East of this escarpment, the plateau slopes gently toward the east for a distance of about 11 miles. This area of relatively gentle topography is broken only by a long, rocky rim which forms the southern edge of the plateau. Farther to the east, Coyote Lake is the major feature of the landscape. It is a playa that is somewhat smaller than the Alvord playa and, like the Alvord, is usually dry. East of Coyote Lake is the Barren Valley portion of the WSA. The topography here is flat to gently rolling with only a few rounded ridgelines and shallow drainages to provide diversity to the landscape.

The East Alvord WSA includes the eastern edge of the Alvord Basin, the escarpment, and plateau features also present in the Alvord Desert WSA. In this study area the escarpment runs roughly through the center of the WSA, dividing the plateau area on the east from the Alvord Basin on the west. Sand dunes are the primary feature of the Alvord Basin portion of the study area.

Most of these dunes are stabilized with a variety of vegetation. The lowest elevation in the study area, 4,015 feet, occurs along the western side of the WSA.

In the northern portion of the WSA lies a much smaller basin. Most of this area is covered by a playa. In addition, Mickey Hot Springs is located on the northern edge of the study area. The springs contain several pools of extremely hot water and, on occasion, bubbling mud holes and steam vents.

As in the Alvord Desert WSA, the escarpment in the East Alvord WSA rises abruptly (from 400 to 1,100 feet above the basin floor) on the eastern edge of the basin to form the plateau area. The study area reaches its maximum elevation in the north-central portion of the WSA where the plateau reaches 5,384 feet. The plateau region in the northern part of the area is somewhat flat to gently rolling and generally slopes to the south and west.

In the southern portion of the study area, the plateau region is cut by numerous intermittent stream drainages, creating an extremely diverse landscape of rounded, rolling hills.

The two study areas contain a variety of plant species. The most common species found in the WSAs is big sagebrush. This shrub is found throughout most of the area east of the Alvord Desert playa. There are several places, however, where big sagebrush is not the dominant species. The sand dunes, for example, are dominated by greasewood, and this portion of the WSA has a diversity of vegetation including spiny hopsage, green rabbitbrush, shadscale, budsage, bottlebrush squirreltail, four-wing saltbush and cheatgrass. The Alvord Desert playa, Coyote Lake and the playa south of Mickey Hot Springs are completely devoid of vegetation.

The WSAs were initially studied under Section 603 of the Federal Land Policy and Management Act (FLPMA). Lands added after the wilderness inventory were studied under Section 202, also of FLPMA. These areas were included in the final Oregon Wilderness Environmental Impact Statement (EIS) filed in February 1990.

The Alvord Desert WSA was modified to include the addition of 139,370 acres. Most of this acreage (107,900 acres) has been added as a result of the 1985 court decision in Sierra Club v. Watt, which

restored split-estate lands (Federally-managed surface, state or private subsurface or mineral rights) and adjoining public lands to study status under Section 603 of FLPMA. The remaining additional acreage (31,470 acres) includes lands acquired by the BLM since the wilderness inventory phase and public lands adjoining these acquisitions.

The East Alvord WSA was modified to include the addition of one split-estate parcel totaling 640 acres. The parcel was acquired by BLM since the wilderness inventory phase.

There were four alternatives analyzed in the final EIS:

1. An all wilderness alternative designating all 251,060 acres of BLM land in the Alvord Desert WSA and all 22,240 acres of BLM land in the East Alvord WSA suitable as wilderness (the two areas would be managed as two separate wilderness areas).

2. Another all wilderness, with acquisitions and road closures, alternative where part of the Alvord Desert WSA (218,090 acres) and all of the East Alvord WSA (22,240 acres) would be combined and a total of 240,330 acres of public land would be recommended suitable for wilderness designation. The 12 mile segment of road that now separates the two WSAs would be closed. An attempt would be made to acquire the mineral estate portion of 21,398 acres of split estate land within the two study areas. In addition, a small parcel of private land, about 50 acres in the northern portion of the East Alvord WSA near Mickey Hot Springs, and 4,735 acres of private inholdings in the Alvord Desert WSA would also be recommended for acquisition. The mineral estate and private land would be acquired through purchase or exchange with willing owners. Assuming acquisition of private lands, the total area recommended suitable under this alternative would be 245,115 acres.

3. A partial wilderness alternative, which is the recommendation of this report, where a total of 69,165 acres of BLM land would be recommended suitable for wilderness in the Alvord Desert WSA. None of the East Alvord WSA would be recommended suitable for wilderness. This alternative recommends leaving the road open that now separates the two study areas. An attempt would be made to acquire the mineral estate on nine parcels of split estate land totaling 4,475 acres. The mineral estate would be acquired through purchase or exchange with willing owners.

4. A no wilderness/no action alternative.

These lands are shown on Map 1.

2. Recommendation and Rationale:

Alvord Desert WSA: 69,165 acres recommended for wilderness, 181,895 acres recommended for nonwilderness,

East Alvord WSA: 0 acres recommended for wilderness, 22,240 acres recommended for nonwilderness

The recommendation for the Alvord Desert WSA is to designate 69,165 acres of BLM land as wilderness and to release 181,895 acres for uses other than wilderness. The recommendation for the East Alvord WSA is to release the entire 22,240 acres of BLM land for uses other than wilderness. The all wilderness alternative, with acquisitions and road closures, is considered to be the environmentally preferable alternative. However, the partial wilderness alternative would be implemented in a manner which would utilize all practical means to avoid or minimize environmental impacts.

The recommended action reflects an attempt to preserve high value wilderness portions of the WSAs that are within a manageable area and that results in a minimum of conflicting demands for such other resource uses as potential mineral development, grazing management, scientific research and study and public access.

The recommendation would add an ecosystem not presently represented in Oregon, and represented in the National Wilderness Preservation System (NWPS) by only three areas. In addition, this area would contribute to balancing the geographic distribution of areas within the NWPS as there is only one designated wilderness within 100 miles of this WSA.

The proposal omits most of the Known Geothermal Resource Area (KGRA) (within Area C on Map 1) which represents the highest potential geothermal area within the WSAs. It also omits a large moderate potential area for zinc and silver (within Area A on Map 1) while simultaneously removing lands contain-

ing scattered private ownership (Areas A and B on Map 1).

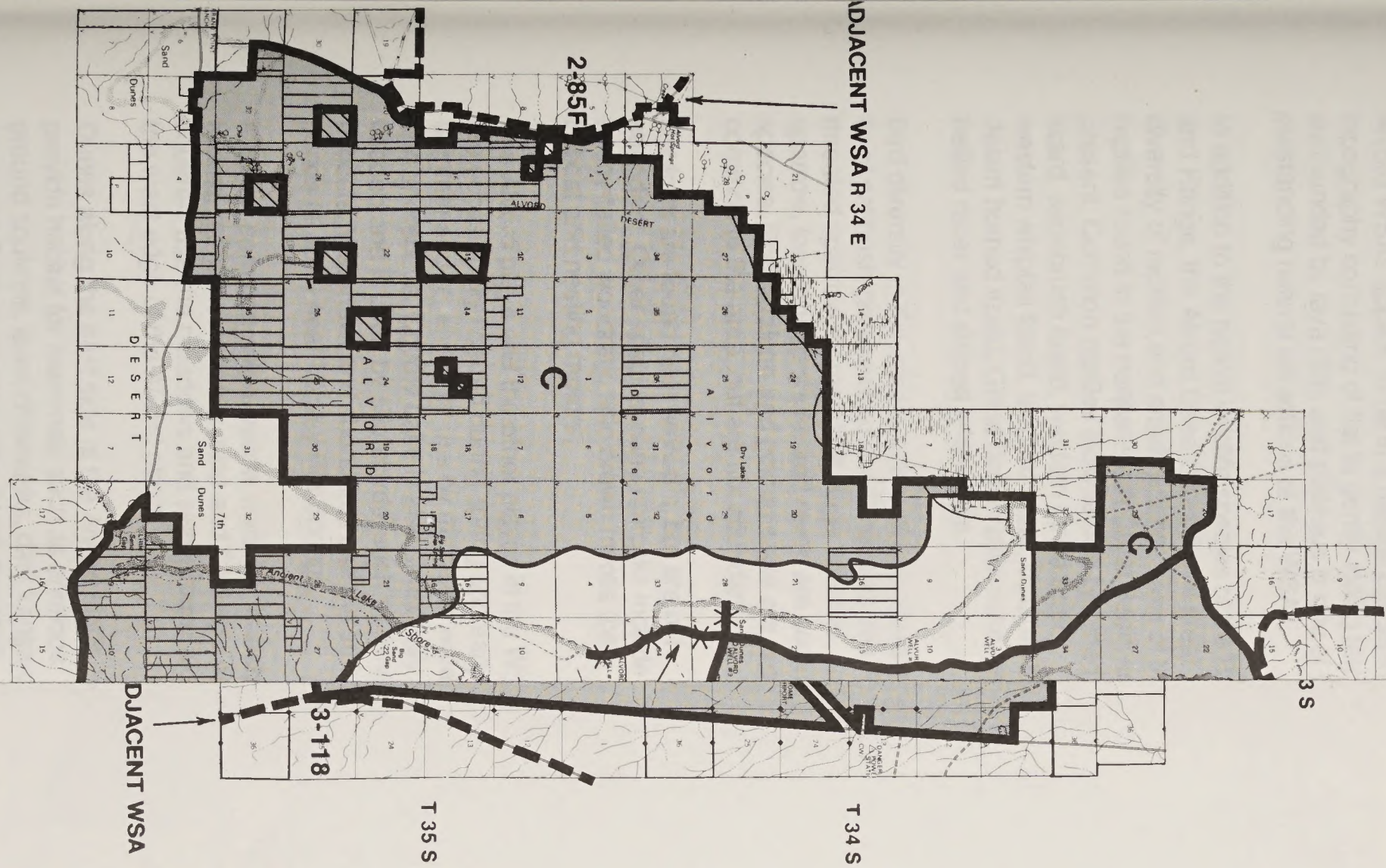
The recommended wilderness area includes the large Coyote Lake Playa while excluding Alvord Playa, both of which have similar values. The recommendation leaves long-established main travel routes open for use including use by the BLM for management purposes, livestock grazing permittees, hunters and the general public.

Within the Alvord Desert WSA and in the BLM recommended wilderness area there exist three livestock water wells, all located along the western boundary immediately adjacent to a road (see Map 1). The first well is called Alvord Well No. 1 and is located at T. 34 S., R. 35 E., Section 3, SW of the NE. The second well, Alvord Well No. 2, is located at T. 34 S., R. 35 E., Section 10, SE of the SE. The third well, Alvord Well No. 4, is located at T. 35 S., R. 35 E., Section 3, SW of the NE. All of these wells are pre-FLPMA and are considered grandfathered livestock improvement projects. Although these wells are not currently in use, it is foreseen that the three well sites will again be utilized and incorporated into a livestock management plan in the future. Therefore, in order to accommodate for the probable future use of these wells, BLM recommends that the wilderness boundary be set back from the road 's center 100 feet (radius) at the location of Alvord Wells No. 1 and 2. Under the recommendation, Alvord Well No. 4 would be completely surrounded by wilderness since the road that leads into the well would to be closed upon designation.

Table 1. Land Status and Acreage Summary of the Study Area

Within Wilderness Study Area	Alvord Desert WSA Acres	East Alvord WSA Acres	Total
BLM (surface and subsurface)	221,847	21,600	243,447
Split-estate (BLM surface only) [1]	29,213	640	29,853
Inholdings (State, Private)	5,370	0	5,370
Total	256,430	22,240	278,670
Within the Recommended Wilderness Boundary			
BLM (within the WSA)	64,690	0	64,690
BLM (outside the WSA)	0	0	0
Split-estate (within the WSA) [1]	4,475	0	4,475
Split-estate (outside the WSA)[1]	0	0	0
Total BLM Land Recommended for Wilderness	69,165	0	69,165
Inholdings (State, private)	0	0	0
Within the Area Not Recommended for Wilderness			
BLM	157,157	21,600	178,757
Split-estate [1]	24,738	640	25,378
Total BLM Land Not Recommended for Wilderness	181,895	22,240	204,135
Inholdings (State, Private) [1]	5,370	0	5,370

[1]Appendix 1 is a detailed description of split-estate tracts included within the study. For purposes of this report, split-estate lands are defined only as those lands with Federal surface and non-Federal subsurface (minerals).



RECOMMENDED FOR WILDERNESS

RECOMMENDED FOR NONWILDERNESS

LAND OUTSIDE WSA RECOMMENDED FOR WILDERNESS (None)

SPLIT ESTATE

STATE (None)

PRIVATE

N

East Alvord and Alvord Desert Proposal

MAP-1

0 1 2 3

MILES

OR-2-73A,74

January, 1991

ing scattered private ownership (Areas A and B on Map 1).

The recommended wilderness area includes the large Coyote Lake Playa while excluding Alvord Playa, both of which have similar values. The recommendation leaves long-established main travel routes open for use including use by the BLM for management purposes, livestock grazing permittees, hunters and the general public.

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Split-estate [1]	24,738	640	25,378
Total BLM Land Not Recommended for Wilderness	181,895	22,240	204,135
Inholdings (State, Private) [1]	5,370	0	5,370

[1]Appendix 1 is a detailed description of split-estate tracts included within the study. For purposes of this report, split-estate lands are defined only as those lands with Federal surface and non-Federal subsurface (minerals).

ADJACENT WSA

R 38 E

T 32 S

2-72D

Note:
Wilderness boundary 100 ft. radius
from road centerline at well sites.

ADJACENT WSA

R 35 E

R 36 E

R 37 E

R 39 E

T 33 S

2-72I

2-73H

C

2-73A

A

T 34 S

ADJACENT WSA R 34 E

2-74

RECOMMENDED ROAD CLOSURE

2-85F

C

B

T 35 S

3-118

ADJACENT WSA

T 36 S

OR-2-73A,74
January, 1991

N

0 1 2 3 MILES

SPLIT ESTATE

STATE (None)

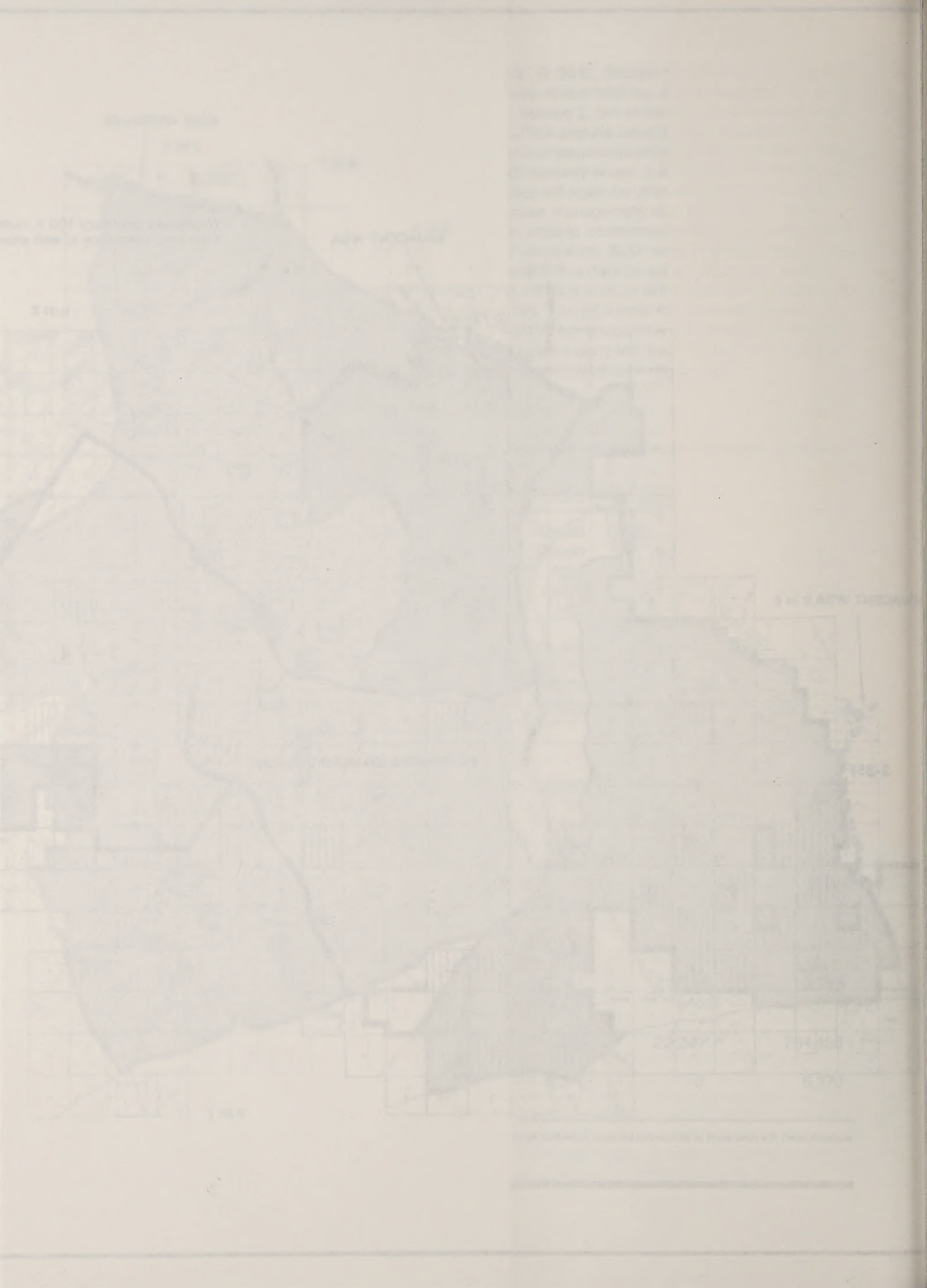
PRIVATE

RECOMMENDED FOR WILDERNESS

RECOMMENDED FOR NONWILDERNESS

LAND OUTSIDE WSA RECOMMENDED FOR WILDERNESS (None)

East Alvord and Alvord Desert
Proposal
MAP-1



3. Criteria Considered in Developing the ilderness Recommendations

Wilderness Characteristics

A. Naturalness: The Alvord Desert and East Alvord WSAs appear to be in a natural condition. The topography consisting of flat to gently rolling terrain surrounded by lava cliffs and plateaus is one of the outstanding natural attractions of the WSAs.

In addition to the typical wildlife species of the Basin and Range, the Alvord Desert area has a great diversity of reptiles and small rodents. Most of the reptiles found in the northeastern Great Basin are present. Common reptiles include side-blotched lizard, sagebrush lizard, western fence lizard, western whiptail lizard, leopard lizard, collared lizard, desert horned lizard, Great Basin rattlesnake, yellow-bellied racer and striped whipsnake.

Bird diversity in the area is low, which is characteristic of saltbush-greasewood shrub habitats. Black-throated sparrow, horned lark, sage thrasher, sage sparrow, loggerhead shrike and raven are common species. Prairie falcon and golden eagle are raptors common to the area, but are not abundant.

Chukars are found near rimrocks, but are not abundant. Other species using rimrocks include bushy-tailed woodrats, little brown myotis (bat), bobcat and nesting raptors.

The Alvord playa and the other playas in the WSAs are occasionally flooded during spring and early summer and receive light use by migrating waterfowl and shorebirds. Coyote Lake is also seasonally flooded and is used by shorebirds, such as American avocets. Waterfowl and shorebirds use the small ponds (1 acre) near Mickey Hot Springs.

Killdeer, common snipe, yellow warblers, marsh hawks, montane meadow mice and Belding's ground squirrels use the meadows and seeps found along the west edge of the Alvord playa.

Dunes along the east side of the Alvord playa provide habitat for mammals such as antelope ground squirrels, least chipmunks, dark kangaroo mice and Ord's kangaroo rats. Black-throated sparrows are a common songbird of the dunes.

Few deer use the area and most of this use is along the west boundary near the Alvord Ranch. However, some deer may range into the southeastern portions of the Alvord Desert WSA from nearby winter ranges. Antelope utilize the eastern half of the Alvord Desert WSA during the winter.

The Alvord Desert ACEC contains many species which are uncommon in the area. Eleven reptiles and twenty mammals have been found within the ACEC. The notable mammals include kit fox, dark kangaroo mouse, little pocket mouse, grasshopper mouse, white-tailed antelope ground squirrel and Merriam's shrew. Reptiles include western whiptail lizards, leopard lizards, collared lizards, desert horned lizard and the Great Basin spade-foot toad. These species are all either at the northern limit of their range or uncommon in Oregon.

There are few unnatural features and they are relatively unnoticeable.

The Alvord Desert study area contains five reservoirs, five wells, a horse trap, the remnants of what might have been an old homestead or stagecoach stop, two barrow pits, several small mineral prospecting scars, two fences totaling 20 miles and 16 vehicle ways totaling 65 miles. These developments have a minor visual influence due to the terrain within the study area. Much of the area is relatively flat to gently rolling so most developments are not visible from the surrounding terrain. Overall, the combination of gentle terrain and relatively few developments substantially lessens the impact of the study area influenced by these features.

The water developments within the WSA are scattered. The largest concentration of developments occurs along the northern boundary road, where there are three wells and a reservoir. These are not large developments and they have a minor influence on the area.

Along the southern boundary, there is also a well and a reservoir. The remaining well is located in the northeastern corner of the WSA. Both of these wells were once wind-powered and are not presently working. These three developments have a minimal effect on the area.

The remnants of the old homestead or stage stop are not visible from the surrounding lands as the foundation and small portions of the walls are all that remain.

The two borrow pits and small prospecting scars are located along the southeastern boundary. They are fairly minor disturbances and are not easily seen from the flat terrain in the immediate vicinity.

The two sections of BLM's district boundary and allotment division fence are located in the east-central portion of the WSA. These are not easily viewed and have a minor influence on the area.

The horse trap site is located just east of the district boundary fence west of Coyote Lake. This site consists of rock cribs and is visible from the higher terrain to the west. A way, 3 miles in length, provides access to the trap site. The overall influence, however, is minimal.

The study area's gentle terrain plays an important role in reducing the effects of the 65 miles of ways. Due to the topographic and vegetative screening, the vehicle ways are not substantially noticeable.

The most substantial source of outside sights and sounds is the boundary roads. Overall, these have a minor influence. They are not easily viewed and, with the exception of U.S. Highway 95, they are only lightly traveled. Other sources of outside sights and sounds are three wells, a reservoir, and ranching activities associated with the Alvord Ranch to the west and the Tudor Ranch on the northeast.

East Alvord WSA contains 11 unnatural features. Eight of the developments are reservoirs, one is a well and reservoir combination, and two are vehicle ways totaling 3 miles. It is estimated that approximately 3 percent of the area is influenced by these features.

The water developments are scattered around the perimeter of the WSA. They are relatively minor disturbances, and because of their locations in small, shallow drainages, each has a limited influence on the natural qualities of the area.

The way in the northwest corner is not easily viewed except in the immediate vicinity. It is located in flat terrain away from any higher areas which would provide views of the development, and it is somewhat screened by the surrounding vegetation. The other way is longer and located in the bottom of a drainage. It can easily be viewed from the adjacent higher terrain. This way tends to blend in with the drainage course and is also slightly screened by vegetation. In several places, the way receives more use from livestock and wild horses than from vehicles. In addition to these identified ways, there are vehicle tracks in the northwestern corner which are the result of occasional off-highway vehicle use. These tracks do not influence the naturalness of the area.

Outside sights and sounds have a minor effect on the wilderness values. There are seven water developments and 31 miles of boundary roads.

B. Solitude: The Alvord Desert WSA and the East Alvord WSA have outstanding opportunities for solitude. The Alvord Desert WSA is very large and would give a feeling of vastness to any wilderness visitor. The East Alvord WSA is not as large but does provide outstanding opportunities for solitude. The topography of both WSAs consists of flat to gently rolling terrain surrounded by lava cliffs and plateaus. The ridgelines and cliffs provide some topographic screening. The type of vegetation in both WSAs does not screen wilderness users from each other.

Military jet aircraft frequently use the area for low altitude training flights. During the daylight hours of high use periods, there may be as many as five low-level flights daily. The influence of these flights on a visitor's perception of solitude is quite temporary, but extreme for a short period of time (1 minute or less). These flights do not have a significant, long-lasting, adverse effect on a visitor's opportunity to find solitude.

C. Primitive and Unconfined Recreation: Opportunities for primitive recreation in the Alvord Desert and East Alvord study areas are outstanding. The primitive recreation activities include day hiking, backpacking, camping, horseback riding and sightseeing.

Opportunities for day hiking are outstanding in both WSAs. In the Alvord Desert WSA, the opportunities for day hiking are best in the western and central portions of the area. The primary day hiking attractions would be the Alvord Desert playa and basin area, the plateau area east of the Alvord, and the Coyote Lake area. Also of interest to the day hiker are the expansive views and open space available throughout the entire WSA.

In the East Alvord WSA opportunities for hiking are not as outstanding, but the topography of the area is diverse and offers a variety of country for hiking. Mickey Hot Springs and the sand dunes, only short distances from the western boundary, would be of interest to the hiker. The rest of the WSA probably does not have enough attractions to draw a substantial amount of day visitors.

There are opportunities for backpacking and camping in both WSAs. However, Alvord Desert WSA offers greater opportunity due to its larger size and more numerous attractions. Day hiking could easily be extended into an overnight trip, although the availability of water is limited. The attractions mentioned for day hiking are also likely to be most attractive to the backpacker. In the Alvord Desert WSA, the size of the study area would also attract hikers looking for an extended trip.

Both WSAs provide ample opportunities for level campsites and relatively easy hiking, but there is a lack of water throughout the entire area.

Opportunities for horseback riding are similar to those for backpacking. The gentle terrain, with the exception of the escarpment, and the size of the two areas allow virtually unlimited use. However, as with backpacking, the major deterrent to horseback riding would be the general lack of water throughout the WSAs.

Opportunities for sightseeing and photography are excellent in both WSAs, including background views of the Steens and Sheepshead Mountains. Other background views outside the WSAs, though less dominant, include the Pueblo and Trout Creek Mountains as a panorama to the south. In the East Alvord WSA, outside scenic views also include vistas of the Alvord Desert and the vast open expanse of land to the east, including Coyote Lake.

Within the Alvord Desert WSA are impressive views of the Alvord playa, the escarpment and plateau area, and the vastness of the open space associated with the general area. The number of opportunities for photographing and viewing typical desert wildlife and plants are particularly high along the eastern portion of the Alvord Basin and in the Coyote Lake area. A visitor might also have an opportunity to view and photograph wild horses.

D. Special Features: There are several special features of the Alvord Desert and East Alvord WSAs which enhance the value of the area as wilderness. Geology, vegetation, wildlife, wild horses and scenic quality are special features of both WSAs. Cultural resources are found primarily in the Alvord Desert study area.

The geology of this area is not unique to the Great Basin, but it is not common in Oregon and would be of interest to the wilderness visitor. Most of the geologic features of interest are in the western portion of the WSAs. The most significant feature of the area is the Alvord Desert. This area is roughly defined as the large basin between Steens Mountain on the west and a prominent ridgeline on the east. This basin is a structural graben (sunken area) bounded by fault zones and their associated escarpments (including Steens Mountain and the ridgeline on the east). The dominant feature of this basin is the intermittently dry playa.

Mickey Hot Springs is located in the northern part of the East Alvord study area. This is one of the hottest springs in BLM's Burns District, reaching temperatures of up to 210 degrees Fahrenheit. Also associated with the springs are a variety of mud pots and steam vents. The location of the mud pots and vents appears to change frequently because of changes in hydrothermal activity. This site is unique within the Burns District and represents a definite attraction in the WSA. On March 29, 1989, Mickey Hot Springs was nominated as an Area of Critical Environmental Concern (ACEC).

The most significant vegetative features of the area occur on the eastern side of the Alvord Basin, where the Alvord ACEC, designated to protect both vegetation and wildlife values, is located. The ACEC extends from the eastern edge of the playa to the top of the plateau to the east and is distinctive due to the diversity of habitats within a small area. This diversity is the result of differences in topography, alkalinity, moisture and soil.

The East Alvord WSA also contains 510 acres of the 560-acre Mickey Basin Research Natural Area (RNA), which provides management and protection of a winterfat (Eurotia lanata) community of a size and condition which is uncommon in Oregon.

Other special vegetation features include two plant species of special interest which have been identified in the Alvord Desert WSA. They are solitary milkvetch (Astragalus solitarius) and Davis peppercress (Lepidium davisii).

The Alvord Desert and East Alvord WSAs also support an unusual variety of reptiles, small animals and insects; most are found within the ACEC. Also of importance to the entire area is the presence of kit fox habitat. These WSAs are within the northernmost range of this species, which is on the Oregon Department of Fish and Wildlife's (ODFW's) List of Threatened and Endangered Species and a candidate species under the Federal Endangered Species Act. The snowy plover, also on ODFW's List of Threatened and Endangered Species, nests along the western edge of the Alvord playa.

Both WSAs contain cultural resources; those in the Alvord Desert WSA are especially noteworthy. Archaeological sites in the WSA give evidence of adaptations of prehistoric Indians to environments that have long since disappeared. In addition, portions of four wagon roads cross parts of the WSA.

Scenery in portions of both WSAs is outstanding, including the entire western portion of both WSAs from the major ridgeline east of the Alvord Desert playa west to the Steens Mountain. The Alvord Desert playa, the sand dunes, and the ridgeline combine to create outstanding contrasts in color, landform and vegetation.

Diversity in the National Wilderness Preservation System (NWPS)

A. Expanding the Diversity of Natural Systems and Features as Represented by Ecosystems: Wilderness designation of this WSA would add an ecosystem (Bailey-Kuchler classification) not presently represented in Oregon, and represented in the National Wilderness Preservation System by only three areas. There are 19 other BLM areas in the State under study with this ecosystem. The information is summarized in Table 2. According to the Bailey-Kuchler system of classifying ecosystems, the Alvord Desert and East Alvord WSAs are in the Intermountain Sagebrush Province, and the potential natural vegetation is saltbush-greasewood.

The Basin and Range section of the Oregon Natural Heritage Plan identifies 10 ecosystems which occur in these WSAs. The upland communities are big sagebrush/spiny hopsage, shadscale-spiny hopsage-budsage community complex, and big sagebrush/bluebunch wheatgrass. Communities in the alkaline areas are bare playa and playa margin communities, greasewood/saltgrass, big sagebrush/greasewood, Great Basin wildrye community, and a sand dune series (beach ridges) from active unvegetated dunes through completely stabilized dunes. The East Alvord WSA also has a winterfat community. A black sagebrush community complex occurs in the Alvord Desert WSA.

B. Assessing the Opportunities for Solitude or Primitive Recreation within a Day's Driving Time (5 hours) of Major Population Centers: The WSA is within a 5-hour drive of one major population center: Boise, Idaho. Table 3 summarizes the number and acreage of destination areas and other BLM study areas within 5 hours drive of the population center(s).

C. Balancing the Geographic Distribution of Wilderness Areas: The Alvord Desert and East Alvord WSAs would contribute to balancing the geographic distribution of areas within the National Wilderness Preservation System. There is one designated wilderness area within 100 miles of the WSA.

Manageability

(The area must be capable of being effectively managed to preserve its wilderness character.)

With the exception of the Alvord Desert playa, both the Alvord Desert and East Alvord WSAs are manageable as wilderness under the all wilderness alternative. Manageability problems could occur, however, due to the presence of split-estate lands and private inholdings, and the unmarked private lands which form part of the Alvord Desert WSA boundary.

The Alvord Desert playa could not be managed as wilderness under the all wilderness alternative. This large, flat lakebed is a traditional recreation vehicle use area. It has a number of access points and virtually no physical barriers which could be used as boundaries to preclude vehicle use. Because access to the area could also be gained by crossing private land, restricting the use of the area to only wilderness visitors would be nearly impossible.

Management problems could occur under the all wilderness alternative due to the presence of scattered, unmarked, split-estate lands and private inholdings. If they were to be developed, these parcels could present problems in managing the area as wilderness.

All of these parcels, in both study areas, lie within an area which has moderate favorability for the occurrence of oil and gas resources and moderate to high favorability for geothermal resources. Several parcels are within areas having moderate favorability for minerals, uranium or diatomite. Depending on the location and size of any possible development and the need for access, maintaining wilderness values could be difficult.

The all wilderness with acquisitions and road closures alternative and the recommended action would be manageable as wilderness, but could also have some of the same problems as in the all wilderness alternative. The management of recreation vehicles on the Alvord playa would not be a factor with either

Table 2. Ecosystem Representation

Bailey-Kuchler Classification	NWPS areas Areas	NWPS areas Acres	Other BLM Studies Areas	Other BLM Studies Acres
Province/Potential Natural Vegetation				
	NATIONWIDE			
Intermountain Sagebrush Province/ Saltbush-Greasewood	3	45,553	37	758,307
	OREGON			
	0	0	18	295,367

Table 3. Wilderness Opportunities for Residents of Major Population Centers

Population Centers	NWPS areas areas	NWPS areas acres	Other BLM Studies areas	Other BLM Studies acres
Boise, ID	16	4,741,570	126	5,060,460

of these alternatives as that portion of the Alvord Desert study area is not recommended for wilderness.

The presence of split-estate and private lands would not be a problem under the all wilderness, with acquisitions and road closures, alternative or the recommended action if the private parcels and mineral estate were acquired as proposed. Although not expected to be a significant problem under any alternative, the all wilderness, with road closures and acquisitions, alternative and recommended action reduce the amount of the adjacent private land by recommending the Alvord Desert playa and those portions of the Alvord Desert WSA where most of these lands are concentrated as nonsuitable for wilderness (Area C on Map 1).

Energy and Mineral Resource Values

The U.S. Geological Survey (USGS) and U.S. Bureau of Mines (USBM) evaluated the entire East Alvord WSA and the area recommended for wilderness in the Alvord Desert WSA. Their 1989 report is titled "Mineral Resources of the Alvord Desert and East Alvord Wilderness Study Areas, Harney and Malheur Counties, Oregon" and is published as USGS Bulletin 1739-B. No identified resources were found in either WSA. Mineral materials were not classified as an identified resource because they are not near current or prospective markets.

In the East Alvord WSA the USGS/USBM study found that the southwest and west central part of the WSA has low potential for gold, silver, mercury and boron. An area that includes Mickey Hot Springs in the northwestern part of the WSA has moderate

potential for gold, silver and mercury and low potential for boron. A small area in the south end of the WSA has low potential for gold and silver. In addition, they found that the western part of this WSA has moderate potential for low- to medium-temperature geothermal resources. The remainder has low potential for geothermal resources. The entire WSA has low potential for oil and gas and uranium.

In the area recommended for wilderness in the Alvord Desert WSA, the USGS/USBM study found that a small area on the western edge has moderate potential for gold, silver and mercury while the remainder of a narrow strip on the western edge has low potential for gold, silver, mercury and boron. A narrow strip along the entire western edge has moderate potential for low- to medium-temperature geothermal resources. The remainder of the Alvord Desert WSA has low potential for low- to medium-temperature geothermal resources. The entire WSA has low potential for oil and gas and uranium.

The EIS shows portions of both WSAs with moderate potential for diatomite, including a broad area within the area recommended for wilderness. No other mineral potential was shown in East Alvord WSA.

In that part of the Alvord Desert WSA recommended for wilderness, a small area in the south has moderate potential for uranium and silver. No other mineral potential was shown. The EIS also shows a location in the south of the nonsuitable portion of the Alvord Desert WSA with moderate potential for uranium and silver. Two small areas located near the center of the nonsuitable portion show moderate potential for uranium and beryllium and a broad area in the northeast of the nonsuitable area shows moderate potential for zinc and silver.

It was noted in the EIS that eight mineral materials sites are located in the nonsuitable portions of both WSAs. Land within the Alvord Desert Known Geothermal Resource Area (KGRA) was considered to have high geothermal potential. This includes 4,660 acres within the area recommended suitable for wilderness and the remaining land in the western one-third of both WSAs. All other land within the East Alvord WSA and the Alvord Desert WSA was rated with moderate in potential for geothermal resources.

The entire area of the two WSAs was rated moderate in potential for oil and gas.

No development scenario was presented in the EIS for energy or mineral resources within the area recommended for wilderness. A 10-megawatt geothermal plant near Mickey Hot Springs was the only projected development scenario for the nonsuitable areas. No significant expansion was predicted for the mineral materials sites.

The USGS/USBM study addressed its differences with the EIS as follows: The USGS/USBM sampling found diatomite occurrences to be too impure for commercial uses. Evaporite crusts enriched in boron were determined to be too small in extent for profitable mining. Aerial gamma-ray spectrometer measurements were found to show no uranium anomalies. Silver potential was found to be low in the portion of the area recommended for wilderness that the EIS identified as having moderate potential for silver. Moderate potential for silver, gold and mercury was found by USGS/USBM in the northwestern part of the East Alvord WSA, near Mickey Hot Springs, even though this area was not identified as having potential in the EIS. The USGS/USBM study did not encompass the area of moderate potential for zinc and silver identified in the EIS in the eastern part of the Alvord Desert WSA. No discussion of beryllium was provided by the USGS/USBM study even though it is shown as having moderate potential near the center of the Alvord Desert WSA in the EIS. Beryllium typically occurs in granite and is unlikely to occur in the volcanic and sedimentary setting of these WSAs.

In the USGS/USBM study of mineral resources of the High Steens (USGS Bulletin 1740-A) it was noted that the Steens Basalt contains anomalous concentration of copper and zinc that reflect strong initial magmatic levels far below minable levels instead of mineralization and are thus not considered significant. Rocks exposed in these two WSAs correlate with those in Steens Mountain.

As of May, 1991, there were no mining claims within this WSA.

The western portions of the WSAs were considered by USGS/USBM to have moderate potential for geothermal resources instead of high as shown in the EIS, because they noted that no exploratory drilling had yet led to development. The remainder of the two WSAs were considered by USGS/USBM to have low potential instead of moderate as shown in the EIS because they noted that the northeast-trending faults are the major conduits for hydrothermal systems, and these faults exist only in the western portion of the WSAs. Both WSAs were rated low in potential for oil and gas resources by USGS/USBM instead of moderate as in the EIS because USGS/USBM noted that the WSAs are too thermally mature and they lack suitable source rocks.

Local Social and Economic Considerations

Livestock use at the current level of 5,134 AUMs and recreation use totaling 200 visitor days per year are the primary resource outputs that generate economic activity in the WSA. Local personal income generated annually from these existing use levels amounts to approximately $61,608 for livestock grazing and $2,400 related to recreation use of the WSA, for an overall total of $64,008.

Under this recommendation, livestock grazing would increase by 7,403 AUMs and the recreation use would remain at approximately 200 visitors per year. The total effect on local personal income would be a net increase of approximately $89,000 per year plus an unknown level of increase attributable to the projected energy development.

There were no social issues identified with the study of this WSA.

Impacts on Resources

The following comparative impact table summarizes the effects on pertinent resources for all the alternatives considered including designation and nondesignation of the entire area as wilderness.

Summary of WSA-specific Public Comments

Public involvement has occurred throughout the wilderness review process. Certain comments received during the inventory process and early stages of the EIS preparation were used to develop significant study issues and various alternatives for the ultimate management of those lands found to have wilderness values.

During formal public review of the draft EIS, and supplement to the draft EIS, a total of 89 comments specifically addressing these WSAs were received. Of those, 72 were written and 17 were oral statements received at the 15 public hearings on the EIS. In general, 55 commenters supported wilderness designation for all or part of these WSAs. Nineteen commenters supported no wilderness for the WSAs, while 15 commenters addressed the relative merits of the EIS, but took no formal position on wilderness designation.

Those favoring wilderness for East Alvord WSA commented that wilderness designation will protect ecosystems, maintain ecological diversity, preserve a gene pool, and help perpetuate nongame wildlife. Others commented that wilderness designation would protect the area from OHV degradation. Some believed that other potential types of designation, such as ACEC or RNA, would not afford adequate protection to the area and that wilderness designation is needed in order to provide the best overall protection of the natural resources in their present condition.

Those opposing wilderness designation for East Alvord WSA were concerned that wilderness designation would lock up the land. Some commented that wilderness designation would prohibit existing popular and appropriate forms of recreation such as OHV use on the sand dunes. Others commented that wilderness designation would adversely impact the range industry or individual livestock operators in terms of financial loss and an overall inconvenience to the rancher. A few commented that wilderness designation would pose a safety hazard by limiting or eliminating vehicle movement and thus limiting radio communication.

Those favoring wilderness for Alvord Desert WSA commented that an all wilderness designation would protect natural resources from potential other uses that may not be in the best interest of the land such as geothermal development and OHV use. Others believed that the value of wilderness outweighs other values and that the WSA meets wilderness criteria within its entirety. Still others believed that this WSA would help protect threatened and endangered species (botanically along with geologically which are unique in Oregon) if designated as wilderness. Some commented that the WSA has high scenic qualities and that the area as a whole would be a positive addition to the existing National Wilderness Preservation System in terms of diversity along with unique features. Some commented that this WSA along with East Alvord and Sheepshead Group WSAs be combined to form one wilderness area.

Those opposing wilderness designation for Alvord Desert WSA commented that there were too many existing human intrusions and that wilderness values were too low for the area to be considered wilderness. Others commented that the WSA has been, is and always will be wild and that restrictive designation such as wilderness is not needed. Some commented that wilderness designation would adversely impact both the range industry and mineral industry. Still others commented that wilderness was incompatible with multiple use and that the area, if designated as wilderness, would lead to overuse of the wilderness area due to the historic recreational OHV use of the playa.

Table 4. Comparative Summary of the Impacts by Alternative

Issue Topics	Recommendation (Partial Wilderness Alternative)	All Wilderness Alternative
Impacts on Wilderness Values	Wilderness designation of 69,165 acres would protect existing wilderness values with probable enhancement of those values. Within the 204,135 acres not designated wilderness, projected activities would impair wilderness directly over approximately 29,000 acres, with further declines from other potential use over the long term.	Wilderness designation of the entire 273,300 acres within the Alvord Desert WSA and East Alvord WSA would result in protection of the existing wilderness values and enhancement of these values.
Impacts on Energy and Mineral Development	Projected development of one 10-megawatt geothermal power plant would occur. No impact to locatable mineral development is expected. The low level of mineral materials production from eight sites would continue.	Wilderness designation would preclude the development of one projected 10-megawatt geothermal power plant. No impact to locatable mineral development is expected. A low level of production from the existing community sand and gravel pit would be lost. Seven grandfathered materials sites would remain open, but one community site would be closed.
Impacts on Vegetation	The 2.5 miles of closed ways and 3 miles of closed dead-end roads would revegetate within two to five growing seasons. In the nonsuitable area, vegetation would be altered on 780 acres and removed on approximately 100 acres.	The 68 miles of closed ways would revegetate within 2 to 3 years. There would be little or no change in the remainder of the WSAs.
Impacts on Wildlife	Deer winter range and associated populations would be maintained on 69,165 acres designated wilderness. Few deer use the area and most of this use is along the west boundary near Alvord Ranch. Antelope winter range would be reduced on 780 acres. Disturbance to shorebird habitat and populations around Mickey Hot Springs would occur from geothermal disturbance. Slight disturbance would also occur to shorebird and snowy plover habitat and populations along the western edge of the Alvord Desert playa. Additional water sources for antelope and other wildlife species would be realized by construction of two proposed guzzlers.	The wildlife habitat and populations would be maintained on 273,300 acres designated wilderness. However, added water sources for antelope and other wildlife species would be foregone due to constraints on construction of two proposed guzzlers.

All Wilderness with Acquisitions and Road Closures Alternative	No Wilderness/No Action Alternative
Wilderness designation of the 245,115 acres to the NWPS (assuming acquisition of 4,785 acres of private property) would protect and enhance existing wilderness values. The acquisition of 21,398 acres of mineral estate would further enhance the total area by preserving wilderness values on all lands within the wilderness boundaries. Projected range improvements in the nonsuitable portion would both directly and indirectly impair wilderness values over approximately 19,500 acres, with further declines from other potential uses over the long term.	In the absence of wilderness designation, projected activities and continued uses would both directly and indirectly impair wilderness values over approximately 44,700 acres with further declines from other potential uses over the long term.
Wilderness designation would preclude the development of one projected 10-megawatt geothermal power plant. No impact to locatable mineral development is expected. A low level of production from the existing community sand and gravel pit would be lost. Seven grandfathered materials sites would remain open, as would the community pit in the nonsuitable portion.	Projected development of one 10-megawatt geothermal power plant would occur in East Alvord WSA. Development of locatable minerals is not projected within the WSA.
The 68 miles of closed ways would revegetate within two to three growing seasons and the closed dead-end and boundary roads would revegetate within two to five growing seasons. The vegetation of the 780-acre brush control and seeding in the nonsuitable portion of the Alvord Desert WSA would change to crested wheatgrass while the rest of the suitable and nonsuitable areas would remain the same.	Continued vehicle access would not allow any of the roads or ways to revegetate. Vegetation would be altered on 780 acres and removed on approximately 100 acres.
Deer winter range and associated populations would be maintained on 245,115 acres (assuming acquisitions and road closures) designated wilderness. Few deer use the area and most of this use is along the west boundary near Alvord Ranch. Antelope winter range would be improved and nongame species, including kit fox, would have their habitat reduced on 780 acres. Shorebird habitat near Mickey Hot Springs and Coyote Lake would be preserved, but minor disturbance to snowy plover and shorebird habitat and populations could occur near the western end of the Alvord Desert playa. Additional water sources for antelope and other wildlife would be foregone.	Deer winter range and associated populations would be maintained on 273,300 acres. Few deer use the area and most of this use is along the west boundary near Alvord Ranch. Antelope winter range would be improved and nongame species habitat, including kit fox, would be reduced on 780 acres. Disturbance to shorebird habitat and populations around Mickey Hot Springs would occur and slight disturbance would occur to shorebirds and snowy plover populations along the western edge of the Alvord Desert playa and around Coyote Lake. Additional water for antelope and other wildlife species could be realized by construction of two proposed guzzlers.

Table 4. Comparative Summary of the Impacts by Alternative (continued)

Issue Topics	Recommendation (Partial Wilderness Alternative)	All Wilderness Alternative
Impacts on Horse Trap Access	The 3 miles of way to Coyote Lake horse trap would be maintained on the average of once every 4 years to allow for the passage of heavy trucks when gathering excess wild horses at the trap site.	Use of the Coyote Lake horse trap would be precluded, increasing expense and inconvenience in managing the wild horse herds.
Impacts on Livestock Grazing	Livestock grazing would increase by 7,403 AUMs to a level of 11,729 AUMs in the Alvord Desert WSA and 808 AUMs in the East Alvord WSA. There would be some additional cost and inconvenience to livestock operators due to closure of 2.5 miles of ways and 3 miles of roads.	Livestock grazing would be reduced by 30 AUMs to the level of 4,486 AUMs of total use in the Alvord Desert WSA and 618 AUMs of total use in the East Alvord WSA. Controlling livestock at critical vegetative growing periods would be foregone by precluding the construction of 4 miles of fence. There would be some additional cost and inconvenience to livestock operators due to the closure of 68 miles of ways.
Impacts on Utility Corridor Routing	The proposed east-west utility corridor would be designated in the eastern portion of Alvord Desert WSA and the 500 kV powerline could be constructed.	The proposed east-west power utility corridor would be rerouted around the WSAs adding 3 miles to the corridor length, with associated increased powerline construction and maintenance costs.
Impacts on Recreation Use	The areas' current recreation use would remain at less than 200 visitor days per year.	Wilderness designation would result in a net reduction in the areas' overall recreation use level from less than 200 visitor days per year to less than 100 visitor days per year.
Impacts on Local Personal Income	Annual local personal income would increase by approximately $89,000.	Annual local personal income would decrease by approximately $1,600.

All Wilderness with Acquisitions and Road Closures Alternative	No Wilderness/No Action Alternative
Use of the Coyote Lake horse trap would be precluded, increasing expense and inconvenience in managing the wild horse herds.	The 3 miles of way to the Coyote Lake horse trap would be maintained on the average of once every 4 years to allow for the passage of heavy trucks when gathering excess wild horses at the trap site.
Livestock grazing would increase by 870 AUMs to a level of 5,196 AUMs of total use in the Alvord Desert WSA and 808 AUMs of total use in the East Alvord WSA due to range improvements in the nonsuitable areas. There would be substantial additional inconvenience and cost to the livestock operators due to the closure of 12 miles of boundary roads.	Livestock grazing would increase by 7,403 AUMs to a level of 11,729 AUMs in the Alvord Desert WSA. Grazing use in the East Alvord WSA would increase to 808 AUMs.
The proposed east-west power utility corridor would be rerouted around the WSAs adding 3 miles to the corridor length, with associated increased powerline construction and maintenance costs.	The proposed utility corridor would be designated in the eastern portion of the Alvord Desert WSA and the 500 kV powerline would be constructed.
Wilderness designation would result in a reduction in the areas' overall recreation use from less than 200 visitor days per year to less than 100 visitor days per year.	Overall recreation use levels would remain at less than 200 visitor days per year.
Annual local personal income would increase by approximately $9,200.	Annual local personal income would increase by approximately $89,000.

The Department of Energy, Bonneville Power Administration (BPA), commented that Industry lease applications and BPA resource assessment studies suggest geothermal potential in the East Alvord WSA (2-73A).

The Idaho Air National Guard did not wish to discourage the designation of wilderness areas, but wished to express their concern over the possible conflict between low altitude overflights and the feeling of solitude sought by the wilderness area users. They stated these routes are of vital importance to their combat training and readiness. Any constraint on the use of existing routes could have a severe impact on unit readiness. The low-level military route of concern is VR1301. This military training route (MTR) is located on the northern portion of the East Alvord WSA and aircraft generally fly at around 1,500 feet above the ground level (AGL). Other MTRs affect the Alvord Desert WSA. This portion of the country has many MTRs within a 50-mile radius of both WSAs.

The Oregon Department of Geology and Mineral Industries commented that the East Alvord WSA contains extensive areas of fresh water lake sediments of the type which, elsewhere in southeastern Oregon, are known to include nonmetallic mineral resources such as bentonite and diatomite. The WSA is also an area of high heat flow (268 and 134 milliwatts per square meter), warm springs (Mickey Hot Springs; 87 degrees Celsius, 100 gpm) and recognized geothermal potential. The Alvord Desert WSA is regarded as a prime geothermal resource area based on evaluations of local geologic structure and heat flow. Geothermal exploration and leasing have occurred. Oil and/or gas may also be present at depth. There is moderate potential for evaporate deposits in the Coyote Lake area for both East Alvord and Alvord Desert WSAs.

Both Harney County and the Burns Paiute Reservation oppose any wilderness designation of these two WSAs, giving the following reasons:

There are serious conflicts with oil, gas, geothermal, mineral and range development. Could cause deferential economic well-being to an already depressed county.

There are major problems with split-estate mineral and energy resources with the State of Oregon.

Both WSAs are within known military low-flying training areas of the U.S. Air Force and the Idaho National Guard. Anyone who has had one of these planes fly over would have a hard time qualifying it as a wilderness experience.

These two WSAs as wilderness would have significant impacts on the development of adjacent private and public lands.

These areas have no public or special features or ecologically significant resources.

The highest and best use of these areas would be to continue them in the present multiple-use management.

The Final EIS, Volume I, includes complete letters from Federal and local governments who have expressed an opinion in the BLM wilderness process.

There were no comment letters received on the final EIS on this WSA.

Appendix 1 - Estimated Costs of Acquisition of Non-Federal Holdings Within Areas Recommended For Designation [1]

Legal Description (Prior to any Subdivision)	Total Acreage	Number of Owners (If Parcel has been Subdivided)	Type of Ownership by Estate (Federal, State Private, other)		Presently Proposed for Acquisition (Yes, No)	Preferred Method of Acquisition (Purchase, Exchange, Other)	Estimated Cost of Acquisition [2]	
			Surface Estate	Subsurface Estate			Land Costs	Processing Costs
Parcel No. 1, Split estate, T. 34 S., R. 37 E., Section 36, All of section except SE of SE 1/4	600		Federal	State	No	Exchange		$6,000 [3]
Parcel No. 2, Split estate, T. 34 S., R. 37 E., Section 16	640		Federal	State	No	Exchange		3
Parcel No. 3, Split estate, T. 34 S., R. 36 E., Section 36	640		Federal	State	No	Exchange		3
Parcel No. 4, Split estate, T. 35 S., R. 36 E. Section 16	640		Federal	State	No	Exchange		3
Parcel No. 5, Split estate, T. 35 S., R. 35 E., Section 36, except SW 1/4	520		Federal	State	No	Exchange		$6,000 [3]
Parcel No. 6, Split estate, T. 36 S., R. 35 E., Section 1, NE of NE1/4	40		Federal	State	No	Exchange		3

Appendix 1 - Estimated Costs of Acquisition of Non-Federal Holdings Within Areas Recommended For Designation [1]

Legal Description (Prior to any Subdivision)	Total Acreage	Number of Owners (If Parcel has been Subdivided)	Type of Ownership by Estate (Federal, State Private, other)		Presently Proposed for Acquisition (Yes, No)	Preferred Method of Acquisition (Purchase, Exchange, Other)	Estimated Cost of Acquisition [2]	
			Surface Estate	Subsurface Estate			Land Costs	Processing Costs
Parcel No. 7, Split estate, T. 35 S., R. 35 E., Section 16, Northern 1/2	200		Federal	State	No	Exchange		3
Parcel No. 8, Split estate, T. 34 S., R. 35 E. Section 36	640		Federal	State	No	Exchange		3
Parcel No. 9, Split estate, T. 34 S., R. 35 E. Section 16, All except western 1/4	555		Federal	State	No	Exchange		3

[1]The estimated costs listed in this appendix in no way represent a formal appraised value of the land or mineral estate, but are rough estimates based on sales or exchanges of lands or mineral estates with similar characteristics to those included in the WSA. The estimates for purposes of establishing a range of potential costs to the government of acquiring non-Federal holdings and in no way represent an offer to purchase or exchange at the cost estimate included in this appendix. Processing costs are all miscellaneous expenses other than land costs. These include work month costs, appraisals, title work, escrow costs, etc.
[2]Only administrative costs are shown for exchanges.
[3]The $6,000 is a total estimated cost for the combined parcels. Represents a one time total charge.

Winter Range Wilderness Study Area

1. The Study Area ---15,440 acres

The Winter Range Wilderness Study Area (WSA) (OR-2-73H) is located about 70 miles southeast of Burns, Oregon (20 miles southwest of Burns Junction and U.S. Highway 95) in Harney and Malheur Counties. The WSA is about 6 miles east of the county road which runs along the east side of Steens Mountain from State Highway 78 at Folly Farm to Fields.

The study area contains 14,800 acres of BLM land. Within the WSA is one 640-acre parcel of split-estate land (see Table 1). The study area is 9 miles long and averages about 3 miles in width. The boundary of the study area is formed almost entirely by low standard, BLM dirt roads, although two small parcels of private land border the area on the western side.

The WSA contains several distinct topographic features. A steep escarpment averaging about 500 feet high runs along the entire west-central side of the study area. To the west and below this ridge lies a basin area. Portions of both the Alvord Desert Basin and the Mickey Basin are included in this part of the study area. Along the western boundary, within the Mickey Basin portion of the area, the WSA reaches its lowest elevation at 3,924 feet.

Near the center of the WSA, the plateau area east of the escarpment rises to a height of 5,122 feet, the highest point in the study area. From the top of the escarpment, the landscape on the plateau slopes gradually downward to the southeast, and consists of gently-rolling terrain. The eastern portion of the study area contains a small, usually dry, playa lakebed which lies near the boundary.

The WSA was initially studied under Section 603 of the Federal Land Policy and Management Act (FLPMA), but since the wilderness inventory phase additional lands were added and modified, and as a result, these areas were studied under Section 202 also of FLPMA. These lands were included in the final Oregon Wilderness Environmental Impact Statement (EIS) filed in February 1990.

The dominant vegetation type within most of the WSA is sagebrush-bunchgrass. Another major vegetation type typical of a desert basin environment is the salt desert shrub. This type includes greasewood, shadscale, spiny hopsage, budsage, saltgrass and a variety of grasses and forbs normally associated with saline/alkaline soils.

Some 50 acres of the southwest corner of the Winter Range WSA is part of the 560-acre Mickey Basin Research Natural Area (RNA). The RNA includes a stand of winterfat in good condition. The RNA was designated to protect the area for research and educational purposes.

The Winter Range WSA has been modified to include a 640-acre parcel of land acquired in an exchange with the State of Oregon since completion of the wilderness inventory phase. The State of Oregon has retained the subsurface mineral estate, resulting in a 640-acre split estate (Federally managed surface, state subsurface or mineral rights) parcel within the WSA.

There were two alternatives analyzed in the EIS: an all wilderness alternative designating all 15,440 acres of public land; and a no wilderness/no action alternative, which is the recommendation of this report. These lands are shown on Map 1.

2. Recommendation and Rationale:

0 acres recommended for wilderness, 15,440 acres recommended for nonwilderness

The recommendation for this WSA is to release the entire 15,440 acres for uses other than wilderness. The all wilderness alternative is the environmentally preferable alternative. However, the no wilderness alternative would be implemented in a manner which would utilize all practical means to avoid or minimize adverse environmental impacts.

The recommendation would allow development of geothermal resources in this WSA which is considered to have limited wilderness values. Although the area meets the minimum criteria for designation as a wilderness and contains special wilderness features, it does not contain outstanding opportunities for primitive and unconfined recreation. It also has moderate and high potential for the occurrence of geothermal resources, and a 10-megawatt geothermal power plant is projected for construction. Part of the study area lies within the Alvord Known Geological Resource Area (KGRA) and has a high geothermal potential.

3. Criteria Considered in Developing the Wilderness Recommendation

Wilderness Characteristics

A. Naturalness: The Winter Range WSA appears to be in a relatively natural condition. Most of the developments can be seen from only a very small portion of the WSA.

The area contains a long ridge with escarpment, low basin and dry playa lakebed. Scattered ridges and buttes in the eastern portion of the area also contribute to its relatively natural state.

Due to lack of year-round water, only occasional use by mule deer and antelope occurs in the WSA. Golden eagle, prairie falcon, great horned owl and American kestrel are some of the raptors found in the area. Other common wildlife species include coyote, black-tailed jackrabbit, least chipmunk, antelope ground squirrel, sage sparrow, Brewer's sparrow, horned lark and western rattlesnake. Chukars and sage grouse are present, but not abundant. Bushy tailed woodrat, canyon mouse and long-eared myotis (bat) may be found near rimrocks.

There are nine developments in the Winter Range WSA: three reservoirs, one well, two fences totaling 1.5 miles, two ways totaling 3 miles in length, and a well. These developments influence about 3 percent of the WSA.

The water developments are scattered around the perimeter of the area. They are relatively minor and are fairly well screened by location and adjacent topography. The vehicle ways are in the west side of the study area and do not have a major influence on the area due to terrain and vegetation. Like the vehicle ways, the fences enter the WSA from the western boundary and their influence on the study area is minimal.

The white sage well is an unnatural feature that was overlooked during the WSA inventory process. The well is located in the northwest corner adjacent to the boundary road of T. 32 S., R. 36 E., Section 15, SE 1/4 of the SE 1/4. Livestock watering facilities exist at this well and are operational primarily during the winter grazing use period.

RECOMMENDED FOR WILDERNESS (None)

RECOMMENDED FOR NONWILDERNESS

LAND OUTSIDE WSA RECOMMENDED FOR WILDERNESS (None)

SPLIT ESTATE

STATE (None)

PRIVATE (None)

- N -

Winter Range Proposal
MAP-1

0 1 2 3
MILES

OR-2-73H
January, 1991

Table 1. Land Status and Acreage Summary of the Study Area

	Acres
Within Wilderness Study Area	
BLM (surface and subsurface)	14,800
Split-estate (BLM surface only)[1]	640
Inholdings (State, private)	0
Total	15,440
Within the Recommended Wilderness Boundary	
BLM (within WSA)	0
BLM (outside WSA)	0
Split-Estate (within the WSA)[1]	0
Split-Estate (outside the WSA)[1]	0
Inholdings (State, private)	0
Total BLM Land Recommended for Wilderness	0
Within the Area Not Recommended for Wilderness	
BLM	14,800
Split-Estate[1]	640
Total BLM Land Not Recommended for Wilderness	15,440
Inholdings (State, private)	0

[1]For purposes of this report, split-estate lands are defined only as those lands with Federal surface and non-Federal subsurface (minerals). Lands that have Federal minerals but non-Federal surface are classified in this report according to ownership of the surface estate.

Features and activities outside the area do not detract from the wilderness character of the study area. The boundary roads have only a small effect on the area's wilderness values because they pass through flat or gently-sloping terrain which decreases their visibility. Other outside sights, such as small water developments, have a very minor influence on the area.

B. Solitude: Opportunities for solitude in the Winter Range WSA are outstanding. The size and topography of the WSA enhance the opportunities for solitude. Much of the WSA provides topographic screening, primarily along the main ridgeline which runs north and south through the study area. Scattered ridges and buttes in the gently-rolling eastern portion of the area provide some topographic screening and enhance solitude values in this part of the WSA.

Military jet aircraft frequently use the area for low altitude training flights. During the daylight hours of high use periods, there may be as many as 15 low-level flights daily. The influence of these flights on a visitor's perception of solitude is quite temporary, but extreme for a short period of time (1 minute or less). These flights do not have a significant, long-lasting, adverse effect on a visitor's opportunity to find solitude.

C. Primitive and Unconfined Recreation: The area does not provide opportunities for primitive recreation. Opportunities for day hiking, backpacking, camping, hunting, horseback riding and sightseeing exist, but are not considered to be of outstanding quality.

D. Special Features: There are several features within the Winter Range WSA which add to the value of the area as wilderness including vegetation, wild horses and scenery.

The size and condition of the winterfat community, for which the Mickey Basin Research Natural Area was designated, is uncommon in Oregon. The site

contains a nearly-pure stand of winterfat in good condition. Three plant species of special interest also occur within the WSA.

Northern kit fox (on the Oregon Department of Fish and Wildlife List of Threatened Species under the Endangered Species Act) may range into the WSA, but its actual presence has not been verified.

The scenery of the study area is most outstanding in the southwestern corner. The area that can be viewed covers the top of the Steens Mountain to the east side of the Alvord Basin.

Diversity in the National Wilderness Preservation System (NWPS)

A. Expanding the Diversity of Natural Systems and Features as Represented by Ecosystems: Wilderness designation of this WSA would add an ecosystem (using the Bailey-Kuchler classification) not presently represented in Oregon, and represented in the National Wilderness Preservation System by only three areas. There are 18 other BLM areas in the State under study with this ecosystem. The information is summarized in Table 2.

Six vegetative communities listed in the Basin and Range section of the Oregon Natural Heritage Plan occur in this WSA: bare playa and play margin communities, greasewood/saltgrass community, shadscale/spiny hopsage/budsage community complex, winterfat community, big sagebrush/spiny hopsage community and big sagebrush/bluebunch wheatgrass.

B. Assessing the Opportunities for Solitude or Primitive Recreation Within a Day's Driving Time (5 hours) of Major Population Centers: The Winter Range WSA is within a 5-hour drive of one major population center (over 100,000). Table 3 summarizes the number and acreage of designated areas and other BLM study areas within 5 hours drive of the population center.

C. Balancing the Geographic Distribution of Wilderness Areas: The Winter Range WSA would contribute to balancing the geographic distribution of areas within the National Wilderness Preservation System. There are only three designated wilderness areas within 100 miles of this WSA.

Manageability

(The area must be capable of being effectively managed to preserve its wilderness character.)

The Winter Range WSA would be manageable as wilderness under the all wilderness alternative. The potential manageability problems of the study area are not substantial. Potential development of adjacent private lands could not be controlled and would have an adverse effect on the natural appearance and opportunities for solitude within the WSA. However, there are no known plans for development on these parcels.

Energy and Mineral Resource Values

The geology, energy and mineral resources of the Winter Range WSA were evaluated by interpreting existing literature, reviewing mining claims and mineral leasing records, and correlating rock units in the WSA with similar environments in other areas known to contain mineral deposits. Technical details of the findings of the evaluation are in a report of the assessment of mineral resources, Sheepshead Mountain Geologic Resource Area (GRA), Harney and Malheur Counties, Oregon, prepared by Terradata in 1982, a BLM contractor, and also in a BLM report in 1983, on the assessment of mineral resources in the South Harney GRA.

A large portion of the study area falls within the Alvord Known Geothermal Resource Area (KGRA). Following legal subdivisions, the KGRA boundary covers most of the western side of the study area, including portions of the Mickey and Alvord Basins and part of the escarpment. Most of the western side of the WSA also has been rated as having a high potential for the occurrence of geothermal resources. Most of this portion lies within the Alvord KGRA. The rest of the WSA has a moderate potential for the occurrence of geothermal resources. The entire area has a moderate potential for oil and gas leases in this area as of October 16, 1987.

Aside from abundant road aggregate sources, there are no known occurrences of mineral deposits within the WSA.

As of May 1991, there were no mining claims in this WSA.

Local Social and Economic Considerations

Livestock use at the current level of 604 AUMs and recreation use totaling less than 100 visitor days per year are the primary resource outputs that generate economic activity in the WSA. Local personal income generated annually from these existing levels amounts to approximately $7,248 for livestock

Table 2. - Ecosystem Representation

Bailey-Kuchler Classification	NWPS areas areas	NWPS areas acres	Other BLM Studies areas	Other BLM Studies acres
Province/Potential Natural Vegetation				
NATIONWIDE				
Intermountain Sagebrush Saltbush-Greasewood	3	45,553	37	1,016,167
OREGON				
Saltbush-Greasewood	0	0	18	553,227

Table 3. - Wilderness Opportunities for Residents of Major Population Centers

Population Centers	NWPS areas areas	NWPS areas acres	Other BLM Studies areas	Other BLM Studies acres
Boise, Idaho	16	4,741,570	126	5,060,460

grazing and $1,200 related to recreation use of the WSA, for an overall total of $8,448.

Under the recommendation, livestock grazing would remain at 604 AUMs. Projected energy and mineral development would amount to one 10-megawatt geothermal power plant. Overall recreation use would remain at less than 100 visitor days per year. Annual local personal income generated from resource outputs in the WSA would remain at approximately $8,500.

There were no social issues identified with the study of this WSA.

Impacts on Resources

The comparative impact table on the following page summarizes the effects on pertinent resources for all the alternatives considered including designation and nondesignation of the entire area as wilderness.

Summary of WSA-Specific Public Comments

Public involvement has occurred throughout the wilderness review process. Certain comments received during the inventory process and early stages of the EIS preparation were used to develop significant study issues and various alternatives for the ultimate management of those lands found to have wilderness values.

During formal public review of the draft EIS and Supplement to the draft EIS, a total of eight comments specifically addressing this WSA were received. Of those, eight were written statements received at the 24 public hearings on the EIS. There

Table 4. Comparative Summary of the Impacts by Alternative

Issue Topics	Recommendation No Wilderness/No Action Alternative	All Wilderness Alternative
Impacts on Wilderness Values	Projected activities and continued uses would directly and indirectly impair wilderness values over approximately 6,000 acres of WSA, with further declines from other potential uses over the long term.	Wilderness designation of the entire 15,440 acres would result in protection and enhancement of existing wilderness values.
Impacts on Energy and Mineral Development	No impact to projected energy development is expected. There would be no impact on mineral development.	Wilderness designation would preclude the development of one 10-megawatt geothermal power plant.
Impacts on Vegetation	Projected geothermal developments would remove ground cover on 71 acres. There would be no change to vegetation in the remainder of the WSA.	Three miles of ways totaling 3 surface acres would eventually revegetate naturally. Little or no change would occur to vegetation in the rest of the area.
Impacts on Wildlife	Minimal impact on wildlife values would be expected. Bighorn sheep, if present, could be adversely impacted by geothermal development.	Wildlife habitat would be maintained throughout the area.
Impacts on Livestock Grazing	Livestock use would remain at its present level of 604 AUMs and vehicle use would continue on all ways for livestock management.	Livestock use would continue at 604 AUMs. Some inconvenience and increase in costs to livestock operators would result from closure of 3 miles of ways.
Impacts on Recreation	Overall recreation use would not change. A negligible increase in vehicle-oriented recreation use combined with the influence of projected geothermal development would decrease primitive recreation use levels.	There would be a negligible reduction in the area's overall recreation use but remain at less than 100 visitor days per year. This reduction would primarily involve displacement of hunting use to other areas.
Impacts on Local Personal Income	Annual local personal income would remain at approximately $8,500.	Annual local personal income would remain at approximately $8,500.

were no oral statements received. In general, five commenters supported wilderness designation for all or part of the WSA. Three commenters supported no wilderness for the WSA.

Those favoring wilderness commented that wilderness resources outweigh other values of the land such as geothermal development and livestock development projects. Others commented that the WSA has high scenic qualities and that the WSA would add an ecosystem not presently represented in the National Wilderness Preservation System. Some commented that in order to protect the overall ecosystem of the area and to maintain an ecological diversity, preserve a gene pool, and to allow for minimum human impact to wildlife and their habitat that this WSA should be combined with adjacent WSAs to form one large wilderness area. A few commented that wilderness designation would help protect and preserve rare plants such as the barrel cactus.

Those opposing designation commented that the existing natural resources, such as geothermal, could not be used and, therefore, would be wasted if designated wilderness. Others commented that designation could cause the area to become overused by attracting more people to the area.

The Idaho Air National Guard expressed concern over the possible conflict between low altitude overflights and the feeling of solitude sought by the wilderness area users. They consider these routes to be of vital importance to combat training and readiness; therefore, any constraint on the use of existing routes could have a severe impact on unit readiness.

This WSA has three existing (September 1990) low-level military training routes that can be found throughout the WSA, those being IR 304, VR 1352 and VR-1301. Combined, these military flight routes are estimated to have 2,500 flights per year at this time.

The Oregon Department of Fish and Wildlife (ODFW) commented that more disclosure of the impacts from past livestock grazing is needed and indicated a desire for more disclosure on the effect introduced plant species have had upon native plant communities. They also expressed a need for a discussion of habitat components for big game, habitat diversity or nongame in the section on environmental consequences.

Both the County Court for Harney County and the Burns Paiute Reservation concur with the BLM's recommendation of no wilderness for Winter Range WSA.

There were no comment letters received on the final EIS for this WSA.

Mahogany Ridge Wilderness Study Area

1. The Study Area —27,940 acres

The Mahogany Ridge Wilderness Study Area (WSA) (OR-2-77) is located 102 miles southeast of Burns (12 miles southeast of Fields) in Harney County. The Whitehorse Ranch county road, which runs between the Fields-Denio county road and U.S. Highway 95, lies 0.5 mile to the north of the WSA. Nevada State Highway 140 is 27 miles to the southwest.

The Mahogany Ridge study area is somewhat rectangularly shaped, containing 27,210 acres of BLM land. Within the study area are 19 private inholdings totaling 1,520 acres. Almost all of the private lands are located in the bottoms of the major drainages which run through the center of the WSA, or near other water sources. The WSA also contains 730 acres of split estate lands (see Table 1).

The WSA is about 12 miles long and averages 4 miles in width, although it narrows to 2 miles in the center. The boundary of the area is formed by a combination of low standard BLM dirt roads and private land.

On the north, a "finger" of private land enters the WSA for 2 miles along Trout Creek. Six dead-end roads totaling 13.5 miles also penetrate the WSA forming part of the boundary. In the northeast, one of these roads leads to an 80-acre parcel of private land. This parcel is also technically part of the boundary even though it is essentially surrounded by BLM land.

The Mahogany Ridge study area lies within the Trout Creek Mountain Range in southeastern Oregon. It is in the western edge of the mountains near the Nevada border. This part of the Trout Creek Mountains is characterized by a large, flat-topped plateau which gradually slopes to the north and west. The plateau is deeply gouged by three drainages which flow to the north and northwest. These three drainages and the large ridges which separate them are the major physical features of the Mahogany Ridge WSA.

The largest of the three drainages is Big Trout Creek Canyon. Flowing from south to north, Big Trout Creek runs the entire length of the study area, nearly dividing the WSA in half. The stream has cut a large canyon which reaches a depth of 1,600 feet near the center of the study area.

To the west of Big Trout Creek is Mahogany Ridge. This is one of the WSA's large, flat-topped ridgelines. The eastern side of the ridge is quite steep and contains a number of small spring-fed drainages which flow into Big Trout Creek. It is to the north and west of this ridgeline, along the northwestern boundary, that the study area reaches its lowest elevation of 4,640 feet. In the southern end of the study area, a ridge named "The V" lies on the east side of Big Trout Creek. Near the WSA's southern boundary, "The V" ridge reaches an elevation of 8,192 feet, the highest point in the study area.

East of "The V" is the East Fork of Trout Creek. This major drainage originates within the study area and flows over 5 miles before it joins Big Trout Creek near the center of the WSA. The East Fork also flows through a large canyon which reaches its maximum depth of almost 1,300 feet near the confluence with Big Trout Creek.

Paralleling the East Fork and the lower reaches of Big Trout Creek is the study area's third major ridge, Center Ridge. This ridgeline primarily divides Big Trout Creek from Little Trout Creek, which drains the northeastern corner of the WSA. Like the East Fork, Little Trout Creek also originates within the study area. Little Trout Creek flows through the smallest canyon of the three drainages, which reaches a maximum depth of 740 feet.

There is a variety of vegetation within the Mahogany Ridge WSA. Although the dominant species in the study area is big sagebrush with a perennial bunchgrass understory, each of the three major drainages includes a variety of riparian species. Other prevalent species include aspen at the higher elevations, and mountain mahogany along the steeper slopes of the ridges.

The WSA was studied under Sections 603 and 202 of the Federal Land Policy and Management Act (FLPMA). Lands added after the wilderness inventory were studied under Section 202, also of FLPMA. These lands were included in the Final Oregon Wilderness Environmental Impact Statement (EIS) filed in February 1990.

The Mahogany Ridge WSA has been modified to include four parcels (730 acres) of land, including three parcels (570 acres) of land acquired in an exchange with the State of Oregon since completion of the wilderness inventory phase. The State of Oregon has retained the subsurface mineral estate, resulting in split-estate (Federally managed surface, state subsurface or mineral rights) lands within the WSA. One additional parcel (160 acres) of split estate land has been reinstated through the court decision in Sierra Club v. Watt. This decision restored split estate lands to wilderness study under Section 603 of FLPMA.

There were three alternatives analyzed in the EIS: 1.) An all wilderness alternative where all 27,940 acres of BLM land would be designated as wilderness; 2.) Another all wilderness alternative where 28,750 acres of BLM land would be designated as wilderness. This includes an additional 810 acres of BLM land located on the northern and western sides of the WSA. An attempt would also be made to acquire 4,590 acres of private land and the mineral estate of 730 acres of split estate land; and, 3.) A no wilderness/no action alternative, which is the recommendation for this report. These lands are shown on Map 1.

2. Recommendation and Rationale

—0 acres recommended for wilderness,
27,940 acres recommended for nonwilderness

The recommendation for this WSA is to release the entire 27,940 acres for uses other than wilderness. The all wilderness alternative, with acquisitions and road closures, which is the environmentally preferable alternative, is not recommended. The no wilderness alternative would be implemented in a manner which would utilize all practical means to avoid or minimize environmental impacts.

The no wilderness alternative is the recommended action because the Mahogany Ridge WSA is not manageable under the all wilderness alternative. The study area possesses a variety of high quality recreational opportunities, offers opportunities for solitude, and is in a basically natural condition. However, due to the presence and distribution of private land inholdings and a boundary which is largely formed by private land, it would not be possible to manage the area to protect its wilderness values without the acquisition of an extensive amount of private land.

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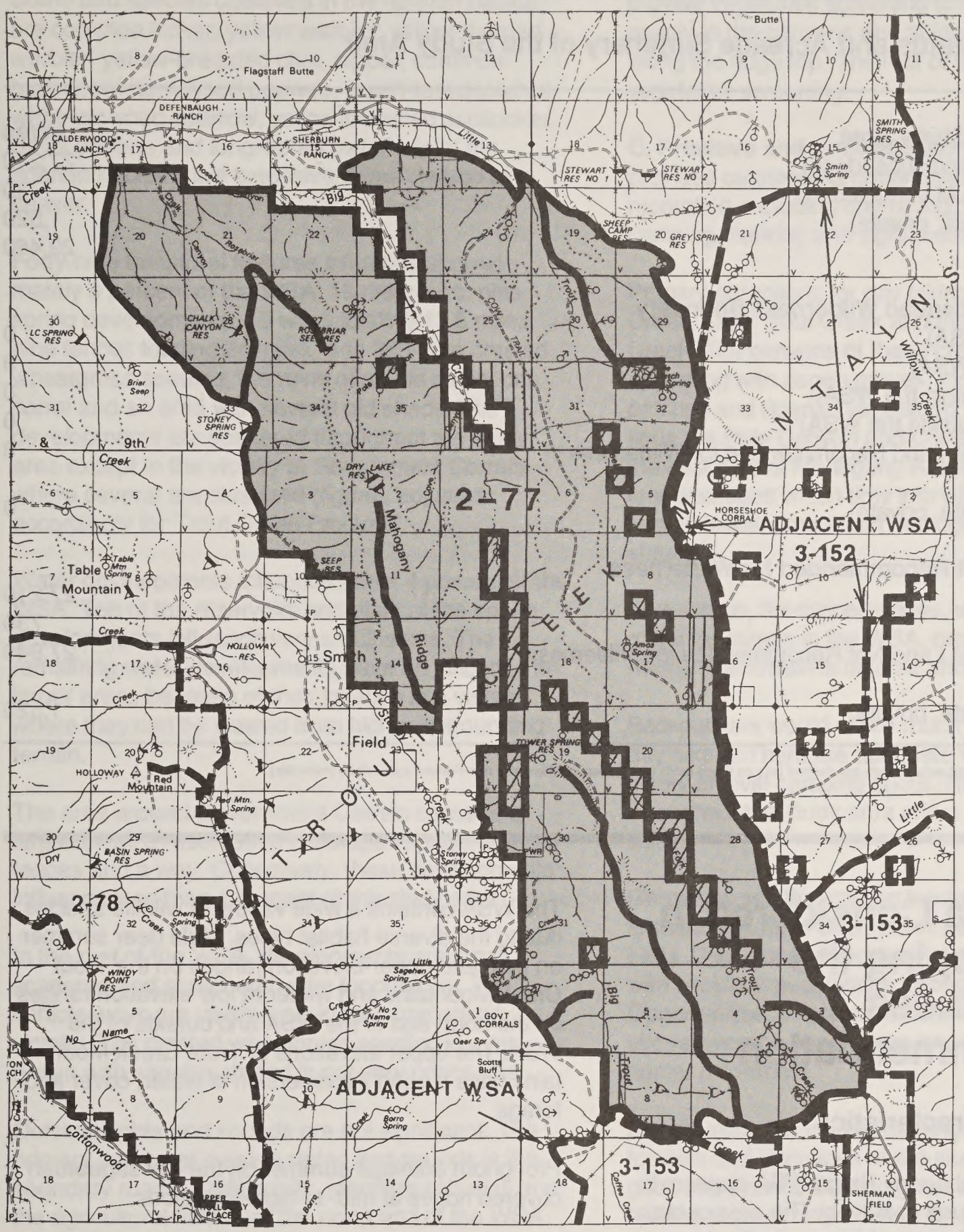


RECOMMENDED FOR WILDERNESS (None)

RECOMMENDED FOR NONWILDERNESS

LAND OUTSIDE WSA RECOMMENDED FOR WILDERNESS (None)

SPLIT ESTATE

STATE (None)

PRIVATE

-N-

Mohogany Ridge Proposal

MAP-1

0 1 2 3

MILES

OR-2-77
January, 1991

Table 1 - Land Status and Acreage Summary of the Study Area

Within Wilderness Study Area	Acres
BLM (surface and subsurface)	27,210
Split Estate (BLM surface only)	730
Inholdings (State, private)	1,520
Total	29,460
Within the Recommended Wilderness Boundary	
BLM (within WSA)	0
BLM (outside WSA)	0
Split Estate (within the WSA)[1]	0
Split Estate (outside the WSA)[1]	0
Total BLM Land Recommended for Wilderness	0
Inholdings (State, private)	0
Within the Area Not Recommended for Wilderness	
BLM	27,210
Split Estate[1]	730
Total BLM Land Not Recommended for Wilderness	27,940
Inholdings (State, private)	1,520

[1]For the purpose of this report, split estate lands are defined only as those lands with Federal surface and non-Federal subsurface (minerals).

3. Criteria Considered in Developing the Wilderness Recommendation

Wilderness Characteristics

A. Naturalness: Mahogany Ridge WSA appears to be in a relatively natural condition. The area contains a large flat-topped plateau which gradually slopes to the north and west. The plateau is deeply gouged by three drainages which flow to the north and west. The plateau is deeply gouged by three drainages which flow to the north and northwest. The largest of the three drainages is Big Trout Creek Canyon. It runs the entire length of the study area, nearly dividing the WSA in half. The stream has cut a large canyon which reaches a depth of 1,600 feet near the center of the study area. Mahogany Ridge, also within this study area, is a large flat-topped ridge which is quite steep and contains a number of small spring-fed drainages. Another ridge named "The V", contains the highest point in the WSA.

The WSA contains a wide variety of wildlife species due to the diverse habitat types. Mule deer summer on mid- and upper-elevation ranges on the Trout Creek Mountains and winter at low elevation ranges on the north end of the WSA and outside of the WSA. The upper elevations of Trout Creek Mountains have a good interspersion of water, cover and forage.

Pronghorn antelope summer on the low sagebrush covered ridges at mid- to high-elevations.

Nongame mammals include coyote, black-tailed jackrabbit, mountain cottontail, northern pocket gopher, beaver and Belding's ground squirrel and many other species.

Chukars are found near canyons and rimrocks in the northern end of the WSA near Trout Creek. Valley quail are also found in the northern end nearby brushy drainages.

Raptors common to the area include golden eagle, red-tailed hawk, prairie falcon, American kestrel and great horned owl.

Some bird species observed in the riparian habitat are common flicker, yellow warbler, yellow-rumped warbler, yellow-breasted chat, dipper, common bushtit, western wood peewee, green-tailed towhee, white-crowned sparrow, yellow-breasted sapsucker, Say's phoebe and long-eared owl. Parts of the riparian habitat have extensive areas cleared by beaver.

Forty-nine unnatural features influence approximately 8 percent of the WSA: 18 reservoirs, nine spring developments, 10 ways totaling 13.5 miles, nine fences totaling 24 miles, one 350-acre crested wheatgrass seeding, the ruins of an old cabin, one corral and an area with several old sheds. The developments are scattered throughout the study area except in the vicinity of Government Corrals where several are clustered (figures adjusted accordingly for Trout Creek Project).

Water developments influence about 4 percent of the WSA. Ten of the reservoirs and eight of the spring developments influence very small areas. The remaining water developments have an influence on larger areas because of their location in a valley where they can be viewed from higher surrounding terrain.

The area around Government Corrals contains a large corral, a reservoir, a developed spring, several fences and a way. Collectively, these developments influence less than 1 percent of the study area.

In the rest of the WSA, developments are small, scattered and screened by the topography. The vehicle ways are visible only in their immediate vicinity. The crested wheatgrass seeding is overgrown with sagebrush and is not very noticeable.

Outside sights and sounds are not significant. The primary source of outside sights and sounds is the boundary roads. Additionally, ranching activities and the agricultural field near the north end of the WSA have a slight influence on the study area. These features do not detract from the wilderness character of the study area.

B. Solitude: Opportunities for solitude in the Mahogany Ridge WSA are outstanding. These opportunities are enhanced by the study area's size and the diverse topography and vegetation.

The major canyons of Trout Creek and its tributaries, plus the plateaus and ridges between the drainages, as well as the rolling hills in the northwest, all provide topographic screening. Groves of aspen, patches of mountain mahogany and expanses of big sagebrush provide vegetative screening to enhance solitude mainly in the canyons and at locations scattered along the ridge top. The rest of the WSA has little vegetative screening.

C. Primitive and Unconfined Recreation: The area provides outstanding opportunities for primitive recreation, including day hiking, backpacking, camping, hunting and sightseeing.

Primary attractions for day hiking include Big Trout Creek, Little Trout Creek and the East Fork of Trout Creek. The canyons of these creeks are very appealing with aspen groves, mountain mahogany patches and riparian vegetation. Additional attractions are Pole Canyon and Cover Canyon located on the east side of Mahogany Ridge. These are intermittent drainages which flow into Big Trout Creek and contain aspen, mountain mahogany and other shrubs.

Three large, flat-topped ridges, which separate the major drainages in the WSA, provide excellent hiking. The terrain is diverse and the view is striking.

Backpackers would utilize much the same areas as day hikers. There are adequate water sources and plenty of level camping spots. The vegetation throughout the study area offers shelter and seclusion.

Game species that can be hunted within the study area include mule deer, antelope and upland game birds. Opportunities for deer hunting are very good with excellent populations throughout the WSA. Opportunities for antelope hunting are good with above-average populations and moderate ease of hunter movement.

Opportunities for chukar hunting are best in the foothills and drainages of the study area. There are good populations of sage grouse in the WSA, but hunting them is only allowed by the Oregon Department of Fish and Wildlife (ODFW) on a periodic basis when numbers are high.

Big Trout Creek, Little Trout Creek and East Fork of Trout Creek all provide good fishing opportunities for hybrid cutthroat/rainbow trout.

Opportunities for sightseeing are outstanding in the Mahogany Ridge WSA. The diversity in terrain, from the broad mahogany-covered plateaus to the aspen groves and riparian habitat of the deep creek canyons, creates many interesting views and viewpoints. Broad vistas with views of Steens Mountain, Pueblo

Mountains and the mountain ranges of northern Nevada are available from various high points in the WSA.

D. Special Features: Features in the Mahogany Ridge WSA, which add to the value of this area as wilderness, include vegetation and wildlife.

Two plant species of special interest, *Melica stricta* and *Allium bisceptrum,* are found in the WSA.

Crucial deer winter range is found on 800 acres around the Chalk Hills area in the northwest part of the WSA.

Sage grouse are abundant during the summer in the low sagebrush and big sagebrush at mid- and high-elevation ranges. Winter areas have not been located. Three sage grouse strutting grounds are located in the northeastern edge of the WSA, where sage grouse conduct an extensive courtship dance prior to mating. The same areas are often used year after year and the birds usually nest within a 2-mile radius of these areas. Sage grouse is a candidate for Federal listing as threatened or endangered.

Diversity in the National Wilderness Preservation System (NWPS)

A. Expanding the Diversity of Natural Systems and Features as Represented by Ecosystems: Wilderness designation of this WSA would add an ecosystem (Bailey-Kuchler classification) not presently represented in Oregon, and represented in the National Wilderness Preservation System by only three areas. There are 66 other BLM areas in the State under study with this ecosystem. The information is summarized in Table 2.

According to the Bailey-Kuchler system of classifying ecosystems, the study area is in the Intermountain Sagebrush Province, and the potential natural vegetation community is sagebrush steppe.

There are seven ecosystems identified in the Basin and Range section of the Oregon Natural Heritage Plan which occur in this WSA. The sagebrush communities are big sagebrush/Idaho fescue, low sagebrush/Idaho fescue, low sagebrush/Sandberg's bluegrass, and big sagebrush/bluebunch wheatgrass. The other communities are aspen grove and mountain mahogany plus the bitterbrush-sagebrush/snowberry which occurs on Trout Creek Mountains.

B. Assessing the Opportunities for Solitude or Primitive Recreation Within a Day's Driving Time (5 hours) of Major Population Centers: The WSA is within a 5-hour drive of two major population centers. Table 3 summarizes the number and acreage of destination areas and other BLM study areas within 5 hours drive of the population centers.

C. Balancing the Geographic Distribution of Wilderness Areas: The Mahogany Ridge WSA would contribute to balancing the geographic distribution of areas within the National Wilderness Preservation System. There is one designated wilderness area within 100 miles of this WSA.

Manageability

(The area must be capable of being effectively managed to preserve its wilderness character.)

The Mahogany Ridge WSA would not be manageable as wilderness under the all wilderness alternative. This is largely due to the extensive amount of private land which occurs within the study area's boundary and the location of those inholdings, which are concentrated along the major drainages.

Almost all of the private inholdings in the Mahogany Ridge study area are along the creeks in two of the study area's three major drainages (Big Trout Creek and the East Fork of Trout Creek) where much of the recreation use would occur under wilderness designation. Few, if any, of the inholdings are fenced or otherwise marked to indicate private ownership. Management of recreation use under these circumstances would be extremely difficult.

Another management difficulty occurs along the northern and western boundaries, where much of the boundary is formed by private land. In addition, the northern boundary also includes a "finger" of private land which extends into the study area along Big Trout Creek. In both areas the subdivisions are not easily identified on the ground and would be difficult to manage. Portions of this private land along Big Trout Creek are currently used for agricultural purposes.

Other substantial manageability problems under an all wilderness alternative include the potential for development of the study area's inholdings. All of the private and split estate land would be available for development of other resources which would not be compatible with wilderness management. These developments could include water resource development, energy and mineral development, and range improvements. Such developments would likely require access. Development and access would

Table 2 - Ecosystem Representation

Bailey-Kuchler Classification	NWPS areas areas	NWPS areas acres	Other BLM Studies areas	Other BLM Studies acres
Domain/Province/Potential Natural Vegetation				
NATIONWIDE				
Intermountain Sagebrush Sagebrush Steppe	3	76,699	136	4,342,400
OREGON				
Sagebrush Steppe	0	0	60	1,955,134

Table 3 - Wilderness Opportunities for Residents of Major Population Centers

Population Centers	NWPS areas areas	NWPS areas acres	Other BLM Studies areas	Other BLM Studies acres
Boise, Idaho	16	4,741,570	126	5,060,460
Reno, Nevada	45	4,967,230	175	6,904,809

present extensive problems in managing the area as wilderness.

The area would be manageable as wilderness under the enhanced wilderness alternative. Acquiring both the inholdings and boundary parcels would greatly improve manageability problems because the boundary would be more identifiable; it would be along a major road instead of along legal subdivisions. With extensive acquisition of private lands and mineral estate, problems with recreation use, access and potential development would also be substantially reduced.

The only portions of the WSA where manageability problems could still occur would be along the northern boundary where the study area is bounded by private land and a finger of developed private land extends into the area along Big Trout Creek.

Energy and Mineral Resource Values

The energy and mineral resources of the Mahogany Ridge WSA were evaluated by interpreting existing literature, reviewing mining and mineral leasing records, correlating rock units in the WSA with similar environments in areas known to contain mineral resources, and by evaluating results of a geochemical sampling program conducted by the BLM. Technical details of the evaluation are in a mineral resources assessment report on Pueblo Valley geological resource area (GRA), Harney County, Oregon, prepared by Terradata in 1982, a consulting firm under contract with BLM.

Surface rocks in the WSA are Tertiary volcanic rocks consisting of basalt, andesite, and rhyolite flows, tuffs and tuffaceous sedimentary rocks with interlayers of ashy diatomite which represent lacustrine (lake) deposits.

The WSA is within the Pueblo Valley GRA which has been classified according to a rating system that indicates both the potential for occurrence (geologic favorability) of certain minerals, as well as the quantity and quality of data on which the rating is based (confidence level).

The northern part of this WSA is considered to have moderate potential for the occurrence of geothermal resources. Projected exploration for oil and gas resources and geothermal resources would be allowed. However, due to the lack of geologic evidence to justify an extensive exploration/development program, only casual exploration, without development, is projected.

The entire WSA is rated moderately favorable for the occurrence of metals because the volcanic rocks present belong to the same geologic formation that hosts occurrences of mercury, copper and gold in the Alvord Peak WSA (OR-2-83). Mercury and copper are strategic and critical minerals, but there are no known deposits of these minerals in the WSA.

The industrial mineral diatomite occurs in a sedimentary rock formation which extends into the northern part of the WSA. There is a diatomite mining prospect less than 3 miles northeast of the WSA. Mining for diatomite and mercury is projected to include development of two open-pit mines within the northern and central portions of the WSA.

As of May, 1991, there were no mining claims within this WSA.

Local Social and Economic Considerations

Livestock use at the current level of 5,420 AUMs and recreation use totaling less than 800 visitor days per year are the primary resource outputs that generate economic activity in the WSA. Local personal income generated annually from these existing use levels amounts to approximately $65,040 for livestock grazing and $9,600 related to recreation use of the WSA, for an overall total of $74,640.

Under the recommendation, livestock use would remain at 5,420 AUMs. Recreation user is expected to increase by 15 visitor days per year. Annual local personal income generated from resource outputs in the WSA would increase by approximately $200.

There would be no social issues identified with the study of this WSA.

Summary of WSA-Specific Public Comments

Public involvement has occurred throughout the wilderness review process. Certain comments received during the inventory process and early stages of the EIS preparation were used to develop significant study issues and various alternatives for the ultimate management of those lands found to have wilderness values.

During formal public review of the draft EIS and supplement to the draft EIS, a total of 16 comments specifically addressing this WSA were received. Of those, 15 were written and one was an oral statement received at the 24 public hearings on the EIS. In general, nine commenters supported wilderness designation for all or part of the WSA. Six commenters supported no wilderness for the WSA, while one commenter addressed the relative merits of the EIS, but took no formal position on wilderness designation.

Those favoring wilderness commented on the need to preserve natural resources, including minerals, for future emergency use. Others commented that the nation needs more wilderness areas and that the Mahogany Ridge WSA fully meets wilderness criteria as set forth in the Wilderness Act of 1964. Some believed that this WSA should be combined with the other WSAs located in the Trout Creek Mountains to create a large wilderness complex. The reasons given for this idea are to better protect watershed resources, general ecology of the area and to best maintain wildlife populations.

Those opposing legislation commented that wilderness values were too low and that wilderness is incompatible with multiple use. Others commented that wilderness designation would adversely impact the mineral industry and the individual private landowners and livestock operators. Some commented that the area could not be managed as a wilderness area due to extensive inholdings within the existing WSA.

The Oregon Department of Geology and Mineral Industries commented that Mahogany Ridge WSA has high geothermal potential and that gold had been discovered within the general area. They also commented that rating the mineral resource potential of the wilderness study areas is difficult and premature due to the lack of inventory data, since all known indicators of mineral wealth need to be considered in assessing mineral potential.

The ODFW had some general comments concerning the draft EIS. These comments previously involved a description of important habitat components for big game and habitat diversity for nongame, and the lack of discussion for these components in the environmental consequences section.

Both Harney County and the Burns Paiute Reservation oppose any wilderness designation of the Mahogany Ridge WSA due to serious conflicts with oil, gas, geothermal, mineral and range developments; minor problems with split estate mineral and energy resources with the State of Oregon; designation would have significant impacts on the development of adjacent private and public lands; manageability, boundary marking, small size and odd shape are some of the major problems of these areas. Both entities believe that the highest and best use of this area would be to continue it in the present multiple-use management.

There were no comment letters received on the Final EIS for this WSA.

Impacts on Resources

The following comparative impact table summarizes the effects on pertinent resources for all the alternatives considered including designation and nondesignation of the entire area as wilderness.

Table 4 - Comparative Summary of the Impacts by Alternative

Issue Topics	Recommendation No Wilderness/No Action Alternative
Impacts on Wilderness Values	In the absence of wilderness designation, projected activities and continued uses would directly and indirectly impair wilderness values over approximately 7,400 acres with further declines from the potential uses over the long term.
Impacts on Energy and Mineral Development	There would be no impact to energy development. Production would occur from one projected diatomite mine and one mercury mine in the WSA.
Impacts on Vegetation	Development of two spring sources would help to distribute livestock grazing over a larger area for better utilization of available forage. Access routes would not revegetate because of continued vehicle use.
Impacts on Wildlife	Wildlife habitat could be damaged due to possible mineral development. Strongest adverse impacts could occur at three sage grouse strutting grounds and on deer winter range. Deer, antelope, trout and nongame species could also be adversely affected.
Impacts on Watershed	Water quality would improve and vegetation would become established inside the fenced exclosures and around springs. Little change would occur over the rest of the WSA. The watershed could be affected due to possible water pollution by mercury and other contaminants used in mining.
Impacts on Livestock Grazing	Livestock use would be sustained at the current level of 5,420 AUMs by better distribution of cattle over a larger area in the WSA. This would be achieved by development of two spring sources in underutilized areas. Access would remain open to motorized vehicle use.
Impacts on Recreation Use	Recreation use would increase from the current level of 800 visitor days per year to approximately 815 visitor days per year.

All Wilderness Alternative	All Wilderness, with acquisitions and road closures, Alternative
Wilderness designation of the entire 27,940 acres within the Mahogany Ridge WSA would result in the protection and enhancement of existing wilderness values.	Wilderness designation of 33,340 acres (assuming acquisition of 4,590 acres of private property) would protect and enhance existing wilderness values. The acquisition of 730 acres of mineral estate of split estate lands would further enhance the total area by preserving wilderness values on all lands within the wilderness boundaries.
No impact to energy development is expected. Production would be foregone from one projected open-pit mercury mine. One projected open-pit diatomite mine would be developed on existing claims.	No impact to energy development is expected. Production would be foregone from one projected open-pit mercury mine. One projected open-pit diatomite mine would be developed on existing claims.
Vegetative condition would continue to decline, especially in areas of concentrated livestock use. The 13.5 miles of ways would naturally revegetate.	Vegetative condition would continue to decline, especially in areas of concentrated livestock use. The 13.5 miles of ways and 13.5 miles of roads would naturally revegetate.
Wildlife habitat and populations would be maintained on 27,940 acres designated wilderness. Disturbance to deer and antelope would be reduced during hunting seasons and mineral development would reduce populations of wintering deer and sage grouse.	Wildlife habitat and populations would be maintained on 33,340 acres designated wilderness. Disturbance to deer and antelope would be reduced during hunting seasons and mineral development would reduce populations of wintering deer and sage grouse. High fishery and wildlife values would be added to the WSA.
Little change in water quality would occur in the study area.	Little change in water quality would occur in the WSA.
Livestock use would be reduced by 180 AUMs. Increased expense and inconvenience for livestock management would be expected by precluding vehicle use on 13.5 miles of ways.	Livestock use would be reduced by 180 AUMs. Increased expense and inconvenience for livestock management would be expected by precluding vehicle use on 13.5 miles of ways and 13.5 miles of dead-end roads.
Wilderness designation would result in a net reduction in the area's overall recreation use, from less than 800 to less than 700 visitor days per year. This reduction would primarily involve displacement of vehicle-oriented use to other areas, and a change to primitive nonmotorized types of recreation in the WSA.	Wilderness designation would result in a net reduction in the area's overall recreation use by approximately 100 visitor days per year from the current level of 800 visitor days to approximately 700 visitor days annually. A projected slight increase in primitive recreation would not be sufficient to offset the reduction in vehicle-oriented recreation.

Table 4 - Comparative Summary of the Impacts by Alternative

Issue Topics	Recommendation No Wilderness/No Action Alternative
Impacts on Local Personal Income	Annual local personal income would increase by approximately $200.

All Wilderness Alternative	All Wilderness, with acquisitions and road closures, Alternative
Annual local personal income would decrease by approximately $3,400.	Annual local personal income would decrease by approximately $3,400.

Red Mountain Wilderness Study Area

1. The Study Area —16,215 acres

The Red Mountain Wilderness Study Area (WSA) (OR-2-78) is located 105 miles southeast of Burns, Oregon, (about 6 miles northeast of Denio, Nevada) in Harney County. The nearest highway is Nevada State Highway 140 which is 12 miles southwest of the WSA.

The study area contains 15,180 acres of BLM land and is roughly triangular in shape. It contains one 80-acre parcel of private land, located near the eastern boundary, and 1,035 acres of split estate lands where the mineral estate is privately owned (see Table 1).

The area's northern boundary is formed by a combination of two BLM roads and an irrigation ditch and pipeline. The eastern boundary is composed of BLM roads and a small parcel of private land. The southern boundary is formed by private land and BLM roads. The western boundary is formed by a county road. Three dead-end roads, totaling 5 miles, enter the study area and make up part of the boundary (one each from the north, east and south).

The study area lies on the southwest edge of the Trout Creek Mountains adjacent to the Pueblo Valley. The dominant topographic feature is Red Mountain which rises to 6,280 feet near the WSA's eastern boundary. This mountain's ridgeline extends southeast for nearly 2 miles, with areas of rock outcroppings. West of Red Mountain, the entire middle portion of the area consists of numerous ridges and hills. Flat lowlands occur in the extreme western portion of the area where the lowest elevation is 4,240 feet.

No perennial streams are found within the study area. Four intermittent creeks (Oreanna, Red Mountain, Dry and No Name) drain the western portion of the area. These creeks or their tributaries have cut into the topography of the WSA and provide some topographic variety.

The WSA was studied under Section 603 of the Federal Land Policy and Management Act (FLPMA). Lands added after the wilderness inventory were studied under Section 202, also of FLPMA. These lands were included in the Final Oregon Wilderness Environmental Impact Statement (EIS) filed in February 1990.

The Red Mountain WSA was modified to include two parcels (1,035 acres) of land acquired in an exchange with the state of Oregon since completion of the wilderness inventory phase. The state of Oregon retained the subsurface mineral estate, resulting in 1,035 acres of split-estate (Federally-managed surface, state subsurface or mineral rights) land in the WSA.

In addition, acquisition of this split-estate enabled inclusion in the WSA of another 450 acres of BLM land that before was separated from the WSA by a split-estate parcel (see Map 1, T. 40 S., R. 36 E., Sections 34 and 35).

There were three alternatives analyzed in the EIS: 1) An all wilderness alternative designating all 16,215 acres of BLM land. 2) Another all wilderness, with acquisitions and road closures, alternative that designates 16,215 acres of BLM land. An attempt would be made to acquire 80 acres of private land and mineral estate of 1,035 acres of split estate land (total wilderness - 16,295). 3) A no wilderness/no action alternative, which is the recommendation in this report. These lands are shown on Map 1.

2. Recommendation and Rationale:

—0 acres recommended for wilderness,
16,215 acres recommended for nonwilderness

The recommendation for this WSA is to designate 0 acres as wilderness and release 16,215 acres for uses other than wilderness. The all wilderness alternative is considered to be the environmentally preferable alternative. However, the no wilderness alternative would be implemented in a manner which would utilize all practical means to avoid or minimize adverse environmental impacts.

The no wilderness alternative is the recommended action primarily because the area has limited high quality wilderness values, especially in its relative naturalness. Manageability is hampered by the imprint of human intrusions in approximately 13 percent of the area, as well as the lack of agency authority over the management of energy or mineral development in approximately 7 percent within the WSA. Overall human intrusions from within and outside the WSA influence the naturalness and pristine characteristics of the area's highest quality scenic values under each wilderness-oriented alternative. The benefits of retaining options for resource development and the need to use motorized vehicles in the area offset the benefits for preserving the area as wilderness. The no wilderness recommendation would facilitate expanded management opportunities for range management and vegetative enhancement and the area would remain open to mineral and energy exploration. The recommendation would permit planning flexibility for the area as a whole.

3. Criteria Considered in Developing the Wilderness Recommendation

Wilderness Characteristics

A. Naturalness: The Red Mountain WSA consists of numerous ridges and rolling hills and four major drainages with side drainages. Also located within the WSA are flat lowlands and Red Mountain itself. The area provides winter habitat for large numbers of mule deer in the areas north of Cottonwood Creek on the lower slopes west of Red Mountain. Deer use occurs during the summer months along the eastern edge of the study area where water is well distributed and thermal cover is adequate. Wildlife and wildlife habitat are the most outstanding naturalness features found in this WSA.

Antelope winter at lower elevations in the northwestern part of the WSA. Most of the summer antelope use occurs near Holloway Reservoir and on low sagebrush flats in the southeastern edge of the study area.

Small mammals common to the low elevation valley edge include antelope ground squirrels, black-tailed jackrabbits and kangaroo mice. Bushy-tailed wood rats, canyon mice and small-footed myotis (bat) inhabit the rocky uplands. Coyote are common throughout the WSA.

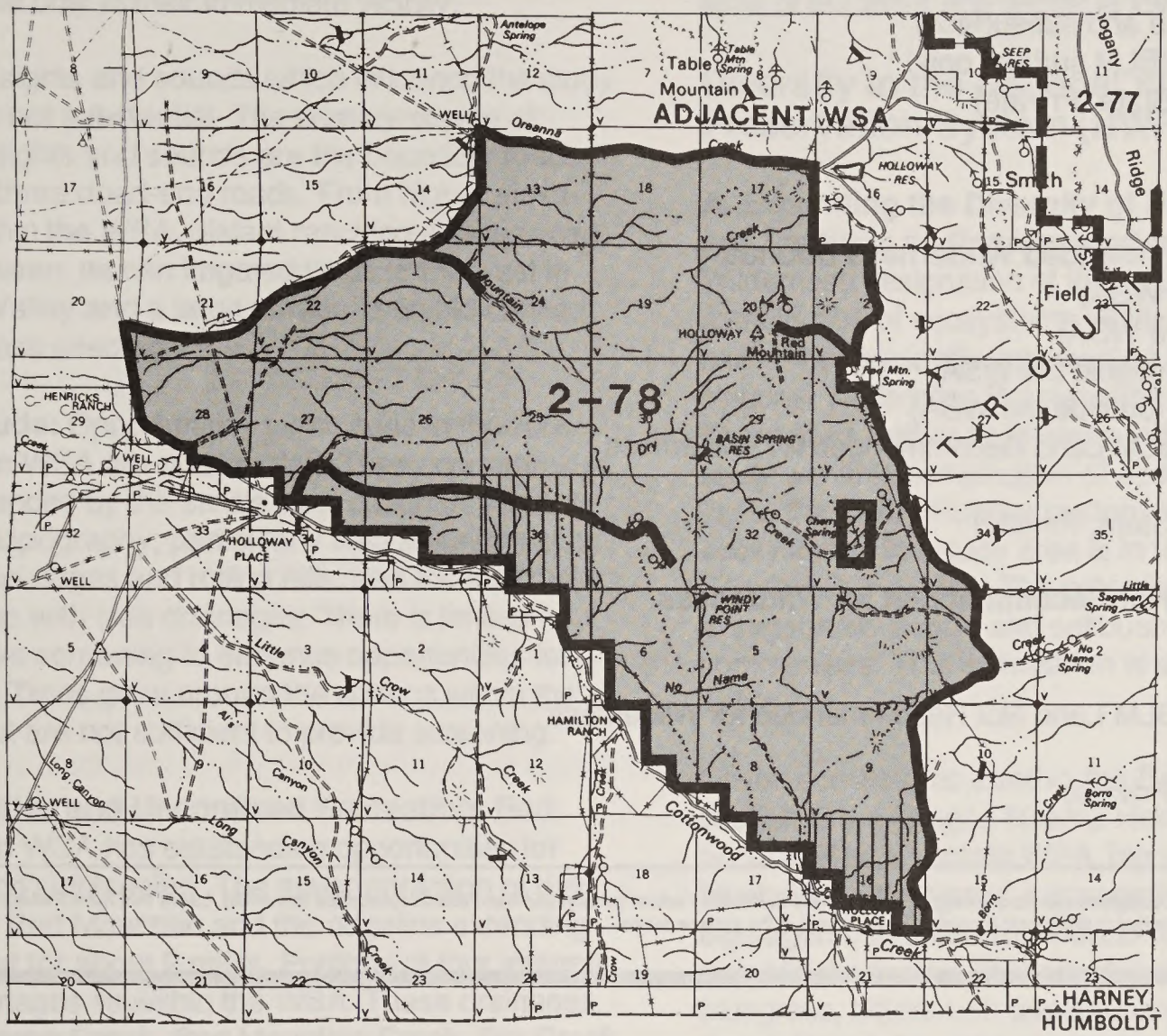
Reptiles found throughout the WSA are bullsnake, western rattlesnake and Great Basin whiptail lizard.

Chukar are abundant along the drainages. Valley quail are abundant along Cottonwood Creek, but range onto uplands in the WSA.

Songbirds include those common to the lower elevations of the Pueblo Valley, such as horned lark,

R 36 E

R 37 E



T 40 S

T 41 S

RECOMMENDED FOR WILDERNESS (None)

RECOMMENDED FOR NONWILDERNESS

LAND OUTSIDE WSA RECOMMENDED FOR WILDERNESS (None)

SPLIT ESTATE

STATE (None)

PRIVATE

- N -

Red Mountain Proposal

MAP-1

0 1 2 3

MILES

OR-2-78
January, 1991

Table 1. Land Status and Acreage Summary of the Study Area

	Acres
Within Wilderness Study Area	
BLM (surface and subsurface)	15,180
Split-estate (BLM surface only) [1]	1,035
Inholdings (State, Private)	80
Total	16,295
Within the Recommended Wilderness Boundary	
BLM (within WSA)	0
BLM (outside WSA)	0
Split-Estate (within the WSA) [1]	0
Split-Estate (outside the WSA) [1]	0
Total BLM Land Recommended for Wilderness	0
Inholdings (State, Private)	0
Within the Area Not Recommended for Wilderness	
BLM	15,180
Split-Estate [1]	1,035
Total BLM Land Not Recommended for Wilderness	16,215
Inholdings (Private) [1]	80

[1] For purposes of this report, split-estate lands are defined only as those lands with Federal surface and non-Federal subsurface (minerals). Lands that have Federal minerals but non-Federal surface are classified in this report according to ownership of the surface estate.

western kingbird and lark sparrow. Species found along canyons and uplands are canyon wren, rock wren and cliff swallow. Raptors nest on the large cliff faces near Red Mountain. Golden eagles, American kestrels, prairie falcons and great horned owls nest in the WSA.

This WSA appears to be in a somewhat natural condition. Generally, the developments are scattered, screened by topography, and can be seen from only small, localized areas.

Unnatural features in the WSA include six reservoirs, four developed springs, three ditches totaling about 2 miles, 0.12 mile pipeline with a trough, about 6 miles of fences, a 680-acre crested wheatgrass seeding, the remains of a small cabin, and ways totaling about 7 miles.

Approximately 13 percent of the study area is influenced by these features.

Three ways and the three irrigation ditches occur in the flat lowland area on the west; they are overgrown and visible only in their immediate vicinity.

The crested wheatgrass seeding is located in the northern portion of the WSA and is not substantially noticeable because it is overgrown with sagebrush; however, due to its size (680 acres), it influences about 5 percent of the WSA.

The seeding can be seen from adjacent hills to the east and south. From the top of Red Mountain, it is visible in the distance. A larger portion, approximately 3,000 acres, of this seeding outside the WSA may be maintained or reseeded and would be visible within the WSA.

Topography screens the reservoirs, spring developments, ways and fences in the eastern two-thirds of the area. The pipeline, trough, cabin remains and way in Red Mountain Creek drainage are visible from the higher points above each development. Three of

the six reservoirs are very small. Generally, the ways and irrigation ditches lie adjacent to or in drainages, are partially screened by the curves in the drainages and by sagebrush vegetation, and can only be seen from high hills above the drainage itself. The fences are visible only in their immediate vicinity.

Outside sights and sounds which influence the study area are not substantial. The primary source of outside sights and sounds are the boundary roads and the three dead-end roads. From higher elevations within the WSA, distant ranching activities can also be seen, as can irrigated fields to the west in Pueblo Valley and a large portion of an old crested wheatgrass seeding.

B. Solitude: Opportunities for solitude in the Red Mountain WSA are outstanding. These opportunities are enhanced by the area's size, configuration and diverse topography, particularly Red Mountain, the numerous ridges and rolling hills, and the four major drainages with side drainages. There is limited vegetative screening to enhance opportunities for solitude. Trees grow around the springs within the WSA, but are not sufficient to provide screening.

C. Primitive and Unconfined Recreation: Red Mountain WSA has outstanding opportunities for hiking and sightseeing. The major attraction of day hiking is Red Mountain and the ridgeline extending southeast for about 2 miles. Portions of four intermittent drainages lie within the WSA. These drainages are Oreanna Creek, Red Mountain Creek, Dry Creek and No Name Creek. The latter three drainages provide additional hiking routes as does the ridgeline north of No Name Creek.

There are outstanding opportunities for sightseeing and photography. These are associated with viewing areas outside of the WSA. From the top of Red Mountain and the ridge south of the summit, the view includes Steens Mountain to the north, Pueblo Valley and Pueblo Mountains to the west, and the mountains of northern Nevada to the south.

There are fair opportunities for other activities such as hunting, but they are not outstanding.

D. Special Features: Wildlife is a special wilderness feature in the WSA because the area contains crucial deer and antelope winter range. Deer winter range occurs in the extreme western lowlands, in the southwest portion near No Name Creek and in the hills above Cottonwood Creek. The northwest portion of the WSA provides antelope winter range.

Kit fox, listed as a threatened species in Oregon under the Endangered Species Act, may occur along the western edge of the area where there is suitable habitat. Sage grouse, a candidate for Federal listing as threatened or endangered, nest in upper elevations of the WSA and winter at lower elevations.

Diversity in the National Wilderness Preservation System (NWPS)

A. Expanding the Diversity of Natural Systems and Features as Represented by Ecosystems: Wilderness designation of this WSA would add a combination of ecosystems (Bailey-Kuchler classification) not presently represented in the entire National Wilderness Preservation System (NWPS). There are 11 other BLM areas in the state under study with this combination of ecosystems. According to the Bailey-Kuchler system of classifying ecosystems, the study area is in the Intermountain Sagebrush Province. The potential natural vegetation is sagebrush-steppe and saltbush-greasewood communities. This information is summarized in Table 2.

Seven ecosystems listed in the Basin and Range section of the Oregon Natural Heritage Plan (ONHP) occur in Red Mountain WSA: big sagebrush/bluebunch wheatgrass, big sagebrush/Idaho fescue, big sagebrush-bitterbrush/Idaho fescue, low sagebrush/Idaho fescue, low sagebrush/Sandberg's bluegrass, bitterbrush-sagebrush/snowberry on Trout Creek Mountains, and shadscale-spiny hopsage-budsage community complex. Three-tip sagebrush/Idaho fescue is a notable ecosystem in the WSA but is not listed in the ONHP.

B. Assessing the Opportunities for Solitude or Primitive Recreation Within a Day's Driving Time (5 hours) of Major Population Centers: The WSA is within a 5-hour drive of two major population centers. Table 3 summarizes the number and acreage of destination areas and other BLM study areas within a 5-hour drive of the population centers.

C. Balancing the Geographic Distribution of Wilderness Areas: The Red Mountain WSA would contribute to balancing the geographic distribution of areas within the National Wilderness Preservation System. There is only one designated wilderness area within 100 miles of this WSA.

Manageability

(The area must be capable of being effectively managed to preserve its wilderness character.)

Table 2. Ecosystem Representation

Bailey-Kuchler Classification	NWPS areas	NWPS acres	Other BLM Studies areas	Other BLM Studies acres
Province/Potential Natural Vegetation				
NATIONWIDE				
Intermountain Sagebrush Province/ Sagebrush Steppe Saltbush-Greasewood	0	0	16	973,035
OREGON				
	0	0	11	666,392

Table 3. Wilderness Opportunities for Residents of Major Population Centers

Population Centers	NWPS areas	NWPS acres	Other BLM Studies areas	Other BLM Studies acres
Boise, Idaho	16	4,741,570	126	5,060,460
Reno, Nevada	45	4,967,230	175	6,904,809

The Red Mountain WSA is capable of being managed for its wilderness characteristics, although there are some potential manageability problems. Under the all wilderness alternative, the 80-acre parcel of private land and the split estate land would be subject to the development of those minerals with moderate potential for occurrence, and this could create problems with the maintenance of wilderness values. However, no energy or mineral developments are projected. There would be some problems with boundary identifications.

Under the all wilderness with acquisitions and road closures alternative, the manageability of the WSA would be improved with the acquisition of the private inholding and the split estate lands, and closure of the dead-end roads. There would be only minor problems with boundary identification.

Energy and Mineral Resource Values

Extensive geological surveys/investigations and exploration for minerals have not been performed. Only generalized geological information is available. The geology, energy and mineral resources of the Red Mountain WSA were evaluated by interpreting existing literature, reviewing mining claims and mineral leasing records, correlating rock units in the WSA with similar environments in areas known to contain mineral resources and by evaluating a geochemical sampling program conducted by BLM. Technical details of the evaluation are in a mineral resources assessment report, "Pueblo Valley Geologic Resource Area (GRA), Harney County Oregon", prepared in 1983 by Terradata (a consulting firm under contract with BLM) and in a BLM report on Fields GRA.

The WSA is within the Pueblo Valley GRA which has been classified according to a rating system that indicates both the potential for occurrence (geologic favorability) of certain minerals, as well as the quantity and quality of data on which the rating is based (confidence level).

The area has a low potential for the occurrence of oil and gas and geothermal resources. No future energy development is foreseen.

The entire WSA has a moderate potential for the occurrence of metals because the volcanic rocks present belong to the same geologic formation in which mercury, copper and gold occurrences are found in the Alvord Peak WSA (OR-2-83). Mercury is a strategic and critical mineral; but there are no known developable deposits of strategic and critical minerals in the WSA.

Minerals that have a moderate potential for occurrence include mercury and diatomite. Due to a lack of geologic evidence there are no known deposits of sufficiently large ore bodies that would merit development. As of May, 1991, there were no mining claims located within the WSA. Further there is a producing diatomite mine in the region, with ample reserves. Due to these factors, and the presence of a thick volcanic covering on the surface, only casual exploration, without development is projected.

Local Social and Economic Considerations

Livestock use at the current level of 1,109 AUMs and recreation use totaling 100 visitor days per year are the primary resource outputs that generate economic activity in the WSA. Local personal income generated annually from these existing use levels amounts to approximately $13,308 for livestock grazing and $1,200 related to recreation use of the WSA, for an overall total of $14,508.

Under the recommendation, annual local personal income generated from resource outputs in the WSA would remain at approximately $15,000.

There were no social issues identified with the study of this WSA.

Impacts on Resources

The following comparative impact table summarizes the effects on pertinent resources for all the alternatives considered including designation and nondesignation of the entire area as wilderness.

Summary of WSA-specific Public Comments

Public involvement has occurred throughout the wilderness review process. Certain comments received during the inventory process and early stages of the EIS preparation were used to develop significant study issues and various alternatives for the ultimate management of those lands found to have wilderness values.

During formal public review of the draft EIS and its Supplement, a total of 12 comments specifically addressing this WSA were received. Of those, 11 were written and one was an oral statement received at the 24 public hearings on the EIS. In general, six commenters supported wilderness designation for all or part of the WSA. Five commenters supported no wilderness for the WSA, while one commenter addressed the relative merits of the EIS, but took no formal position on wilderness designation.

Those favoring wilderness commented that wilderness designation would protect threatened and endangered species, such as kit fox and their habitat, and would preserve natural resources, which includes minerals, for future emergency use. Others commented that the value of wilderness outweighs other values within the WSA and that designation of Red Mountain WSA would complement adjacent suitable areas in the Trout Creek Mountains.

Those opposing wilderness commented that wilderness designation is incompatible with multiple use and that the area can be better managed as nonwilderness. Others commented that the area as a whole includes too many existing human intrusions to be considered as a wilderness area and that wilderness values are generally low.

The Oregon Department of Geology and Mineral Industries (DOGAMI) commented that Mahogany Ridge WSA has high geothermal potential and that gold had been discovered within the general area. They believe that rating the mineral resource potential of the wilderness study areas is difficult and premature due to the lack of inventory data.

The Oregon Department of Fish and Wildlife (ODFW) had some general comments on Red Mountain WSA. They did not believe the Draft EIS adequately discussed the habitat components for big game, habitat diversity or nongame in the section on environmental consequences.

Table 4 - Comparative Summary of the Impacts by Alternative

Issue Topics	Recommendation (No Wilderness/No Action Alternative)
Impacts on Wilderness Values	Projected resource activities and developments would both directly and indirectly impair wilderness values over 2,100 acres of the WSA, with further declines from other potential uses over the long term.
Impacts on Energy and Mineral Development	No impact to energy or mineral development is expected.
Impacts on Vegetation	Range developments will result in a direct loss of vegetation in 2 acres, over the short term. Overall vegetation would recover due to changes in grazing livestock patterns brought about by range resource developments.
Impacts on Wildlife	Wildlife habitat and populations would be maintained.
Impacts on Livestock Grazing	Livestock grazing use would remain at 1,109 AUMs and vehicle use for management activities would continue on ways and dead-end roads.
Impacts on Recreation Use	The area's current recreation use level of 100 visitor days per year would not be substantially changed over time.
Impacts on Local Personal Income	Annual local personal income would remain at approximately $15,000.

All Wilderness Alternative	All Wilderness, with Acquisitions and Road Closures, Alternative
Wilderness designation of the entire 16,215 acres within Red Mountain WSA would result in the protection of the existing wilderness values and probable enhancement of those values.	Wilderness designation of 16,215 acres would result in the protection of existing wilderness values and enhancement of those values. Acquisition of mineral estate would further enhance the total area by preserving wilderness values on all lands within wilderness boundaries.
No impact on energy or mineral development is expected.	No impact to energy or mineral development is expected.
The 7 miles of ways would revegetate. Overall vegetative trend would remain static.	The 5 miles of dead-end roads and 7 miles of ways would revegetate. Overall vegetation condition would remain the same.
Wildlife habitat and populations would be maintained on 16,215 acres designated wilderness. The proposed release of California bighorn sheep would occur as projected.	Wildlife habitat and populations would be maintained on 16,215 acres designated wilderness. The proposed release of California bighorn sheep would occur as projected.
Livestock use would be reduced by 200 AUMs to a level of 909 AUMs. Vehicle use for routine livestock management on the 7 miles of ways would be precluded, resulting in some inconvenience and additional expense to operators.	Livestock use would be reduced by 200 AUMs to a level of 909 AUMs. Vehicle use for routine livestock management on the 7 miles of ways and 5 miles of dead-end roads would be precluded, resulting in some additional expense to livestock operators.
The area's current recreation use level of 100 visitor days per year would not be substantially changed over time.	The area's current recreation use level of 100 visitor days per year would not be substantially changed over time.
Annual local personal income would decrease by approximately $2,000.	Annual local personal income would decrease by approximately $2,000.

Both Harney County and the Burns Paiute Reservation oppose any wilderness designation of the Red Mountain WSA . They believe there are serious conflicts with oil, gas, geothermal, mineral and range developments; and minor problems with split-estate mineral and energy resources with the state of Oregon. They feel designation would have significant impacts on the development of adjacent private and public lands; and that manageability, boundary marking, and the small size and odd shape of the WSA create major problems. They believe the highest and best use of this area would be to continue its present form of multiple-use management.

There were two comment letters received on the Final EIS.

Pueblo Mountains Wilderness Study Area

1. The Study Area —72,090 acres

The Pueblo Mountains WSA (OR-2-81/NV-020-642) is located 96 miles south of Burns and 5 miles south of Fields, Oregon. Almost all of the area is within Harney County, although a small portion crosses the state line into Humboldt County, Nevada. The entire study area lies to the west of the main north-south county road which runs between Fields and Denio, Nevada. The nearest major highway is Nevada State Highway 140, 4 miles to the south of the WSA.

The WSA is an irregularly-shaped area containing 68,710 acres of BLM land in Oregon, plus 600 acres of BLM land in Nevada. In addition, there are 3,380 acres of split-estate lands in Oregon (see Table 1).

At the extremes, the area is 15 miles long and 11 miles wide. The boundary is formed by a combination of private land, BLM dirt roads, a paved county road (east side only), and legal subdivisions. Legal subdivisions form the boundary where portions of the inventory unit were excluded from further wilderness review because they lacked wilderness characteristics.

In addition, 12 low standard dead-end dirt roads (totaling 17 miles) enter the study area from various points around the perimeter and also form part of the boundary. One of the roads ends at a 320-acre parcel of private property, making the parcel a part of the boundary even though it is surrounded by the wilderness study area.

The most prominent physical feature of the study area is the Pueblo Mountains ridgeline which runs north and south along the entire length of the western half of the WSA. This is a tilted fault block mountain range, the eastern side of which has been uplifted along a north-south trending fault. Averaging 7,300 feet in elevation along the crest, the eastern face of this ridge is steep, rugged and rocky while much of the western slope is like a table top tilted to the west at nearly a 20 to 25-degree angle.

Less than 3 miles east of the western ridge lies a shorter (9-mile-long) north-south ridgeline. Along this ridgeline is Pueblo Mountain. At 8,634 feet, it is the second highest peak in southeastern Oregon and the highest point in the study area. Two major drainages originating in the central portion of the study area, Willow Creek and Cottonwood Creek skirt this ridgeline to the north while both Arizona Creek and Van Horn Creek cut through the ridge within rugged

canyons. Denio Creek also cuts through the ridge; a portion of this drainage is outside the study area to the south.

Although steep, the east slope of the eastern ridge is much less rugged and rocky than the east slope of the western ridge. The eastern ridge gives way to foothills and lowlands along the eastern boundary as it merges with Pueblo Valley.

It is along the eastern boundary that the study area reaches its lowest elevation (at several points) of just under 4,200 feet. A series of high valleys, basins and meadows lie in the erosional valley between the two ridges.

The WSA was initially studied under Section 603 and 202 of the Federal Land Policy and Management Act (FLPMA). Lands added after the wilderness inventory were studied under Section 202, also of FLPMA. These lands were included in the final Oregon Wilderness Environmental Impact Statement (EIS) filed in February of 1990.

The Pueblo Mountains WSA has been modified to include seven parcels of land, totaling 3,380 acres. These lands were acquired in an exchange with the State of Oregon since completion of the wilderness inventory phase. The State of Oregon has retained the subsurface mineral estate, resulting in 3,380 acres of split estate (Federally managed surface, state subsurface or mineral rights) land within the WSA. The total acreage of the WSA is now 72,690 acres.

There were five alternatives analyzed in the EIS:

- An all wilderness alternative that would designate 72,690 acres of BLM land, including 600 acres in Nevada.

- A partial wilderness alternative that would designate 68,610 acres of BLM land, including 600 acres in Nevada and adding 5,280 acres of BLM land outside of the WSA boundary. Assuming acquisition of 3,910 acres of private land and the mineral estate of 3,875 acres of split estate, there would be 77,800 acres recommended as suitable. Under this alternative, 4,080 acres would be released for uses other than wilderness.

- A partial alternative that would designate 41,315 acres of BLM land, including 600 acres in Nevada, and release 31,375 acres for uses other than wilderness. Assuming acquisition of 1,930 acres of private lands and the mineral estate of 2,440 acres of split-estate, there would be 43,245 acres recommended suitable.

- A partial alternative, which is the recommendation of this report, that would designate 26,150 acres of BLM land (including 600 acres in Nevada) and release 46,540 acres for uses other than wilderness. There are no private lands within the recommended area but an attempt would be made to acquire the mineral estate of 1,740 acres of split estate land.

- A no wilderness/no action alternative.

These lands are shown on Map 1.

2. Recommendation and Rationale:

—26,150 acres recommended for wilderness (Oregon - 25,550 acres; Nevada - 600 acres,
46,540 acres recommended for nonwilderness (Oregon - 46,540 acres)

There are 600 acres of the WSA located in Nevada. The recommendation for this Nevada portion of the WSA is included in the Nevada Wilderness Study Report.

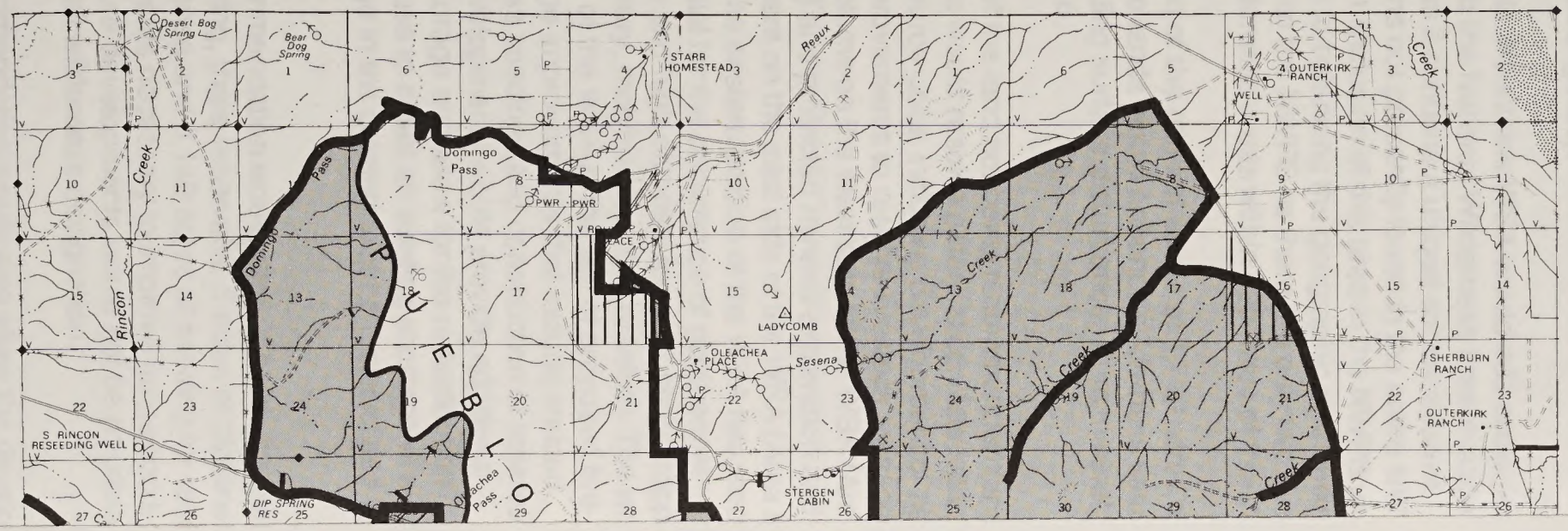
The recommendation for the Pueblo Mountains WSA is to designate 23,810 acres of BLM land and 1,740 acres of split-estate land in Oregon, and 600 acres of BLM land in Nevada, and to release 46,540 acres in Oregon for uses other than wilderness. The all wilderness, with acquisitions and road closures, alternative is considered the environmentally preferable alternative, as it would result in the least change from the natural environment over the long term. However, the recommendation would be implemented in a manner which would use all practical means to avoid or minimize environmental impacts.

The land recommended for wilderness is basically the core of the study area. It contains the highest quality wilderness values and special features within a unit capable of being managed to preserve these qualities. It is natural in appearance and has outstanding opportunities for solitude due to its enclosure by rugged ridgelines with steep escarpments and the deeply incised drainages vegetated with quaking aspen, cottonwood, Mormon tea and other screening brush species. It can support a variety of high quality primitive types of recreation such as backpacking, horseback riding, upland game hunting

R 33 E

R 34 E

R 35 E



T 39 S

RECOMMENDED FOR WILDERNESS

RECOMMENDED FOR NONWILDERNESS

LAND OUTSIDE WSA RECOMMENDED FOR WILDERNESS (None)

SPLIT ESTATE

STATE (None)

PRIVATE

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Pueblo Mountains Proposal

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OR-2-81

January, 1991

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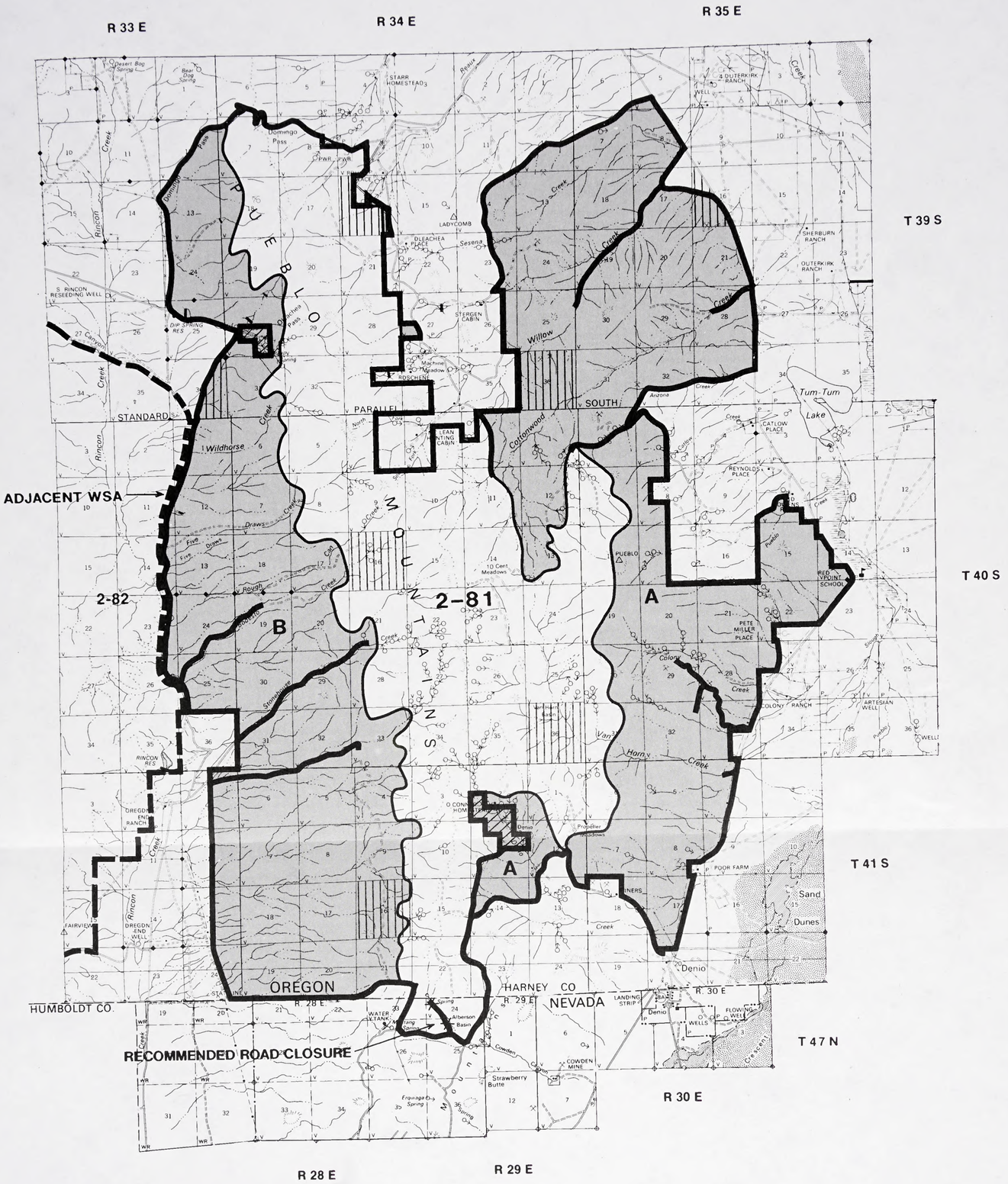


Pueblo Mountains Proposal
MAP-1

OR-2-81
January, 1991

and scenic and wildlife photography. Its numerous special wilderness features include high mountain ridges and meadows, habitat for a resident population of bighorn sheep (a candidate for Federal listing under the Endangered Species Act), interesting geologic features (such as the enormous westward-tilted Steens-Pueblo fault block which represents the northernmost extension from Nevada of this Basin and Range type of structure), outstanding scenic vistas and a number of special interest plants (including a candidate for Federal listing as threatened or endangered).

The Pueblo Mountains WSA would add ecological diversity to the National Wilderness Preservation (NWPS) as it contains a unique combination of ecosystems not presently found in the entire NWPS. In addition, inclusion of this area in the NWPS would contribute to balancing the geographic distribution of areas within the NWPS as there are only two designated wilderness areas within 100 miles of this WSA.

Acquisition of the mineral estate of 1,740 acres of split estate lands would enhance wilderness values by precluding surface disturbances from mineral exploration.

Release of the land not being recommended for wilderness would resolve potential conflicts with other resource uses, including development of new range improvements to resolve livestock management problems on the west side of the WSA (Area A on Map 1) and projected mineral exploration and development on the east side of the WSA (Area B on Map 1). The eastern portion of the WSA has moderate potential for the occurrence of geothermal resources and high potential for gold, silver, copper, zinc, mercury, molybdenum and uranium. The west boundary of the WSA is the site of proposed livestock range improvements that include crested wheatgrass seedings and construction of reservoirs. These developments would provide additional livestock forage and allow for the redistribution of livestock use to offset an existing shortage of available forage in the grazing allotment associated with this WSA.

The recommendation would allow the development of one spring, three reservoirs, 5 miles of pipeline, 26 miles of fence and 3,140 acres of seeding for range developments necessary to improve range conditions. These developments would not be possible under an all wilderness designation.

The recommendation would also allow the development of two projected mines in the portion of the WSA not recommended for wilderness.

3. Criteria Considered in Developing the Wilderness Recommendations

Wilderness Characteristics

A. Naturalness: The Pueblo Mountains WSA is in a natural condition. This WSA has unique natural features in respect to vegetation, wildlife and geology. The ecosystem representation within the Pueblo Mountains is unique in that species diversity is prominent and is not commonly found throughout other WSAs with this species combination in Eastern Oregon. The geology of the Pueblo Mountains is spectacular as the main ridge line and Pueblo Mountain itself rises majestically from the valley floor to form jagged cliffs and small terraces, which provide for a healthy herd of big horn sheep and mule deer with prime and secluded habitat.

The WSA has habitat to support a large population of bighorn sheep. California bighorn sheep were released in the Pueblo Mountains in 1976, 1980 and 1983 by Oregon Department of Fish and Wildlife (ODFW). California bighorn sheep are a candidate for Federal listing as threatened or endangered. The good interspersion of water, forage and thermal cover provides good summer range for both mule deer and antelope. The eastern and western slopes of the WSA are crucial deer winter range. Some of the other mammals in the WSA include mountain cottontail rabbit, black-tailed jackrabbit, bushy-tailed woodrat, canyon mouse, deer mouse, long-eared myotis (bat), coyote and bobcat.

Chukars are abundant in the rocky canyons and rimrock found over much of the area. Sage grouse, a candidate for Federal listing as threatened or endangered, are found near some of the meadows and low sagebrush flats, such as 10 Cent Meadow. Valley quail are found near brushy drainages. A large variety of songbirds also exist in this WSA.

Reptiles are found throughout the WSA and include sagebrush lizards, side-blotched lizards, western rattlesnakes and bullsnakes.

Whitehorse cutthroat trout, a candidate for Federal listing as threatened or endangered, were released in Van Horn Creek and Denio Creek in 1976 and 1980. They have become established in 2.5 miles of Van Horn Creek and 0.2 mile of Denio Creek in the WSA and another mile of Denio Creek outside the WSA.

Table 1 - Land Status and Acreage Summary of the Study Area

Within Wilderness Study Area	Oregon Acres	Nevada Acres	Total Acres
BLM (surface and subsurface)	68,710	600	69,310
Split-estate (BLM surface only) [1]	3,380	0	3,380
Inholdings (State, Private)	0	0	0
Total	72,090	600	72,690
Within the Recommended Wilderness Boundary			
BLM (within the WSA)	23,810	600	24,410
BLM (outside the WSA)	0	0	0
Split-estate (within the WSA) [1]	1,740	0	1,740
Split-estate (outside the WSA) [1]	0	0	0
Total BLM Land Recommended for Wilderness	25,550	600	26,150
Inholdings (State, Private)	0	0	0
Within the Area Not Recommended for Wildernes			
BLM	44,900	0	44,900
Split-estate[1]	1,640	0	1,640
Total BLM Land Not Recommended for Wilderness	46,540	0	46,540
Inholdings (State, Private)	0	0	0

[1]Appendix 1 is a detailed description of split estate tracts included within the study. For purposes of this report, split estate lands are defined only as those lands with Federal surface and non-Federal subsurface (minerals).

The Riding's satyr butterfly (*Neominois ridingsii*) was recently reported on the Pueblo Mountains.

The unnatural developments of the WSA are not substantially noticeable within the study area as a whole. Because the steep topography of much of the WSA precludes development in many locations and because the diversity of the landscape screens many of the developments, the unnatural influences on the natural quality of the study area are slight.

Unnatural developments within the study area include six reservoirs, six developed springs, three fences totaling 4 miles, 33 miles of vehicle ways, 18 areas of past mining activity, one powerline totaling 4 miles, four ditches totaling 4 miles, one cemetery and two dumps. Generally, the developments are scattered, screened by topography, and can be seen from only small localized areas. Approximately 4 percent of the study area is influenced by these features.

The reservoirs, developed springs and ditches are each visible only from small areas. The ditches, when maintained in the future, would be slightly more noticeable. The water tank is silver colored and quite visible but could be painted a darker color. The mining scars are localized and often screened by topography, so they are visible only from the immediate vicinity.

The powerline runs adjacent to the paved county road (the eastern boundary road) in the lowlands and is only visible along the road. The cemetery lies close to the county road and is not a substantial visual disturbance. The vehicle ways are generally located in drainages where they are seen only from small areas. In addition, many of the ways are overgrown and barely visible.

Within the present WSA boundary are six unnatural features that were overlooked during the WSA inventory process. These unnatural and non-invento-

ried features include 3 water ditches, a powerline, a buried pipeline, and a cemetery. The three water ditches are located in three different areas along the boundary: T. 41 S., R. 35 E., middle of Sections 7 and 8; another at T. 40 S., R. 34 E., middle of Section 2; and T. 40 S., R. 34 E., middle of Section 31. The high voltage powerline is located on the eastern boundary slightly within the WSA and parallels the county road for approximately 6 miles. The powerline is between Red Point School and the town of Denio. A buried pipeline is located on the extreme southeastern boundary of the WSA at T. 41 S., R. 35 E., Section 20 NW corner. The cemetery is located along the southeastern boundary adjacent to the town of Denio. A corner of the town's cemetery is located at T. 41 S., R. 35 E., Section 20 within the WSA. The proposed recommendation would eliminate these features by placing them outside the recommended wilderness boundary.

Developments outside the study area do not significantly detract from the natural character of the WSA. Outside developments which influence the study area are boundary roads (including the 12 roads which penetrate the WSA), fences, powerlines and ranches. Most of these features are visible only from points around the perimeter of the area and are not an overwhelming influence on the landscape. Those developments which are occasionally visible from the higher elevations are distant and unobtrusive.

Naturalness would be slightly enhanced as a result of eliminating most motorized vehicle use within the 26,150 acres of WSA recommended suitable for wilderness. Closure of 10.75 miles of ways and 0.75 mile of dead-end road in the area recommended suitable would allow them to revegetate and become substantially unnoticeable in two to five growing seasons.

The naturalness of Pueblo Mountain and substantial portions of the eastern and western areas of the WSA would be subject to disturbance from other resource uses on the 46,540 acres recommended as nonsuitable for wilderness.

B. Solitude: Pueblo Mountains WSA has outstanding opportunities for solitude due to the large size, configuration and topography of the area. The Pueblo Mountains' diverse landscape includes rugged ridges with steep escarpments, high-elevation basins and meadows, and deeply-cut drainages. All of these physical features enhance the opportunities for solitude within the area and provide numerous settings for a visitor to find seclusion.

Vegetative screening, sufficient to enhance solitude, is limited to portions of the drainages, meadows and spring areas. Vegetation such as aspen, cottonwood, alder, willow and chokecherry provide some screening in the wetter locations, while mountain mahogany occurring in the higher meadows and east-facing slopes in the central part of the WSA also provides some screening.

C. Primitive and Unconfined Recreation: Outstanding opportunities for primitive and unconfined types of recreation in the Pueblo Mountains WSA include day hiking, backpacking, hunting, horseback riding, sightseeing, wildlife viewing and photography. The high quality of these activities is largely due to the abundance and attractiveness of the area's physical features.

The drainages and steep slopes around the perimeter of the WSA provide the best opportunities for day hikes. The drainages (primarily those on the eastern side) also provide access to the interior of the study area for longer backpacking and horseback riding trips. Opportunities for sightseeing and photography can be found throughout the WSA and range from vast distant views from the summit of Pueblo Peak and the western ridge to more localized viewing of waterfalls in the upper reaches of Cottonwood Creek and the numerous wild flowers.

Opportunities for hunting and viewing wildlife are also available within the study area. Mule deer and upland game birds (chukar, quail and dove) are the most commonly hunted species, while numerous nongame types of wildlife are frequently visible throughout the area.

Winding through the central portion of the study area for 11 miles is the Pueblo Mountain segment of the Desert Trail. The trail has been marked and designated in the Pueblo Mountains through a cooperative venture between Desert Trail Association (a private organization), the Parks and Recreation Division of the State of Oregon, and BLM. BLM and the Desert Trail Association have joined in a Cooperative Management Agreement (CMA) to share responsibilities for maintaining this portion of the trail and developing other portions. The trail is part of the Oregon State Recreation Trails System.

D. Special Features: The Pueblo Mountains WSA contains several special features which contribute to the value of the area as wilderness. These include distinctive geological, botanical, wildlife and scenic qualities.

Geological features include the enormous westward-tilted fault block, of which the Pueblo Mountains form the southern part. This is an impressive example of the Basin and Range type of structure which covers much of Nevada. It is characterized by a series of parallel fault blocks forming elongated mountain ranges and broad, intervening valleys. The Steens-Pueblo fault block represents the northernmost extension of this type of structure.

Eastward from the metamorphic rocks is a related geological feature. Basin and Range faulting offsets cobbles and gravels that were deposited in alluvial fans during the Pliocene and now form low rounded foothills. In addition, a faulted alluvial fan of Pleistocene to Recent age at the mouth of Cottonwood Creek indicates continuing Basin and Range faulting.

Another interesting geological feature is the pre-Tertiary metamorphic rocks that are exposed along the east side of the eastern ridge between Arizona Creek and Denio, Nevada. Except for a small outcrop in the Trout Creek Mountains, these are the only outcrops of metamorphic rocks in southeastern Oregon and are the oldest rocks in southeastern Oregon as well. Also present are pre-Tertiary granitic rocks that are exposed in the southeastern part of the WSA, about 1.5 miles northwest of Denio. They represent an igneous body that is somewhat younger than the metamorphic rocks they intrude.

Vegetation occurring in the WSA is a special feature because of the presence of six plant species of special interest and because of the Research Natural Area portion of the study area which contains uncommon plants and a narrowleaf cottonwood/ Mormon tea community.

The presence of bighorn sheep and sage grouse (both candidates for Federal listing under the Endangered Species Act) and crucial deer and antelope winter range make wildlife values a special feature of the WSA. The study area also provides habitat for a native species of trout. The Whitehorse cutthroat trout, another candidate for Federal listing under the Endangered Species Act, has been restocked into its assumed native habitat in Van Horn Creek. This species is found only in a few streams other than Van Horn Creek and Denio Creek in the Pueblo Mountains, including the larger streams which drain the eastern side of Steens Mountain and two drainages in the Trout Creek Mountains.

The Alvord chub, an Oregon Species of Special Concern as listed in the Oregon Natural Heritage Database, is found in a number of springs and desert streams in Pueblo Valley. The streams in the Pueblo Mountain WSA which drain the eastern side of the Pueblo Mountain range and provide habitat for this small fish are lower reaches of Willow Creek, Cottonwood Creek, Arizona Creek, Colony Creek, Van Horn Creek and Denio Creek.

The outstanding scenery of the study area is another special wilderness feature. The high quality scenic area includes most of the central portion of the WSA and consists of the western slope of the eastern ridge, the western ridge, and the high basins and meadows in the interior.

Diversity in the National Wilderness Preservation System (NWPS)

A. Expanding the Diversity of Natural Systems and Features as Represented by Ecosystems: Wilderness designation of this WSA would add a combination of ecosystems (using Bailey-Kuchler classification) not presently represented in the entire National Wilderness Preservation System (NWPS). There are 11 other BLM areas in the state under study with these two ecosystems. The information is summarized in Table 2.

The WSA contains seven ecosystems listed in the Basin and Range section of the Oregon Natural Heritage Plan. These include big sagebrush/ bluebunch wheatgrass, big sagebrush/Idaho fescue, low sagebrush/bluebunch wheatgrass, low sagebrush/Idaho fescue, mountain mahogany community in the southern Basin and Range, narrowleaf cottonwood and Mormon tea community complex and a shadscale-spiny hopsage-budsage community. One ecosystem which occurs in this WSA but is not listed in the Oregon Natural Heritage Plan is three-tip sagebrush/Idaho fescue.

B. Assessing the Opportunity for Solitude or Primitive Recreation Within a Day's Driving Time (5 hours) of Major Population Centers: The WSA is within a 5-hour drive of two major population centers. Table 3 summarizes the number and acreage of destination areas and other BLM study areas within 5 hours drive of the population.

C. Balancing the Geographic Distribution of Wilderness Area: The Pueblo Mountains WSA would contribute to balancing the geographic distribution of areas within the NWPS. There are only two designated wilderness areas within 100 miles of this WSA.

Table 2 - Ecosystems Representation

Bailey-Kuchler Classification	NWPS Areas	NWPS Acres	Other BLM Studies Areas	Other BLM Studies Acres
Province/Potential Natural Vegetation				
NATIONWIDE				
Intermountain Sagebrush/ Sagebrush Steppe & Saltbush-Greasewood	0	0	16	916,560
OREGON				
	0	0	11	609,917

Table 3. Wilderness Opportunities for Residents of Major Population Centers

Population Centers	NWPS Areas	NWPS Acres	Other BLM Areas	Other BLM Acres
Boise, ID	16	4,741,570	126	5,060,460
Reno, NV	45	4,967,230	175	6,947,809

Manageability

(The area must be capable of being effectively managed to preserve its wilderness character.)

The portion of the Pueblo Mountains WSA recommended for wilderness designation can be managed as wilderness to preserve values now present in the area. There are no manageability problems expected under the proposed action, since acquisition of 1,740 acres of split estate lands and road closures would eliminate potential manageability conflicts. There would be no vehicles on the dead-end roads within the area, and no potential or need for the development of access to the split estate land.

The proposed action is a new alternative designed to reconcile major conflicting concerns and permit acceptable multiple uses. In this alternative, manageability would be enhanced by excluding approximately 2,215 acres of private land, not closing 4 miles of roads and 22.25 miles of ways which would be difficult to enforce, and by placing the boundary at a higher elevation on the west and south sides of the area. Vehicles would be unable to enter the remainder of the WSA because of steep terrain.

The part of the WSA not recommended for wilderness designation (46,540 acres) is manageable as wilderness, but management would be difficult.

The roads and ways outside of the new proposed boundary are used extensively by both deer and bird

hunters during the fall. These roads and ways are also used by ranchers for livestock management. These activities include hauling horses and placing salt.

Establishing the boundary line at the 6,000-foot level would exclude an area of private land and related on-going mineral activity in the south end of the WSA and all of the western foothills of the western ridge where the majority of the range developments are proposed.

Energy and Mineral Resource Values

The U.S. Geological Survey (USGS) and U.S. Bureau of Mines (USBM) evaluated more than 41,315 acres of the Pueblo Mountains WSA including the 26,150 acres recommended for wilderness and the mineralized area to the east of the recommended area. The USGS/USBM report, published in 1987 as USGS Bulletin 1740-B, is titled "Mineral Resources of the Pueblo Mountains Wilderness Study Area, Harney County, Oregon, and Humboldt County, Nevada." There were no resources identified in the WSA , but the USGS/BM did find high potential for silver and mercury along a northwest-trending fault; and moderate potential for gold, silver, copper, mercury and molybdenum along a northeast-trending fault zone. Each of the faults extends approximately 0.5 mile along the east boundary of the area recommended for wilderness. In the area recommended for wilderness, there was low potential found for the following: silver, zinc, mercury, molybdenum, copper, lead, oil, gas and geothermal energy. Portions of the WSA east of the area recommended for wilderness have high potential for gold, silver, copper, zinc, mercury, molybdenum and uranium resources. Sedimentary rocks within the WSA and northeast of the area recommended for wilderness have low potential for diatomite and betonite resources. Large quantities of sand, gravel and rock are present throughout the study area, but their likely development is precluded due to the presence of more accessible deposits outside of the area.

The Barringer report, published in 1984 under BLM contract number YA-551-CT3-440045, is titled "Mineral Resource Assessment through Geochemical Studies of Heavy Mineral Concentrates from Wilderness Study Areas in the Burns, Prineville and Vale Districts, Southeastern Oregon." In the western part of the WSA, the Barringer report attributed anomalous silver and copper values to basalt that contains higher than normal amounts as background levels that are far below the minable threshold and rated the silver and copper mineral potential at moderate to poor. The only sample with anomalous gold contained no gold indicator elements and no unusual minerals and, therefore, no conclusion was made as to its potential. In the eastern part of the WSA, anomalous copper and silver values were attributed to high, nonminable background levels in the basalt. Anomalous molybdenum and tungsten values in the eastern part of the WSA were also evaluated as background-level, nonminable levels. The mineral potential for disseminated precious metals deposits (especially gold) in the eastern part of the WSA was rated moderate.

The 1983 study by the Oregon Department of Geology and Mineral Industries (DOGAMI) titled "Geology and Mineral Resources of 18 BLM Wilderness Study Area, Harney and Malheur Counties, Oregon" does not conflict with the Barringer report and the mineral samples collected for this report were used for the Barringer report. The DOGAMI geochemical analyses showed that the eastern part of the WSA is highly mineralized and could contain minable deposits of gold, mercury, copper and molybdenum. In addition, the DOGAMI report states that the tilted structure of the Pueblos makes it a good trap for oil and gas although no source rocks are identified in the area. It also cites evidence that the northeastern part of the WSA has high potential for thermal water of sufficient temperature for direct heat application but too low for energy production.

The area examined by USGS/USBM encompasses the portion of the WSA presently recommended for wilderness and the acreage surrounding the recommended area, including the mineralized area to its east. The Barringer report and DOGAMI study include the entire WSA. The USGS/USBM reported no deficiencies in their sampling program whereas the Barringer report noted limited analyses due to the small size and variable quantities of many of the samples they, and DOGAMI, used in their studies; therefore, the USGS/USBM findings are more reliable. All reports noted that high-potential mineralization is limited to the eastern part of the WSA, and the USGS/USBM report shows that two of the mineralized fault zones extend for approximately 0.5 mile along the east boundary of the area recommended for wilderness.

As of May, 1991, there were 55 mining claims within this WSA.

The USGS/USBM study found low potential for geothermal resources and noted there are no hot springs in the area they examined. The northeastern-most part of the WSA is 5 miles south of the Alvord Desert Known Geothermal Resource Area. DOGAMI

rated the northeastern part of the WSA high for thermal water of sufficient temperature for direct heat application but too low for energy production. They cited temperatures of a warm springs 10 miles north of the WSA and temperature readings in a mineral exploration hole outside of the area examined by USGS/USBM but within the northeastern part of the WSA. The Barringer report did not address geothermal potential.

Oil and gas resources were rated as low by both USGS/USBM and DOGAMI. The Barringer report did not address oil and gas resources.

Local Social and Economic Considerations

Livestock use at the current level of 4,430 AUMs and recreation use totaling 700 visitor days per year are the primary resource outputs that generate economic activity in the WSA. Local personal income generated annually from these existing use levels amounts to approximately $53,160 for livestock grazing and $8,400 related to recreation use of the WSA, for an overall total of $61,560.

Under the recommendation, the total effect on local personal income would be a net decrease of $2,400 per year plus an unknown level of increase attributable to the projected energy and mineral development.

There were no social issues identified with the study of this WSA.

Summary of WSA-Specific Public Comments

Public involvement has occurred throughout the wilderness review process. Certain comments received during the inventory process and early stages of the EIS preparation were used to develop significant study issues and various alternatives for the ultimate management of those lands found to have wilderness values.

During formal public review of the draft EIS and its Supplement, a total of 75 comments specifically addressing this WSA were received. Of those, 64 were written and 11 were oral statements received at the 24 public hearings on the EIS. In general, 45 comments supported wilderness designation for all or part of the WSA. Twenty-five comments supported no wilderness for the WSA, while five comments addressed the relative merits of the EIS, but took no formal position on wilderness designation.

Those favoring wilderness commented that the value of wilderness outweighs other values such as mining or grazing, and that minerals found in the Pueblo Mountains WSA are commonly found elsewhere outside WSAs. Some of those favoring wilderness commented on several of the special features found within the WSA. These included geological features, botanical, wildlife and scenic qualities.

Those opposing wilderness designation were concerned that wilderness would preclude exploration and development of minerals, and would adversely impact the range industry and individual livestock operators. Some of those opposed to wilderness believed that the economy would be adversely impacted if designated as wilderness.

There were comments received from several agencies about the WSA proposal. The state of Nevada, State Office of Community Services, does not support the creation of wilderness areas through the closure of roads which have been used historically by Nevada residents for access. The Nevada State Department of Mines has no objections to wilderness designation. The Nevada Division of State Parks is in favor of wilderness designation. Oregon Department of Geology and Mineral Industries states that there are numerous mercury, copper, gold and uranium occurrences and that the area is associated with historic leasing for oil, gas and geothermal resources. The Oregon Department of Fish and Wildlife favors wilderness designation and proposes additional acreage, believing that mineral development in this WSA would have an adverse and irretrievable impact on the big game animal populations. Harney County, County Court for Harney County, and the Burns Paiute Reservation all favor a partial wilderness designation of the existing WSA, with their recommendation being similar to that of the BLM.

There were three comment letters received on the Final EIS specific to this WSA.

Impacts on Resources

The following comparative impact table summarizes the effects on pertinent resources for all the alternatives considered, including designation and nondesignation of the entire area as wilderness.

Table 4. Comparative Summary of the Impacts by Alternative

Issue Topics	Recommendation (Partial Wilderness Alternative)	All Wilderness Alternative
Impacts on Wilderness Values	Wilderness designation of 26,150 acres would protect existing wilderness values with probable enhancement of those values. Within the 46,540 acres not designated wilderness, projected activities would impair wilderness directly and indirectly over approximately 30,000 acres with further declines from other potential uses over the long term.	Wilderness designation of the entire 72,690 acres within the Pueblo Mountains WSA would result in the protection of existing wilderness values and probable enhancement of those values.
Impacts on Energy and Mineral Development	No impact to energy development is expected. Wilderness designation would result in foregone production from one projected silver and mercury mine. Production of silver, mercury and gold from two projected mines would occur in the nonsuitable area.	No impact to energy development is expected, since none is projected. Production of mercury, gold and silver from three projected mines would be foregone.
Impacts on Vegetation	Vegetation would be altered on 3,140 acres while vegetation would be removed on approximately 250 acres. Disturbance created by range and wildlife developments would revegetate as well as 11.5 miles of roads and ways closed to vehicle use. The riparian and meadow vegetation in both the suitable and nonsuitable areas would improve and the ecological status would change from early seral to mid-seral in some areas and from mid-seral to late seral in others.	The 33 miles of closed ways would revegetate within 2 to 3 years. There would be little or no change in the vegetation over the remainder of the WSA.

All Wilderness with Acquisitions and Road Closures Alternative	Partial Wilderness Alternative	No Wilderness/No Action Alternative
Wilderness designation of 77,800 acres (assuming acquisition of 3,910 acres of private property) would protect and enhance existing wilderness values. The acquisition of 3,875 acres of mineral estate of split-estate lands would further enhance the total area by preserving wilderness values on all lands within the wilderness boundaries.	Wilderness designation of 43,245 acres, including 1,930 acres of acquired private land, would protect existing wilderness values with probable enhancement of those values. Within 31,375 acres not designated wilderness, projected activities would impair wilderness values directly and indirectly over approximately 29,000 acres with further declines from other potential uses over the long term.	In the absence of wilderness designation, projected activities and continued uses would both directly and indirectly impair wilderness values over approximately 32,000 acres with further declines from other potential uses over the long term.
No impact to energy development is expected. Production of mercury, gold and silver from three projected mines would be foregone.	No impact to energy development is expected, Production of silver and mercury from one projected mine would be foregone in the suitable area. Production of silver, mercury and gold from two projected mines would occur in the nonsuitable area.	No impact on energy development is expected. Production of gold, silver and mercury from three projected mines would occur.
The 68.5 miles of closed vehicle routes would revegetate within two to five growing seasons. There would be little or no change over the remainder of the WSA.	Vegetation would be altered on 3,140 acres while vegetation would be removed on approximately 250 acres. Thirty-four miles of vehicle routes would revegetate. The riparian and meadow vegetation in both the suitable and nonsuitable areas would improve and the ecological status would change from early seral to mid-seral in some areas and from mid-seral to late seral in others.	Vegetation would be altered on 3,140 acres and vegetation would be removed on approximately 300 acres. Disturbance created by other range and wildlife projects along with mineral exploration would eventually revegetate. The riparian and meadow vegetation would improve and the ecological status would change from early to mid-seral in some areas and from mid-seral to late seral in others.

Table 4. Comparative Summary of the Impacts by Alternative (continued)

Issue Topics	Recommendation (Partial Wilderness Alternative)	All Wilderness Alternative
Impacts on Wildlife	Wildlife habitat and populations would be maintained on 26,150 acres designated wilderness. Whitehorse cutthroat trout would be reintroduced into upper Denio Creek, but not in upper Van Horn Creek. The construction of in-stream structures in upper Denio Creek would occur, but would be precluded in upper Van Horn Creek. Bighorn sheep would be reintroduced in the Van Horn Creek area. Riparian habitat, fish habitat and sage grouse habitat would improve. Habitat for 50 antelope would also improve, but a reduction in 80 wintering deer and damage to 3,140 acres of nongame species habitat is projected as a result of projected mining activity.	Wildlife habitat and populations would be maintained on 72,690 acres designated wilderness. Disturbance to wildlife would be greatly reduced by the closure of ways. The reintroduction of Whitehorse cutthroat trout into upper Denio Creek and Van Horn Creek would not occur as a result of precluding the construction of instream structures. Bighorn sheep would be reintroduced in the Van Horn Creek area.
Impacts on Watershed	Most of the perennial drainages and most of the meadows in the suitable portion of the WSA would begin to stabilize under improved livestock management. Water quality on 7 miles of two perennial streams would be reduced due to projected open-pit mining activity.	Due to continued grazing on the riparian areas, poor water quality and active erosion would continue on the perennial streams and meadows, with the exception of Denio Creek.
Impacts on Livestock Grazing	Livestock use would remain at the baseline level of 4,430 AUMs as a result of constructed projects. Vehicle use for routine livestock management would be precluded on 10.75 miles of ways and 0.75 miles of road, causing some inconvenience and additional expense to livestock operators.	Baseline livestock grazing use would be reduced by 795 AUMs. Vehicle use for routine livestock management and fence maintenance on 33 miles of ways would be precluded, with some inconvenience and additional expense to livestock operators.

All Wilderness with Acquisitions and Road Closures Alternative	Partial Wilderness Alternative	No Wilderness/No Action Alternative
Wildlife habitat and populations would be maintained on 77,800 acres designated wilderness and disturbance to wildlife would be greatly reduced. The reintroduction of Whitehorse cutthroat trout into upper Denio Creek and Van Horn Creek would not occur but bighorn sheep would be reintroduced in the Van Horn Creek area with a corresponding increase in population.	Wildlife habitat and populations would be maintained on 43,245 acres designated wilderness. The reintroduction of Whitehorse cutthroat trout into upper Denio Creek and Van Horn Creek would not occur but bighorn sheep would be reintroduced in the Van Horn Creek area. Riparian habitat, fish habitat and sage grouse habitat would improve. Habitat for 50 antelope would also improve, but a reduction in 80 wintering deer and damage to 3,140 acres of nongame species habitat is projected as a result of projected mining activity.	Most wildlife habitat species populations could be maintained at present levels over most of the WSA. The proposed reintroduction of Whitehorse cutthroat trout in upper Denio Creek and Van Horn Creek and bighorn sheep in the Van Horn Creek area would occur. Cutthroat trout habitat would be improved in Van Horn Creek and Denio Creek. Riparian habitat, fish habitat and sage grouse habitat would improve. Habitat for 50 antelope would also improve, but a reduction in 150 summering deer, 120 wintering deer, 10 bighorn sheep and damage to 3,140 acres of nongame species habitat is projected as a result of projected mining activity.
Due to continued grazing on the riparian areas, all of the perennial drainages and meadows with the exception of those in the Denio Creek watershed, would continue to exhibit active erosion and poor water quality.	With improved livestock management, water quality would improve on all streams except for 7 miles affected by mining activity. Streambanks would begin to stabilize on about 20 miles of perennial stream. The remainder of the WSA would show little change.	With improved livestock management, Headcuts in perennial streams and meadows would begin to heal and fecal coliform counts would drop on 57 miles. Projected mining activity would reduce water quality on 13 miles of three perennial streams.
Baseline livestock grazing use would be reduced by 795 AUMs. Vehicle use for routine livestock management and fence maintenance on 33 miles of ways and 35.5 miles of roads would be precluded, causing some inconvenience and additional cost to livestock operators.	Baseline livestock use would be reduced by an estimated 170 AUMs. Vehicle use for routine livestock management would be precluded on 24 miles of ways and 5 miles of dead-end roads with some inconvenience and additional expense to livestock operators. Development of range projects in the nonsuitable area would prevent further livestock use reductions of approximately 625 AUMs.	Livestock use would remain at the baseline level of 4,430 AUMs due to constructed projects. Vehicle use for routine livestock management would continue on 33 miles of ways and 17 miles of dead-end roads.

Table 4. Comparative Summary of the Impacts by Alternative (continued)

Issue Topics	Recommendation (Partial Wilderness Alternative)	All Wilderness Alternative
Impacts on Recreation Use	This alternative would result in a net reduction of the area's overall recreation use level, from 700 visitor days per year to approximately 500 visitor days per year.	Wilderness designation would result in a net reduction in the area's overall recreation use level from 700 visitor days per year to less than 500 visitor days per year.
Impacts on Personal Income	Annual local personal income would decrease by approximately $2,400.	Annual local personal income would decrease by approximately $12,000.

All Wilderness with Acquisitions and Road Closures Alternative	Partial Wilderness Alternative	No Wilderness/No Action Alternative
Wilderness designation would result in a net reduction in the area's overall recreation use level from 700 visitor days per year to approximately 400 visitor days per year.	This alternative would result in a net reduction of the overall recreation use level, from 700 visitor days per year to approximately 500 visitor days per year.	The area's recreation use level of 700 visitor days per year, would not be substantially affected. Primitive recreation would decline moderately as a result of the projected increase in vehicle-oriented recreation and projected mineral and livestock developments.
Annual local personal income would decrease by approximately $13,000.	Annual local personal income would decrease by approximately $4,500.	Annual local personal income would increase by approximately $61,500.

Appendix 1 - Estimated Costs of Acquisition of Non-Federal Holdings Within Areas Recommended for Designation[1]

Legal Description (Prior to any Subdivision	Total Acreage	Number of Owners	Type of Ownership by Estate (Federal, State Private, other)		Presently Proposed for Acquisition (Yes, No)	Preferred Method of Acquisition (Purchase, Exchange, Other)	Estimated Cost of Acquisition [2]	
			Surface Estate	Subsurface Estate			Land Costs	Processing Costs [3]
Parcel No. 1, T. 39 S., R. 34 E., Section 16, S 1/2 (Portions) and NW 1/4 (Portions)	320	1	Federal	Non-Federal	No	Exchange		$3,750
Parcel No. 2, T. 40 S., R. 34 E., Section 16 (Entire)	640	1	Federal	Non-Federal	No	Exchange		$3,750
Parcel No. 3, T. 40 S., R. 34 E., Section 36 (Entire)	640	1	Federal	Non-Federal	No	Exchange		$3,750
Parcel No. 4, T. 41 S., R. 34 E. Section 16, SE1/4NE1/4 (Portions) and NE1/4SE1/4(Portions), and SE1/4SE1/4 (Portions)	120	1	Federal	Non-Federal	No	Exchange		$3,750

[1] The estimated costs listed in this appendix in no way represent a formal appraised value of the land or mineral estate, but are rough estimates based on sales or exchanges of lands or mineral estates with similar characteristics to those included in the WSA. The estimates for purposes of establishing a range of potential costs to the government of acquiring non-Federal holdings and in no way represent an offer to purchase or exchange at the cost estimate included in this appendix. Processing costs are all miscellaneous expenses other than land costs. These include work month costs, appraisals, title work, escrow costs, etc.

[2] Only administrative costs are shown for exchanges.

[3] State minerals would be included in a District-wide or Statewide exchange. Total District cost approximately $15,000.

Rincon Wilderness Study Area

1. The Study Area —103,965 acres

The Rincon Wilderness Study Area (WSA) (OR-2-82) is located 95 miles south of Burns, Oregon, 10 miles west of Fields and 1 mile north of the Oregon/Nevada border in Harney County. The WSA is 24 miles south of the end of Oregon State Highway 205 and 8 miles north of Nevada State Highway 140.

Most of the WSA is located in Burns District. A very small portion in the southwestern corner of the study area lies within the Lakeview District. The WSA includes a panhandle extending to the north from the main portion of the WSA.

The WSA contains 97,545 acres of BLM land. Within the study area are two parcels of private land totaling 120 acres and 6,420 acres of split-estate land (see Table 1).

The Rincon WSA is 23 miles long (including the panhandle) and 12 miles wide. The area is bounded almost entirely by roads. The northern boundary line is formed by the Long Hollow Road (county-maintained) and private land. The eastern boundary line is composed of several BLM roads, scattered parcels of private land and the Rincon crested-wheatgrass seeding. The southern and southwestern boundary lines are formed by a BLM-maintained road (the Long Draw Road) and a portion of the Hawk Valley crested wheatgrass seeding. The western boundary line is formed by the Funnel Canyon Road (BLM-maintained).

Four dead-end roads totaling 13.5 miles enter the study area and form part of the boundary line. All of these roads enter the WSA from the eastern boundary line. Two of the dead-end roads (each 1.5 miles in length) are in the northern portion of the study area. The other two dead-end roads are located in the central portion of the WSA and are 6 miles and 4.5 miles long. The section of road that forms the northern boundary line is a high standard gravel road. The roads that form the remainder of the boundary lines on the east, west and south, as well as the four dead-end roads that enter the WSA, are all low standard dirt roads.

The Rincon WSA contains a variety of physical features, including portions of Catlow Rim, Lone Mountain and Oregon End Table. On the northwest side of the panhandle, Catlow Rim extends almost 15 miles into the WSA and reaches an elevation of 6,350 feet at Square Mountain in the north end of the WSA.

The part of Catlow Rim located within the WSA has several deep canyons with intermittent streams and is characterized by rugged, westerly-facing rock cliffs. A flat, open valley (part of Catlow Valley) lies between the toe of Catlow Rim and the western boundary road in the northwest portion of the WSA. Along this boundary road is the study area's lowest elevation, 4,450 feet. Within a small area along the rim the study area's greatest elevation change occurs. It features a 1,800-foot drop from the top of Square Mountain to Catlow Valley, within a distance of approximately 1 mile.

The southwestern portion of the WSA contains the Lone Mountain area which extends 6 miles to the east from the western boundary. Lone Mountain and the surrounding hills are characterized by rock pinnacles and columns of volcanic origin. The summit of Lone Mountain near the southwestern boundary is the highest point in the study area, reaching an elevation of 6,903 feet. The average elevation of the study area is approximately 5,500 feet.

A large, generally flat valley lies between Lone Mountain and Oregon End Table to the southeast. Oregon End Table is a large, flat-topped plateau 3 miles by 5 miles in size. This area is extremely rocky and is characterized by rimrock around the table's edge.

The WSA was initially studied under Section 603 of the Federal Land Policy and Management Act (FLPMA). Lands added after the wilderness inventory were studied under Section 202, also of FLPMA. These lands were included in the final Oregon Wilderness Environmental Impact Statement (EIS) filed in February 1990.

The Rincon WSA has been modified to include 12 parcels (5,120 acres) of land acquired in an exchange with the state of Oregon since completion of the wilderness inventory phase. The state of Oregon has retained the subsurface mineral estate, resulting in 5,120 acres of split-estate (Federally managed surface, state subsurface or mineral rights) lands within the WSA. The Statewide EIS volume contains a complete discussion as to why these lands were added to the WSA.

There were four alternatives analyzed in the EIS: 1) An all wilderness alternative designating all 103,965 acres of BLM land; 2) Another all wilderness, with acquisitions and road closures, alternative that also designates all 103,965 acres of BLM land. In addition, however, an attempt would be made to acquire 120 acres of isolated tracts of private land and the mineral estate of 6,420 acres of split estate land through purchase or exchange with willing owners; 3) A partial alternative (recommendation of this report) that designates 19,428 acres of BLM land (see Map 1). An attempt would be made to acquire the mineral estate of 1,500 acres of split estate land located within the area recommended suitable; and 4) A no wilderness/no action alternative. These lands are shown on Map 1.

2. Recommendation and Rationale:

—19,428 acres recommended for wilderness,
84,537 acres recommended for nonwilderness

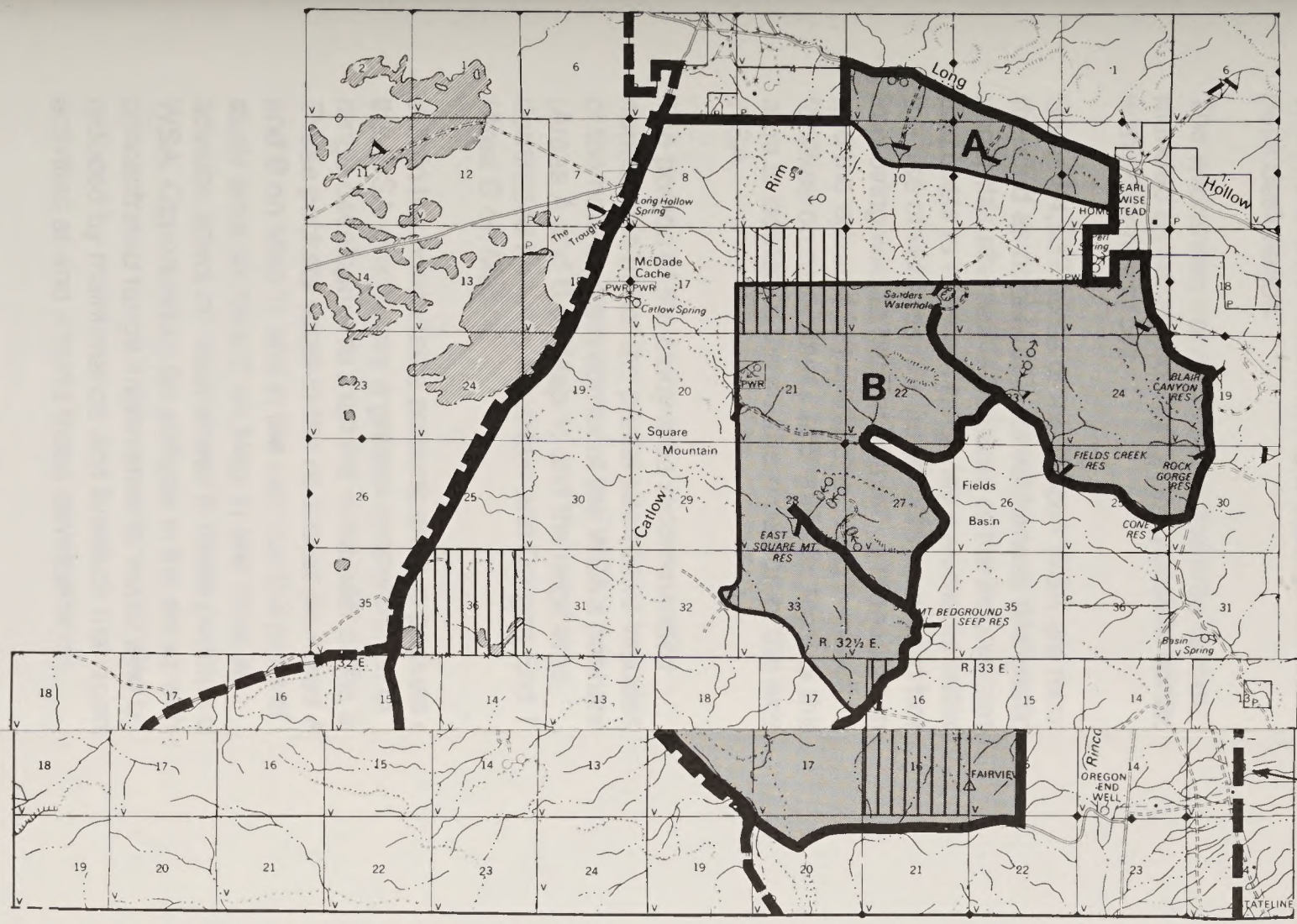
The recommendation for this WSA is to designate the 19,428 acres of BLM lands considered under the partial alternative and to release 84,537 acres for uses other than wilderness. The all wilderness, with acquisitions and road closures, is the environmentally preferable alternative since it would result in the least change from the natural environment over the long term. However, the recommendation would be implemented in a manner which would use all practical means to avoid or minimize environmental impacts.

The area recommended as suitable for wilderness contains most of the southern end of Catlow Rim. This area is in a basically natural condition and has outstanding opportunities for solitude and primitive types of recreation. It also contains special features including cultural resources, high-quality raptor nesting areas, bighorn sheep habitat and is an area of geologic interest.

Designation of this portion of the study area as wilderness would protect the area's wilderness values and special features within an area that can be managed to preserve these qualities.

The recommendation would add an ecosystem not presently represented in Oregon and represented in the entire National Wilderness Preservation System (NWPS) by only three areas. In addition, the recommendation would contribute to balancing the geographic distribution of areas within the NWPS.

This portion of the study area recommended for wilderness has only minor conflicts with other resource uses. Like the rest of the WSA, this portion has been identified as having low potential for the occurrence of energy resources. Parts of the area



T 37 S

ADJACENT WSA

R 32 E

R 33 E

RECOMMENDED FOR WILDERNESS

RECOMMENDED FOR NONWILDERNESS

LAND OUTSIDE WSA RECOMMENDED FOR WILDERNESS (None)

SPLIT ESTATE

STATE (None)

PRIVATE

- N -

Rincon Proposal

MAP-1

0 1 2 3

MILES

OR-2-82

January, 1991

The part of Catlow Rim located within the WSA has several deep canyons with intermittent streams and is characterized by rugged, westerly-facing rock cliffs. A flat, open valley (part of Catlow Valley) lies between the toe of Catlow Rim and the western boundary road in the northwest portion of the WSA. Along this boundary road is the study area's lowest elevation, 4,450 feet. Within a small area along the rim the study area's greatest elevation change occurs. It features a 1,800-foot drop from the top of Square Mountain to Catlow Valley, within a distance of approximately 1 mile.

The southwestern portion of the WSA contains the Lone Mountain area which extends 6 miles to the east from the western boundary. Lone Mountain and the surrounding hills are characterized by rock pinnacles and columns of volcanic origin. The summit of Lone Mountain near the southwestern boundary is the highest point in the study area, reaching an elevation of 6,903 feet. The average elevation of the study area is approximately 5,500 feet.

A large, generally flat valley lies between Lone Mountain and Oregon End Table to the southeast. Oregon End Table is a large, flat-topped plateau 3 miles by 5 miles in size. This area is extremely rocky and is characterized by rimrock around the table's edge.

The WSA was initially studied under Section 603 of the Federal Land Policy and Management Act (FLPMA). Lands added after the wilderness inventory were studied under Section 202, also of FLPMA. These lands were included in the final Oregon Wilderness Environmental Impact Statement (EIS) filed in February 1990.

The Rincon WSA has been modified to include 12 parcels (5,120 acres) of land acquired in an exchange with the state of Oregon since completion of the wilderness inventory phase. The state of Oregon has retained the subsurface mineral estate, resulting in 5,120 acres of split-estate (Federally managed surface, state subsurface or mineral rights) lands within the WSA. The Statewide EIS volume contains a complete discussion as to why these lands were added to the WSA.

There were four alternatives analyzed in the EIS: 1) An all wilderness alternative designating all 103,965 acres of BLM land; 2) Another all wilderness, with acquisitions and road closures, alternative that also designates all 103,965 acres of BLM land. In addition, however, an attempt would be made to acquire 120 acres of isolated tracts of private land and the mineral estate of 6,420 acres of split estate land through purchase or exchange with willing owners; 3) A partial alternative (recommendation of this report) that designates 19,428 acres of BLM land (see Map 1). An attempt would be made to acquire the mineral estate of 1,500 acres of split estate land located within the area recommended suitable; and 4) A no wilderness/no action alternative. These lands are shown on Map 1.

2. Recommendation and Rationale:

—19,428 acres recommended for wilderness,
84,537 acres recommended for nonwilderness

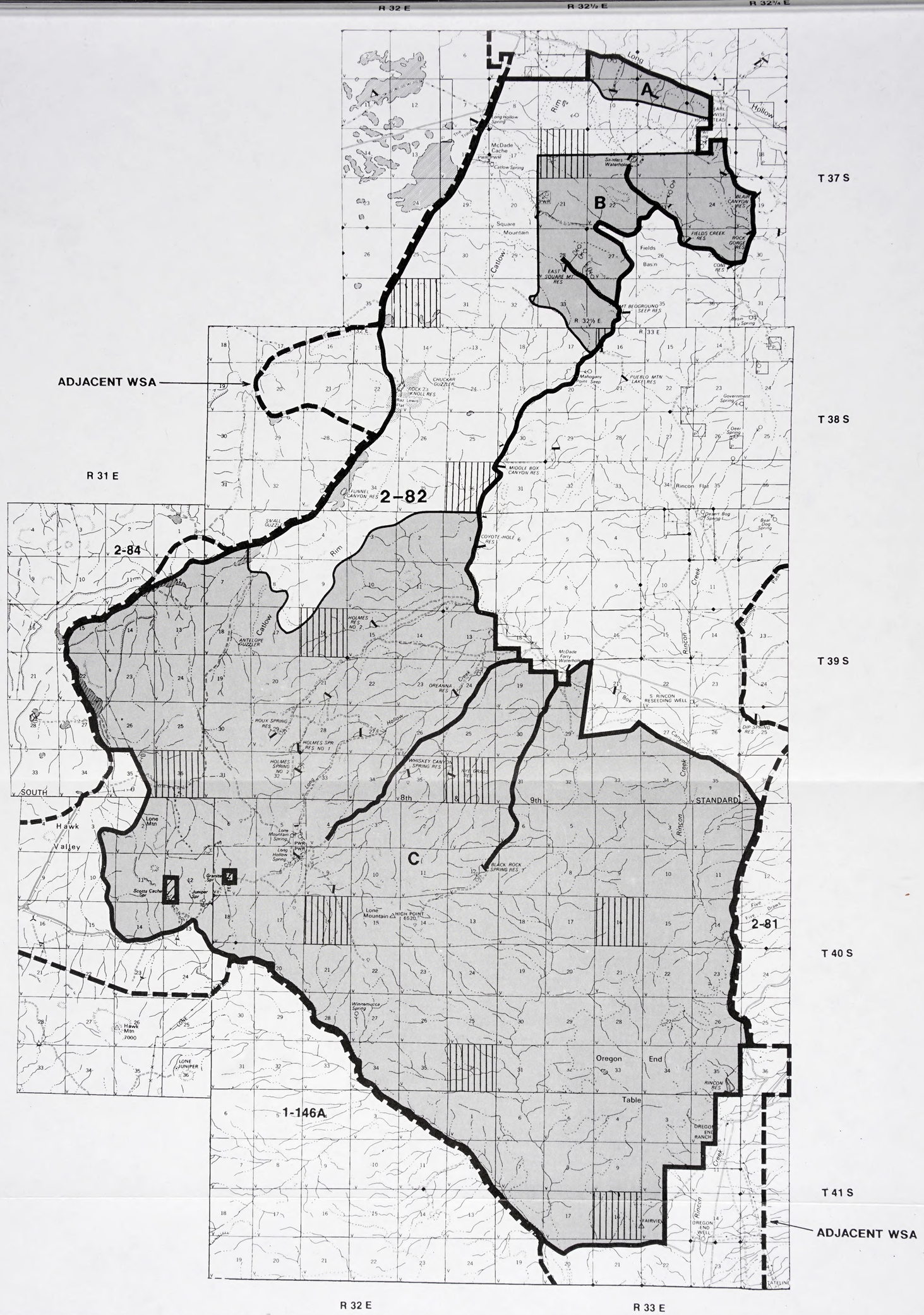
The recommendation for this WSA is to designate the 19,428 acres of BLM lands considered under the partial alternative and to release 84,537 acres for uses other than wilderness. The all wilderness, with acquisitions and road closures, is the environmentally preferable alternative since it would result in the least change from the natural environment over the long term. However, the recommendation would be implemented in a manner which would use all practical means to avoid or minimize environmental impacts.

The area recommended as suitable for wilderness contains most of the southern end of Catlow Rim. This area is in a basically natural condition and has outstanding opportunities for solitude and primitive types of recreation. It also contains special features including cultural resources, high-quality raptor nesting areas, bighorn sheep habitat and is an area of geologic interest.

Designation of this portion of the study area as wilderness would protect the area's wilderness values and special features within an area that can be managed to preserve these qualities.

The recommendation would add an ecosystem not presently represented in Oregon and represented in the entire National Wilderness Preservation System (NWPS) by only three areas. In addition, the recommendation would contribute to balancing the geographic distribution of areas within the NWPS.

This portion of the study area recommended for wilderness has only minor conflicts with other resource uses. Like the rest of the WSA, this portion has been identified as having low potential for the occurrence of energy resources. Parts of the area



RECOMMENDED FOR WILDERNESS

RECOMMENDED FOR NONWILDERNESS

LAND OUTSIDE WSA RECOMMENDED FOR WILDERNESS (None)

SPLIT ESTATE

STATE (None)

PRIVATE

- N -

Rincon Proposal

MAP-1

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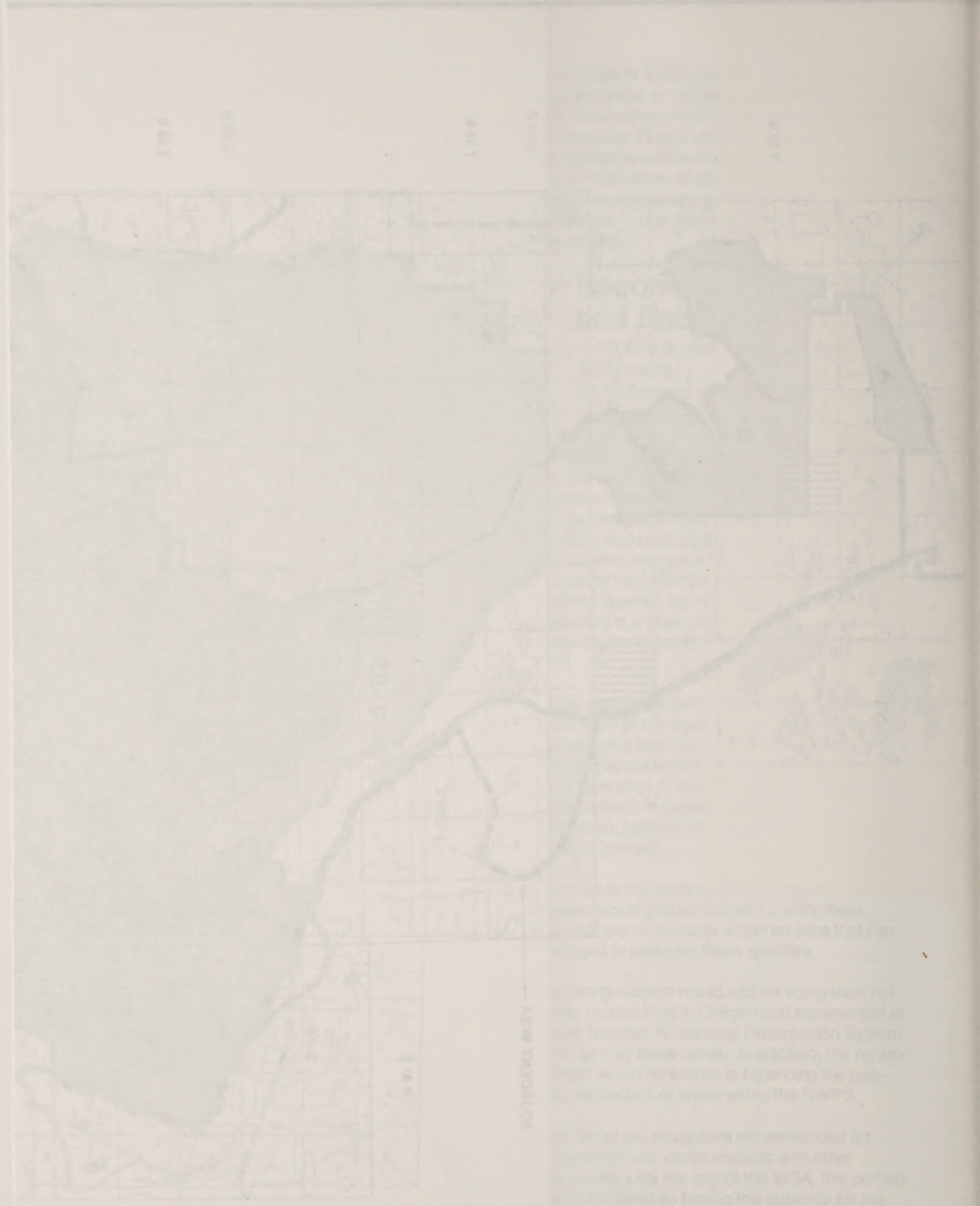
MILES

OR-2-82

January, 1991



have moderate potential for the occurrence of diatomite and silver, and high potential for sand and gravel. The range improvements which have been proposed within the area recommended for wilderness would affect only a small portion of the southern end of the area recommended suitable for wilderness designation.

The wilderness values found in the area recommended as suitable outweigh the possible conflicts with other resources.

Some 84,537 acres of the Rincon WSA are recommended as nonsuitable for wilderness designation under this alternative because of the inconvenience and costs to maintain range improvements without the use of vehicles, the benefits to be gained from improving wildlife habitat and range management, and the adverse influence of existing livestock facilities on naturalness and solitude. Most of this area is located in the southern portion of the existing WSA.

The portion of the study area recommended nonsuitable under the partial alternative includes part of the northeastern corner of the WSA's panhandle (Areas A and B on Map 1) and the large area dominated by Lone Mountain and Oregon End Table (Area C on Map 1).

Within the nonsuitable portions are two pockets of the WSA which have a greater concentration of range developments than the remainder of the area. These pockets occur in the northeast (in Areas A and B on Map 1) and in the east-central parts of the study area (in Area C on Map 1) and have an adverse affect on naturalness in those portions of the WSA. Opportunities for solitude in the areas with concentrated range improvements would also be reduced by maintenance and livestock management activities at and around these developments.

3. Criteria Considered in Developing the Wilderness Recommendations

Wilderness Characteristics

A. Naturalness: The Rincon WSA appears to be in a relatively natural condition. The WSA contains a variety of distinct natural features, including portions of Catlow Rim, Lone Mountain and Oregon End Table. The part of Catlow Rim located within the WSA has several deep canyon with intermittent streams and is characterized by rugged, westerly facing rock cliffs.

This WSA provides habitat for wildlife species using the big sagebrush, low sagebrush and antelope bitterbrush habitats. Cliffs and rugged canyons provide additional habitat for many species. Most of winter deer use is in the northwestern corner of the WSA below Catlow Rim, along the west side of the WSA. Deer winter at lower elevations along the west side of the WSA.

Antelope winter in the southern part of the WSA and summer where low sagebrush flats have adequate water. Some winters, over 2,000 antelope stay near Big Springs Table, but move onto Oregon End Table in the southeastern portion of the study area. This part of the study area has been identified as crucial antelope winter range. Four usually active golden eagle nests and six usually active prairie falcon nests are on Catlow Rim above Long Hollow and overlooking Catlow Valley on the northwestern side of the study area. Fourteen other inactive golden eagle nests have been located in the WSA. American kestrels, great horned owls, long-eared owls and red-tailed hawks are other raptors using the area.

Chukars are found where steep rocky rims occur. They are usually abundant on the northern end of the WSA near Long Hollow, the west edge of the study area above Catlow Valley, and the south side of Lone Mountain. Valley quail are occasionally observed, but are not abundant.

Other wildlife species common to the WSA include western rattlesnake, common raven, common flicker, sage sparrow, Brewer's sparrow, horned lark, rock wren, sage thrasher, least chipmunk, antelope ground squirrel, black-tailed jackrabbit, mountain cottontail, kangaroo mouse, Great Basin pocket mouse, canyon mouse, bushy-tailed woodrat, coyote and small-footed myotis (bat).

None of the unnatural developments within the study area are substantially noticeable and most of them can be seen from only a very small portion of the WSA. With the exception of two areas where these developments are somewhat concentrated, a visitor to the study area would not notice a significant impact on the natural quality of the WSA.

The Rincon WSA contains 75 unnatural features. Of this total, 40 are water developments for livestock or wildlife, including 26 reservoirs, eight wildlife guzzlers and six spring developments. There are 32 vehicle

Table 1.- Land Status and Acreage Summary of the Study Area

	Acres
Within Wilderness Study Area	
BLM (surface and subsurface)	97,545
Split-Estate (BLM surface only)[1]	6,420
Inholdings (State, Private)	120
Total	104,085
Within the Recommended Wilderness Boundary	
BLM (within WSA)	17,928
BLM (outside WSA)	0
Split-Estate (within WSA)[1]	1,500
Split-Estate (outside WSA)[1]	0
Total BLM Land Recommended for Wilderness	19,428
Inholdings (State, private)	0
Within the Area Not Recommended for Wilderness	
BLM	79,617
Split-Estate[1]	4,920
Total BLM Land Not Recommended for Wilderness	84,537
Inholdings (Private)	120

[1] Appendix 1 is a detailed description of split-estate tracts included within the study. For purposes of this report, split-estate lands are defined only as those lands with Federal surface and non-Federal subsurface (minerals).

ways, totaling approximately 52 miles. One of the developments is an old mining prospect and the remaining developments are interior fences, totaling 23 miles. Approximately 7 percent of the study area is influenced by these features.

The area affected by water developments accounts for less than half of the total area influenced by unnatural features. Most of the water developments occur within Areas A, B and C which are recommended nonsuitable for wilderness designation. They are located in two general locations: the northern part of the panhandle and the central portion located to the north and east of the Lone Mountain area. Several other water developments are scattered around the perimeter of the study area.

Individually, most of these water developments influence a relatively small area. Many of the reservoirs are located in shallow drainages and can be seen from only the immediate vicinity of the drainage. Other developments, including several of the guzzlers, are located on hillsides facing away from higher terrain, thus limiting the area from which they can be viewed.

A large reservoir in the northern end of the WSA, a guzzler, a group of two reservoirs and several segments of vehicle ways located in the southwest corner are within fairly wide valleys. Because of their location, they influence a larger acreage than the majority of the water developments.

Three other water developments also influence a fairly large area due to their location below Catlow Rim (two along the northern boundary as indicated on Area A, Map 1, and one along the western boundary). Because of their location low on the steep slope of the rim, they are visible from much of the higher terrain.

The area from which the 32 vehicle ways can be seen accounts for about half of the area influenced

by unnatural features. As with most of the reservoirs, the ways are located in the northern and central portions of the WSA (in Areas A, B, and C on Map 1). Individually they have a very small influence on the WSA as a whole. The remaining two developments, a fence and an old mining site, have little influence on the area.

The most noticeable outside sights and sounds are the roads which form the boundary line of most of the area; they are easily visible from the perimeter acreage of the WSA. These roads represent a visual contrast which is noticeable, but not significant enough to detract from the natural appearance of the WSA. Other outside sights have a very minor influence on the WSA. These features include two crested wheatgrass seedings, a ranch, a cow camp and several small water developments.

B. Solitude: Opportunities for solitude in the Rincon WSA are outstanding. These opportunities are enhanced by the area's large size and diverse topography, particularly the rolling hills found within much of the area, the rugged rock outcroppings around Lone Mountain and the rims and elevation differences associated with Catlow Rim and Oregon End Table. The only vegetative screening is the western juniper on the south side of Lone Mountain around Juniper Spring and Granite Springs. For the WSA as a whole, vegetative screening does not enhance opportunities for solitude.

C. Primitive and Unconfined Recreation: The area provides outstanding opportunities for primitive forms of recreation, including day hiking, camping, backpacking, horseback riding, hunting, observing wildlife, sightseeing and photography.

The primary attractions for day hiking within the Rincon WSA would be Catlow Rim and the Lone Mountain area. Several of the steep drainages which cut into Catlow Rim provide challenging access to the top of the rim. The rock outcroppings around Lone Mountain would be of interest and would also present a challenge to the hiker. Other features which might be of interest to a hiker include Oregon End Table and the small canyons, which drain into Long Draw, along the southern boundary.

These features would also be of interest to a backpacker or horseback rider. Most of the terrain has abundant level areas suitable for camping. The limiting factor for overnight stays is the availability of water.

Game species which can be hunted within the area include mule deer, antelope and chukars. The northern end of the WSA is particularly good for deer hunting, while the opportunities for chukar hunting are best along Catlow Rim. Opportunities for antelope hunting are only fair due to the low number of animals within such a large area.

Opportunities for observing wildlife (especially raptors along Catlow Rim), sightseeing and photography are outstanding within the WSA. The areas around Catlow Rim, Lone Mountain, Oregon End Table and various other points around the WSA provide opportunities for sightseeing and photography. Broad vistas with views of the surrounding topography are available throughout most of the study area, while the rock formations around Lone Mountain, the rugged face of Catlow Rim and other features of the area provide interesting views and photographic settings.

D. Special Features: There are several features in the Rincon WSA which add to the value of the area as wilderness, including wildlife, geologic, cultural and vegetative features.

Wildlife is a special feature within this study area because of the high-quality raptor nesting area and an area of crucial antelope winter range. The raptor area includes the 15 miles of Catlow Rim located within the northern portion of the WSA. This is the southern end of a 31-mile long area identified by the U.S. Fish and Wildlife Service in its February 1980 publication, "Important Fish and Wildlife Habitat of Oregon." The importance of this area is due primarily to the high density of raptor species using the area.

Crucial deer winter range is located in the northwest corner below Catlow Rim. The crucial antelope winter range is located in the southeastern portion of the WSA and includes most of the Oregon End Table area. The study area also includes habitat for bighorn sheep in the Lone Mountain area. Kit fox, on the Oregon Department of Fish and Wildlife's (ODFW's) list of threatened or endangered species, may range into the lower elevations in the southern end of the WSA. Six sage grouse strutting grounds, and accompanying nesting sites, are located within the WSA. These birds are a candidate species for Federal listing as threatened or endangered.

The geology of the WSA is a special feature mainly because of Catlow Rim. Catlow Rim is a prominent fault scarp which forms the western edge of the southern topographic unit of the Steens Mountain fault block. In addition, the rim also serves as the eastern boundary of Catlow Valley, a prominent structural basin. This basin, especially along Catlow Rim, is characterized by ancient shoreline features

such as gravel bars, spits, wave-built terraces and wave-cut benches which are obvious evidence of a lake that existed in Catlow Valley during the Pleistocene glacial period. Catlow Rim has been identified as a geological sightseeing area because of its uniqueness and size.

Noteworthy cultural resource sites in the WSA include a well-known cave and an area with a considerable amount of rock art. The cave was the focus of a pioneering archaeological study in this part of southeastern Oregon. The rock carvings are located in a little studied part of the State.

There is one plant species of special interest in the WSA, *Phacelia gymnoclada*.

Diversity in the National Wilderness Preservation System

A. Expanding the Diversity of Natural Systems and Features as Represented by Ecosystems: Wilderness designation of this WSA would add an ecosystem (Bailey-Kuchler classification) not presently represented in Oregon, and represented in the National Wilderness Preservation System by only three areas. There are 66 other BLM areas in the State under study with this ecosystem. The information is summarized in Table 2.

According to the Bailey-Kuchler system of classifying ecosystems, the Rincon WSA is in the Intermountain Sagebrush Province and the potential natural vegetation is sagebrush-steppe.

The Oregon Natural Heritage Plan identifies seven plant communities which occur in the Rincon WSA. They are big sagebrush/bluebunch wheatgrass, Indian ricegrass-needlegrass community, big sagebrush/spiny hopsage, big sagebrush-bitterbrush with Idaho fescue, low sagebrush/Idaho fescue, big sagebrush/Idaho fescue, and a black sagebrush community complex within the Basin and Range physiographic province.

B. Assessing the Opportunities for Solitude or Primitive Recreation Within a Day's Driving Time (5 hours) of Major Population Centers: The WSA is within a 5-hour drive of two major population centers. Table 3 summarizes the number and acreage of destination areas and other BLM study areas within 5 hours drive of the population centers, Boise, Idaho and Reno, Nevada.

C. Balancing the Geographic Distribution of Wilderness Areas: The Rincon WSA would contribute to balancing the geographic distribution of areas within the National Wilderness Preservation System. There are only two designated wilderness areas within 100 miles of the WSA.

Manageability

(The area must be capable of being effectively managed to preserve its wilderness character.)

The areas under the all wilderness, all wilderness with acquisitions and road closures alternatives, and the recommendation are manageable as wilderness.

Under the all wilderness alternative, a number of scattered parcels of split estate land and two small parcels of private land complicate management. However, no energy or mineral development is projected.

Energy and Mineral Resource Values

The U.S. Geological Survey (USGS) and U.S. Bureau of Mines (USBM) evaluated 20,500 acres of the Rincon WSA including the 19,428 acres recommended for wilderness. Their evaluation of the energy and mineral resource potential of this portion of the study area is described in USGS Bulletin 1740-E, "Mineral Resources of the Rincon Wilderness Study Area, Harney County, Oregon" published in 1988. No mineral resources were identified although moderate potential was determined for silver resources in a small (0.20-mile square), isolated rhyolite ash-flow tuff exposed near the central part of the area recommended for wilderness. Geological environments similar to those associated with mineralization in the Pueblo-Steens mining district were not recognized in the area. The report notes high potential for sand and gravel resources in ancient lake shoreline deposits along the northwest boundary of the area (Catlow Rim). The report states that the area has low potential for geothermal resources and no potential for oil and gas.

The entire 103,965 acres of the Rincon WSA were evaluated for energy and mineral resource potential in a 1982 report titled "Lone Mountain GRA OR-021-22" prepared by Terradata, a consulting firm under BLM contract. This report identified no resources but interpreted moderate favorability for copper, mercury, and gold due to proximity to the Pueblo-Steens mining district. It found low potential for geothermal resources, oil and gas, coal, and betonite. It found no potential for oil shale and tar sands, uranium, and thorium; moderate potential was found for diatomite.

One major difference between the USGS/USBM report and the Terradata report is the USGS/USBM

Table 2. Ecosystem Representation

Bailey-Kuchler Classification	NWPS Areas areas	NWPS Areas acres	Other BLM Studies areas	Other BLM Studies acres
Province/Potential Natural Vegetation				
NATIONWIDE				
Intermountain Sagebrush Sagebrush Steppe	3	76,699	136	4,266,375
OREGON				
	0	0	66	1,879,109

Table 3 - Wilderness Opportunities for Residents of Major Population Centers

Population Centers	NWPS Areas areas	NWPS Areas acres	Other BLM Studies areas	Other BLM Studies acres
Boise, ID	16	4,741,570	126	5,060,460
Reno, NV	45	4,967,230	175	6,904,809

discovery of an anomalous concentration of silver from a small, isolated outcrop that may reflect more mineralized rock at some depth. The other major difference is the USGS/USBM determination that the portion recommended for wilderness does not contain geological environments similar to those associated with mineralization in the Pueblo-Steens mining district. The moderate potential for diatomite described in the Terradata report occurs in the part of the Rincon WSA that is outside of the area recommended for wilderness and was not examined for the USGS/USBM report.

As of May 1991, there were no mining claims within this WSA.

Impacts on Resources

The following comparative impact table summarizes the effects on pertinent resources for all the alternatives considered including designation and nondesignation of the entire area as wilderness.

Local Social and Economic Considerations

Livestock use at the current level of 7,054 AUMs and recreation use totaling 300 visitor days per year are the primary resource outputs that generate economic activity in the WSA. Local personal income generated annually from these existing use levels amounts to approximately $84,648 for livestock grazing and $3,600 related to recreation use of the WSA, for an overall total of $88,248.

Under this recommendation, livestock grazing would remain at 7,054 AUMs and recreation use would

Table 4 - Comparative Summary of the Impacts by Alternative

Issue Topics	Recommendation (Partial Wilderness Alternative)	All Wilderness Alternative
Impacts on Wilderness Values	Wilderness designation of the 19,428 acres of the Rincon WSA would result in protection and enhancement of the existing wilderness values in the area. The 84,537 acres recommended nonsuitable would be subject to projected resource activities that would both directly and indirectly impair wilderness values over approximately 27,000 acres of the WSA, with further declines from other potential uses over the long term.	Wilderness designation of the entire 103,965 acres within the Rincon WSA would result in the protection of the existing wilderness values and probable enhancement of those values.
Impacts to Energy and Mineral Development	No impact to energy development is expected. Exploration and possible production of silver from one site would be foregone. (This mineral impact reflects a revision from the EIS).	No impact to energy development is expected. Exploration and possible production of silver from one site would be foregone. (This mineral impact reflects a revision from the EIS.)
Impacts on Vegetation	The 4 miles of ways in the area recommended suitable would naturally revegetate. Projected management actions in the nonsuitable area would directly disturb approximately 7,900 acres and corresponding vegetative cover by converting natural sagebrush to crested wheatgrass and reducing diversity. Overall ecological status would not change outside the proposed seedings.	The 52 miles of ways, would naturally revegetate. Overall vegetation would remain unchanged.
Impacts on Wildlife	Wildlife habitat and populations would be maintained on 19,428 acres designated wilderness. Bighorn sheep populations would increase. Abandonment of guzzlers and exclosures would result in declining deer and small game populations.	Wildlife habitat and populations would be maintained on 103,965 acres designated wilderness. Bighorn sheep populations would increase. Abandonment of guzzlers and exclosures would result in declining deer and small game populations.
Impacts on Livestock Grazing	Livestock use would remain at 7,054 AUMs. Vehicle use on 4 miles of ways would be precluded with some inconvenience and and additional expense to operators.	Livestock grazing use would be reduced by 1,255 AUMs. Vehicle use on 52 miles of ways would be precluded with some inconvenience and additional expense to livestock operators.

All Wilderness, with Acquisitions and Road Closures, Alternative	No Wilderness/No Action Alternative
Wilderness designation of the 104,085 acres would result in the protection of the existing wilderness values and probable enhancement of those values.	In the absence of wilderness designation, projected management actions would both directly and indirectly impair wilderness values over approximately 28,200 acres of the WSA, with further declines from other potential uses over the long term.
No impact to energy or mineral development is expected. Exploration and possible production of silver at one site would be foregone. (This mineral impact reflects a revision from the EIS.)	No impact to energy or mineral development is expected.
The 13.5 miles of dead-end roads and 52 miles of ways would naturally revegetate. Overall vegetation would remain unchanged.	No revegetation would occur on any roads or ways due to continued use by vehicles. Projected management actions would directly disturb 7,929 acres of vegetation cover by burning sagebrush, converting sagebrush to crested wheatgrass and construction of structural range improvements.
Wildlife habitat and populations would be maintained on 104,085 acres designated wilderness. Bighorn sheep populations would increase. Abandonment of guzzlers and exclosures would result in declining deer and small game populations.	Wildlife habitat and populations would be maintained on 103,965 acres. Populations of bighorn sheep, deer, antelope, sage grouse, chukars and nongame species would increase.
Livestock grazing use would be reduced by 1,255 AUMs. Vehicle use of 52 miles of ways and 13.5 miles of dead-end roads would be precluded with some inconvenience and additional expense to livestock operators.	Livestock use would remain at 7,054 AUMs.

Table 4 - Comparative Summary of the Impacts by Alternative (continued)

Issue Topics	Recommendation (Partial Wilderness Alternative)	All Wilderness Alternative
Impacts on Recreation Use	Wilderness designation would result in a net increase in the area's overall recreation use level from currently 300 visitor days per year to approximately 400 visitor days per year.	Wilderness designation would result in a slight net reduction in the area's overall recreation in use of approximately 300 visitor days per year to a total of 200 visitor days per year.
Impacts on Local Personal Income	Annual local personal income would decrease by approximately $1,000.	Annual local personal income would decrease by approximately $16,000.

increase by approximately 100 visitor days per year. Annual local personal income generated from resource outputs in the WSA would increase by approximately $1,000.

There were no social issues identified with the study of this WSA.

Summary of WSA-Specific Public Comments

Public involvement has occurred throughout the wilderness review process. Certain comments received during the inventory process and early stages of the EIS preparation were used to develop significant study issues and various alternatives for the ultimate management of those lands found to have wilderness values.

During formal public review of the draft EIS and its Supplement, a total of 35 comments specifically addressing this WSA were received. Of those, 31 were written and four were oral statements received at the 24 public hearings on the EIS. In general, 21 commenters supported wilderness designation for all or part of the WSA. Eight commenters supported no wilderness for the WSA, while six commenters addressed the relative merits of the EIS, but took no formal position on wilderness designation.

Those favoring wilderness commented that the WSA has high scenic values and that the value of wilderness outweighs any other values within the WSA. Others commented that the designation of wilderness within the entire WSA would best protect and preserve natural resources and further that this WSA combined with adjacent WSAs would be in the best interest of the land to maintain its ecological diversity. Some commented that the WSA is unique in Oregon in that it has outstanding geologic formations and provides habitat for kit fox. Still others commented that wilderness designation would protect cultural values, preserve unique juniper stands, and would provide protection from overgrazing.

Those opposing wilderness designation commented that wilderness would lead to problems on adjacent land in regard to future development and overall access. Other problems and conflicts could arise due to a proposed powerline corridor. Others commented that wilderness designation would restrict use of the area by precluding use of motor vehicles in an area considered too large to be feasible for hiking or hunting via non-motorized transportation. Some commented that the WSA had too many inholdings and that designating this area as wilderness would not be feasible. Still others commented that there were too many existing human-created intrusions and that the overall naturalness of the area had been altered to a large degree, which detracts from the wilderness characteristics. Some commenters expressed concerns about adverse impacts that wilderness could have on the local economy, namely the range industry or the individual livestock operator.

All Wilderness, with Acquisitions and Road Closures, Alternative	No Wilderness/No Action Alternative
Wilderness designation would result in a minor net reduction in the area's overall recreation use of approximately 300 visitor days per year to a total of 200 visitor days per year.	The area's current overall recreation use level of 300 visitor days per year, is projected to increase over time to approximately 500 visitor days per year.
Annual local personal income would decrease by approximately $16,000.	Annual local personal income would increase by approximately $2,000.

Both Harney County and the Burns Paiute Reservation favor a partial wilderness designation as recommended by the BLM.

There were three comment letters received on the final EIS for this WSA.

Appendix 1 - Estimated Costs of Acquisition of Non-Federal Holdings Within Areas Recommended for Designation[1]

	Legal Description (Prior to any Subdivision)	Total Acreage	Number of Owners (If Parcel has been Subdivided)	Type of Ownership by Estate (Federal, State Private, other)		Presently Proposed for Acquisition (Yes, No)	Preferred Method of Acquisition (Purchase, Exchange, Other)	Estimated Cost of Acquisition[2]	
				Surface Estate	Subsurface Estate			Land Costs	Processing Costs
Parcel No. 1, (split estate) T. 38 S., R. 32 E., Section 36	520			Federal	State	No	Exchange		$3,750
Parcel No. 2, (split estate) T. 39 S., R. 32 E., Section 16, NW of NW1/4	40			Federal	State	No	Exchange		$3,750
Parcel No. 3, (split estate) T. 37 S., R. 32 E., Section 36	620			Federal	State	No	Exchange		$3,750
Parcel No. 4, (split estate) T. 37 S., R. 32 1/4 E., Section 16, Northern quarter of section	320			Federal	State	No	Exchange		$3,750

[1] The estimated costs listed in this appendix in no way represent a formal appraised value of the land or mineral estate, but are rough estimates based on sales or exchanges of lands or mineral estates with similar characteristics to those included in the WSA. The estimates for purposes of establishing a range of potential costs to the government of acquiring non-Federal holdings and in no way represent an offer to purchase or exchange at the cost estimate included in this appendix. Processing costs are all miscellaneous expenses other than land costs. These include workmonth costs, appraisals, title work, escrow costs, etc.

[2] Only administrative costs are shown for exchanges.

Alvord Peak Wilderness Study Area

1. The Study Area —16,825 acres

The Alvord Peak Wilderness Study Area (WSA) (OR-2-83) is located about 82 miles south of Burns, Oregon, and approximately 4 miles north of Fields, in Harney County. It lies adjacent to the Long Hollow county road and within a mile of the Folly Farm-Fields county road. The nearest highways are Oregon State Highways 205 and 78, 31 miles west and 56 miles north, respectively.

The roughly rectangular shaped study area contains 15,700 acres of BLM land; and 1,125 acres of split-estate land. There are 80 acres of privately-owned land in the central portion of the study area (see Table 1).

The WSA boundary is somewhat irregular and is formed by a variety of features. The eastern boundary is composed primarily of two roads (one in combination with a powerline), the edge of a crested wheatgrass seeding and private land. The southern boundary includes a road and a powerline, while the northern boundary is defined by a road and private land. Part of the western boundary follows legal subdivisions created by private land and BLM lands which contain a concentration of human developments. Four dead-end roads, totaling 4 miles, also form part of the WSA boundary; one road entering the WSA from the northwest, two from the east and one from the southeast. A half-mile section of road that forms part of the southern boundary is a high standard gravel road while all other roads are low standard dirt roads. These are roads that actually enter the WSA, but are not included within the WSA itself.

The dominant topographic feature in this study area is a ridgeline containing a series of 10 peaks. The ridge runs from north to south through the center of the WSA and is the southern-most extension of the main ridge of Steens Mountain. These peaks vary in elevation from 6,189 feet to 7,132 feet, with the highest point in the WSA being Alvord Peak. From the ridgeline, the terrain slopes sharply east into Alvord Basin, falling an average of 1,600 feet in about three-quarters of a mile. The lowest elevation of 4,200 feet occurs along the eastern side of the study area.

To the west of the peaks, the terrain slopes more gently toward a plateau area which is typical of the western side of Steens Mountain. This part of the WSA contains rolling hills and some relatively-flat land.

There are 2 miles of perennial streams in the study area and numerous intermittent drainages that run east and west from the summit of the ridge.

The study area contains a variety of grasses but the most common form of vegetation is big sagebrush. A small area of low sagebrush occurs in the southwest portion of the area. The WSA contains few juniper and only a small amount of riparian vegetation, which is found around several springs.

The WSA was studied under Sections 603 and 202 of the Federal Land Policy and Management Act (FLPMA). Lands added after the wilderness inventory were studied under Section 202, also of FLPMA. These lands were included in the final Oregon Wilderness Environmental Impact Statement (EIS) filed in February 1990.

The Alvord Peak WSA has been modified to include three parcels of land totaling 2,170 acres. Two parcels (1,125 acres) were acquired in an exchange with the state of Oregon after completion of the wilderness inventory phase. The state of Oregon has retained the subsurface mineral estate, resulting in 1,125 acres of split-estate (Federally managed surface, state subsurface or mineral rights) lands within the WSA. In addition, 1,045 acres of BLM land were separated from the WSA by a parcel of this split-estate land. With the inclusion of the split-estate land, the BLM land becomes a part of the WSA.

There were three alternatives analyzed in the EIS: An all wilderness alternative designating 16,825 acres of BLM land; An all wilderness, with acquisitions and road closures, alternative designating 16,905 acres; and, A no wilderness/no action alternative, which is the recommendation of this report. These lands are shown on Map 1.

2. Recommendation and Rationale

—0 acres recommended for wilderness,
16,825 acres recommended for nonwilderness

The recommendation for this WSA is to release the entire 16,825 acres for uses other than wilderness. The all wilderness, with acquisitions and road closures, alternative is the environmentally preferable alternative as it would result in the least change from the natural environment over the long term. However, the no wilderness/no action alternative would be implemented in a manner which would use all practical means to avoid or minimize environmental impacts.

The recommendation was selected because wilderness values in the WSA are considered insufficient to outweigh the benefits of mineral exploration and possible development and developments needed for more intensive rangeland management for livestock. The recommendation would retain the option of mineral exploration and development and construction of livestock developments, which are needed to reverse the downward vegetative trend and prevent a reduction in livestock use. Although the area has several wilderness values, including bighorn sheep habitat, it is also located within an area identified as having a high potential for the occurrence of geothermal resources in the eastern portion of the WSA and high potential for mineral resources of gold, mercury and copper throughout the entire WSA. Mercury and copper are strategic and critical minerals. The recommendation would allow development of one projected gold mine in the southeastern portion of the WSA as well as mineral exploration on 15,700 acres of BLM land.

The 1,125 acres of split- estate lands and the privately-owned 80 acres in the central portion of the study area could create manageability problems if designated wilderness due to a potential for mineral exploration, development, and access from the WSA boundary.

The recommendation would also allow for construction of two spring developments and two reservoirs designed to increase use of available forage for the purpose of reducing grazing pressure on some of the more sensitive areas. Without these projects, there would be a projected reduction in livestock grazing use of 662 AUMs in the Andrews Allotment.

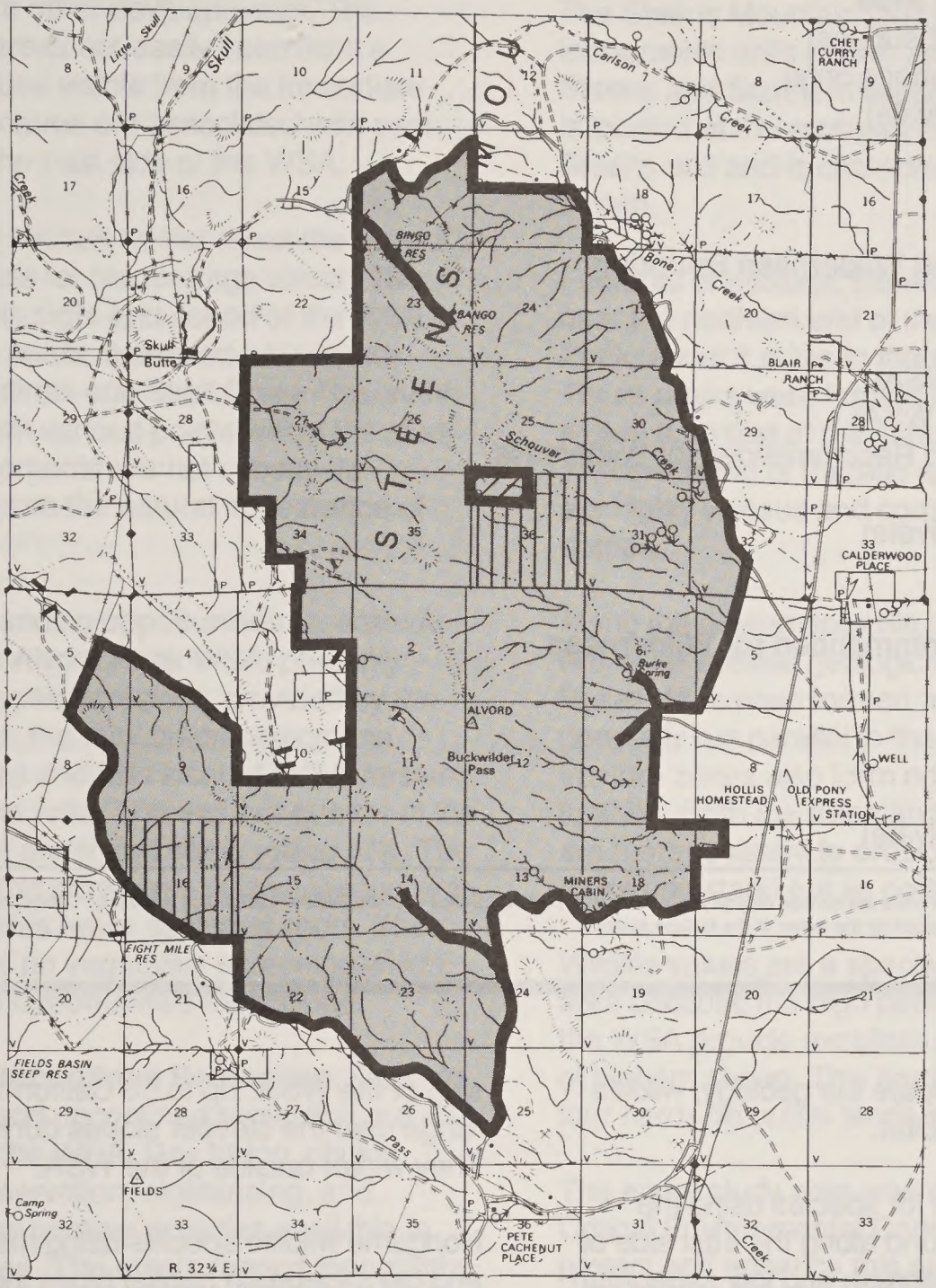
3. Criteria Considered in Developing the Wilderness Recommendations

Wilderness Characteristics

A. Naturalness: The Alvord Peak WSA is in a relatively natural condition. The study area contains a ridgeline with a series of 10 peaks, with rock outcroppings and numerous drainages and hills. The eastern quarter of the WSA has large, flat areas and some rolling hills. The most outstanding natural

R 32¾ E

R 33 E



T 36 S

T 37 S

RECOMMENDED FOR WILDERNESS (None)

RECOMMENDED FOR NONWILDERNESS

LAND OUTSIDE WSA RECOMMENDED FOR WILDERNESS (None)

SPLIT ESTATE

STATE (None)

PRIVATE

-N-

Alvord Peak Proposal
MAP-1

0 1 2 3
MILES

OR-2-83
January, 1991

Table 1. Land Status and Acreage Summary of the Study Area

	Acres
Within Wilderness Study Area	
BLM (surface and subsurface)	15,700
Split-Estate [1](BLM surface only)	1,125
Inholdings (State, Private)	80
Total	16,905
Within the Recommended Wilderness Boundary	
BLM (within WSA)	0
BLM (outside WSA)	0
Split-Estate (within WSA) [1]	0
Split-Estate (outside WSA) [1]	0
Total BLM Land Recommended for Wilderness	0
Inholdings (State, Private)	0
Within the Area Not Recommended for Wilderness	
BLM	15,700
Split-Estate [1]	1,125
Total	16,825
Inholdings (State, Private)	80

[1] For the purpose of this report, split-estate lands are defined only as those lands with Federal surface and non-Federal subsurface (minerals). Lands that have Federal minerals but non-Federal surface are classified in this report by the owner of the surface estate.

features found in this WSA are the geology, wildlife and associated wildlife habitat.

The WSA provides habitat for species using the steep rimrock and talus found along the east side of Steens Mountain. Big sagebrush and low sagebrush are habitat types for many of the wildlife species in the WSA.

Much of the area is excellent chukar habitat with good interspersion of water, forage, talus and rimrock. Valley quail are found along drainages and uplands along the east side of the area. Sage grouse, a candidate for Federal listing as Threatened or Endangered, use the gentle western slopes.

Golden eagle, prairie falcon, American kestrel, great horned owl, burrowing owl and common raven use the area.

Mule deer and antelope make light use of the area yearlong. There is a small area of crucial deer winter range in the lower foothills along the northeastern side of the WSA. Up to 50 California bighorn sheep range over the steeper slopes during the summer. They winter outside of the WSA.

Nongame wildlife species using the low sagebrush and big sagebrush habitat types include Brewer's sparrow, sage sparrow, western meadowlark, sage thrasher, black-tailed jackrabbit and least chipmunk. Rimrocks and talus provide habitat for such species as yellow-bellied marmot, bush-tailed wood rat, canyon mouse, long-eared myotis (bat) and small-footed myotis.

Developments influence only about 6 percent of the WSA (the area of influence is an estimate of the acreage within the WSA from which each development can be seen). Most of the unnatural features occur at or near a boundary, leaving the interior free of developments. The WSA contains 26 developments: seven reservoirs, three developed springs, a 0.75-mile pipeline, two guzzlers, six short ways totaling 3 miles, three fences totaling 2 miles, two locations with buildings and an area of past mining activity.

The vehicle ways are overgrown with vegetation and lie in drainages where they are screened by topography. Five of the reservoirs in the study area also lie within pronounced drainages. Two reservoirs and a guzzler are located in open areas and are more easily seen than are other developments. The buildings occur in areas not easily seen from a distance, but are quite visible from the immediate vicinity. These structures are associated with past mining activity on the east side of the WSA.

Outside sights and sounds do not affect the overall quality of naturalness for the average visitor. The developments within sight and sound of the WSA include two county roads, a crested wheatgrass seeding, two powerlines and Skull Creek Reservoir. Although visible from various points within the study area, these developments are not substantial enough to detract from the natural appearance of the WSA.

B. Solitude: Outstanding opportunities for solitude are available in the Alvord Peak WSA, primarily because of topographic screening provided by the ridgeline, the peaks, the rock outcroppings and numerous drainages and hills located in the western three-quarters of the area. The eastern quarter of the WSA has large, flat areas and some rolling hills. The eastern section of the study area is less conducive to solitude, as it provides fewer secluded spots. The study area contains no vegetative screening which would enhance the opportunities for solitude.

C. Primitive and Unconfined Recreation: Opportunities for primitive and unconfined recreation are also outstanding within the WSA. Day hiking, chukar hunting, wildlife observation, sightseeing, and photography are the primary activities available in the Alvord Peak area. The area's rugged topography provides a challenge for the hiker. In addition, the presence of a herd of bighorn sheep, the sharp contrast of brightly colored lichens on dark basalt rock, and the broad scenic vistas from the summit of the ridgeline not only add to the hiking experience, but provide opportunities for the photographer and sightseer.

Opportunities for backpacking and horseback riding are also available within the area but are somewhat limited due to the relatively small size of the WSA.

Hunting opportunities are excellent for chukars on the lower eastern slopes of the area. Although deer, bighorn sheep and antelope are present in the WSA, their numbers are limited and the hunting opportunities therefore identified as fair.

D. Special Features: Special features include the geologic, wildlife, vegetative and scenic features which add to the value of the study area as wilderness.

The Steens Mountain fault block is divided into three topographic units known as Northern Steens, High Steens and Southern Steens. The Alvord Peak WSA is located at the southern end of the Southern Steens unit and is characterized by rugged, irregular terrain.

Features of geologic interest include Sharp Peak near the northern end of the study area and Alvord Peak, about 3 miles to the south of Sharp Peak. These peaks were formed by lava flows of a different nature than that of the surrounding formation. They are composed of rhyolitic and dacitic lavas, which are highly viscous and commonly form volcanic domes.

Along the eastern foothills of the Southern Steens, two other notable geologic features can be seen. Basalt dikes have formed narrow ridges which generally run parallel to the range. Mineralized fracture zones also form ridges or "reefs" along the foothills. Both the dikes and the mineralized "reefs" are more resistant to erosion than the surrounding rocks and stand out as notable features.

Wildlife values are a special feature of this study area because the high peaks in the central portion of the WSA provide excellent summer range for a herd of bighorn sheep. This herd of sheep is one of only four herds on public lands in the Burns District.

The entire study area was designated as an Area of Critical Environmental Concern (ACEC) in 1983 to protect and enhance this area as valuable habitat for bighorn sheep. The upper elevations have water, escape cover and isolation which combine to provide excellent summer habitat for bighorns.

Sage grouse, a candidate species for Federal listing as Threatened or Endangered in Oregon under the Endangered Species Act, use the gentle western slopes of the WSA. The WSA contains crucial deer winter range in the lower foothills along the northeastern side of the WSA. One plant species of special interest, *Phacelia gymnoclada,* has been identified within the WSA. This species is "threatened in Oregon but more common or stable elsewhere" according to the Oregon Natural Heritage Data Base (1987).

The scenery of Alvord Peak area is a special wilderness feature because the eastern side has outstand-

ing scenic qualities. The scenic portion of the area includes all of the high eastern face of the ridgeline with its numerous peaks, as well as excellent vistas of upper Steens Mountain, Pueblo and Trout Creek Mountains and the low, valley floor of Alvord Basin to the east.

Diversity in the National Wilderness Preservation System (NWPS)

A. Expanding the Diversity of Natural Systems and Features as Represented by Ecosystems: Wilderness designation of this WSA would add a combination of ecosystems not presently represented in the National Wilderness Preservation System . There are 11 other BLM areas in the state under study with these ecosystems. The information is summarized in Table 2.

According to the B ailey-Kuchler method of classificating ecosystems, the WSA is in the Intermountain Sagebrush province and contains sagebrush steppe and saltbush-greasewood communities of vegetation.

Plant communities identified in the Basin and Range section of the Oregon Natural Heritage Plan, which occur in the WSA, are big sagebrush/Idaho fescue, big sagebrush/bitterbrush/Idaho fescue, low sagebrush/Idaho fescue and big sagebrush/bluebunch wheatgrass.

B. Assessing the Opportunities for Solitude or Primitive Recreation Within a Day's Driving Time (5 hours) of Major Population Centers: The WSA is within a 5-hour drive of one major population center. Table 3 summarizes the number and acreage of destination areas and other BLM study areas within five hours drive of the population centers.

C. Balancing the Geographic Distribution of Wilderness Areas: The Alvord Peak WSA would contribute to balancing the geographic distribution of areas within the National Wilderness Preservation System. There is only one designated wilderness area within 100 miles of this WSA.

Table 2. Ecosystem Representation

Bailey-Kuchler Classification	NWPS areas	NWPS acres	Other BLM Studies areas	Other BLM Studies acres
Province/Potential Natural Vegetation				
NATIONWIDE				
Intermountain Sagebrush Province/ Sagebrush Steppe Saltbush-Greasewood	0	0	16	972,425
OREGON				
Sagebrush Steppe Saltbush Greasewood	0	0	11	665,782

Table 3. Wilderness Opportunities for Residents of Major Population Centers

Population Centers	NWPS areas	NWPS acres	Other BLM Studies areas	Other BLM Studies acres
Boise, Idaho	16	4,741,570	126	5,060,460

Manageability

(The area must be capable of being effectively managed to preserve its wilderness character.)

The Alvord Peak WSA is manageable as wilderness. Manageability problems could occur due primarily to the 1,125 acres of split-estate lands, 80 acres of private land and the possibility for development and access to them.

The study area's common boundary with private land should not be a significant manageability problem. Although the boundary follows legal subdivisions and is not easily identified on the ground, most of the private boundary parcels are not near those portions of the WSA expected to receive the greatest amount of recreation use. Improving the identification of the boundary in these locations through fencing or signing may eliminate most of the problems.

Continued or increased use of the dead-end roads which enter the WSA could also cause manageability problems under the all wilderness alternative, although existing use is light (100 visitor days per year) and is expected to decrease slightly. Under the enhanced wilderness alternative, the manageability problems associated with the private inholding and split estate lands and the dead-end roads would be eliminated. Potential problems with the development of adjacent private land could occur, but there are no known plans for development at this time.

Energy and Mineral Resource Values

Energy and mineral classifications and evaluations for potential are in a mineral resources assessment report, "Pueblo Valley Geologic Resources Area (GRA OR-020-21), Harney County, Oregon", prepared in 1982 by Terradata (a consulting firm under contract with BLM), and in a BLM report on the Fields Geologic Resource Areas.

The WSA is within the Pueblo Valley GRA which has been classified according to a rating system that indicates both the potential for occurrence (geologic favorability) of certain minerals, as well as the quantity and quality of data on which the rating is based (confidence level).

The southeast edge (less than 360 acres) of the Alvord Peak WSA falls within the Alvord Known Geothermal Resource Area (KGRA), a Federally-defined area with specific boundaries within which geothermal resources are known to exist. This portion of the WSA is rated as having a high potential for the occurrence of geothermal resources.

The main area of the geothermal field lies to the east in Alvord Valley. Major hot springs and faults, high geothermal gradients in test holes and favorable geophysical information make the Alvord Valley a prime geothermal prospect.

The entire WSA is rated as having a high potential for the occurrence of mercury, gold and copper. The geologic environment, inferred geologic processes, and occurrences of mercury, copper and gold provide direct evidence to support this rating. Mercury and copper are strategic and critical minerals. Although mercury, gold and copper have a high mineral potential rating, there are no known confirmed, developable mineral deposits.

As of May 1991, there were 23 mining claims within this WSA.

Impacts on Resources

The following comparative impact table summarizes the effects on pertinent resources for all the alternatives considered including designation and nondesignation of the entire area as wilderness.

Local Social and Economic Considerations

Livestock use at the current level of 2,436 AUMs and recreation use totaling 100 visitor days per year are the primary resource outputs that generate economic activity in the WSA. Local personal income generated annually from these existing use levels amounts to approximately $29,232 for livestock grazing and $1,200 related to recreation use of the WSA, for an overall total of $30,432.

Under the recommendation, livestock grazing would remain at 2,436 AUMs. Projected energy and mineral development would amount to one metallic mine. Overall recreation use would increase by 200 visitor days per year.

There were no social issues identified in the study of this WSA.

Summary of WSA-Specific Public Comments

Public involvement has occurred throughout the wilderness review process. Certain comments received during the inventory process and early stages of the EIS preparation were used to develop significant study issues and various alternatives for the ultimate management of those lands found to have wilderness values.

Table 4 - Comparative Summary of the Impacts by Alternative

Issue Topics	Recommendation (No Wilderness/No Action Alternative)
Impact on Wilderness Values	In the absence of wilderness designation, projected resource activities and developments would both directly and indirectly impair wilderness values over approximately 2,100 acres of the WSA, with further declines from other potential uses over the long term.
Impacts on Energy and Mineral Development	Projected development of one open-pit gold mine would occur.
Impacts on Vegetation	Range and mining developments would result in a direct loss of vegetation on 195 acres. The plant species of special interest would be subject to disturbance by projected mining activities. Overall vegetation would recover due to changes in livestock grazing patterns.
Impact on Wildlife	Most wildlife habitat and populations would be maintained. Bighorn sheep populations may decline depending upon future mining activity and location.
Impacts on Watershed	Stabilization of the current erosion problems at the two springs would occur and overall water quality would improve. Little change to watershed would occur over the rest of the area.
Impacts on Livestock Grazing	Livestock grazing use would continue at the current use level of 2,436 AUMs.
Impacts on Recreation Use	Recreation use would increase from the current level of 100 visitor days per year to approximately 300 visitor days per year.
Impacts on Local Personal Income	Annual local personal income would increase by over $2,000.

All Wilderness Alternative	All Wilderness with Acquisitions and Road Closures Alternative
Wilderness designation of the entire 16,825 acres within the WSA would result in the protection of the existing wilderness values and probable enhancement of those values.	Wilderness designation of the 16,905 acres (assuming acquisition of 80 acres of private land) would result in the protection of existing wilderness values and enhancement of those values. Acquisition of mineral estate would further enhance the total area by preserving wilderness values on all lands within the wilderness boundaries.
No impact to energy development is expected. Production foregone from one projected open-pit gold mine.	Same as all wilderness, except exploration precluded on an additional 1,205 acres, with private land and mineral estate acquisition.
The 3 miles of ways (totaling 3 acres) would eventually revegetate. Overall vegetation would continue to decline on the average.	The 3 miles of ways and 4 miles of road (totaling 11 acres) would eventually revegetate. Overall vegetation condition would continue to decline on the average.
Wildlife habitat and populations would be maintained on 16,825 acres designated wilderness. Small animal populations would decline where one guzzler site would be abandoned.	Wildlife habitat and populations would be maintained on 16,905 acres designated wilderness. Small animal populations would decline slightly where one guzzler site would be abandoned.
Headcutting problems on Dipping Vat Spring and Schouver Springs continue to worsen, and water quality would remain poor on these two perennial streams.	Current headcutting problems would continue to worsen and the water quality would remain poor on the watershed over the rest of the WSA.
Livestock use would be reduced by an estimated 662 AUMs. Vehicle use for routine livestock management on 3 miles of ways would be precluded.	Livestock use would be reduced by 662 AUMs. Vehicle use for routine livestock management on the 3 miles of ways and 4 miles of dead-end roads would be precluded.
Recreation use would remain at the current level of 100 visitor days per year.	Recreation use would remain at the current level of 100 visitor days per year.
Annual local personal income would decrease by approximately $8,000.	Annual local personal income would decrease by approximately $8,000.

During formal public review of the draft EIS and its Supplement, a total of 22 comments specifically addressing this WSA were received. Of those, 20 were written and two were oral statements received at the 24 public hearings on the EIS. In general, nine comments supported wilderness designation for all or part of the WSA. Nine comments supported no wilderness for the WSA, while four comments addressed the relative merits of the EIS, but took no formal position on wilderness designation.

Those favoring wilderness commented on the need to protect natural resources and the inadequacy of the present Area of Critical Environmental Concern (ACEC) designation to protect bighorn sheep and their habitat from mining, grazing and other developments. Some thought geothermal exploration and development was inappropriate since only a small portion of the high potential geothermal resource area is in the WSA. Those opposing wilderness designation were concerned that wilderness would limit management opportunities for the development of minerals and other uses and that there were too many inholdings and intrusions in the WSA.

The Oregon Departments of Geology and Mineral Industries, Fish and Wildlife, Forestry and State Economist, and Harney County all commented on the draft EIS. These agencies did not identify any specific jurisdictional conflicts with any of the alternatives for this WSA.

There was one comment letter received on the Final EIS specific to this WSA.

Basque Hills Wilderness Study Area

1. The Study Area ---141,410 acres

The Basque Hills Wilderness Study Area (WSA) (OR-2-84) is located 90 miles south of Burns, Oregon (18 miles west of Fields and 10 miles north of the Oregon/Nevada state line) in Harney County, Oregon. The WSA is 24 miles south of the end of Oregon State Highway 205 and less than one mile from the county road that runs from Highway 205 to Fields.

About half of the Basque Hills WSA is in the Burns District, the remainder (the western side) lies within the Lakeview District.

The triangular-shaped study area contains 137,220 acres of BLM land. There is one 320-acre private parcel located along a dead-end road; overall, 520 acres of private land are located within the WSA. The WSA also contains 4,190 acres of split-estate land (see Table 1). At the extremes, the study area is 22 miles long and 17 miles wide. Most of the eastern and western boundaries are formed by BLM low standard roads and private land. A portion of the area's northern boundary line is also formed by a BLM low standard dirt road, but most of this boundary is adjacent to private property. The southern boundary line, located in the Lakeview District, is a dirt road.

Three dead-end roads, totaling 25 miles, penetrate the WSA and also form part of the overall boundary line. These roads enter the study area in the northwest corner, from the eastern boundary and from the southeastern boundary.

The Basque Hills WSA is a high desert area with some foothills and rimrock. The landscape is predominantly flat to very gently-rolling. Most of the study area consists of broad, flat expanses and a few low foothills. The major topographic features of the area include Fish Fin Rim in the northwestern corner, Red Butte and another rock outcropping also referred to as Fish Fin Rim near the center of the WSA, Coyote Rim and Catlow Valley in the northeast, and Basque Hills in the southeast.

Scattered throughout the area are dry lakebeds which are commonly found in shallow depressions. The largest of these lakebeds, Slickey Lake, is located in the northeastern portion of the study area in Catlow Valley.

The average elevation of the WSA is about 5,000 feet. The lowest elevation, 4,520 feet, occurs near the northern boundary in Catlow Valley. The highest point in the WSA, 5,909 feet, occurs in the Basque Hills along the southeastern boundary.

There are no perennial streams within the WSA. Many shallow intermittent drainages cross the study area, generally draining the area to the north and northeast into the Catlow Valley.

The vegetation throughout the WSA includes big sagebrush, rabbitbrush, scattered patches of low sagebrush and a variety of grasses. A variety of salt desert shrub species occurs in Catlow Valley, the northeastern portion of the study area. These species include shadscale, greasewood, spiny hopsage, winterfat, Nuttal's saltbush and Great Basin wildrye.

The WSA was initially studied under Section 603 of the Federal Land Policy and Management Act (FLPMA), but since the wilderness inventory phase, additional lands were added and modified and as a result, these areas were studied under Section 202 also of FLPMA. These lands were included in the final Oregon Wilderness Environmental Impact Statement (EIS) filed in February 1990.

The Basque Hills WSA has been modified to include nine parcels (4,190 acres) of land acquired in an exchange with the State of Oregon since completion of the wilderness inventory phase. The State of Oregon has retained the subsurface mineral estate, resulting in 4,190 acres of split estate (Federally managed surface, state subsurface or mineral rights) land within the WSA.

There were three alternatives analyzed in the EIS: 1) An all wilderness alternative designating all 141,410 acres of public land; 2) Another all wilderness alternative with acquisitions and road closures that would designate all 141,410 acres of public land within the WSA plus attempt acquisition of the mineral estate of 4,190 acres of split-estate land and 520 acres of private land through purchase or exchange with willing owners; and 3) A no wilderness/no action alternative, which is the recommendation in this report. These lands are shown on Map 1.

2. Recommendation and Rationale:

0 acres recommended for wilderness,
141,410 acres recommended for nonwilderness

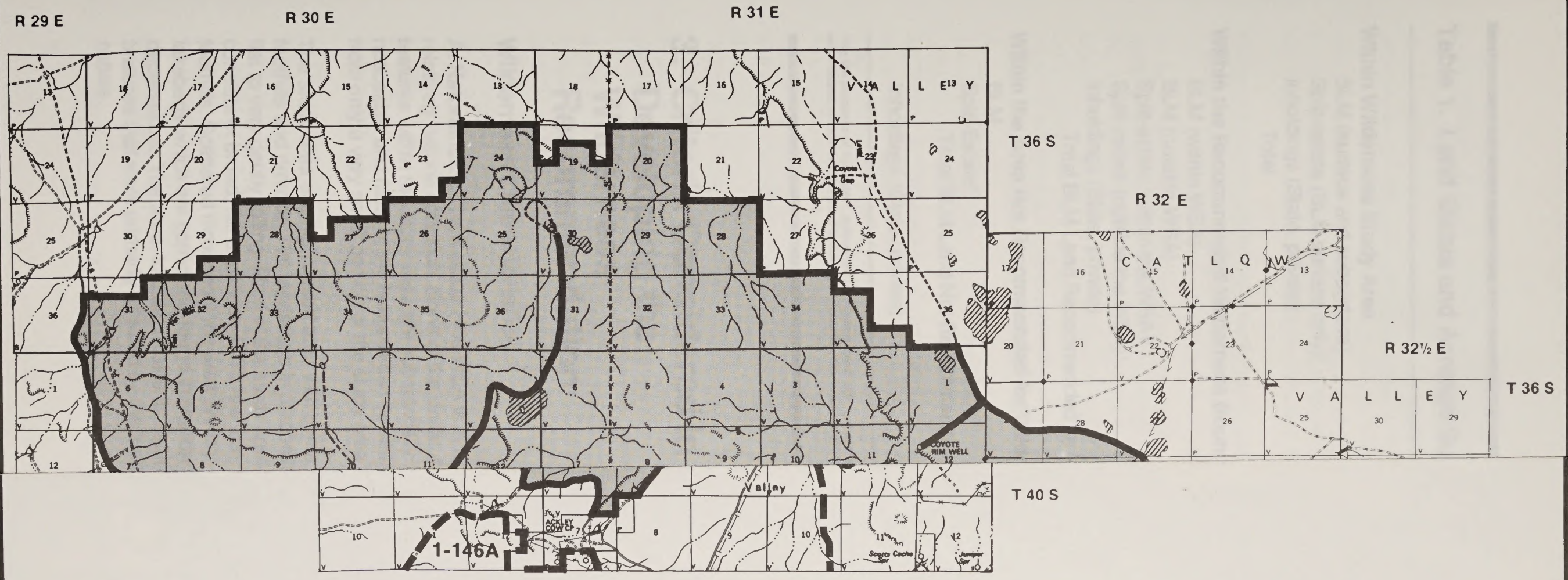
The recommendation for this WSA is to release the entire 141,410 acres for uses other than wilderness. The all wilderness with acquisitions alternative is considered to be the environmentally preferable alternative. However, the no wilderness alternative would be implemented in a manner which would utilize all practical means to avoid or minimize environmental impacts.

The no wilderness alternative is recommended because the benefits derived from allowing intensive range developments (which would provide for an increase in 8,615 AUMs of forage), allowing powerline construction within a utility corridor across the study area, and allowing the implementation of a wildlife habitat improvement project are considered to outweigh benefits from preservation of the area's wilderness values.

Although the area is in a generally natural condition and offers outstanding opportunities for solitude, it offers limited opportunities for primitive types of recreation and has few special wilderness features. The opportunity for solitude within this area of over 140,000 acres is the dominant attribute of the WSA.

There are opportunities in the Basque Hills area to improve the capacity of the rangeland for livestock use through better distribution of water, subdividing the area for improved management purposes and vegetation manipulations such as seedings. These developments would allow for the increase in 8,615 AUMs of forage. Under wilderness designation, these opportunities would be foregone.

If the area were designated wilderness, the opportunity to construct a major east-west utility corridor (power/transmission lines) across the northern end of the area would be foregone. Construction of 4.4 miles of additional line, as a detour around wilderness, would increase costs by $1,201,200 to $1,686,500 depending upon the type of line design. Wilderness designation of the WSA would require that any powerline in the proposed east-west corridor be routed around the area, thus increasing overall costs.



RECOMMENDED FOR WILDERNESS (None)

RECOMMENDED FOR NONWILDERNESS

LAND OUTSIDE WSA RECOMMENDED FOR WILDERNESS (None)

SPLIT ESTATE

STATE (None)

PRIVATE

- N -

Basque Hills Proposal

MAP-1

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MILES

OR-2-84
January, 1991

The average elevation of the WSA is about 5,000 feet. The lowest elevation, 4,520 feet, occurs near the northern boundary in Catlow Valley. The highest point in the WSA, 5,909 feet, occurs in the Basque Hills along the southeastern boundary.

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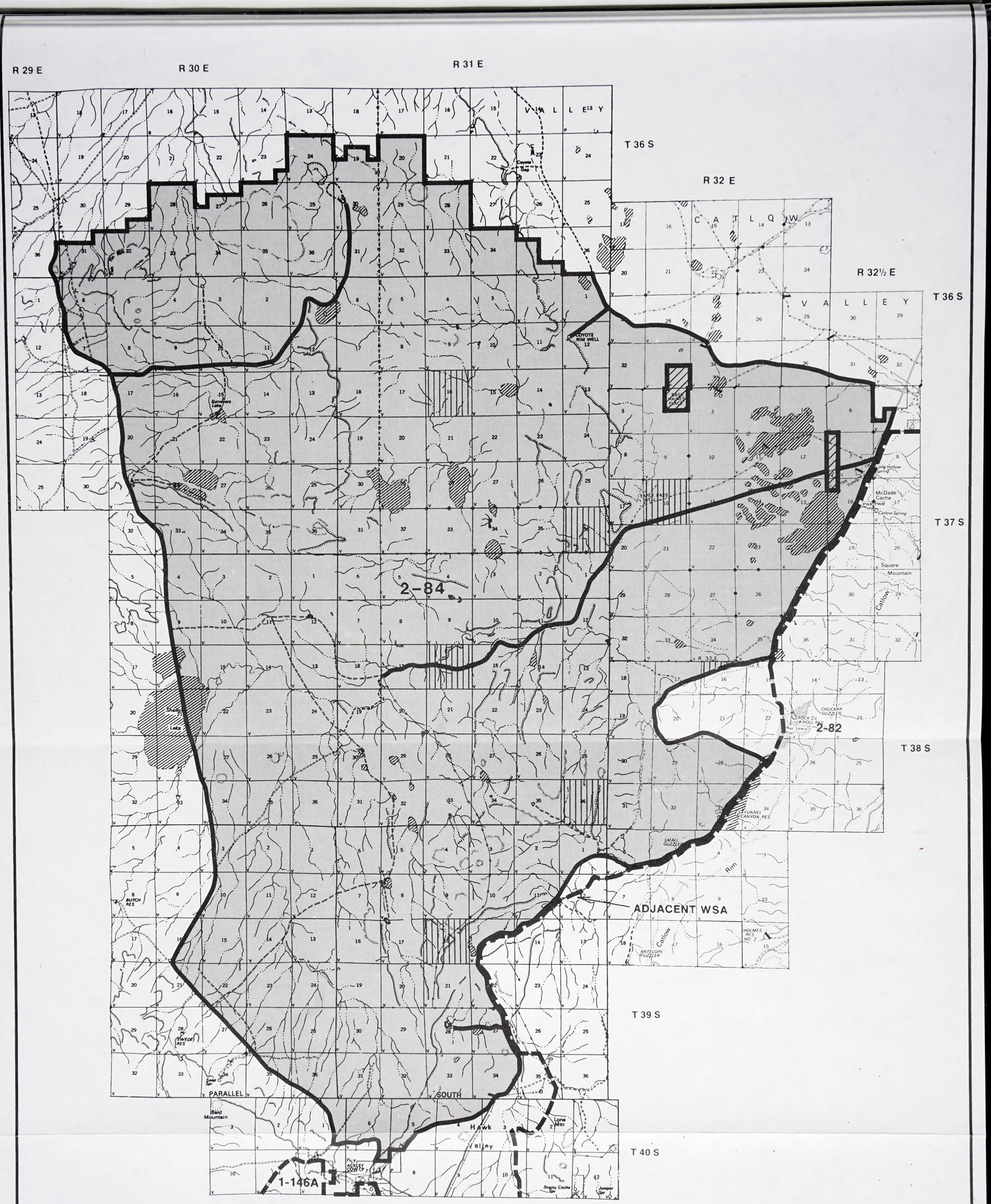

RECOMMENDED FOR WILDERNESS (None)

RECOMMENDED FOR NONWILDERNESS

LAND OUTSIDE WSA RECOMMENDED FOR WILDERNESS (None)

SPLIT ESTATE

STATE (None)

PRIVATE

N

Basque Hills Proposal

MAP-1

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MILES

OR-2-84

January, 1991

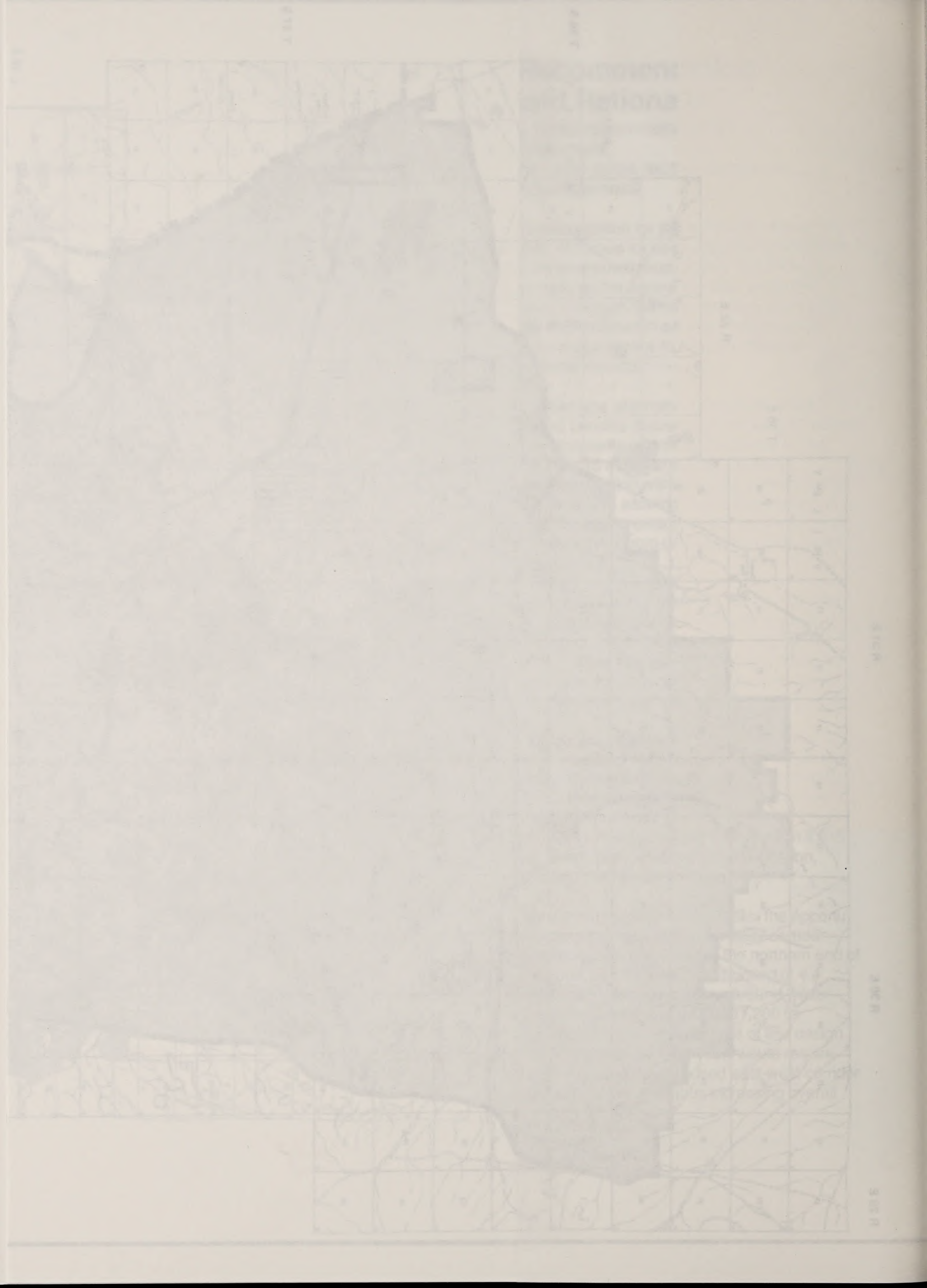


Table 1. Land Status and Acreage Summary of the Study Area

Within Wilderness Study Area	Acres
BLM (surface and subsurface)	137,220
Split-estate (BLM surface only)[1]	4,190
Inholdings (State, private)	520
Total	141,930
Within the Recommended Wilderness Boundary	
BLM (within WSA)	0
BLM (outside WSA)	0
Split-estate (within the WSA)[1]	0
Split-estate (outside the WSA)[1]	0
Inholdings (State, private)	0
Total BLM Land Recommended for Wilderness	0
Within the Area Not Recommended for Wilderness	
BLM	137,220
Split-Estate[1]	4,190
Total BLM Land Not Recommended for Wilderness	141,410
Inholdings (State, private)	520

[1]For the purposes of this report, split-estate lands are defined only as those lands with Federal surface and non-Federal subsurface (minerals). Lands that have Federal minerals but non-Federal surface are classified in this report according to ownership of the surface estate.

3. Criteria Considered in Developing the Wilderness Recommendation

Wilderness Characteristics

A. Naturalness: The Basque Hills WSA is in a relatively natural condition. None of the unnatural features within the study area are substantially noticeable and most of the features can be seen from only a very small portion of the study area.

The study area is a high desert area with some foothills and rimrock. The landscape is predominantly flat to very gently rolling. Most of the study area consists of broad, flat expanses and a few low foothills. Scattered throughout the area are dry lakebeds which are commonly found in shallow depressions. The area, to date, retains its natural features that were primarily affected by the forces of nature.

Antelope, as well as deer, winter in the south end of Catlow Valley. Coyote Rim in the northern part of the WSA is heavily used by nesting raptors with three usually active golden eagle nests and seven inactive nests. One prairie falcon nest has been located on Coyote Rim. Other rims having heavy raptor use are in the southeastern corner, where there is usually one active prarie falcon nest and two active golden eagle nests. Six other inactive golden eagle nests have been located in this portion of the WSA. Other raptors nesting in the area include the great horned owl and American kestrel. Chukars are found along Coyote Rim and other rimrock areas of the WSA. Common nongame wildlife species include coyote, black-tailed jackrabbit, least chipmunk, antelope ground squirrel, sage sparrow, Brewer's sparrow, horned lark, sage thrasher, western rattlesnake and gopher snake. Bush-tailed woodrat, canyon mouse and long-eared myotis (bat) may be found using cliff habitat found near Coyote Rim and other rough topography.

The study area contains 42 unnatural features. They are 20 water developments including 16 reservoirs, two developed wells and two wildlife guzzlers. There

are also 19 vehicle ways totaling about 74 miles, two fences totaling about 31 miles, the remains of an old horse trap and a cow camp. It is estimated that approximately 3 percent of the study area is influenced by these features.

Due to the rolling hills in this WSA, most of the water developments can only be viewed from within the vicinity of each development. Several of the reservoirs influence a larger area because of their locations near a high point or within a broad, sloping depression. Overall, water developments influence less than 1 percent of the study area.

The 74 miles of vehicle ways in the study area consist of mostly overgrown vehicle tracks through the sagebrush. Generally, these tracks are not noticeable, except along their alignment. Only in a few instances are these ways clearly visible, or visible from adjacent higher elevations. One vehicle way is a well-defined extension of the road which crosses the eastern half of the study area and is visible within the immediate vicinity. However, even this way is sufficiently screened by vegetation from the surrounding terrain to make it substantially unnoticeable.

The most noticeable unnatural feature is the district boundary fence which enters the study area from the north. During construction of the fence, a wide trail was bladed to remove sagebrush and make fence construction easier. A way, 7.5 miles in length, has also been established in this bladed trail. The way and fence are intermittently visible from the hills, which rise to the west and south, and from other portions of the surrounding terrain.

Most of the remaining fences easily blend with the surrounding landscape. The fences only become a noticeable development within their immediate vicinity.

The remaining developments, the abandoned horse trap and a cow camp, have a very slight visual influence on the study area. Very little remains of the horse trap; three stone fences provide the only indication of past activity. The cow camp is located adjacent to the boundary road on the southeastern side of the WSA. A ridgeline to the west of the camp screens this development from the remainder of the study area, so very little acreage is influenced by this development.

Within the WSA there are some unnatural features that were overlooked during the WSA inventory process. These unnatural and non-inventoried features include three water wells. The first well (Coyote Rim Well) is located in the northeastern portion of the WSA (T. 36 S., R. 31 E., Section 12 SW of the NW). The vehicle passage route that leads into this well is in question as to whether it is a "road" or a "way." Currently, it is classified as a "way," but further on-site review indicates this vehicle passage is a "road" (photos and documentation recorded and submitted to WSA case files). This feature is shown on Map 1 as a road.

The second well (Early Pass Well) is located towards the western portion of the WSA (T. 37 S., R. 32 E., Section 16) in the middle of the section.

The third well (Funnel Canyon Well) is located along the southeastern boundary at T. 38 S., R. 32 E., Section 33 NE of the SW.

In association with these water wells are livestock water troughs and/or stock reservoir(s).

The most significant outside sights are the roads which form the boundary of most of the area. These roads present a noticeable visual contrast, but not substantial enough to detract from the natural appearance of the WSA. The other outside sight which has a very minor influence on the area is the Hawk Valley crested wheatgrass seeding adjacent to the southeastern boundary. It does not detract from the wilderness character of the study area.

B. Solitude: Opportunities for solitude in the Basque Hills WSA are outstanding. These opportunities are enhanced by the area's large size and the topographic screening provided by rolling hills. The low, broad hills and rims in the central, eastern and northwestern portions of the WSA provide outstanding opportunities for solitude. Although sagebrush is present throughout the area, it is low growing and does not provide vegetative screening.

C. Primitive and Unconfined Recreation: The area does not provide any outstanding opportunities for primitive forms of recreation. Opportunities for day hiking, backpacking, hunting and sightseeing are only of moderate or low quality due to the lack of topographic features, vegetative diversity and availability of water.

D. Special Features: Three special features within the Basque Hills WSA add to the value of this area as wilderness.

A newly discovered plant species, *Eriogonum crosbyae,* has been located in the northwest portion of the WSA.

Raptor nesting is concentrated in areas along Coyote Rim and the other rims in the eastern half of the WSA. Raptors actively nesting along the rims include golden eagles, red-tailed hawks, kestrels, prairie falcons and great horned owls.

The kit fox, listed as a Threatened species in Oregon under the Endangered Species Act, may range into the WSA.

Diversity in the National Wilderness Preservation System (NWPS)

A. Expanding the Diversity of Natural Systems and Features as Represented by Ecosystems: Wilderness designation of this WSA would add an ecosystem (Bailey-Kuchler classification) not presently represented in Oregon, and represented in the National Wilderness Preservation System by only three areas. There are 66 other BLM areas in the State under study with this ecosystem. The information is summarized in Table 2.

According to the Bailey-Kuchler system of classifying ecosystems, the WSA is in the Intermountain Sagebrush Province and the potential natural vegetation is sagebrush-steppe communities.

The WSA contains five plant communities identified in the Basin and Range Section of the Oregon Natural Heritage Plan. These are big sagebrush/bluebunch wheatgrass, big sagebrush/greasewood, Indian ricegrass/needlegrass community, winterfat community, bare playa and playa margin communities.

B. Assessing the Opportunities for Solitude or Primitive Recreation Within a Day's Driving Time (5 hours) of Major Population Centers: The Basque Hills WSA is within 5 hours driving time of three standard metropolitan statistical areas with a population of over 100,000: Medford, Oregon; Boise, Idaho; and Reno, Nevada. Table 3 summarizes the number and acreage of designated areas and other BLM study areas within 5 hours drive of the population centers.

C. Balancing the Geographic Distribution of Wilderness Areas: The Basque Hills WSA would contribute to balancing the geographic distribution of areas within the National Wilderness Preservation System. There are three designated wilderness areas within 100 miles of this WSA.

Manageability

(The area must be capable of being effectively managed to preserve its wilderness character.)

The Basque Hills WSA would be manageable under the all wilderness alternative, although there might be some manageability problems associated with the split-estate and private land within the study area. Access could not be denied to these lands nor could development be controlled outside existing zoning and mining laws unless these areas were acquired or exchanged by a willing seller. Any development within the WSA would be incompatible with wilderness due to the lack of vegetative and topographic screening. Naturalness of the area could be impaired.

Another problem which could affect the management of the area as wilderness is the presence of a large amount of adjacent private land along the northern boundary. Most of this land is not marked or otherwise recognizable on the ground because the boundaries follow legal subdivisions. Problems with controlling recreational use in this area could occur. This would not be a substantial problem; recreational use in the WSA would be limited and would occur away from this boundary.

Energy and Mineral Resource Values

The geology, energy and mineral resources of the Basque Hills WSA were evaluated by interpreting existing literature, reviewing mining claims and mineral leasing records, and correlating rock units in the WSA with similar environments in other areas that are known to contain mineral deposits. Technical details of the evaluation findings are in a report of the assessment of mineral resources, Lone Mountain geologic resource area (GRA OR-021-22), Harney County, Oregon, prepared by Terradata in 1982, a BLM contractor in 1984, and in a BLM report on the assessment of mineral resources in the South Harney GRA in 1983.

There are no energy resources with moderate or high potential for occurrence in the WSA.

The entire WSA is rated as having a moderate potential for the occurrence of metals based on geologic favorability but no direct evidence. The geological environment is similar to environments found in the Pueblo-Steens Mountains, where hydrothermal deposits of copper, mercury and accessory gold occur in silicified fault zones. Copper and mercury are strategic and critical minerals, which are among the metals rated moderate in the WSA. The area also has a moderate potential for the occurrence of diatomite, again based on indirect evidence. Aside from abundant road aggregate

Table 2. Ecosystem Representation

Bailey-Kuchler Classification	NWPS Areas areas	NWPS Areas acres	Other BLM Studies areas	Other BLM Studies acres
Province/PNV				
		NATIONWIDE		
Intermountain Sagebrush				
Sagebrush Steppe	3	76,699	136	4,228,930
		OREGON		
Sagebrush Steppe	0	0	66	1,841,664

Table 3. - Wilderness Opportunities for Residents of Major Population Centers

Population Centers	NWPS areas areas	NWPS areas acres	Other BLM Studies areas	Other BLM Studies acres
Medford, Oregon	31	2,440,081	21	730,038
Boise, Idaho	16	4,741,570	126	5,060,460
Reno, Nevada	45	4,967,230	175	6,904,809

sources, there are no known occurrences of mineral deposits within the WSA. The area did not contain any active mining claims as of May, 1991.

Local Social and Economic Considerations

Livestock use at the current level of 6,576 AUMs and recreation use totaling 100 visitor days per year are the primary resource outputs that generate economic activity in the WSA. Local personal income generated annually from these existing use levels amounts to approximately $78,912 for livestock grazing, and $1,200 related to recreation use of the WSA, for an overall total of $80,112.

Under the recommendation, livestock grazing would increase by 8,615 AUMs. Overall recreation use would increase by 100 visitor days per year. Annual local personal income generated from resource outputs in the WSA would increase by approximately $105,000.

There were no social issues identified with the study of this WSA.

Summary of WSA-Specific Public Comments

Public involvement has occurred throughout the wilderness review process. Certain comments received during the inventory process and early stages of the EIS preparation were used to develop significant study issues and various alternatives for the ultimate management of those lands found to have wilderness values.

During formal public review of the draft EIS and

Supplement to the draft EIS, a total of 26 comments specifically addressing this WSA were received. Of those, 22 were written and four were oral statements received at the 24 public hearings on the EIS. In general, 13 commenters supported wilderness designation for all or part of the WSA. Nine commenters supported no wilderness for the WSA, while four commenters addressed the relative merits of the EIS but took no formal position on wilderness designation.

Those favoring wilderness commented that the area should be designated wilderness to help protect natural ecosystems, maintain ecological diversity, preserve gene pools, and provide for wildlife habitat. Several commenters stated that the WSA contains outstanding wildlife habitat conditions such as important raptor nesting sites and produced a healthy population of shrews and pikas. Others commented that not only should this WSA be designated as wilderness, but other adjacent WSAs should be combined with it to form one large wilderness area in order to protect and preserve the overall ecology and watershed attributes of the area. Some commented that wilderness designation would help protect the area from overgrazing thus providing better protection to threatened and endangered plant species. A few commented that wilderness designation of this area would create an important primitive recreation and wilderness experience.

Those opposing designation commented that wilderness would have an adverse impact on the local economy, namely the livestock industry and recreation generated revenues (mostly hunting). Others commented that the area does not meet wilderness criteria because there are too many existing human-created intrusions found throughout the area. Some commented that, because of the limited topographic screening and the type of vegetation cover, the area offered limited opportunity for solitude. A few commenters opposed wilderness designation because existing "roads" and "ways" would be closed, thereby restricting access by vehicles into this extensive area. One commenter stated that the area has nothing unusual or special, and that there are millions of acres of this type of country located between Colorado and the country of Mexico.

The Department of Energy, Bonneville Power Administration (BPA), had identified a potential need for a north-south utility corridor. Pacific Power and Light (PP&L) had also identified a potential need for an east-west utility corridor through a portion of this WSA. According to BPA the added energy loss for routing the utility corridor around the Basque Hills WSA would be enough power to supply 120 typical Oregon households. In conjunction with the rerouting, increased land use and resource impacts could be anticipated.

The U.S. Environmental Protection Agency stated that the wilderness suitability determination favors commodity development. The agency requested that the final EIS include a discussion of how natural values are factored into the suitability determination.

Both the County Court for Harney County and the Burns Paiute Reservation concur with the BLM's recommendation of nonsuitable for wilderness of the Basque Hills WSA.

There were two comment letters received on the

Impacts on Resources

The following comparative impact table summarizes the effects on pertinent resources for all the alternatives considered including designation and nondesignation of the entire area as wilderness.

Table 4. Comparative Summary of the Impacts by Alternative

Issue Topics	Recommendation (No Wilderness/No Action Alternative)
Impacts on Wilderness Values	In the absence of wilderness designation, projected activities would directly impair wilderness values on 29,688 acres and would indirectly influence an additional 71,500 acres, with further declines from other potential uses over the long term.
Impacts on Energy and Mineral Development	No impact to energy or mineral development is expected.
Impacts on Vegetation	Vegetation would be altered on approximately 29,530 acres in the WSA.
Impacts on Wildlife	Antelope populations would likely increase. Nongame wildlife populations, including those of kit fox and raptors, would be moderately reduced on 29,530 acres of vegetation conversion.
Impacts on Livestock Grazing	An additional allocation of 8,615 AUMs to livestock use would be realized.
Impacts on Utility Corridor Routing and Development	The proposed east-west utility corridor would be designated in the northern portion of the WSA and the 500-kV powerline would be constructed.
Impacts on Recreation Use	Recreation use would increase from the current level of 100 visitor days per year to approximately 200 visitor days per year.
Impacts on Local Personal Income	Annual local personal income would increase by approximately $105,000.

All Wilderness Alternative	All Wilderness (With Acquisitions and Road Closures) Alternative
Wilderness designation of the entire 141,410 acres of public land in the Basque Hills WSA would result in the protection of existing wilderness values and enhancement of those values.	Wilderness designation would result in the protection of existing wilderness values and probable enhancement of these values on 141,930 acres (assuming acquisition of 520 acres of private land).
No impact to energy or mineral development is expected.	No impact to energy or mineral development is expected.
Vegetative composition and ecological status would remain the same and the 74 miles of ways would naturally revegetate within 5 years.	Vegetative composition and ecological status of all three allotments would remain unchanged. Seventy-four miles of ways and 25 miles of roads would naturally revegetate within 5 years.
Wildlife habitat and populations would be maintained on 141,410 acres designated wilderness. One wildlife guzzler would likely be abandoned causing small animal populations to decline.	Wildlife habitat and populations would be maintained on 141,930 acres designated wilderness. One wildlife guzzler would likely be abandoned causing small animal populations to decline.
Livestock grazing use would remain at the current level of approximately 6,576 AUMs. A potential allocation of an additional 8,615 AUMs of livestock forage from new projects would be foregone. Vehicle use for routine livestock management on 74 miles of ways would be precluded with some inconvenience and slight increase in cost to livestock operators.	A potential allocation of an additional 8,615 AUMs of livestock forage from new projects would be foregone. Vehicle use for routine livestock management (about 10 trips per year) on 74 miles of ways and 25 miles of roads would be precluded with some inconvenience and a slight increase in cost to livestock operators.
The east-west corridor would be relocated outside of the WSA, adding 4.4 miles to the corridor length, with associated powerline construction and maintenance cost.	The east-west corridor would be relocated outside the WSA, adding 4.4 miles to the corridor length, with associated powerline construction and maintenance cost.
Recreation use would remain the same at the current level of 100 visitor days per year.	Recreation use would remain the same at the current level of an overall recreation use of 100 visitor days per year.
Annual local personal income would remain at approximately $80,000.	Annual local personal income would remain at approximately $80,000.

High Steens and Little Blitzen Gorge Wilderness Study Areas

1. The Study Areas
High Steens, 69,740 acres, and Little Blitzen Gorge, 9,400 acres.

The High Steens (OR-2-85F) and Little Blitzen Gorge (OR-2-86F) Wilderness Study Areas (WSAs) are located approximately 60 miles southeast of Burns, Oregon, in Harney County. The WSAs are 20 miles east of Frenchglen and Oregon State Highway 205, the nearest highway.

The High Steens WSA contains 68,485 acres of BLM land plus 1,255 acres of split-estate land (see Table 1). In addition, the study area contains inholdings of private land totaling 2,165 acres. The area is long and somewhat narrow (averaging approximately 20 miles by 9 miles), extending north and south along the length of Steens Mountain.

The Little Blitzen Gorge WSA contains 9,400 acres, all of it BLM land. It, too, is long and narrow, averaging 8 miles in length and 2 miles in width. The Little Blitzen Gorge is oriented east to west, as it follows a westward flowing drainage from the top of the mountain.

The boundaries of the two study areas are formed by a combination of private land and BLM low standard dirt roads. Both study areas are bordered for 14 miles by the Steens Mountain Loop Road, which is a standard gravel road. The High Steens WSA is on the east side of the road or the "outside" of the loop and the Little Blitzen Gorge WSA is on the west side of the road, or the "inside" of the loop. The Steens Mountain Loop Road was constructed, and is maintained, by BLM. It receives substantial use, especially in the upper elevations during the summer months, by sightseers and other recreationists who use it as access to reach the backcountry. The Little Blitzen Gorge is an integral part of Steens Mountain but, because of the placement of the road, it is the only major gorge that is not at least partially within the High Steens WSA. In addition to being physically similar to the other gorges on the mountain, the Little Blitzen Gorge is also a major recreation attraction and provides one of the prominent views from the main ridge of Steens Mountain.

A portion of the eastern boundary of the High Steens WSA is formed by a section of a county road, which is a standard gravel road, located along the base of the mountain.

Also forming part of the boundary in the High Steens WSA are 10 dead-end low standard dirt roads totaling 15 miles. Three of these roads lead to State and private lands which actually form part of the WSA boundary, but are surrounded by BLM land. These parcels include two segments of private land totaling 920 acres, and one parcel of State land totaling 430 acres.

The High Steens and Little Blitzen Gorge WSAs contain a variety of physical features which are the result of vulcanism, faulting, glaciation and erosional processes. The two WSAs lie atop the high, main ridge of Steens Mountain, the highest mountain in southeastern Oregon.

There are several prominent physical features within the High Steens WSA. Throughout its entire length, the study area includes the high, main ridge of the mountain. Near the central portion of the study area is the summit, which reaches a height of 9,733 feet. This point is actually located on a parcel of State land which forms part of the study area's boundary line. The highest point in the study area on BLM land is only 3 feet lower, and located 2 miles to the north, at the Steens Mountain overlook.

From the top of the ridge, the east side of the mountain drops rapidly into the Alvord Desert basin. The elevation difference along this eastern face of the mountain is generally greater than 4,000 feet. At one point, however, the elevation difference is as much as 5,300 feet within 3.5 miles. It is along the eastern boundary that the High Steens WSA reaches its lowest elevation of 4,080 feet.

The eastern portion of the mountain is deeply carved by numerous drainages and is characterized by steep, rugged, rocky escarpments and ridgelines. Ten drainages on this eastern slope originate from spring flows and nearly perennial snow fields near the mountain's summit. From north to south these drainages include Mann, Castle Rock, Little McCoy, Mosquito, Willow, Cottonwood, Big Alvord, Little Alvord, Pike and Indian Creeks. Glacial action has carved portions of the upper ends of many of these drainages, leaving small U-shaped basins with meadows of lush vegetation at high elevations along the eastern slope.

West of the Steens ridge, in the High Steens WSA, is the more gentle, western-sloping portion of the Steens Mountain fault block. Although major portions of the study area contain this gently-rolling high plateau, much of this area has been deeply cut by glaciers and huge U-shaped glaciated gorges are the dominant features of the landscape.

Kiger Gorge, the largest and perhaps the most well-known of these gorges, lies on the northern end of the study area. Averaging over 1 mile from canyon rim to canyon rim, this gorge reaches a depth of more than 2,000 feet. The steep, rugged, rocky canyon walls which surround the gorge on three sides slope abruptly to the valley floor where Kiger Creek drains the area to the north. Much of the canyon bottom is privately-owned land.

Four other major gorges also dominate the upper elevations of the High Steens WSA. Wildhorse and Little Wildhorse Creeks drain the study area to the south, while Big Indian Creek and Little Indian Creek drain the area in a westerly direction.

The northwestern and southwestern portions of the WSA are generally flat to gently-rolling areas, which is typical of the western slope of Steens Mountain.

The Little Blitzen Gorge WSA is dominated by one major feature, the deep canyon of Little Blitzen Gorge. One of the six major glaciated drainages on the mountain, it begins just west (less than 0.25 mile) of the Steens Mountain ridgeline at an elevation of 9,200 feet. Like the other gorges, the Little Blitzen Gorge is U-shaped and is characterized by towering, rocky canyon walls around the perimeter on three sides, and thick vegetation in portions of the canyon bottom. The gorge averages about 1 mile in width and ranges from 800 to 1,200 feet in depth.

The Little Blitzen River, which drains the area in a westerly direction, is a perennial stream fed by numerous springs and contains several waterfalls. The lowest elevation in this WSA, 5,400 feet, occurs along the river where it leaves the study area on the western boundary.

Above the rim of the gorge on the north and south, the study area contains portions of the gently sloping western plateau of Steens Mountain. Within these parts of the study area are a few scattered perennial ponds and several small, spring-fed drainages which flow into the gorge.

Both study areas contain a wide variety of vegetation, largely due to the extreme variation in elevation. Some species are widely distributed, while others are restricted to small, isolated areas. In both study areas, riparian vegetation, including cottonwood trees and groves of aspen, occurs within most of the drainages and near springs. Grasses and alpine wild flowers are dominant near the summit and on the more gentle, western-facing slopes.

Sagebrush occurs throughout both study areas. Mountain mahogany and juniper occur on the very

steep, rocky slopes, such as the side walls of the gorges, or in the steep drainages on the eastern side of the mountain.

The WSAs were initially studied under Sections 603 and 202 of the Federal Land Policy and Management Act (FLPMA). Lands added after the wilderness inventory were studied under Section 202, also of FLPMA. These lands were included in the Final Oregon Wilderness Environmental Impact Statement (EIS) filed in February 1990.

These two WSAs were modified to include 4,480 acres of additional land. Several parcels of land have been added to the High Steens WSA. This includes 2,760 acres of split-estate lands (federally-managed surface, state or private subsurface or mineral rights), 720 acres of private land (acquired in full fee), and a 160-acre parcel of BLM land (full fee land attached to one of the above parcels). All of these lands were acquired by the BLM since the wilderness inventory phase. An additional 680 acres have been reinstated to the WSA through the court decision in Sierra Club v. Watt. This decision restored split-estate lands to wilderness study status under Section 603 of FLPMA. Of these 680 acres, 500 acres are split-estate lands while 180 acres are BLM lands (full fee). A total of 4,320 acres has been added to the study area.

One parcel (20 acres) of split-estate land acquired since the inventory has been added to Little Blitzen Gorge WSA, and one parcel (140 acres) of split estate reinstated as WSA land (Sierra Club v. Watt) has also been added.

There were five alternatives analyzed in the EIS: 1) An all wilderness alternative where all 69,740 acres of the High Steens WSA and all 9,400 acres of the Little Blitzen Gorge WSA would be suitable for wilderness (managed as two separate wilderness areas); 2) Another all wilderness, with road closures and acquisitions, alternative where a portion of the High Steens WSA and all of the Little Blitzen Gorge WSA would be combined and 64,370 acres of BLM land would be recommended as suitable for wilderness designation. An attempt would be made in the High Steens WSA to acquire inholdings and boundary parcels totaling 5,830 acres of private land and a 430-acre parcel of state land along with mineral estate parcel(s) of 1,200 acres (split-estate land) which would bring the total wilderness recommendation to 70,630 acres; 3) A partial wilderness alternative where 35,930 acres of the High Steens WSA and 6,430 acres of the Little Blitzen Gorge WSA would be designated as wilderness and managed as separate areas. An attempt would be made to acquire 2,100 acres of private land and state land through purchase or exchange with willing landowners, including 1,590 acres of private land and 410 acres of state land in the High Steens WSA, and a 100-acre parcel of private land adjacent to the Little Blitzen Gorge WSA. An attempt would also be made to acquire the mineral estate of 1,150 acres of split-estate lands; 4) Another partial alternative (recommendation of this report) where 36,440 acres are recommended for wilderness in the High Steens WSA and 4,700 acres of the Little Blitzen Gorge WSA are recommended as wilderness. An attempt would be made in the High Steens WSA to acquire from willing owners 958 acres of private land, 410 acres of state land and 60 acres of mineral estate of split-estate lands. An attempt would also be made to acquire a 100-acre parcel of private land adjacent to the Little Blitzen Gorge WSA. The WSAs would be managed as two separate wilderness areas under this alternative; and, 5) A no wilderness/no action alternative. These lands are shown on Map 1.

The recommended wilderness designation in Alternative 4 is a change from the final EIS due to land acquisitions (discussed above) that took place since the document's publication.

2. Recommendation and Rationale:

High Steens WSA: 36,440 acres recommended for wilderness, 34,340 acres recommended for nonwilderness.

Little Blitzen Gorge WSA: 4,700 acres recommended for wilderness, 4,800 acres recommended for nonwilderness

The recommendation for the High Steens WSA is to designate 36,440 acres as wilderness and release 34,340 acres for uses other than wilderness. The recommendation for the Little Blitzen Gorge WSA is to designate 4,700 acres as wilderness and release 4,800 acres for uses other than wilderness. These adjacent WSAs would be managed as separate individual wilderness areas due mainly to the desirability of keeping the entire Steens Mountain Loop Road open.

The acreage recommended for wilderness (36,440) and for nonwilderness (34,440) represent changes from the High Steens WSA Appendix of the Final EIS. Since the publication of the Final Wilderness

EIS, a land acquisition (located in the southeastern portion of the WSA) was completed in December 1990, in the High Steens WSA. As a result, an additional 4,465 acres is now being recommended suitable as wilderness in the proposed High Steens wilderness area. Of these 4,465 acres, 1,040 acres were acquired lands while the remaining 3,425 acres is BLM land and within the existing High Steens WSA.

This additional area was not incorporated in the previous recommended wilderness proposal due to manageability problems associated with the amount and location of private inholdings. Now that this private land has been acquired, the manageability concern is removed. Overall, the area appears to be in an outstandingly natural condition and provides excellent opportunities for solitude and primitive and unconfined recreation.

Proposed actions for these additional lands include closing 2.5 miles of roads, 2.3 miles of "ways" and removing 1.5 miles of nonfunctional wooden fence.

Designation of both entire WSAs as wilderness is the environmentally preferable alternative. However, the recommended partial alternative would be implemented in a manner which would use all practical means to avoid or minimize environmental impacts.

The Steens Loop Road remains open in its entirety under the recommended action. This is a change from the draft EIS and reflects public comments which were overwhelmingly in favor of keeping the Loop Road open.

The proposed action recommends that a large portion of this, the highest mountain in southeastern Oregon, be designated as wilderness. Portions of the two study areas recommended as suitable for wilderness contain the majority of this highly scenic and ecologically unique mountain. Included are high, sharp ridgelines and peaks, deep glacial-carved gorges and a steep, east-facing escarpment which rises over a mile above the Alvord Basin to the east. Also included within the suitable boundary are plant and animal species of special interest and plant communities common only to alpine areas, an unusual situation for a desert mountain. The area has a large number and variety of wilderness qualities. It is in a basically natural condition, offers outstanding opportunities for solitude and primitive types of recreation and contains a large number of unique, special wilderness features.

The southeast and central-east edge of the area recommended as suitable for wilderness in the High Steens WSA has been identified as having moderate to high potential for the occurrence of certain minerals. The majority of the recommended area in the High Steens WSA and all of the Little Blitzen Gorge WSA are under thousands of feet of barren lava flows and have low mineral potential.

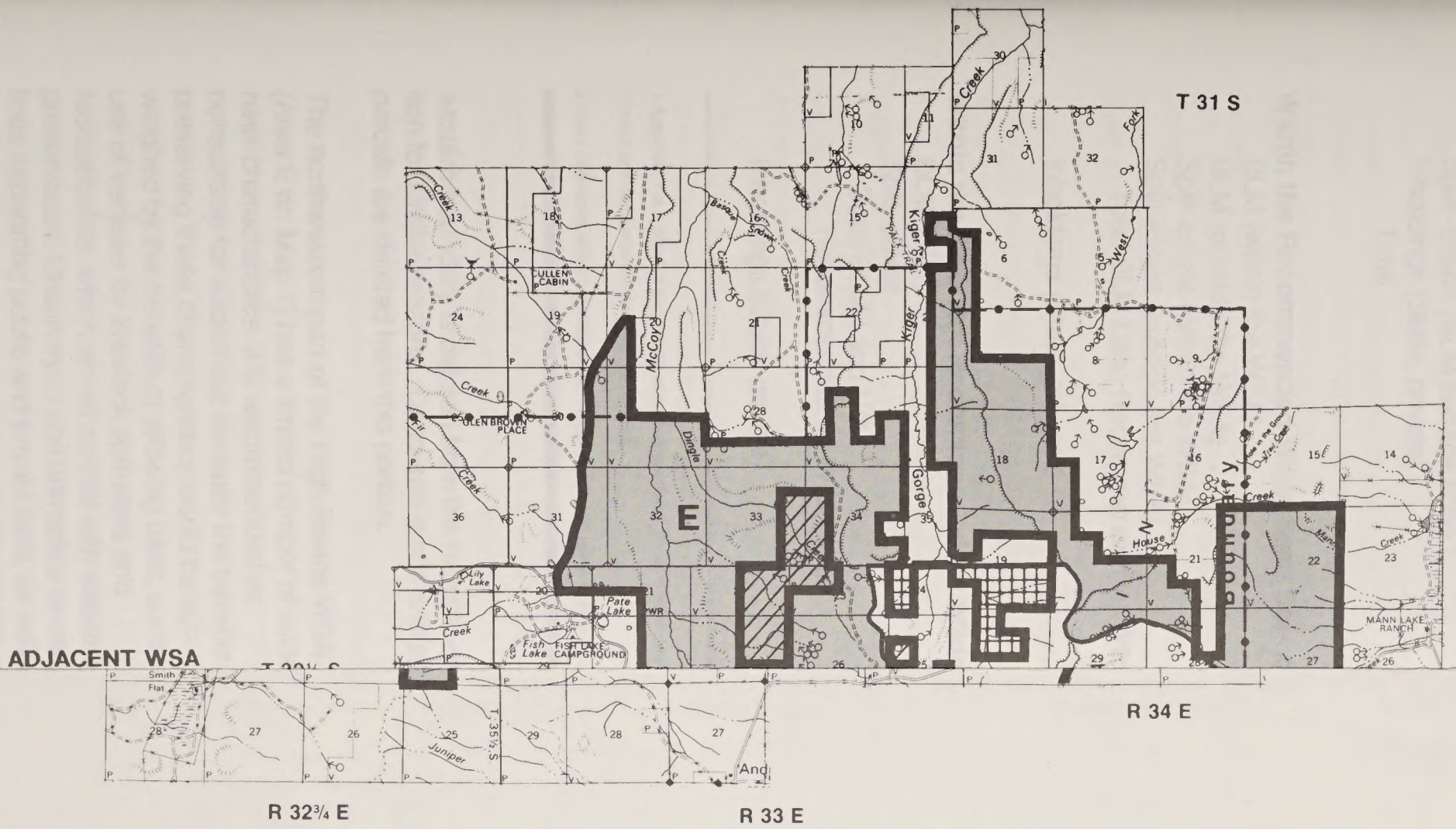
The recommendation would add to the National Wilderness Preservation System (NWPS) a unique combination of ecosystems that are not presently represented in combination in the NWPS. There are no other BLM study areas in the nation containing this combination of ecosystems.

In addition, the recommendation would contribute to balancing the geographic distribution of areas within the NWPs. There is one only designated wilderness within 100 miles of these WSAs.

Although this mineral assessment is a potential conflict, no development is projected on these lands. Designation of this part of the Steens Mountain to protect wilderness values is appropriate since they outweigh the potential mineral values which could be gained from resource development.

Portions of the two study areas are recommended as being nonsuitable for wilderness under the partial alternative because of conflicts with other resource uses, manageability problems, and the need to improve the location of the boundary line. The potential for mineral development is particularly high in the southeastern corner of the High Steens WSA, which contains a number of mining claims and past, small mining operations. Although not considered likely, there is a possibility that a valuable mineral discovery could be made on the claims before the area was designated wilderness, giving the mining claimants a right to develop their claims regardless of the effect on wilderness values. If such development were to occur, it would not be possible to preserve wilderness values in the vicinity of the mines, access roads and related facilities.

The southwestern portion of the High Steens (Area C on Map 1) also has potential manageability problems. Vehicle-oriented recreation is a common activity on this part of the mountain and would be difficult to control in this area due to the presence of several vehicle ways and the relatively flat terrain. This area also contains a parcel of private land, is nearly surrounded by private land on unidentifiable legal boundaries, and would be difficult for visitors to access the bulk of the study area. All of these factors contribute to the potential management problems which override the area's limited number of wilderness characteristics. Area F (on Map 1) on the



RECOMMENDED FOR WILDERNESS

RECOMMENDED FOR NONWILDERNESS

LAND OUTSIDE WSA RECOMMENDED FOR WILDERNESS

SPLIT ESTATE

STATE

PRIVATE

-N-

High Steens, Little Blitzen Gorge Proposal

MAP-1

0 1 2 3

MILES

OR-2-85F,86F
January, 1991

EIS, a land acquisition (located in the southeastern portion of the WSA) was completed in December 1990, in the High Steens WSA. As a result, an additional 4,465 acres is now being recommended suitable as wilderness in the proposed High Steens wilderness area. Of these 4,465 acres, 1,040 acres were acquired lands while the remaining 3,425 acres is BLM land and within the existing High Steens WSA.

This additional area was not incorporated in the previous recommended wilderness proposal due to manageability problems associated with the amount and location of private inholdings. Now that this private land has been acquired, the manageability concern is removed. Overall, the area appears to be in an outstandingly natural condition and provides excellent opportunities for solitude and primitive and unconfined recreation.

Proposed actions for these additional lands include closing 2.5 miles of roads, 2.3 miles of "ways" and removing 1.5 miles of nonfunctional wooden fence.

Designation of both entire WSAs as wilderness is the environmentally preferable alternative. However, the recommended partial alternative would be implemented in a manner which would use all practical means to avoid or minimize environmental impacts.

The Steens Loop Road remains open in its entirety under the recommended action. This is a change from the draft EIS and reflects public comments which were overwhelmingly in favor of keeping the Loop Road open.

The proposed action recommends that a large portion of this, the highest mountain in southeastern Oregon, be designated as wilderness. Portions of the two study areas recommended as suitable for wilderness contain the majority of this highly scenic and ecologically unique mountain. Included are high, sharp ridgelines and peaks, deep glacial-carved gorges and a steep, east-facing escarpment which rises over a mile above the Alvord Basin to the east. Also included within the suitable boundary are plant and animal species of special interest and plant communities common only to alpine areas, an unusual situation for a desert mountain. The area has a large number and variety of wilderness qualities. It is in a basically natural condition, offers outstanding opportunities for solitude and primitive types of recreation and contains a large number of unique, special wilderness features.

The southeast and central-east edge of the area recommended as suitable for wilderness in the High Steens WSA has been identified as having moderate to high potential for the occurrence of certain minerals. The majority of the recommended area in the High Steens WSA and all of the Little Blitzen Gorge WSA are under thousands of feet of barren lava flows and have low mineral potential.

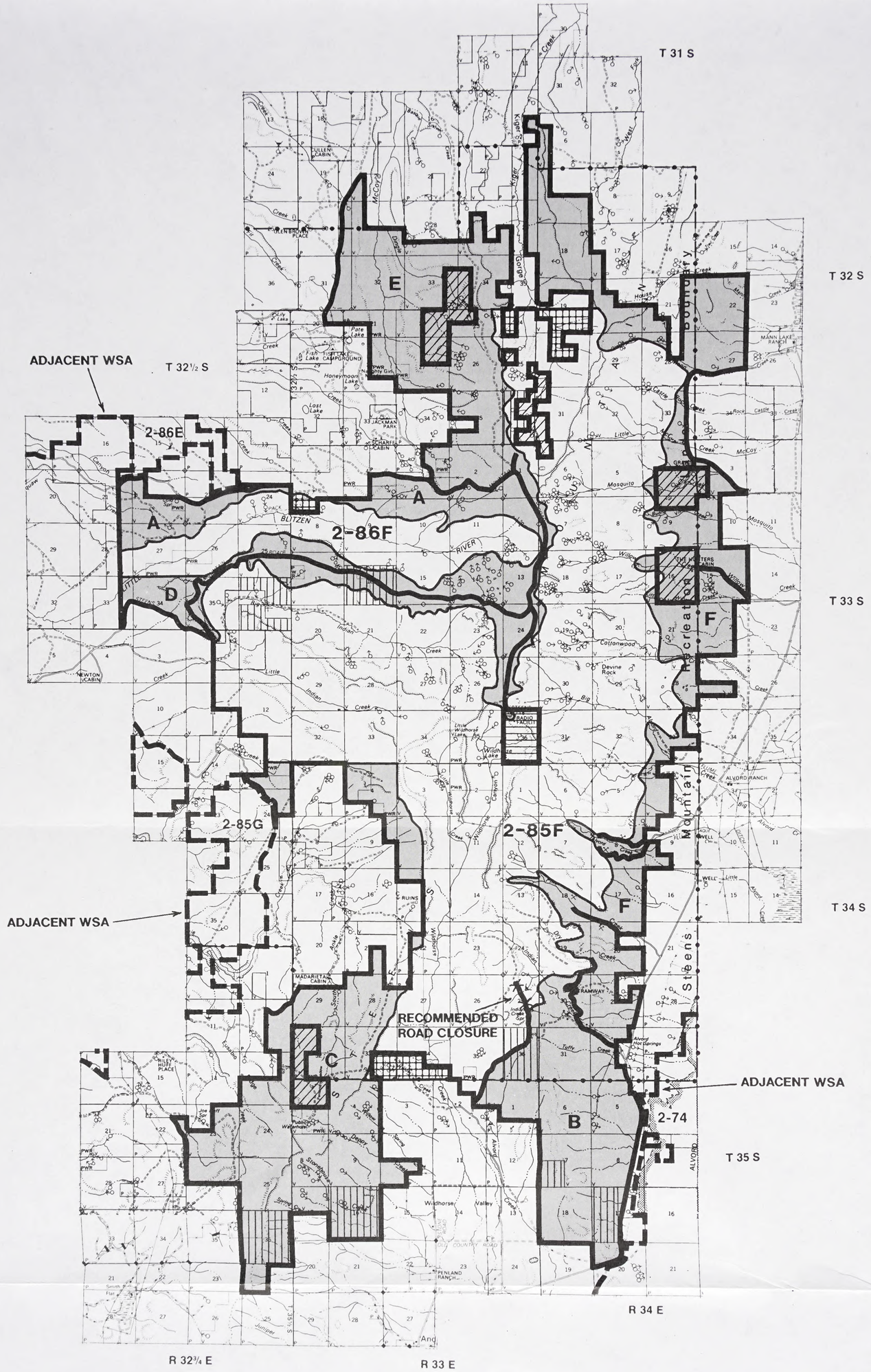
The recommendation would add to the National Wilderness Preservation System (NWPS) a unique combination of ecosystems that are not presently represented in combination in the NWPS. There are no other BLM study areas in the nation containing this combination of ecosystems.

In addition, the recommendation would contribute to balancing the geographic distribution of areas within the NWPs. There is one only designated wilderness within 100 miles of these WSAs.

Although this mineral assessment is a potential conflict, no development is projected on these lands. Designation of this part of the Steens Mountain to protect wilderness values is appropriate since they outweigh the potential mineral values which could be gained from resource development.

Portions of the two study areas are recommended as being nonsuitable for wilderness under the partial alternative because of conflicts with other resource uses, manageability problems, and the need to improve the location of the boundary line. The potential for mineral development is particularly high in the southeastern corner of the High Steens WSA, which contains a number of mining claims and past, small mining operations. Although not considered likely, there is a possibility that a valuable mineral discovery could be made on the claims before the area was designated wilderness, giving the mining claimants a right to develop their claims regardless of the effect on wilderness values. If such development were to occur, it would not be possible to preserve wilderness values in the vicinity of the mines, access roads and related facilities.

The southwestern portion of the High Steens (Area C on Map 1) also has potential manageability problems. Vehicle-oriented recreation is a common activity on this part of the mountain and would be difficult to control in this area due to the presence of several vehicle ways and the relatively flat terrain. This area also contains a parcel of private land, is nearly surrounded by private land on unidentifiable legal boundaries, and would be difficult for visitors to access the bulk of the study area. All of these factors contribute to the potential management problems which override the area's limited number of wilderness characteristics. Area F (on Map 1) on the



High Steens, Little Blitzen Gorge Proposal
MAP-1

OR-2-85F,86F
January, 1991

Table 1. Land Status and Acreage Summary of the Study Area

Within Wilderness Study Area	High Steens WSA Acres	Little Blitzen Gorge WSA Acres	Total
BLM (surface and subsurface)	68,485	9,400	7,885
Split- estate (BLM surface only) [1]	1,255	0	1,255
Inholdings (State, private)	2,165	0	2,165
Total	71,905	9,400	81,305
Within the Recommended Wilderness Boundary			
BLM (within the WSA)	35,340	4,600	39,940
BLM (outside the WSA)	1,040	100	1,140
Split-estate (within the WSA)	60	0	60
Split-estate (outside the WSA)	0	0	0
Total BLM Land Recommended for Wilderness	36,440	4,700	41,140
Inholdings (State, private)[2]	1,368	0	1,368
Within the Area Not Recommended for Wilderness			
BLM	33,145	4,800	37,945
Split-estate	1,195	0	1,195
Total BLM Land Not Recommended for Wilderness	34,340	4,800	39,140
Inholdings (State, private)	797	0	797

1 Appendix 1 is a detailed description of split-estate tracts included within the study. For purposes of this report, split-estate lands are defined only as those lands with Federal surface and non-Federal subsurface (minerals).

2 The 1,368 acres within High Steens WSA represents 410 acres of state land, 420 acres of private land inholdings within the WSA and 538 acres outside and adjacent to the WSA.

eastern boundary is deleted from the recommendation for similar reasons. Dead-end roads and private parcels are deleted from this portion.

The northwestern part of the High Steens WSA (Area E on Map 1) has a limited number of wilderness characteristics. It is recommended as nonsuitable for wilderness because the benefits of preserving those characteristics would be outweighed by the benefits of allowing uses, such as the use of vehicles by livestock operators and recreationists, which would conflict with wilderness preservation. Unsurveyed and unmarked boundary lines separating public and private land, as well as an inholding, would make this part of the WSA difficult to manage as wilderness.

Portions of the top of the mountain are recommended as nonsuitable for wilderness because the benefits of leaving that area open to the use of vehicles by recreationists on dead-end roads extending off from the Steens Mountain Loop Road would outweigh the benefits of preserving that area's wilderness values. Motor vehicle-related recreation use on the Steens Loop Road and to adjacent scenic overlooks is a well-established and highly popular recreation activity (Area A on Map 1).

3. Criteria Considered in Developing the Wilderness Recommendations

Wilderness Characteristics

A. Naturalness: The High Steens WSA and the Little Blitzen Gorge WSA appear to be in outstanding natural condition. Both WSAs contain a variety of physical features which are the result of vulcanism, faulting, glaciation and erosional processes. The areas consist of steep, rugged, rocky escarpments and ridgelines along with deep drainages. Also within the boundaries are gently sloping plateaus. These two WSAs contain some of the most outstandingly natural features found in eastern Oregon. From the unaltered and spectacularly-carved glacial geology to the unusual and unique plant and animal species, the two WSAs are a fascination of nature.

Both the High Steens WSA and Little Blitzen Gorge WSA have a good variety of wildlife habitat and diverse fauna. Glacial cirques, talus slopes, high mountain lakes, ponds and streams and high elevation fescue grasslands are special wildlife habitats found within these two WSAs.

The upper elevations of Steens Mountain are prime summer mule deer habitat, with a good interspersion of forage, cover and water. The lower slopes on the east side of Steens Mountain, within the High Steens WSA, are crucial deer winter range for about 10 percent of the deer in the Steens Mountain Wildlife Management Unit.

Antelope range onto the subalpine habitat of the upper elevations of Steens Mountain during the summer. Antelope range yearlong on gentle slopes of the lower foothills on the east side of Steens Mountain.

Rocky Mountain elk range into the WSAs at the upper elevations during the summer.

In the High Steens WSA, Oregon Department of Fish and Wildlife (ODFW) periodically stocks Wildhorse Lake with Lahontan cutthroat trout by helicopter. Hybrid Lahontan cutthroat-rainbow trout are found in 8 miles of Wildhorse Creek and the lower portion of Little Wildhorse Creek including public land and private property.

Brewer's sparrow, dipper, robin, yellow-rumped warbler, yellow-breasted sapsucker, green-tailed towhee, Rufous sided towhee, MacGillivary's warbler, beaver, wandering garter snake, and Pacific tree frog are found along the streams. Beaver utilize the Little Blitzen River, Big Indian Creek, Little Indian Creek, McCoy Creek, Dingle Creek, Kiger Creek and Wildhorse Creek.

Upland game birds include valley quail and chukars. Steep slopes on the east side of Steens Mountain in the High Steens WSA have excellent chukar populations.

The upper elevations of Steens Mountain receive heavy use by summering raptors. Red-tailed hawks, golden eagles, marsh hawks, prairie falcons and American kestrels are the most commonly observed species. The most heavily used areas are the big sagebrush and subalpine habitat types. Golden eagles and prairie falcons nest on the cliffs. One prairie falcon nest has been located in the Little Blitzen Canyon, and one golden eagle nest has been found in the Wildhorse Canyon.

Common songbirds vary with habitat. In the High Steens WSA, the lower slopes bordering the edge of the Alvord Desert host species such as horned lark, Brewer's sparrow, black-throated sparrow, sage thrasher and western meadowlark. The subalpine habitat in both WSAs is breeding habitat for Brewer's blackbird, water pipit, rock wren, horned lark and other species. In 1981, black rosy finch and gray-crowned finch were observed breeding in the subalpine area of Steens Mountain. This is the only area where both species have been observed breeding in the lower 48 States, except for the Bitterroot Mountains in Montana.

Belding ground squirrel, golden-mantled ground squirrel, sage vole, least chipmunk and northern pocket gopher are common small mammals found on top of Steens Mountain in both WSAs. Great Basin pocket mouse, deer mouse, Ord's kangaroo rat, mountain cottontail and little brown myotis (bat) are species found along the east edge of the High Steens WSA.

Two mammal species uncommon in Oregon—the pika (*Ochotoma princeps*) and the northern water shrew, (*Sorex palustris*)—are found in both WSAs. The pika is found on talus slopes and only at two locations in southeastern Oregon, Steens Mountain and Warner Rim. The northern water shrew has only been found in one location in southeastern Oregon, on Steens Mountain. A subspecies of tiger beetle, *Cincindele montane chamberlaini*, is endemic to the area.

None of the unnatural features within the study areas are very noticeable. The majority of the developments in the High Steens WSA occur in the southeast corner of the study area. There are 28 ways totaling 38 miles, five water developments, 11 fences totaling 9 miles, and several locations of mining activity which include three cabins. It is estimated that approximately 4 percent of the study area is influenced by these features.

There is a concentration of ways in the southeast corner of the WSA (Areas A and B on Map 1), but the rough topography reduces the influence of these developments on the naturalness of the area. Topographic relief minimizes the influence of the ways on the west side of the rim. At present, approximately 4 miles of ways (not shown on the maps for this appendix) are closed to motorized vehicles under the Steens Mountain Recreation Area Management Plan.

Of the 11 fences in this WSA, none are longer than 1.5 miles. All of the fences are screened by topography and vegetation and have a minimal influence on the area.

Three water developments are concentrated in the southwest corner. One is a developed reservoir and two are developed springs. All are small and relatively unnoticeable, screened primarily by the rugged topography.

There are several places in the southeastern portion of the study area that have substantial mining scars. One of the mines has a small tramway built on the hillside which was used to remove ore-bearing rock. The mining activity occurred along Little Alvord Creek, Pike Creek, Dry Creek and Indian Creek. In general, however, these scars influence only a relatively small portion of the WSA due to their location within canyons or on east-facing slopes away from higher elevations from which they can be viewed.

Three cabins occur near the past mining activity. One older cabin sits north of the Weston Place on Indian Creek and the other two are on Pike Creek and Little Alvord Creek. All three are in the bottom of drainages and they can be seen only from the immediate vicinity.

Outside sights and sounds are not imposing and emanate from the boundary roads and the light traffic on them. On the east face of Steens Mountain, there are 11 miles of dead-end roads winding up the creek drainages. They have minimal influence on the surrounding area, due to the steep topography of the drainages. On the top of the mountain, there are 3 miles of dead-end roads that are used by sightseers. One road leads to the radio facility on top of the mountain on a tract of land owned by the State of Oregon. This tower and the roads are substantially unnoticeable from inside the WSA. Only from the rim, just above the road, can the development be partially seen. This road is well-traveled in the summer by sightseers and anglers traveling to Wildhorse Lake. The other small road leads to the overlook of Kiger Gorge. It is also well-traveled during the summer months.

There are numerous roads, ways and other developments within a couple miles of the study area boundary that can be seen from certain high locations. The locations are high above and a substantial distance from the developments, so the influence of the outside sights on the visitor's perception of the naturalness of the WSA is light.

The Little Blitzen Gorge WSA has very few unnatural features. There are five vehicle ways totaling 5 miles, two reservoirs, one trail and remnants of four cabins and a corral. It is estimated that approximately 7 percent of the area is influenced by these features.

The vehicle ways are seldom used and barely noticeable. Currently, 3.5 miles of ways which are closed under the Steens Mountain Recreation Area Management Plan. The only reservoir is small and substantially unnoticeable.

Trails used by hikers and horseback riders run along the river and up two drainages on the north rim of the gorge. These trails are screened by topography or vegetation, which reduces the overall visibility of the trails.

The four historic cabins and the corral, which are located in the bottom of Little Blitzen Gorge, are rapidly deteriorating since they are no longer used. These structures are of historic interest and enhance the study area.

Outside sights and sounds, primarily from the boundary roads, have only a slight effect on the study area. Approximately two-thirds of the WSA boundary is formed by the Steens Mountain Loop Road, which is heavily used during the summer months of July, August and September. The road itself influences only small portions of the study area.

B. Solitude: The High Steens WSA and the Little Blitzen Gorge WSA offer outstanding opportunities for solitude.

Opportunities for solitude in the High Steens WSA are enhanced by the varied and rugged topography. The extreme difference in elevations is the major screening factor. It is possible in many places in the WSA to be within a half-mile of a boundary road or dead-end road and feel totally isolated. The gorges of Kiger Creek, Wildhorse, Little Wildhorse, Big Indian, Little Indian and the other drainages provide excellent opportunities for isolation from all other parts of the WSA and boundaries. The east side of the study area is completely screened from the west side because of the steep escarpment face.

Vegetative screening also enhances opportunities for solitude in some areas. In the canyons, aspen, willow and other riparian species provide screening within the immediate vicinity of the creeks. Junipers growing on the steeper slopes provide some screening; however, the study area as a whole does not contain enough vegetation to significantly enhance opportunities for solitude.

The long and narrow shape of the Little Blitzen Gorge WSA is not conducive to solitude, but the unusual topographic features provide opportunities for solitude. Nearly all of the study area has topographic screening.

The majority of the vegetative screening occurs along the river corridor. Tall stands of black cottonwood and aspen grow along the Little Blitzen River and, combined with mountain mahogany and aspen growing farther upslope away from the river, provide excellent opportunities for solitude. The plateau area above the gorge has large thickets of aspen, providing opportunities for solitude where it is not provided by the area's topography.

C. Primitive and Unconfined Recreation: Opportunities for primitive recreation activities in the High Steens and Little Blitzen Gorge WSAs are outstanding. The primitive recreation activities include day hiking, backpacking, horseback riding, hunting, fishing, sightseeing and photography.

Opportunities for day hiking are outstanding in both WSAs. In the High Steens WSA, the east side provides many interesting and rugged drainages to hike. Very few of these canyon areas are easily accessible from the top of the mountain, but nearly all of them are accessible from the mouth of the canyons at the lower elevations. Wildhorse Creek and Willow Creek provide very challenging hikes. Kiger Rim and the gorges on the west side, Little Indian Creek, Big Indian Creek and McCoy Creek also provide day hiking opportunities.

In the Little Blitzen Gorge WSA, the bottom of the gorge provides the best day hiking opportunities. Water, vegetation and wildlife are all abundant and attractive features. Three established trails with varying degrees of difficulty provide access routes to the bottom of the gorge. Overall, this area provides challenging routes for the hiker.

Opportunities for backpacking abound in both WSAs. The High Steens WSA offers the most variety of areas in which to backpack. The eight major canyons on the east, the Wildhorse Canyon, Kiger Gorge, and the west gorges all contain spectacular scenery ranging in variety from lush canyon bottoms to the towering rock escarpments, and provide excellent places to backpack. Level camping spots are numerous in all but the canyons on the east face. These east side canyons contain level spots, but they are limited to the creek floodplain and the small glacial cirques at the head of the creeks where flat areas are much more abundant. A portion of the Desert Trail, running from Big Indian Canyon down Little Wildhorse and Wildhorse Canyons, provides excellent backpacking opportunities. Many of these same trails and routes can also be used by horseback riders. However, the opportunities would be limited to those routes which are not as steep and difficult.

In the Little Blitzen Gorge WSA, backpackers and horseback riders would use the same areas as day hikers. Level camping areas exist all along the creek bottom. Water is abundant, but requires purification. The trails are suitable for horseback riding.

Game species which can be hunted in the High Steens WSA include mule deer, antelope, bighorn sheep, elk and upland game birds. The entire area is in deer, elk and antelope summer range, providing opportunities for hunting all of these animals. Chukar hunting is best on the lower east face of the Steens where excellent bird habitat exists.

Mule deer, antelope and elk are the only game species in the Little Blitzen Gorge WSA which provide hunting opportunities. Deer populations are large enough for good hunting throughout the area.

Opportunities for fishing are outstanding in both WSAs. In the High Steens WSA, there is fishing for redband trout in Big Indian Creek, Little Indian Creek, Kiger Creek, McCoy Creek and their tributaries. Hybrid Lahontan cutthroat trout-rainbow trout occur in Wildhorse Creek and Wildhorse Lake is stocked with Lahontan cutthroat trout. In Little Blitzen Gorge WSA, the Little Blitzen River is managed for wild trout.

Sightseeing and photographic opportunities abound in these WSAs. In the High Steens WSA, the immense vistas include Beatys Butte and Hart Mountain to the west, the Pueblo Mountains to the south and the Alvord Basin, Sheepshead Mountains and Trout Creek Mountains to the east. Within the study area, the glaciated gorges with their U-shaped valleys and the rugged and sheer rock escarpments create fascinating views for both sightseeing and photography. The gorge in the Little Blitzen Gorge WSA with its rocky, rugged escarpments and rich green bottoms of aspen and riparian vegetation is very attractive. A different perspective is provided from within the canyon where the rock spires tower above on the narrow canyon walls and aspen groves cling to the steep slopes.

D. Special Features: The special features of the High Steens and Little Blitzen Gorge WSAs substantially enhance the areas' wilderness values. Geology, vegetation, wildlife and scenic qualities are special features of both WSAs. Historical values are a special feature of the Little Blitzen Gorge WSA.

The geology of Steens Mountain is the dominant special feature of both WSAs. Steens Mountain is a fault block mountain that dips gently westward and reaches a maximum elevation of 9,773 feet. It is bounded on the east by a fault scarp with up to 5,500 feet of topographic relief. The eastern escarpment exposes a 4,300-foot-thick sequence of basalt flows that average 20 feet in individual thickness.

Displacement along northwesterly-trending faults has separated the mountain into three distinct topographic units known as Northern Steens, High Steens and Southern Steens. The High Steens unit stands approximately 2,000 feet above the other two segments of the mountain. Most of the two WSAs are in the High Steens unit.

Pleistocene glaciers have been the main sculpturing agent on the upper part of the High Steens, and on the adjacent parts of the Northern and Southern Steens into which glaciers originating in the High Steens flowed. Kiger Gorge and the canyons of the Little Blitzen River, Big Indian Creek, Little Indian Creek, Wildhorse Creek and Little Wildhorse Creek were gouged as deep as 2,000 feet by glaciers that originated within a few miles of the summit of the mountain and flowed down former stream valleys. The heads of the glaciated canyons lie within a distance of about 6 miles of each other and are accessible by short hikes from the Steens Mountain Loop Road and side roads.

The heads of the glaciers are marked by small basins, or cirques. A distance of only approximately 0.5 mile separates the head of Big Indian Canyon from cirques east of the rim. At Kiger Gorge, the rim was breached where the head of the Kiger glacier met the head of a glacier in the valley of Cottonwood Creek on the east scarp, forming a distinctive feature known as the Kiger notch.

Lake basins on the High Steens were formed by glaciation and are of two types. Fish Lake and other smaller lakes nearby are in depressions dammed at the western end by moraines. Wildhorse Lake in the cirque of Wildhorse Canyon, and Little Wildhorse Lake in the cirque of Little Wildhorse Canyon, are glacially-eroded depressions in the bedrock.

Little Blitzen Gorge, the primary geologic feature of the Little Blitzen Gorge WSA, was carved by glaciers that originated at the top of the Steens fault block and flowed west down a former stream valley. A distance of approximately 0.25 mile separates the head of the gorge from the east escarpment of Steens Mountain. Weathered boulders remain from the glacial action and are scattered in the canyon and at the mouth of the valley. The deep, narrow U-shaped gorge displays glacially polished and striated bedrock and moraine deposits from two glacial advances.

Scenic quality is a special feature common to both WSAs. Little Blitzen Gorge WSA and most of the High Steens WSA contain outstanding scenery.

Thirteen plant species of special interest are known to occur in the High Steens and Little Blitzen Gorge WSAs.

Several species contribute to making wildlife a special feature in the High Steens WSA. Bighorn sheep range over the east face of the mountain and occasionally may be seen there. Sage grouse are found in both WSAs. California bighorn sheep and sage grouse are candidates for Federal listing as threatened or endangered. There is crucial deer winter range on the lower slopes of the escarpment. Whitehorse cutthroat trout, proposed for Federal listing as a threatened or endangered species, was successfully established in Mosquito Creek in 1971. Pike, Little Alvord, Big Alvord, Cottonwood, Willow and Little McCoy Creeks have also been stocked with this trout species. Both WSAs contain redband trout, a native fish of special concern because of its limited range. This species is also a candidate for Federal listing as threatened or endangered.

Steens Mountain, including High Steens and Little Blitzen Gorge WSAs, is one of only two eastern Oregon locations where pikas are found. Steens Mountain also provides the only eastern Oregon habitat for the northern water shrew.

Additionally, in these areas, Steens Mountain is an important raptor-foraging area and raptor nests have been located in both WSAs. Sage grouse, a candidate for Federal listing as threatened or endangered, summer in the sagebrush habitat on top of Steens Mountain in both WSAs.

Four old homesteads located in the bottom of Little Blitzen Gorge have nearly rotted away, but are still visible. Frank Kuney, a.sheep rancher of the 1920's, built a working corral near the principal meadow of the gorge. Today this corral stands in disrepair, but it was used through the 1960's. These historical features enhance the wilderness values of the Little Blitzen Gorge WSA.

Diversity in the National Wilderness Preservation System (NWPS)

A. Expanding the Diversity of Natural Systems and Features as Represented by Ecosystems: Wilderness designation of these WSAs would add three ecosystems (Bailey-Kuchler classification) not presently represented in combination in Oregon in the entire National Wilderness Preservation System There are 70 other BLM areas in the nation under study with this combination of ecosystems. This information is summarized in Table 2.

According to the Bailey-Kuchler system of classifying ecosystems, the Little Blitzen Gorge WSA and the High Steens WSA are in the Intermountain Sagebrush Province. The potential natural vegetation types are saltbush-greasewood, sagebrush-steppe, and alpine meadows and barren.

Fifteen of the plant communities listed in the Basin and Range section of the Oregon Natural Heritage Plan occur in these WSAs. Nine of them are common to both WSAs. These are big sagebrush/Idaho fescue, big sagebrush on Steens Mountain, mountain mahogany community in the Southern Basin and Range, bitterbrush-sagebrush-snowberry on Steens Mountain, aspen groves, snowbrush and bittercherry community complex, high elevation fescue grasslands, alpine communities on Steens Mountain including snow-deflation and moderate snow-cover communities, and alpine communities on Steens Mountain including downslope snow accumulation areas and upper cirque communities.

There are four plant communities present in the High Steens WSA, but not in the Little Blitzen Gorge WSA. There are big sagebrush/bluebunch wheatgrass, big sagebrush-greasewood, low sagebrush/Idaho fescue and low sagebrush on Steens Mountain. Communities found only in the Little Blitzen Gorge WSA are western juniper/big sagebrush-bitterbrush and black cottonwood riparian areas.

B. Assessing the Opportunities for Solitude or Primitive Recreation within a Day's Driving Time (5 hours) of Major Population Centers: The High Steens and Little Blitzen Gorge WSAs are within a 5-hour drive of one major population center (over 100,000), Boise, Idaho. Table 3 summarizes the number and acreage of designated areas and other BLM study areas within 5 hours drive of the population center.

C. Balancing the Geographic Distribution of Wilderness Areas: The High Steens and Little Blitzen Gorge WSAs would contribute to balancing the geographic distribution of areas within the National Wilderness Preservation System. There is only one designated wilderness area within 100 miles of these WSAs.

Manageability

(The area must be capable of being effectively managed to preserve it wilderness character.)

Both the High Steens WSA and Little Blitzen Gorge WSA would be manageable as wilderness under the all wilderness alternative. However, management problems could occur as a result of irregular and unidentifiable boundaries with private land, the presence of private and split-estate lands, the potential for future development of mineral resources in areas where mining claimants may have valid rights.

There could be potential management problems with identification of boundaries in both study areas, especially in the High Steens WSA. Most of the boundary for this area is irregular and follows legal subdivisions with private land. These boundaries are not easy to identify on the ground, and survey work and signing or fencing would be extremely costly. This is also true of the private and split-estate lands.

Management problems could also occur as a result of existing use of the area by vehicles. This is especially the case in the southwestern corner (Area C on Map 1) of the High Steens WSA where hunters have long used vehicles to gain access to this part of the WSA and adjacent lands. Existing vehicle ways

Table 2. Ecosystem Representation

Bailey-Kuchler Classification	NWPS areas Areas	NWPS areas Acres	Other BLM Studies Areas	Other BLM Studies Acres
Province/PNV				
	NATIONWIDE			
Intermountain Sagebrush/ Sagebrush Steppe, Saltbush-Greasewood and Alpine Meadows and Barren	0	0	0	0
	OREGON			
	0	0	0	0

Table 3. Wilderness Opportunities for Residents of Major Population Centers

Population Centers	NWPS areas areas	NWPS areas acres	Other BLM Studies areas	Other BLM Studies acres
Boise, Idaho	16	4,741,570	126	5,060,460

in the area provide access routes on which use would be difficult to control.

Only the southeast and central-east edge of the High Steens WSA (Areas A and B on Map 1) have moderate to high potential for the occurrence of minerals. Depending on the extent of development (minerals or otherwise) and the need for access to the inholding across BLM land, maintaining the wilderness qualities of the surrounding wilderness lands could be difficult. This is especially the case for the southeastern portion of the High Steens WSA. Under wilderness management, mining operations which occur in the area, and which were found to have valid existing rights upon designation of the area as wilderness, could be expanded and could impair wilderness qualities.

The all wilderness (with acquisitions and road closures), recommended action and partial alternatives all attempt to reduce the potential management problems of the study areas. Wilderness designated under any of these alternatives would also be manageable but would not be without problems.

Under the all wilderness (with acquisitions and road closures) alternative, the minor boundary adjustments would improve the location and identification of the boundary line and acquisition of inholdings would reduce or eliminate potential problems with recreation use or development. This alternative would also reduce problems with existing vehicle-oriented recreation in the southeast, although manageability problems would still be present.

Within the final EIS there is a slight map error in the Little Blitzen Gorge WSA for the recommended action. The error is found in the western boundary of the area. The boundary is adjusted to follow section lines instead of the portion of the South Steens Loop Road (Area D on Map 1) . The rationale for this action is to retract a distance from the Steens Loop Road to provide for other forms of recreation not allowed in wilderness that would take place off this portion of the road. No acreage adjustment is needed because the changes had already been corrected prior to the map being published in the final EIS. Maps in this report reflect the correction and intention of the boundary location.

Within the two study areas, there are a total of five sites designated as Research Natural Areas (RNAs), while much of the mountain has been designated as a scenic Area of Critical Environmental Concern (ACEC). The RNA designation is intended to protect these areas for research and education.

The portion of the Donner und Blitzen River complex and its tributaries flowing through these WSAs is part of a 73-mile segment that has been designated a Wild River component of the National Wild and Scenic River System. The Federal designation withdraws from mineral location and leasing all public lands within 0.25 mile on each side of the river (approximately 1,920 acres in the High Steens WSA and 2,560 acres in the Little Blitzen Gorge WSA for a total of 4,480 acres).

The restrictions for the Wild and Scenic River designation would continue to apply within the WSA whether or not the area is designated wilderness.

The recommended action and partial alternative also would reduce potential problems with recreation use and mineral development through acquisition of inholdings, though fewer acres would be involved. Boundary problems with private land would still exist, but would be substantially reduced as a result of the adjustments along the northern and eastern sides of the High Steens WSA.

Energy and Mineral Resource Values

The U.S. Geological Survey (USGS) and U.S. Bureau of Mines (USBM) evaluated approximately 35,930 acres of the High Steens WSA and 6,430 acres of the Little Blitzen Gorge WSA. Their study covers an area slightly larger than the area recommended suitable for wilderness, and includes the mineralized area on the southeast and central-east edge of the High Steens WSA. Their 1987 report, titled "Mineral Resources of the High Steens and Little Blitzen Gorge WSAs, Harney County, Oregon," is published as USGS Bulletin 1740-A.

The USGS/USBM study identified a marginal perlite resource occurrence in the High Steens WSA and noted that mercury and uranium were mined in small amounts in the WSA southeast of the area recommended for wilderness. They identified no resources in the Little Blitzen Gorge WSA.

In two areas along the southeast edge of the High Steens WSA, the USGS/USBM report found high potential for uranium, moderate potential for gold, and high potential for mercury in the southernmost of the two areas. They found moderate potential for uranium, mercury and gold along the entire southeast and central-east margin of the WSA. This potential is in the 40-mile-long and 2- to 3-mile wide Steens-Pueblo mining district that lies along the steep east escarpment of the Steens-Pueblo Mountains fault block. The northeastern portion of the High Steens WSA was rated low in potential for these minerals even though it has a similar geologic setting. Elsewhere in the High Steens WSA and in the entire Little Blitzen Gorge WSA the potential for mineralization is unknown because the formation in which mineralization occurs is under 2,000 to 4,000 feet of barren lava flows and because mineralization may occur only along the fault zone that bounds the east side of the Steens. The USGS/USBM study found low to no potential for perlite, zeolites, geothermal energy and oil and gas throughout the two WSAs.

The USGS/USBM study cites geologic evidence that epithermal mercury-uranium mineralization affected the southeastern portion of the High Steens WSA and states that this area is favorable for undiscovered epithermal gold deposits.

The minerals evaluation in the EIS was based on a preliminary evaluation by the Oregon Department of Geology and Mineral Industries (DOGAMI) in their 1983 report titled "Geology and Mineral Resources of 18 BLM Wilderness Study Areas, Harney and Malheur Counties" by Gray and Others (DOGAMI Open-File Report 0-83-2). Heavy mineral concentrates of the DOGAMI stream-sediment samples were analyzed and evaluated by Barringer Resources, Inc. (Bukofski and others, 1984, "Mineral Resource Assessment Through Geochemical Studies of Heavy Mineral Concentrates from Wilderness Study Areas in the Burns, Prineville and Vale Districts, Southeastern Oregon") and this evaluation was also considered in the mineral evaluation in the EIS.

The EIS noted high potential for copper, gold, mercury, molybdenum and silver in the entire High Steens WSA, low potential for perlite and moderate potential for zeolites and bentonite near the eastern boundary of the High Steens WSA, and high potential for geothermal energy in the WSA east of the area recommended for wilderness. A mining scenario for one gold/silver/mercury mine was described.

As of May 1991, there were seven mining claims located within the High Steens WSA.

In the Little Blitzen Gorge WSA, the EIS showed high potential for zinc, copper, mercury, nickel and cobalt changing to moderate potential in the far western end. The EIS also showed moderate potential for bentonite and zeolites near the eastern boundary of this WSA. Oil and gas potential was rated low for both WSAs.

The USGS/USBM study attributed anomalous copper, nickel, zinc and silver concentrations to high initial levels of these metals in the Steens Basalt, and did not consider them indicative of potentially minable resources. Anomalous molybdenum levels were considered gold indicators and not as a potential resource in themselves. Zeolites were considered by USGS/USBM to have low resource potential because, although favorable conditions existed for their formation, samples collected did not show an amount and quality of zeolitization necessary for a higher rating.

The USGS/USBM study also relegated most of the two WSAs to unknown mineral status because they are beneath 2,000 to 4,000 feet of barren lava flows. Although the USGS/USBM study does not cover the entire WSAs, the excluded areas are covered by the lava flows.

An analysis of the Energy and Mineral Resources for the recommended additional wilderness proposal in the High Steens WSA is as follows: The U.S. Geological Survey (USGS) Bulletin 1740-A in 1987 delineated an area of moderate potential for mercury, uranium and gold in the eastern part of this proposed addition. The mineral potential is related to a formation that is exposed along Indian Creek. The rest of this additional area has unknown "potential for mineral resources" according to the USGS. The mineralized formation that is exposed along Indian Creek is overlayed by thousands of feet of barren lava flows in the rest of the area. The entire proposed addition has low potential for zeolites, geothermal resources, and oil and gas resources.

Any potential mine would be most likely located outside the recommended wilderness area within an area of high mineral potential. As of May 1991, there were no mining claims located within the Little Blitzen Gorge WSA.

Local Social and Economic Considerations

Livestock use at the current level of 6,156 AUMs and recreation use totaling 26,000 visitor days per year are the primary resource outputs that generate economic activity in the WSAs. Local personal income generated annually from these existing use levels amounts to approximately $73,872 for livestock grazing and $312,000 related to recreation use of the WSAs, for an overall total of $385,872.

Under the recommendation, livestock grazing would decrease by 206 AUMs. Projected energy and mineral development would amount to one 10-MW geothermal power plant and one metallic mine. Overall recreation use would decrease by 2,000 visitor days per year. Annual local personal income generated from resource outputs in the WSA would decrease by approximately $26,000.

There were no social issues identified with the study of this WSA.

Impacts on Resources

The following comparative impact table summarizes the effects on pertinent resources for all the alternatives considered including designation and nondesignation of the entire area as wilderness.

Table 4. Comparative Summary of the Impacts by Alternative

Issue Topics	Recommendation (Partial Wilderness Alternative)	All Wilderness Alternative
Impacts on Wilderness Values	Wilderness designation of 42,508 acres would result in protection and enhancement of the more outstanding wilderness values of the two WSAs. The 39,140 acres recommended nonsuitable would be subject to projected resource activities that eventually would both directly and indirectly impair wilderness values over approximately 7,100 acres, with further declines from other potential over the long term.	Wilderness designation of the entire 79,140 acres within the High Steens WSA and Little Blitzen Gorge WSA would result in the protection of the existing wilderness values and probable enhancement of those values.
Impacts on Energy and Mineral	One 10-megawatt geothermal power source would be developed in the High Steens WSA, outside the suitable wilderness recommendation. Projected development of one open-pit mine for gold, uranium and mercury would occur outside the suitable wilderness recommended area. (Mineral list revised from EIS based on USGS Mineral Resource Report)	Wilderness designation would result in foregone energy production from one projected 10-megawatt geothermal power plant. Wilderness designation would result in foregone production of mercury, gold and uranium from one projected open-pit mine. (Mineral list revised from EIS based on USGS Mineral Resource Report)
Impacts on Vegetation	Overall vegetative composition would not substantially change. Proposed ways and road closures would result in their natural revegetation. The projected open-pit mine would directly disturb vegetative cover within the project areas.	Overall, existing vegetation would remain unchanged.

All Wilderness, with acquisitions and road closures, Alternative	Partial Wilderness Alternative	No Wilderness/No Action Alternative
Wilderness designation of the 70,630 acres (assuming acquisition of 6,260 acres of private and State land) would result in the protection of existing wilderness values and enhancement of those values. In the portion of the High Steens WSA recommended nonsuitable, projected energy, mineral and range developments would both directly and indirectly reduce wilderness values on approximately 7,200 acres, with further declines from other potential uses over the long term.	Wilderness designation of 44,460 acres in the High Steens WSA and Little Blitzen Gorge WSA would result in protection and enhancement of the existing wilderness values in the two WSAs. The 36,780 acres recommended nonsuitable would be subject to projected energy, mineral and range developments and improved access that would both directly and indirectly affect wilderness values on approximately 7,200 acres with further declines from other potential uses over the long term.	In the absence of wilderness designation, projected management actions would directly and indirectly disturb wilderness values over approximately 13,000 acres of both WSAs, with further declines from other potential uses over the long term.
One 10-megawatt geothermal power source would be developed in the High Steens WSA outside the suitable wilderness recommendation. Projected development of one open-pit mine for gold, uranium and mercury would occur in the High Steens WSA, outside the suitable wilderness recommended area. (Mineral list revised from EIS based on USGS Mineral Resource Report)	One projected 10-megawatt geothermal power source would be developed in the High Steens WSA, outside the suitable wilderness recommendation. Projected development of one 150-acre open-pit mine for gold, uranium and mercury production would occur in the High Steens WSA outside the suitable wilderness recommended area. (Mineral list revised from EIS based on USGS Mineral Resource Report)	One projected 10-megawatt geothermal power source would be developed. Projected development of one open-pit mine for gold, uranium and mercury would occur. (Mineral list revised from EIS based on USGS Mineral Resource Report)
The vegetative composition would remain unchanged. The closure of roads and ways would revegetate over time. The projected energy and mineral activity would directly disturb vegetative cover within the project area, but outside the suitable wilderness recommendation.	Overall vegetative composition would not substantially change. Proposed road and way closures would result in them revegetating naturally. Projected energy and mineral development would directly disturb vegetative cover within the project areas.	The roads and ways would remain open and would not naturally revegetate. Projected range improvement development would enhance riparian vegetation. The projected energy and mineral development would directly disturb vegetative cover within the project area.

Table 4. Comparative Summary of the Impacts by Alternative (continued)

Issue Topics	Recommendation (Partial Wilderness Alternative)	All Wilderness Alternative
Impacts on Wildlife	Wildlife habitat and populations would be maintained on 37,808 acres in the High Steens WSA and 4,600 acres in the Little Blitzen Gorge WSA. Both deer and bighorn sheep populations would be reduced due to mining and geothermal development within the nonsuitable portion of the WSA. Habitat for chukars and small mammals would also be reduced.	Wildlife habitat and populations would be maintained on 69,740 acres in the High Steens WSA and 9,400 acres within the Little Blitzen Gorge WSA. Proposals to improve habitat for whitehorse cutthroat trout would be foregone in High Steens WSA. The trapping of bighorn sheep would be allowed providing bighorns for reintroduction to other areas.
Impacts on Watershed	The projected mining activity would reduce the water quality on either Indian Creek or Pike Creek. Other watersheds would either stay the same or improve under livestock management.	Most of the perennial streams in both WSAs would stay in their present condition, and the remaining perennial streams would improve under the present livestock management system.
Impacts on Livestock Grazing	Livestock grazing use would be reduced by 206 AUMs to 4,702 AUMs in the High Steens WSA and would remain at 1,248 AUMs in the Little Blitzen Gorge WSA. Vehicle use on 1.75 miles of ways would be precluded, with a slight increased cost and inconvenience to livestock operators.	Livestock grazing use would be reduced by 206 AUMs to 4,702 AUMs in the High Steens WSA and remain at 1,248 AUMs in the Little Blitzen Gorge WSA. Vehicle use on 30.5 miles of ways would be precluded, with some inconvenience and slight increase in costs to livestock operators.
Impacts on Recreation Use	Recreation use would decrease from the current level of 26,000 visitor days per year to approximately 24,000 visitor days per year.	Recreation use would decrease from the current level of 26,000 visitor days per year to approximately 23,000 visitor days per year.
Impacts on Local Personal Income	Annual local personal income would decrease by approximately $26,000.	Annual local personal income would decrease by approximately $38,000.

All Wilderness, with acquisitions and road closures, Alternative	Partial Wilderness Alternative	No Wilderness/No Action Alternative
Wildlife habitat and populations would be maintained on 70,630 acres designated wilderness. Both deer and bighorn sheep populations would be reduced due to mining and geothermal development within the nonsuitable portion of the WSA. Habitat for chukars and small mammals would also be reduced.	Wildlife habitat and populations would be maintained on 44,460 acres designated wilderness. Both deer and bighorn sheep populations would be reduced due to mining and geothermal development within the nonsuitable portion of the WSA. Habitat for chukars and small mammals would also be reduced.	Wildlife habitat and populations would be maintained on 79,140 acres. Bighorn sheep and deer populations would be reduced due to mining and geothermal development. Habitat for chukars and small mammals would also be reduced with a proportional loss of individuals.
The projected mining activity would reduce water quality of either Indian Creek or Pike Creek. Other watersheds will either stay the same or improve under livestock management.	The projected mining activity would reduce water quality on either Pike Creek or Indian Creek. Other watersheds would either remain the same or improve under livestock management.	The projected mining activity would create poor water quality on two perennial streams. Other watersheds would either stay the same or improve under livestock management.
Livestock grazing use would be reduced by 206 AUMs to 4,702 AUMs in the High Steens WSA and remain at 1,248 AUMs in the Little Blitzen Gorge WSA. Vehicle use on 20.5 miles of ways and 9 miles of roads would be precluded, with some inconvenience and a slight additional expense to livestock operators.	Livestock grazing use would be reduced by 206 AUMs to 4,702 AUMs in the High Steens WSA and would remain at 1,248 AUMs in the Little Blitzen Gorge WSA. Vehicle use on 8.5 miles of ways and 1 mile of road would be precluded, with some increased cost and inconvenience to livestock operators.	Livestock grazing use would remain at 6,156 AUMs.
Recreation use would decrease from the current level of 26,000 visitor days per year to approximately 21,000 visitor days per year. In the area recommended nonsuitable, recreation use is expected to remain the same.	Recreation use would decrease from the current level of 26,000 visitor days per year to approximately 24,000 visitor days per year.	Recreation use would decrease from the current level of 26,000 visitor days per year to approximately 26,780 visitor days per year.
Annual local personal income would decrease by approximately $62,000.	Annual local personal income would decrease by approximately $26,000.	Annual local personal income would increase by approximately $9,000.

Summary of WSA-Specific Public Comments

Public involvement has occurred throughout the wilderness review process. Certain comments received during the inventory process and early stages of the EIS preparation were used to develop significant study issues and various alternatives for the ultimate management of those lands found to have wilderness values.

During formal public review of the draft EIS and supplemental to the draft EIS, a total of 68 comments specifically addressing these WSAs were received. Of those, 61 were written and seven were oral statements received at the 24 public hearings on the EIS. In general, 28 commenters supported wilderness designation for all or part of these WSAs. Sixteen commenters supported no wilderness for the WSAs, while 24 commenters addressed the relative merits of the EIS, but took no formal position on wilderness designation(s).

Those favoring wilderness commented that combining the WSAs to form one wilderness and closing the roads would best protect watershed and the overall ecology of the area. Others commented that these WSAs provide an important unique ecological diversity and that designation of the two WSAs as wilderness would help maintain a gene pool and preserve wildlife along with their habitat. Most of the comments focused around the debate on whether or not to close portions of the Steens Mountain Loop Road because of wilderness designations. Although many commenters favored some kind of wilderness designation for the WSAs, many of those same commenters opposed any closure of the Steens Mountain Loop Road.

Almost half of those who commented stated their opposition in closing any portion of the Steens Mountain Loop Road.

Those opposing designation were concerned that the Steens Mountain Loop Road would be closed as a result of wilderness. Others commented that existing forms of recreation are more appropriate than wilderness. Some commented that a National Park of Steens Mountain would be in the best overall interest of the area as opposed to wilderness. Some commented that wilderness is for the elite and that the aged, young and handicapped are restricted (locked out) from those areas that are unique in nature, such as Steens Mountain, when wilderness designations occur. A few commented that the wild horses found in the Steens would not be manageable under wilderness and that overuse from these horses on the land would occur.

The Department of Energy, Bonneville Power Administration (BPA), noted that there are geothermal resource sites at some areas BLM is considering for wilderness designation. They noted that industry lease applications and BPA resource assessment studies suggest geothermal potential in the proposed wilderness alternative of the High Steens WSA. BPA also believes that existing geothermal leases should generally be recognized, along with a potential need for transmission line right-of-way in the event of development and utilization. Wilderness classification after lease issuance may affect exploration, development, or operation of geothermal electric power generation facilities. This is particularly true in the Alvord Area and adjacent Resource Areas (Andrews, Southern Malheur and Warner Lakes). They recommended that access to potential geothermal sites by assured in the final EIS and decision document.

The Idaho Air National Guard expressed concern over possible conflict between low altitude overflights and the feeling of solitude sought by the wilderness area users. These routes are of vital importance to combat training and readiness. Any constraint on the use of existing routes could have a severe impact on unit readiness.

One low-level military route (VR 1301) has direct influence on both WSAs. Estimated operation of this route is 540 flights annually at approximately 1,500 feet above the ground.

The Oregon Department of Fish and Wildlife (ODFW) requested a boundary adjustment in 1985 on the east side of the recommended wilderness area. The request was for a boundary to be established at the 4,600-foot elevation from Indian Creek north to Little Willow Creek. This adjustment would allow for protection of key bighorn sheep range. The boundary adjustment would also allow protection of additional habitat for pika, northern water shrew, crucial deer winter range and Wildhorse cutthroat trout habitat.

The County Court for Harney County and the Burns Paiute Reservation stated that both the High Steens WSA and Little Blitzen Gorge WSA are suitable as recommended by the partial alternative with the deletion of lands that would occur by moving the north boundary at Kiger Gorge south to the next section line, and by moving the east and south boundaries on the following legal description: From Mann Creek to Willow Creek at the 6,000-foot elevation; from Willow Creek to Pike Creek use the

5,600-foot elevation line; from Pine Creek to Indian Creek use the 6,400-foot elevation; then due west 0.25 mile south of section line between Sections 14 and 23, and Sections 16 and 22, T. 24, R. 33 E., W.M. for approximately 1.25 miles to wilderness boundary line and thence north on wilderness boundary line. They also believe that the High Steens is a major tourist attraction in Harney County; the Steens Mountain Loop Road is an important recreational road and affords many the opportunity to view this magnificent country that they would be denied if the road was closed. The Court for Harney County and the Burns Paiute Reservation were adamantly opposed to any plan that would result in the closure of the Loop Road.

There were 200 comment letters received on the final EIS for this WSA, nearly all of which opposed a proposal to allow snowmobiles on the Steens Loop Road.

Appendix 1 - Estimated Costs of Acquisition of Non-Federal Holdings Within Areas Recommended for Designation [1]

Legal Description (Prior to any Subdivision)	Total Acreage	Number of Owners (If Parcel has been Subdivided)	Type of Ownership by Estate (Federal, State Private, other) Surface Estate	Subsurface Estate	Presently Proposed for Acquisition (Yes, No)	Preferred Method of Acquisition (Purchase, Exchange, Other)	Estimated Cost of Acquisition [2] Land Costs	Processing Costs
Parcel No. 1, (Private inholding) (High Steens WSA) T. 32 S., R. 34 E., Section 30, middle north of section	120	1	Private	State	No	Purchase	$12,000	$3,000
Parcel No. 2, (Private inholding) (High Steens WSA) T. 32 S., R. 34 E., Section 19, middle south of section	280	1	Private	State & Federal	No	Purchase	$28,000	$3,000
Parcel No. 3,[3] (Private inholding) (High Steens WSA) T. 32 1/2 S., R. 33 E., Section 24, western half section	80	1	Private	Private	No	Purchase	$ 8,000	$3,000
Parcel No. 4,[3] (Private inholding) (High Steens WSA) T. 32 1/2 S., R. 33 E., Section 25, SW of the NW 1/4	40	1	Private	Private	No	Purchase	$ 4,000	$3,000
Parcel No. 5, (Private inholding) (High Steens WSA) T. 32 S., R. 34 E., Section 30, SW of the SW 1/4	40	1	Private	Private	No	Purchase	$ 4,000	$3,000
Parcel No. 6,[4] (Private inholding) (High Steens WSA) T. 32 1/2 S., R. 33 E., Section 25, Lot 3	17.39		Private	Private	No	Purchase	$ 1,739	$3,000

Appendix 1 - Estimated Costs of Acquisition of Non-Federal Holdings Within Areas Recommended for Designation

Legal Description (Prior to any Subdivision)	Total Acreage	Number of Owners (If Parcel has been Subdivided)	Type of Ownership by Estate (Federal, State Private, other) Surface Estate	Subsurface Estate	Presently Proposed for Acquisition (Yes, No)	Preferred Method of Acquisition (Purchase, Exchange, Other)	Estimated Cost of Acquisition [2] Land Costs	Processing Costs
Parcel No. 7, (Private inholding) (High Steens WSA) T. 32 S., R. 34 E., Section 31, Lot 1	40		Private	Private	No	Purchase	$ 4,000	$3,000
Parcel No. 8, (Private inholding) (High Steens WSA) T. 32 S., R. 34 E., Section 31, Lots 3 & 4	80		Private	Private	No	Purchase	$ 8,000	$3,000
Parcel No. 9,[5] (Private inholding) (High Steens WSA) T. 32 1/2 S., R. 33 E., Section 36, eastern portion of section	218	1	Private	State	No	Purchase	$21,800	$3,000
Parcel No. 10,[5] (Private inholding) (High Steens WSA) T. 32 S., R. 34 E., Section 6, Lot 4	49.81	1	Private	Private	No	Purchase	$ 4,981	$3,000
Parcel No. 11, (Private inholding) (High Steens WSA) T. 33 S., R. 33 E., Section 36, Entire section (mini section)	431.5	1	State	State	No	Exchange	$21,575	$6,000
Parcel No. 12, (Split estate) (High Steens WSA) T. 32 1/2 S., R. 32 3/4 E., Section 36, north half of section	225	1	Federal	State	No	Exchange	$ 3,375	$6,000

Appendix 1 - Estimated Costs of Acquisition of Non-Federal Holdings Within Areas Recommended for Designation

Legal Description (Prior to any Subdivision)	Total Acreage	Number of Owners (If Parcel has been Subdivided)	Type of Ownership by Estate (Federal, State · Private, other)		Presently Proposed for Acquisition (Yes, No)	Preferred Method of Acquisition (Purchase, Exchange, Other)	Estimated Cost of Acquisition [2]	
			Surface Estate	Subsurface Estate			Land Costs	Processing Costs
Parcel No. 13, (Split estate) (High Steens WSA) T. 32 1/2 S., R. 32 3/4 E., Section 36, south half of section	225	1	Federal	State	No	Exchange	$ 3,376	$6,001
Parcel No. 14, (Split estate) (High Steens WSA) T. 33 S., R. 33 E., Section 16, SW portion of section	150	1	Federal	State	No	Exchange	$15,000	$6,000

[1] The estimated costs listed in this appendix in no way represent a formal appraised value of the land or mineral estate, but are rough estimates based on sales or exchanges of lands or mineral estates with similar characteristics to those included in the WSA. The estimates for purposes of establishing a range of potential costs to the government of acquiring non-Federal holdings and in no way represent an offer to purchase or exchange at the cost estimate included in this appendix. Processing costs are all miscellaneous expenses other than land costs. These include work month costs, appraisals, title work, escrow costs, etc.

[2] Only administrative costs are shown for exchanges.

[3] Parcels 3 and 4 represent a change in recommended action since FEIS publication.

[4] Parcel 6 represents a change in recommended action since FEIS publication.

[5] Parcels 9 and 10 represent a change in recommended action since FEIS publication.

South Fork of the Donner und Blitzen River Wilderness Study Area

1. The Study Area —37,555 acres

The South Fork of the Donner und Blitzen River Wilderness Study Area (WSA) (OR-2-85G) is located 74 miles south of Burns, Oregon, (12 miles south of Frenchglen) in Harney County. The study area lies along the southern section of the Steens Mountain Loop Road, 7 miles east of Oregon State Highway 205.

The area is basically rectangular in shape, with the western end narrowing somewhat. A roughly "L" shaped portion on the eastern side is almost entirely separated from the main body of the area by a large section of private land.

The study area contains approximately 35,850 acres of BLM land. In addition, 1,320 acres of private land are located within the WSA, as well as 1,705 acres of split-estate land (see Table 1).

Most of the study area is bounded by BLM roads with adjacent public lands. The northern boundary line of the area is formed entirely by the southern extension of the Steens Mountain Loop Road which is a gravel road. The western and southwestern boundary lines are formed by BLM dirt roads and two parcels of private land. The eastern boundary line is formed by a combination of BLM roads and private land, with the majority of the boundary being formed by private land.

The South Fork of the Donner und Blitzen River WSA is located within the central portion of the physiographic feature known as the Steens Mountain Fault Block. Most of the terrain is flat to gently rolling. The major feature of the WSA is the river corridor. Located in the eastern portion of the study area, the river flows from south to north. Of the 8.5 miles of river associated with this study area, 6 miles flow across public land, approximately 2 miles flow through private land just outside the boundary, while 0.5 mile crosses a private inholding. Small segments of three other perennial streams (Indian Creek, Deep Creek and Ankle Creek) also pass through the study area and drain into the South Fork.

The eastern portion of the study area contains the greatest amount of topographic diversity. The river and creeks all flow through canyons which range from 100 to 200 feet in depth. Overall, the elevation of the study area averages 5,800 feet, with the extremes ranging from 5,100 feet in the river bottom near the northeastern boundary to 6,500 feet in the southeastern corner of the "L" shaped extension.

The South Fork of the Donner und Blitzen River WSA has been modified to include four parcels (1,705 acres) of land acquired in an exchange with the State of Oregon since completion of the wilderness inventory phase. The State of Oregon has retained subsurface mineral estate, resulting in 1,705 acres of split-estate (Federally-managed surface, state subsurface or mineral rights) lands within the WSA.

The WSA was initially studied under Section 603, with additional acquired lands studied under Section 202 of the Federal Land Policy and Management Act (FLPMA), and the WSA was included in the Final Oregon Wilderness Environmental Impact Statement (EIS) filed in February 1990.

There were three alternatives analyzed in the EIS: 1) An all wilderness alternative recommending 37,555 acres for wilderness; 2) Another all wilderness, with acquisitions, alternative recommending all 37,555 acres for wilderness and an attempt would be made to acquire a total of 4,420 acres of private land (both within and adjacent to the WSA) and the mineral estate of 1,705 acres of split estate lands within the existing WSA boundary.Assuming acquisition of private land, the total area recommended suitable under this alternative would be 41,975 acres; and 3) A no wilderness/no action alternative (the recommendation of this report). These lands are shown on Map 1.

2. Recommendation and Rationale:

—0 acres recommended for wilderness
37,555 acres recommended for nonwilderness

The recommendation for the South Fork of the Donner und Blitzen River WSA is to designate 0 acres as wilderness and release 37,555 acres for uses other than wilderness.

Designation of the entire WSA as wilderness is the environmentally preferable alternative. However, the no wilderness recommendation would be implemented in a manner which would use all practical means to minimize environmental impacts.

The no wilderness alternative is recommended because of the potential manageability problems associated with the private lands on the eastern side of the study area. The most significant wilderness values in the WSA are located in the eastern portion and the river corridor where the private land is located. The western portion of the study area possesses wilderness values of somewhat lower quality than the eastern portion.

Wilderness designation of the WSA would require the acquisition of substantial amounts of private land. These acquisitions would be essential in order to reduce the potential for management problems. Although the area possesses some wilderness values, particularly along the eastern portion, these values do not offset the option of leaving the area open to the existing vehicle-oriented recreational uses and projected range developments; nor are the overall wilderness values of such significance as to warrant the necessary acquisition of private land and designation of the area as wilderness. Construction of divisional fencing would allow the application of livestock grazing management designated to improve riparian habitat conditions, thus improving redband trout habitat, a candidate species for Federal listing as threatened or endangered.

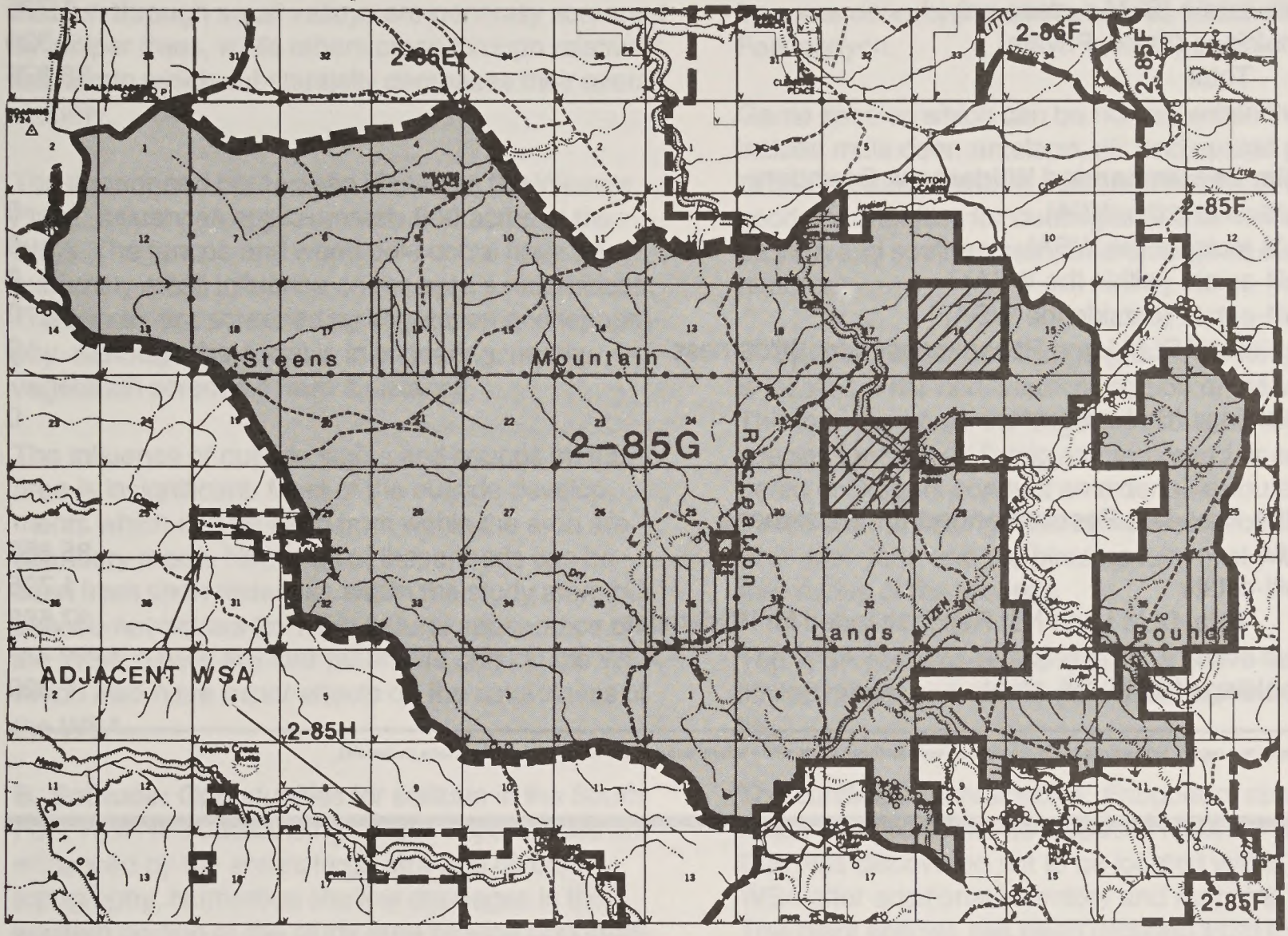
3. Criteria Considered in Developing the Wilderness Recommendations

Wilderness Characteristics

A. Naturalness: The South Fork of the Donner und Blitzen WSA is in a sufficiently natural condition to meet the criteria for WSA classification. The most outstanding natural areas are found within the river and creek drainage systems located in the eastern portion of the WSA. These drainages offer a variety of vegetation and wildlife species that are unique year-round to arid climates.

Juniper and low sagebrush are the dominant vegetation in the study area. Most of the juniper trees are located within the eastern two-thirds of the WSA. Low sagebrush occurs throughout most of the study area, but is most common in the western portions. A variety of grasses are also found within the area. The river and the larger creeks contain riparian vegetation, and a grove of aspen is located within the Deep Creek drainage.

The WSA provides habitat for wildlife species common to the mosaic of low sagebrush, western juniper, big sagebrush and riparian habitat types on



RECOMMENDED FOR WILDERNESS (None)

RECOMMENDED FOR NONWILDERNESS

LAND OUTSIDE WSA RECOMMENDED FOR WILDERNESS (None)

SPLIT ESTATE

STATE (None)

PRIVATE

- N -

South Fork Donner und Blitzen River Proposal

MAP-1

0 1 2 3

MILES

OR-2-85G
January, 1991

Table 1. Land Status and Acreage Summary of the Study Area

	Acres
Within Wilderness Study Area	
BLM (surface and subsurface)	35,850
Split-estate (BLM surface only) [1]	1,705
Inholdings (State, Private)	1,320
Total	38,875
Within the Recommended Wilderness Boundary	
BLM (within the WSA)	0
BLM (outside the WSA)	0
Split-estate (within the WSA) [1]	0
Split-estate (outside the WSA) [1]	0
Total BLM Land Recommended for Wilderness	0
Inholdings (State, Private)	0
Within the Area Not Recommended for Wilderness	
BLM	35,850
Split-estate [1]	1,705
Total BLM Land Not Recommended for Wilderness	37,555
Inholdings (State, Private) [1]	1,320

[1]For purposes of this report, split-estate lands are defined only as those lands with Federal surface and non-Federal subsurface (minerals).

Steens Mountain. Aspen groves provide a limited amount of habitat for those wildlife species utilizing trees for nesting, foraging and roosting.

Most of the study area is relatively open and provides good deer and antelope summer range. Most of the deer summer range occurs east of the Blitzen River. Elk occasionally use the area from spring through fall.

Raptors commonly using the area during the summer include red-tailed hawks, golden eagles, prairie falcons, marsh hawks and American kestrels. Occasional raptor nests have been located within the WSA. Other nongame species found in the study area include black-tailed jackrabbit, mountain cottontail, Brewer's sparrow, western meadowlark, sage thrasher and common flicker.

Chukars may be found in the WSA in the summer, but their populations are not abundant.

Riparian habitat is found along 14 miles of streams on public land in the WSA. This includes the river, the three larger creeks and several intermittent streams. Fisheries habitat quality is rated 46 percent in poor condition and 54 percent in fair condition. Heavy sediment loads coming from headwater streams have degraded trout habitat significantly. Also, lack of streambank shade results in high summer water temperatures, reducing fish habitat quality. Some species of wildlife common to riparian habitat include rock wrens, Brewer's sparrow, yellow-rumped warbler, Cassin's finch and beaver.

The study area contains 30 unnatural features, which are 15 reservoirs, 11 vehicle ways totaling 28 miles, a corral, two fences totaling 2 miles and an old abandoned habitation. These developments influence approximately 2 percent of the WSA.

Eight of the reservoirs are located along the western boundary. The other seven are scattered through the remainder of the WSA. The reservoir with the

greatest influence is Long Reservoir which is located in a broad, shallow drainage on the western side of the study area. The other reservoirs are screened by either topography or vegetation.

The vehicle ways in the area are also generally screened by topography and vegetation. The ways that run through small valleys are generally screened by juniper trees, while others cross through relatively flat terrain which substantially decreases their overall visibility.

The abandoned homestead known as the Weaver Place, influences approximately 500 acres of the WSA. The fences and wood pole corral have an extremely small influence on the area's naturalness. The fences are screened by vegetation and topography. Although the corral is in a clearing, nearby vegetation screens it from a distance.

The influence of outside sights and sounds on the area is insignificant. Most of the outside developments which can be seen from within the area are boundary roads. Nearly all of these roads can be seen from short distances within the study area, but they do not detract from the natural appearance of the WSA. There are four reservoirs outside the WSA which also have minor effects on the naturalness of the WSA.

B. Solitude: Opportunities for solitude in the South Fork WSA are outstanding. These opportunities are enhanced by the area's large size and diverse topography. Numerous shallow drainages in the western portion of the study area provide opportunities for a visitor to find seclusion. The deeper canyons of the South Fork of the Donner und Blitzen River and its tributaries also contribute to solitude.

Vegetative screening, provided by juniper trees, also enhances opportunities for solitude. Although some aspen and riparian species also occur in the area, they are not a major factor in enhancing solitude.

C. Primitive and Unconfined Recreation: Opportunities for primitive and unconfined types of recreation in this WSA are outstanding. These activities include day hiking, backpacking, camping, fishing and horseback riding. The primary attraction of the area is the South Fork of the Donner und Blitzen River. The river and its tributaries provide many different routes for hikes of varying degrees of difficulty. The streams and riparian vegetation provide pleasant surroundings in which to hike.

The eastern portion of the area contains juniper and topographic screening which would enhance a backpacking or camping experience. Although it may require purification, water is available throughout the WSA, as are adequate camping spots.

Horseback riding, like backpacking, would be of high quality. Most of the terrain in the study area is relatively accessible by horses. However, there may be some difficulty in gaining access into the South Fork canyon.

Game species which can be hunted within the area include mule deer, antelope, elk and upland game birds. The southwestern portion of the WSA offers good opportunities for hunting antelope, while the eastern and southeastern area offer good deer hunting.

D. Special Features: A sage grouse strutting ground is located in the northwestern portion of the WSA. This is a site where the sage grouse, a candidate species for Federal listing as threatened or endangered in Oregon, conduct an extensive courtship dance prior to mating. The same area is often used year after year, and the birds usually nest within a 2-mile radius of the grounds.

The WSA contains redband trout, a native fish with limited range, and also a candidate for the Federal list.

The candidate plant species, *Eriogonum cusickii*, which was presented as a special feature in the draft EIS, was discovered not to be located within the WSA after additional inventory and mapping work. This plant species has been dropped from this WSA.

Diversity in the National Wilderness Preservation System

A. Expanding the Diversity of Natural Systems and Features as Represented by Ecosystems: Wilderness designation of this WSA would add an ecosystem (Bailey-Kuchler classification) not presently represented in Oregon, and represented in the National Wilderness Preservation System by only three areas. There are 66 other BLM areas in the State under study with this ecosystem. The information is summarized in Table 2.

According to the Bailey-Kuchler system of classifying the ecosystems, the South Fork of the Donner and Blitzen River WSA is located in the Intermountain Sagebrush Province and its potential natural vegetation is sagebrush steppe communities.

The Basin and Range section of the Oregon Natural Heritage Plan identifies six plant communities which occur in this WSA: western juniper/big sagebrush/ Idaho fescue, western juniper/low sagebrush/ Sandberg's bluegrass, western juniper/big sagebrush/bluebunch wheatgrass, big sagebrush/Idaho fescue, low sagebrush/Idaho fescue and low sagebrush/Sandberg's bluegrass.

B. Assessing the Opportunities for Solitude or Primitive Recreation Within a Day's Driving Time (5 hours) of Major Population Centers: The South Fork of the Donner und Blitzen River WSA is within a 5-hour drive of one major population center (over 100,000): Boise, Idaho. Table 3 summarizes the number and acreage of designated areas and other BLM study areas within 5 hours drive of the population center.

C. Balancing the Geographic Distribution of Wilderness Areas: The South Fork Donner und Blitzen River WSA would contribute to balancing the geographic distribution of areas within the National Wilderness Preservation System. There are only two designated wilderness areas within 100 miles of this WSA.

Manageability

(The area must be capable of being effectively managed to preserve its wilderness character.)

The South Fork of the Donner und Blitzen River WSA would be manageable as wilderness under the all wilderness alternative, but such management would be difficult because of the private lands on the east side of the WSA. The private land would cause two problems. First, the wilderness area's boundary would follow legal subdivisions along most of the eastern side, making boundary identification difficult. This problem is compounded by the presence of the "L" shaped extension which is nearly surrounded by unmarked private land.

The second problem is location of the private land. The area's primary recreational attraction likely

Table 2. Ecosystem Representation

Bailey-Kuchler Classification	NWPS areas areas	NWPS areas acres	Other BLM Studies areas	Other BLM Studies acres
Province/Potential Natural Vegetation				
	NATIONWIDE			
Intermountain Sagebrush Province/Sagebrush Steppe	3	76,699	136	4,332,785
	OREGON			
	0	0	66	1,945,519

Table 3. Wilderness Opportunities for Residents of Major Population Centers

Population Centers	NWPS areas areas	NWPS areas acres	Other BLM Studies areas	Other BLM Studies acres
Boise, Idaho	16	4,741,570	126	5,060,460

would be the river corridor, and to a lesser extent, the larger tributaries which enter from the east. About 2.5 miles of the river within this corridor crosses privately owned land (this includes one inholding and a portion of private land on the boundary). Management of this part of the area would be difficult if the landowner did not want general recreation use to occur on these parcels. Even with signing or fencing, recreational use of the river corridor or the "L" shaped extension would be difficult to manage for recreation purposes under the all wilderness alternative.

Under the all wilderness with acquisitions alternative, the area would be manageable as wilderness. There would be no substantial manageability problems if the inholdings and the land between the main body of the WSA and the "L" were acquired. Mineral estate of the split-estate lands would also be subject to acquisition or exchange by willing owner. The perimeter of the area could be adequately signed or fenced.

The portion of the Donner und Blitzen River flowing through the WSA is part of the 73-mile segment of the river that has been designated a wild river component of the National Wild and Scenic Rivers System. The Federal designation withdraws from mineral location and leasing all public lands within 0.25 mile on each side of the river (approximately 1,2800 acres in the WSA).

The restrictions for the Wild and Scenic River designation would continue to apply whether or not the area is designated wilderness.

Energy and Mineral Resource Values

The geology, energy and mineral resources of the South Fork of the Donner und Blitzen River WSA were evaluated by interpreting existing literature, reviewing mining claims and mineral leasing records and correlating rock units in the WSA with similar environments in other areas that are known to contain mineral deposits. Technical details of the evaluation findings are in a report of the assessment of mineral resources, Catlow Rim Geologic Resource Area, Harney County, Oregon, prepared in 1982 by Terradata (a BLM contractor), and in a BLM report on the assessment of mineral resources in the South Harney Geologic Resource Area.

The area has a low potential for the occurrence of oil and gas, and there are no indications of geothermal resources in the WSA.

Diatomite is given a moderate potential for occurrence in portions of the WSA. This rating is based on the presence of tuffaceous lacustrine sediments similar to those in other Tertiary basins in southeastern Oregon which are known to contain diatomite.

Aside from abundant road aggregate sources, there are no known occurrences of mineral deposits within the WSA. As of May, 1991, there were no mining claims within this WSA.

Impacts on Resources

The following comparative impact table summarizes the effects on pertinent resources for all the alternatives considered including designation and nondesignation of the entire area as wilderness.

Local Social and Economic Considerations

Livestock use at the current level of 4,960 AUMs and recreation use totaling 3,000 visitor days per year are the primary resource outputs that generate economic activity in the WSA. Local personal income generated annually from these existing use levels amounts to approximately $59,520 for livestock grazing and $36,000 related to recreation use of the WSA, for an overall total of $95,520.

Under the recommended action, livestock grazing would remain at 4,960 AUMs. Overall recreation use would increase by 200 visitor days per year. Annual local personal income generated from resource outputs in the WSA would increase by approximately $2,000.

There were no social issues identified with the study of this WSA.

Summary of WSA-specific Public Comments

Public involvement has occurred throughout the wilderness review process. Certain comments received during the inventory process and early stages of the EIS preparation were used to develop significant study issues and various alternatives for the ultimate management of those lands found to have wilderness values.

During formal public review of the draft EIS and Supplement to the draft EIS, a total of 17 comments specifically addressing this WSA were received. Of

Table 4 - Comparative Summary of the Impacts by Alternative

Issues Topics	Recommendation (No Wilderness/No Action Alternative)
Impacts on Wilderness Values	In the absence of wilderness designation, projected activities would directly impair wilderness values over approximately 11 acres of surface disturbance and indirectly influence 1,100 acres, with further declines from other potential uses over the long term.
Impacts on Energy and Mineral Development	There would be no impact to energy or mineral development.
Impacts on Vegetation	The 28 miles of ways would not revegetate. Riparian vegetation would slightly improve with implemented fencing projects and improved grazing management. Overall vegetation would remain basically unchanged.
Impacts on Wildlife	Wildlife habitat and populations would be maintained on 37,555 acres under this alternative. Riparian habitat would only slightly improve.
Impacts on Watershed	Improved grazing management would improve riparian vegetation, allowing stabilization of streambanks and improved water quality.
Impacts on Livestock Grazing	Livestock use would continue at the current level of approximately 4,960 AUMs.
Impacts on Recreation	Recreation use would increase from the current level of 3,000 visitor days per year to approximately 3,200 visitor days per year. Vehicle use in half of the WSA would remain limited to existing roads and ways under the off-highway designation associated with the Steens Mountain Recreation Lands.
Impacts on Economic Value and Local Income	Annual local personal income would increase by approximately $2,000.

All Wilderness Alternative	All Wilderness with Acquisitions Alternative
Wilderness designation of the entire 37,555 acres would result in the protection of existing wilderness values and probable enhancement of these values.	Wilderness designation would result in the protection of existing wilderness values and probable enhancement of these values on 41,975 acres.
No impact to energy or mineral development.	No impact to energy or mineral development is expected.
The 28 miles of ways would naturally revegetate. Riparian vegetation in areas of heavy livestock use would continue to decline. Overall vegetation would remain unchanged.	The 28 miles of ways would naturally revegetate. Riparian vegetation would continue to deteriorate. Overall vegetation would remain basically the same.
Wildlife habitat and populations would be maintained on 37,555 acres designated wilderness. Fourteen miles of redband trout habitat would continue to decline.	Wildlife habitat and populations would be maintained on 41,975 acres designated wilderness. Fourteen miles of redband trout habitat would continue to deteriorate.
Erosion, turbidity and overall poor water quality would continue on 14 miles of stream and eventually decline further.	Soil erosion, turbidity and overall poor water quality would continue in its present condition and eventually worsen on 24 miles of stream.
Livestock use would remain at 4,960 AUMs. Vehicle use on 28 miles of ways would be precluded, causing some inconvenience and a slight increase in cost to livestock operators.	Livestock use would remain at 4,960 AUMs. Vehicle use on 28 miles of ways would be precluded, with slight additional expense and inconvenience to livestock operators.
Recreation use would decrease the current level of 3,000 visitor days per year to approximately 2,500 visitor days per year.	Recreation use would decrease from the current level of 3,000 visitor days per year to approximately 2,500 visitor days per year.
Annual local personal income would decrease by approximately $6,000.	Annual local personal income would decrease by approximately $6,000.

those, 15 were written and two were oral statements received at the 24 public hearings on the EIS. In general, 13 commenters supported wilderness designation for all or part of the WSA. Three commenters supported no wilderness for the WSA, while one commenter addressed the relative merits of the EIS, but took no formal position on wilderness designation.

Those favoring wilderness commented that wilderness designation will help protect and preserve natural resources and that wilderness outweighs other types of resource use. Others commented that this WSA should be combined with adjacent WSAs to form one large wilderness area. Some commented that wilderness will help protect the area from overgrazing and as a result riparian zones will be improved over time. A few commented that BLM overstated manageability problems associated with the WSA when formulating recommendations and instead of the proposed alternative of no wilderness it should be reevaluated and recommended as wilderness.

Those opposing designation commented that wilderness management would be extremely difficult to implement due to extensive inholding. Others commented that wilderness is for the elite and that the old, young, and handicapped would be restricted (locked out) because access to these areas would be limited. A few commented that wilderness would have an adverse impact to the mineral industry because total mineral withdrawal would automatically occur if designated.

The Oregon Department of Fish and Wildlife (ODFW) had a few general comments on this WSA. They did not believe that livestock grazing impacts were properly addressed in the draft EIS in regard to wildlife nor did they believe that the consequences of the recommended action were thoroughly analyzed.

Both the County Court of Harney County and Burns Paiute Reservation concur with the Bureau of Land Management's recommendation for nonsuitable for wilderness for this WSA.

There were two comment letters received on the final EIS for this WSA.

Home Creek Wilderness Study Area

1. The Study Area ---26,590

The Home Creek Wilderness Study Area (WSA) (OR-2-85H) is located 63 miles south of Burns (13 miles south of Frenchglen) in Harney County, Oregon. The area lies adjacent to the county road which extends south of Oregon State Highway 205. The State Highway ends less than 1 mile north of the WSA.

The study area is roughly triangular in shape and contains 25,120 acres of BLM land. Included within the study area are privately-owned parcels totaling 120 acres and 1,470 acres of split-estate land (see Table 1). The boundary line of the area is composed primarily of roads and private land. A low standard dirt road forms the northern and eastern portions of the boundary line. Small portions (less than 2 miles) of the western boundary line are formed by a high standard gravel road maintained by Harney County.

The major physical features of the Home Creek WSA are Catlow Rim, the plateau area, and the three drainages of Dry Creek, Home Creek and Threemile Creek.

Along the western side of the WSA is Catlow Rim, a steep and rocky, westerly-facing escarpment which rises 800 to 1,500 feet above Catlow Valley. The very western edge of the WSA contains a portion of the eastern edge of Catlow Valley, where the study area reaches its lowest elevation of 4,580 feet.

From the top of Catlow Rim, the eastern three-quarters of the WSA is a gently rolling plateau. This plateau is on the western side of the Steens Mountain Fault Block. It is on this plateau, in the southern end of the WSA, that the area's highest elevation is reached, 6,461 feet.

The 9-mile length of the Catlow Rim, which is located within the WSA, is deeply cut in three locations. Draining the extreme western slopes of Steens Mountain and emptying into the Catlow Valley are Dry Creek, Home Creek and Threemile Creek. As a result of erosion over centuries, these creeks have carved large, deep canyons through the face of the rim.

Home Creek is the only stream in the WSA which is perennial over its entire length. Home Creek Canyon cuts into the plateau with a depth of 300 to 1,200 feet for over 2.5 miles and is the longest and steepest of the three canyons. With sheer rock walls, the canyon rises 1,200 feet in about 0.25 mile. The remaining

2.5 miles of Home Creek are in a fairly shallow canyon just over 100 feet in depth.

Threemile Creek Canyon is the deepest of the three canyons. At its deepest point, the creek is 1,500 feet below the rim of the canyon. Of the 3 miles of Threemile Creek located in the study area, only the lower 2 miles are perennial.

Dry Creek Canyon is the smallest of the three canyons. It ranges from 300 to 800 feet in depth and does not contain a perennial stream.

The major vegetative communities in the area are dominated by low sagebrush and western juniper. A variety of grasses are also found in the WSA, and riparian vegetation occurs in the drainages of Home Creek and Threemile Creek.

The WSA was initially studied under Section 603 of the Federal Land Policy and Management Act (FLPMA). Lands added after the wilderness inventory were studied under Section 202, also of FLPMA. These areas were included in the final Oregon Environmental Impact Statement (EIS) filed in February 1990.

The Home Creek WSA was modified to include three parcels (1,470 acres) of land acquired in an exchange with the state of Oregon since completion of the wilderness inventory phase. The state of Oregon has retained the subsurface mineral estate, resulting in 1,470 acres of split-estate (Federally managed surface, state subsurface or mineral rights) land within the WSA.

There were three alternatives analyzed in the EIS: 1) An all wilderness alternative designating all 26,590 acres; 2) A partial wilderness alternative (the recommendation of this report) designating 22,015 acres. An attempt would be made to acquire 120 acres of private land and the mineral estate portion of 1,015 acres of split-estate land if the owners are willing; and 3) A no wilderness/no action alternative. These lands are shown on Map 1.

2. Recommendation and Rationale:

22,015 acres recommended for wilderness,
4,575 acres recommended for nonwilderness

The recommendation for the Home Creek WSA is to designate 22,015 acres as wilderness and release 4,575 acres for uses other than wilderness.

Designation of the entire WSA as wilderness is the environmentally preferable alternative. The partial wilderness recommendation would be implemented in a manner which would use all practical means to minimize environmental impacts.

The partial wilderness alternative is the recommendation because most of the Home Creek WSA contains a number and variety of wilderness values. Much of the WSA is in an exceptionally natural condition and possesses outstanding opportunities for solitude and primitive types of recreation. The WSA has special features, including scenic qualities, an area of geological interest and wildlife habitat. Designation of the Home Creek study area as wilderness would protect these special features and help to maintain and improve the Threemile Creek watershed which feeds a downstream reservoir used to supply fish hatchery stock.

The recommendation would add ecological diversity to the National Wilderness Preservation System (NWPS) since only three wilderness areas in the nation contain this area's ecosystem. There are no wilderness areas in Oregon containing the area's ecosystem. In addition, the recommendation would contribute to balancing the geographic distribution of wilderness areas within the NWPS.

Land along the western and southern boundaries (Aras B and C on Map 1) would be recommended nonsuitable for wilderness to provide a more manageable wilderness boundary due to manageability problems caused by private land inholdings. Land in the southeast part of the WSA (Area A on Map 1) would be recommended nonsuitable so that a route which provides access to a large area of public and private land could remain open to vehicle use.

3. Criteria Considered in Developing the Wilderness Recommendation

Wilderness Characteristics

A. Naturalness: Home Creek WSA is in an exceptionally natural condition. There are few developments within the study area and the effect of outside developments is minimal. The WSA possesses many unique natural features, but the most significant are the three major drainages found along the Catlow Rim. These deeply and spectacularly cut canyons

RECOMMENDED FOR WILDERNESS

RECOMMENDED FOR NONWILDERNESS

LAND OUTSIDE WSA RECOMMENDED FOR WILDERNESS

SPLIT ESTATE

STATE (None)

PRIVATE

-N-

Home Creek Proposal

MAP-1

0 1 2 3

MILES

OR-2-85H

January, 1991

Table 1. Land Status and Acreage Summary of the Study Area

	Acres
Within Wilderness Study Area	
BLM (surface and subsurface)	25,120
Split-estate (BLM surface only) [1]	1,470
Inholdings (State, private)	120
Total	26,710
Within the Recommended Wilderness Boundary	
BLM (within WSA)	21,000
BLM (outside WSA)	0
Split-Estate (within the WSA) [1]	1,015
Split-Estate (outside the WSA) [1]	0
Total BLM Land Recommended for Wilderness	22,015
Inholdings (State, private)	120
Within the Area Not Recommended for Wilderness	
BLM	4,120
Split-Estate[1]	455
Total BLM Land Not Recommended for Wilderness	4,575
Inholdings (State, private) [1]	0

[1] Appendix 1 is a detailed description of split-estate tracts included within the study. For purposes of this report, split-estate lands are defined only as those lands with Federal surface and non-Federal subsurface (minerals). Lands that have Federal minerals but non-Federal surface are classified in this report according to surface estate.

represent the source and power of nature that shaped this geologic feature over time. Within these canyons are found a diversity of plants and wildlife not normally associated with arid climates. Perennial streams in two of the three drainages supply abundant aquatic life which includes an unusual trout species, redband. This trout has adapted over time to live in warm, shallow summertime water temperatures and through long, harsh, cold winters.

The Home Creek WSA has a good population of antelope, chukar and sage grouse. Deer use the area during the summer, but are not as abundant as in the upper elevation habitat east of the WSA. They also winter there. Antelope summer east of Catlow Rim where there is low open habitat, but winter outside of the WSA.

Excellent redband trout populations occur in 2.2 miles of Threemile Creek and the lower 2 miles of Home Creek. Threemile Creek and Home Creek combined have 7 miles of trout habitat.

Excellent raptor habitat occurs along the Catlow Rim. Four prairie falcon nests and five golden eagle nests are usually active. This is a high nesting density for the 9 miles of rim located within the WSA. Other raptor species which may use the rim include red-tailed hawks, kestrels and great horned owls. Peregrine falcons, rarely seen in the area, are a Federal endangered species.

Sage grouse (a candidate for Federal listing as threatened or endangered range over the sagebrush covered parts of the WSA. One sage grouse strutting ground exists in the area.

Nongame species include those adapted to cliffs and talus habitats, such as bushy-tailed woodrats, long-eared myotis (bats) and small-footed myotis. Other nongame species include those common to big sagebrush, low sagebrush and western juniper habitat. Great Basin pocket mouse, black-tailed jackrabbit, mountain cottontail, yellow pine chipmunk, yellow-bellied sapsucker, common flicker, sage thrasher, Brewer's sparrow and western meadowlark are some of the species using these habitats.

Seventeen unnatural features are located in the WSA: 11 small reservoirs developed for livestock and wildlife, a wildlife guzzler, three vehicle ways totaling 7 miles and two fences totaling 2 miles. These developments are scattered along the northeastern boundary and visually influence only about 2 percent of the WSA.

Most of the reservoirs are located on or near the WSA boundary. They are small and can be seen from only small portions of the WSA. The ways have a minor influence on the area's naturalness because they are revegetating and are screened by topography. The fences also have a small impact because they are partially screened by topography or vegetation.

The influence of the unnatural features located outside the WSA boundary is not substantial. Seven reservoirs occur along the northeastern side of the area and can be seen from a very small area within the WSA. The northeastern boundary road has only a small influence on the naturalness of the area because of topographic and vegetative screening. Agricultural and ranching operations of three Catlow Valley ranches (Roaring Springs, Home Creek and Threemile), a powerline and the county road can be seen in the area from the top of Catlow Rim to the western boundary. One or more of these developments can be seen from most points along the rim.

B. Solitude: Home Creek WSA offers outstanding opportunities for solitude. These opportunities are enhanced by topographic or vegetative screening throughout much of the WSA.

The WSA could sustain a substantial amount of use without adversely affecting opportunities for solitude. Because of the area's size and the extent of attractions (the major drainages and Catlow Rim), visitor use would be relatively dispersed. In addition, solitude is enhanced by topography in portions of the remainder of the area which would also be available for visitors crossing the WSA or seeking features other than the main attractions.

C. Primitive and Unconfined Recreation: Home Creek WSA offers outstanding opportunities for primitive and unconfined types of recreation, including sightseeing, hunting, photography, wildlife viewing, backpacking, camping, horseback riding and fishing.

Opportunities for day hiking within Home Creek WSA are very good. Primary attractions would be Catlow Rim, Threemile Creek, Home Creek and Dry Creek. The length of these drainages and their ruggedness and steepness would be a challenge to the hiker. These features would also be of interest to a backpacker. Most of the terrain has areas suitable for camping. The limiting factor for overnight stays is the availability of water.

Game species which can be hunted within the area include mule deer, antelope and chukars, though hunting for mule deer is not of high quality in the area. The general lack of the type of vegetation deer use for cover is not conducive to high quality deer habitat. Opportunities for hunting antelope and chukars are excellent in certain portions of the area. Chukar hunting is especially good along the bottom of Catlow Rim, while certain portions of the area along the eastern boundary provide good antelope hunting.

Fishing opportunities in Home Creek and Threemile Creek are enhanced with good populations of redband trout in both streams.

Opportunities for observing wildlife (especially raptors along Catlow Rim), sightseeing and photography are also outstanding in the WSA. Catlow Rim, Threemile Creek and Home Creek provide opportunities for sightseeing and photography. Catlow Rim provides a viewpoint for the surrounding area, while the creek drainages provide interesting views within the study area.

D. Special Features: The Home Creek WSA contains several special features which enhance the value of the study area as wilderness. These include wildlife, geological and scenic qualities.

Wildlife is a special feature because of the high quality raptor nesting areas and a sage grouse strutting ground. A high concentration of raptor nesting occurs along Catlow Rim and within the steep-walled drainages of the three major canyons which cut through the rim. The U.S. Fish and Wildlife Service identified these notable raptor nesting areas in its February 1980 publication, "Important Fish and Wildlife Habitats of Oregon." That study pertains to the entire 31-mile length of Catlow Rim and not exclusively to the 9-mile portion within the WSA. Over its length, the rim supports golden eagles, prairie falcons, red-tailed hawks, kestrels and great horned owls.

Another wildlife feature is the sage grouse strutting ground. This is a site where sage grouse conduct an extensive courtship dance prior to mating. The same area is often used year after year, and the birds usually nest within a 2-mile radius of the strutting ground. Sage grouse is a candidate species for Federal listing as threatened or endangered.

Portions of Catlow Rim, including those in the WSA, provide habitat for bighorn sheep, a species dependent on wild lands and natural conditions. Seventeen bighorn sheep were released in Home Creek Canyon on February 3, 1989.

Home Creek and Threemile Creek contain redband trout, a native fish with limited range. Redband trout is a candidate species for Federal listing as threatened or endangered.

The geology is a special feature in the study area, primarily Catlow Rim. Catlow Rim is a prominent fault scarp that rises 1,000 to 1,900 feet above Catlow Valley and forms the western edge of the Steens Mountain fault block. The escarpment exposes a thick sequence of basalt flows that are individually 20 to 30 feet thick. Catlow Rim serves as the eastern boundary of Catlow Valley, a prominent structural basin or tectonic depression. During the Pleistocene, the valley was filled by Catlow Lake. Ancient shoreline features such as gravel bars, spits, wave-built terraces and wave-cut benches provide evidence of at least five lake levels, the highest of which was about 250 feet above the present valley floor.

Catlow Rim and the major canyons make the area's scenery a special feature. The variety of landforms and color, scenic views of the rim and canyons, and their impressive size all contribute to the high quality scenery.

Diversity in the National Wilderness Preservation System (NWPS)

A. Expanding the Diversity of Natural Systems and Features as Represented by Ecosystems: Wilderness designation of this WSA would add an ecosystem (Bailey-Kuchler classification) not presently represented in Oregon, and represented in the National Wilderness Preservation System by only three areas. There are sixty-six other BLM areas in the State under study with this ecosystem. This information is summarized in Table 2.

According to the Bailey-Kuchler system of classifying ecosystems, the study area is in the Intermountain Sagebrush Province and the potential natural vegetation is sagebrush steppe communities.

The study area contains seven plant communities listed in the Basin and Range section of the Oregon Natural Heritage Plan and are low sagebrush/Idaho fescue, western juniper/big sagebrush/Idaho fescue, western juniper/low sagebrush/Sandberg's bluegrass, big sagebrush/Idaho fescue, low sagebrush/Sandberg's bluegrass and western juniper/big sagebrush/bluebunch wheatgrass.

B. Assessing the Opportunities for Solitude or Primitive Recreation Within a Day's Driving Time (5 hours) of Major Population Centers: The Home Creek WSA is within a 5-hour drive of one major population center (over 100,000). Table 3 summarizes the number and acreage of designated areas and other BLM study areas within 5 hours drive of the population center, Boise, Idaho.

C. Balancing the Geographic Distribution of Wilderness Areas: The Home Creek WSA would contribute to balancing the geographic distribution of areas within the National Wilderness Preservation System. There are two designated wilderness areas within 100 miles of this WSA.

Manageability

(The area must be capable of being effectively managed to preserve its wilderness character.)

The Home Creek WSA would be manageable as wilderness under all of the alternatives considered. Relatively minor manageability problems with boundary identification under the all wilderness alternative would be resolved under the partial alternative by recommending small portions of the area as nonsuitable for wilderness (Areas B and C on Map 1) and by recommending acquisition of small parcels of private land and the mineral estate of split-estate lands.

Under the all wilderness alternative, the presence of the mineral estate lands could cause manageability problems if mineral development ever occurred. However, the parcels are outside of areas having potential mineral values and there are no known plans for mineral development at this time.

Since the final EIS, a minor boundary adjustment has been created to allow for better wilderness boundary manageability as described in the following:

The partial alternative (recommendation) retains the area's basic configuration. The entire western boundary except Dry Creek would be located at the 4,700-foot elevation level along the base of Catlow Rim (Area C on Map 1). Approximately 1,000 acres of the WSA west of and below the 4,700-foot contour line would be outside the wilderness area. This would enhance manageability of the area by avoiding the irregular configuration of legal subdivisions on this side of the WSA and making the boundary more

Table 2. - Ecosystems Representation

Bailey - Kuchler Classification	NWPS Areas		Other BLM Studies	
	Areas	Acres	Areas	Acres
Province/Potential Natural Vegetation				
NATIONWIDE				
Intermountain Sagebrush Sagebrush Steppe	3	76,699	136	4,343,750
OREGON				
Sagebrush Steppe	0	0	66	1,956,484

Table 3. Wilderness Opportunities for Residents of Major Population Centers

Population Centers	NWPS Areas		Other BLM Areas	
	Areas	Acres	Areas	Acres
Boise, Idaho	16	4,741,570	126	5,060,460

identifiable on the ground. It also moves the boundary to the rim of the Roaring Springs Ranch headquarters located in the extreme northwestern portion of the WSA. No acreage changes occur.

Energy and Mineral Resource Values

The U.S. Geological Survey (USGS) and U.S. Bureau of Mines (USBM) evaluated the 22,015 acres of the Home Creek WSA that comprise the area recommended for wilderness. Their report, titled "Mineral Resources of the Home Creek Wilderness Study Area, Harney County, Oregon," is published as USGS Bulletin 1740-C. They identified no energy or mineral occurrences in this WSA and determined that energy and mineral potential is low in the WSA except for moderate potential for sand and gravel from ancient shoreline deposits. This complements previous investigations with the exception that welded ash deposits identified in previous investigations as having moderate potential for diatomite are not considered a potential diatomite resource in the USGS/USBM report. No mining of diatomite was projected in the EIS.

As of May 1991, there were no mining claims within this WSA.

Impact on Resource Values

The following comparative impact table summarizes the effects on pertinent resources for all the alternatives considered including designation and nondesignation of the entire area as wilderness.

Local Social and Economic Considerations

Livestock use at the current level of 2,809 AUMs and recreation use totaling 300 visitor days per year are the primary resource outputs that generate economic activity in the WSA. Local personal income generated annually from these existing use levels amounts to approximately $33,708 for livestock grazing and $3,600 related to recreation use of the WSA, for an overall total of $37,308.

Table 4 - Comparative Summary of the Impacts by Alternative

Issue Topics	Recommendation (Partial Wilderness Alternative)
Impacts on Wilderness Values	Wilderness designation of 22,135 acres within the Home Creek WSA would result in protection and enhancement of existing wilderness values. On 4,575 acres not designated as wilderness, existing wilderness values would be little affected since no substantial incompatible actions are projected.
Impacts on Energy and Mineral Development	No impact to energy or mineral development because none is expected.
Impacts on Vegetation	A total of 5.5 miles of ways (totaling 5.5 acres) would naturally revegetate. Riparian vegetation within the proposed exclosure) along Threemile Creek would substantially improve. Overall vegetation would remain unchanged.
Impacts on Wildlife	Most wildlife habitat would be preserved and riparian habitat improved by constructing 1 mile of riparian fencing. Bighorn sheep habitat would be maintained. One guzzler would be maintained.
Impacts on Watershed	Active gullies would begin to stabilize and water quality would improve from 1 mile of riparian fence. There would be little change in the watershed over the rest of the area.
Impacts on Livestock Grazing	Livestock use would remain at 2,809 AUMs. Vehicle use would be precluded on 5.5 miles of ways resulting in some inconvenience and slight additional expense to operators. Vehicle use would continue on 1.5 miles of way in the nonsuitable portion.
Impacts on Recreation	Wilderness designation would result in a reduction in the area's overall recreation use level of 300 visitor days per year to approximately 200 visitor days per year.
Impacts on Local Personal Income	Annual local personal income would decrease by approximately $1,000.

All Wilderness Alternative	No Wilderness/No Action Alternative
Wilderness designation of the entire 26,590 acres within the Home Creek WSA would result in protection and enhancement of existing wilderness values.	In the absence of wilderness designation, projected activities would both directly and indirectly impair wilderness values over approximately 100 acres, with further declines from other potential uses over the long term.
No impact to energy or mineral development because none is expected.	No impact to energy or mineral development because none is expected.
The 7 miles of ways totaling 7 acres would naturally revegetate. Riparian vegetation along 1 mile of Threemile Creek would substantially improve. Overall vegetation would remain unchanged.	Riparian vegetation along 1 mile of Threemile Creek would substantially improve. Overall vegetation would remain unchanged.
Habitat for game and nongame species and their existing levels of populations would be maintained throughout the WSA. Riparian habitat would be improved by construction of 1 mile of riparian fence. One guzzler would be maintained.	Wildlife populations of game and nongame species would sustain minor temporary levels of harassment due to human activity associated with existing vehicle use. The riparian fence would improve habitat for nongame wildlife and redband trout. Raptors would be little affected by the actions that have been projected.
Active gullies would begin to stabilize and water quality would improve from the 1 mile of riparian fence. There would be little change in the watershed over the rest of the WSA.	Active gullies would begin to stabilize and water quality would improve from 1 mile of riparian fence. There would be little change over the rest of the watershed.
Livestock use would remain at 2,809 AUMs. Vehicle use on 7 miles of ways would be precluded, with some increased cost and inconvenience to operators.	Livestock grazing use would remain at 2,809 AUMs.
Wilderness designation would result in a reduction in the area's current overall recreation use level of approximately 300 visitor days per to approximately 200 visitor days per year.	Recreation use would increase from the current level of 300 visitor days per year to approximately 400 visitor days per year.
Annual local personal income would decrease by approximately $1,000.	Annual local personal income would increase by approximately $1,000.

Under the recommendation, livestock grazing would remain at 2,809 AUMs. Overall recreation use would decrease by 100 visitor days per year. In conclusion, annual local personal income generated from resource outputs in the WSA would decrease by approximately $1,000.

There were no social issues identified with the study of this WSA.

Summary of WSA-Specific Public Comments

Public involvement has occurred throughout the wilderness review process. Certain comments received during the inventory process and early stages of the EIS preparation were used to develop significant study issues and various alternatives for the ultimate management of those lands found to have wilderness values.

During formal public review of the draft EIS, and Supplement to the draft EIS, a total of 13 comments specifically addressing this WSA were received. Of those, all 13 were written and there were no oral statements received at the 24 public hearings on the EIS. In general, seven commenters supported wilderness designation for all or part of the WSA. Six commenters supported no wilderness for the WSA.

Those favoring wilderness commented that the value of wilderness outweighs any other type of resource values. Others commented that wilderness designation will help protect the overall ecosystem of the area by preserving and maintaining ecological diversity, promote and allow a healthy gene pool to survive, and provide a natural habitat for all existing wildlife species. Some commented that this WSA should be combined with adjacent WSAs to form one large wilderness area.

Those opposing designation commented that wilderness manageability of the area would be too difficult because of the privately-owned inholdings and because the amount and level of human created intrusions are "significant." Others commented that wilderness would create an adverse impact to the range industry and would have a detrimental effect on the individual livestock operator. Some commented that the area should not be wilderness because its wilderness values are low. A few commented that, since livestock will be allowed to continue to graze the area at existing use rates, the area should not be wilderness because then BLM would not be able to implement grazing management systems that are needed to minimize impacts on the range, and overuse would result.

The Oregon Department of Geology and Mineral Industry commented on the draft EIS for this WSA. The WSA is an area of prospects and historic activity for uranium, mercury and zeolites.

Both the County Court for Harney County and the Burns Paiute Reservation oppose any wilderness designation for the following reasons:

1. There are serious conflicts with oil, gas, geothermal, mineral and range development.

2. There are major problems with split-estate mineral and energy resources with the state of Oregon.

3. All of these areas would have significant impacts on the development of adjacent private and public lands.

4. Manageability, boundary marking, small size and odd shape are some of the major problems of the area.

5. The area has no public or special features or ecologically significant resources that are not represented in areas that are being recommended as suitable for wilderness. The areas recommended as suitable for wilderness offer many more special and unique features and have much higher wilderness value than these areas.

6. The highest and best use of these areas would be to continue them in the present multiple-use management.

There was one comment letter received on the final EIS for this WSA.

Appendix 1 - Estimated Costs of Acquisition of Non-Federal Holdings Within Areas Recommended for Designation [1]

Legal Description (Prior to any Subdivision		Total Acreage	Number of Owners	Type of Ownership by Estate (Federal, State Private, other) Surface Estate	Subsurface Estate	Presently Proposed for Acquisition (Yes, No)	Preferred Method of Acquisition (Purchase, Exchange, Other)	Estimated Cost of Acquisition [2] Land Costs	Processing Costs
Parcel No. 1, (private inholding) T. 35 S., R. 32 1/2 E., Section 7 NE of SW 1/4	40	1		Private	Private	Yes	Exchange		$100,000 G/
Parcel No. 2, (private inholding) T. 35 S., R. 32 1/2 E., Section 18 SW of NW 1/4	40	1		Private	Private	Yes	Exchange		$100,000 G/
Parcel No. 3, (private inholding) T. 34 S., R. 32 E., Section 17 NE1/4NE1/4	10	1		Private	Private	No	Exchange		$100,000 G/
Parcel No. 4, (private inholding) T. 34 S., R. 32 E. Section 8 NE of the SW1/4	30	2		Private	State	No	Exchange		$100,000 G/
Parcel No. 5, (split estate) Entire north end of the section, T. 34 S., R. 32 E., Sec. 16	375			Federal	State	No	Exchange		$20,000 S/
Parcel No. 6, (split estate) Entire section T. 34 S., R. 32 E. Section 36	640			Federal	State	No	Exchange		$20,000 S/

[1] The estimated costs listed in this appendix in no way represent a formal appraised value of the land or mineral estate, but are rough estimates based on sales or exchanges of lands or mineral estates with similar characteristics to those included in the WSA. The estimates for purposes of establishing a range of potential costs to the government of acquiring non-Federal holdings and in no way represent an offer to purchase or exchange at the cost estimate included in this appendix.

Processing costs are all miscellaneous expenses other than land costs. These include work month costs, appraisals, title work, escrow costs, etc.

[2] Only administrative costs are shown for exchanges.

[G] Part of a large land exchange with Gillette Ranches, Inc.

[S] Part of a larger land exchange with the State of Oregon.

Blitzen River Wilderness Study Area

1. The Study Area ---55,880 acres

The Blitzen River Wilderness Study Area (WSA) (OR-2-86E)is located 60 miles south of Burns (less than 1 mile south of Frenchglen), in Harney County, Oregon. The northwestern edge of the WSA is adjacent to Oregon State Highway 205.

The Blitzen River WSA is irregularly shaped and contains 53,810 acres of BLM land. Two inholdings are also included within the study area's boundary. On the western side of the river is one 40-acre parcel of private land. On the east side of the WSA is one 640-acre parcel of private land. The study area also contains 2,070 acres of split estate lands (see Table 1).

The area is approximately 12 miles from north to south and 155 miles from east to west. The study area's boundary line is formed by a variety of features. On the north, most of the boundary line is formed by the northern portion of the Steens Mountain Loop Road which is a high standard gravel road. Private land, a portion of the Malheur National Wildlife Refuge, and a small segment of Oregon State Highway 205 form the remainder of the northern boundary line.

A portion of the eastern boundary line lies adjacent to private land and public lands. Small sections of road, which generally serve private landowners, also form part of the eastern boundary. On the south, the boundary line is formed by the southern portion of the Steens Mountain Loop Road, several other BLM roads and several parcels of private land. The western boundary line generally follows a powerline, although a parcel of private land also occurs on this side of the area. All boundary roads, with the exception of the Steens Mountain Loop Road and Oregon State Highway 205 are low standard dirt roads.

The WSA is a rolling, sloping, high desert plateau. The area contains a variety of topographic features, ranging from the dominant features of the Donner und Blitzen River Canyon and Fish Creek Canyon, to the sloping foothills of the Steens Mountain ridge east of the river, to the deeply-cut, rock-rimmed ridges on the west side of the river.

One of the main features of the study area, the Donner und Blitzen River, winds its way through the WSA from south to north for approximately 16 river miles and divides the area in half. At one point, the

western wall of the canyon rises 600 feet above the river; however, the normal depth of the rocky canyon is 300 to 400 feet. The study area reaches its lowest elevation, 4,240 feet, at the mouth of the Blitzen River Canyon on the northern edge of the WSA. At its widest point this canyon is 0.5 mile wide, although the average width is about 0.25 mile.

Fish Creek and Little Blitzen River, like the Blitzen River, are also perennial streams which drain the higher elevations of Steens Mountain. Fish Creek is located on the eastern side of the river and flows about 5 miles to the west until it intersects the Blitzen River in the north-central portion of the WSA. Fish Creek also flows through a steep-walled canyon which ranges in depth from about 200 feet where the drainage enters the WSA on the eastern boundary, to 400 feet where the creek merges with the Blitzen River. Fish Creek averages 0.25 mile in width.

On the east side of the river, the topography of the study area, which is gently-rolling and sloping, includes the upper-elevation western foothills of Steens Mountain. It is near the eastern boundary that the WSA reaches its highest elevation of nearly 7,400 feet. To the west of a ridgeline which parallels the western side of the Blitzen River, the terrain is flatter and more open.

The study area contains a variety of vegetation, including mountain mahogany and numerous riparian species in the canyons. On the flatter terrain and foothills, big sagebrush and low sagebrush occur. Scattered patches of juniper grow throughout the WSA, but the junipers are most heavily concentrated within the central and northeastern portions of the area. Large aspen groves occur at the higher elevations in the eastern portion of the WSA.

The WSA was initially studied under Section 603 of the Federal Land Policy and Management Act (FLPMA). Lands added after the wilderness inventory were studied under Section 202, also of FLPMA. These areas were included in the final Oregon Wilderness Environmental Impact Statement (EIS) filed in February 1990.

The Blitzen River WSA was modified to include nine parcels (2,390 acres). Six parcels (1,900 acres) of land were acquired in an exchange with the State of Oregon since completion of the wilderness inventory phase. The State of Oregon has retained the subsurface mineral estate, resulting in split estate (Federally managed surface, state subsurface or mineral rights) lands within the WSA. Two other parcels of split estate lands (170 acres) are lands that were reinstated as WSA lands through the court decision in Sierra Club v. Watt. This decision restored split estate lands to wilderness study under Section 603 of FLPMA. One 320-acre parcel of private land has been acquired in full fee title and is now part of the WSA.

There were five alternatives analyzed in the EIS: 1) An all wilderness alternative where all 55,880 acres of BLM land would be designated wilderness; 2) Another all wilderness alternative, with acquisitions and road closures, where 2,250 acres of BLM land located outside the WSA, 2,070 acres of split estate land and 1,110 acres of private lands in and adjacent to the WSA would be incorporated into this wilderness alternative through purchase or exchange with willing landowners. This would bring the total wilderness area to 59,240 acres; 3) A partial alternative (the recommendation of this report) where 21,670 acres of BLM land would be designated as wilderness. An attempt would be made to acquire 100 acres of private land and the mineral estate of 1,115 acres of split estate land within the WSA, through purchase or exchange with willing owners. In addition, approximately 300 acres of BLM land outside of the WSA would be added; 4) Another partial alternative where 8,735 acres of BLM land would be designated wilderness. An attempt would be made to acquire one 100-acre parcel of private land and the mineral estate of 620 acres of split estate land; and 5) A no wilderness/no action alternative. These lands are shown on Map 1.

2. Recommendation and Rationale:

21,970 acres recommended for wilderness,
34,210 acres recommended for nonwilderness

The recommendation for the Blitzen River WSA is to designate 21,970 acres of BLM land, and 100 acres of private land (if the land is acquired through purchase or exchange with willing owners) as wilderness and release 34,210 acres for uses other than wilderness. The area recommended for wilderness contains lands that possess the highest wilderness values, which includes canyons of both Fish Creek and the Donner und Blitzen River. The area not recommended for wilderness contains lands that possess lower value wilderness qualities and would best be managed as nonwilderness.

Designation of the entire WSA as wilderness is the environmentally preferable alternative. However, the partial wilderness recommendation would be imple-

mented in a manner which would use all practical means to avoid or minimize environmental impacts.

The area recommended as suitable for wilderness under the proposed action includes the canyons of both Fish Creek and the Donner und Blitzen River. In addition, the area contains some of the rolling hills east of the river including an area with relatively dense juniper cover in the northeastern corner of the WSA. The area recommended for wilderness designation is in a basically natural condition. It has outstanding opportunities for solitude and a variety of primitive types of recreation. Wildlife habitat and scenery in the suitable portion are special wilderness features.

This alternative would protect the area's wilderness values of naturalness, solitude, primitive and unconfined recreation and special features, within an area capable of being managed to preserve these qualities.

Conflicts with other resources are relatively minor within the suitable portion of the study area. The suitable area has no potential for the occurrence of metals. Several range improvements have been proposed for the northern portion of the area, but this conflict is not sufficient to outweigh the value of this area as wilderness.

The recommendation would provide ecological diversity to the National Wilderness Preserviation System (NWPS), by adding an ecosystem (intermountain sagebrush/sagebrush-steppe) not presently represented in Oregon and represented nationwide by only three areas. In addition, the recommendation would contribute to balancing the geographic distribution of areas within the NWPS. There is only one designated area within 100 miles of this area.

Portions of the Blitzen River WSA recommended nonsuitable under the proposed action include most of the land on the western side of the river (Area A on Map 1) and much of the area in the southeastern corner (Area B on Map 1).

On the western side of the study area, much of the land recommended as nonsuitable has a greater concentration of range developments than the remainder of the WSA. This concentration has an adverse effect on naturalness in this part of the study area. In addition, the opportunities for solitude within this area of concentrated developments would be further lessened by maintenance and livestock management activities at and around the developments.

The southwestern corner of the study area, while having few range developments, has a limited number of wilderness qualities. This portion of the WSA has some opportunity for solitude, but no outstanding recreation values. This area would not provide any significant contributions to the value of the area as wilderness and would be better suited to current uses and activities of the area than it would be as wilderness.

The southeastern portion of the WSA is not recommended as suitable for wilderness designation because the overall wilderness values of this area are not substantial in nature, nor do they require the protection provided by wilderness designation.

3. Criteria Consideration in Developing the Wilderness Recommendation

Wilderness Characteristics

A. Naturalness: The study area appears to be in a basically natural condition. Outstanding natural features exist within this WSA as is found within the canyon walls of the Donner und Blitzen National Wild and Scenic River and associated tributaries. A unique and exceptionally diverse riparian zone is found inside the canyon(s) that supports a high diversity of both vegetation and wildlife not generally found in arid climates.

The WSA contains a variety of wildlife habitat with a diversity of animals.

Riparian habitat contains a rich variety of wildlife and is a prominent feature of the WSA. Riparian habitat is found along 24 miles of stream. Twenty-two of these stream miles in Blitzen River, Little Blitzen River and Fish Creek are habitat for redband trout. Other fish species include mountain whitefish, long-nosed dace and mottled sculpin. Spotted frog, wandering garter snake, beaver, raccoon, valley quail, Lazuli bunting, yellow-breasted chat, yellow warbler, spotted sandpiper and Canada goose are a few of the species found in the riparian habitat along the Blitzen River, Little Blitzen River and Fish Creek.

Talus and rimrocks along the streams and canyons provide habitat for western rattlesnake, sagebrush lizard, bobcat, bushy-tailed woodrat, canyon mouse, Great Basin pocket mouse, canyon wren, cliff

Table 1. Land Status and Acreage Summary of the Study Area

	Acres
Within Wilderness Study Area	
BLM (surface and subsurface)	53,810
Split-estate (BLM surface only)[1]	2,070
Inholdings (State, private)	680
Total	56,560
Within the Recommended Wilderness Boundary	
BLM (within WSA)	20,555
BLM (outside WSA)	300
Split-Estate (within the WSA)[1]	1,115
Split-Estate (outside the WSA)[1]	0
Total BLM Land Recommended for Wilderness	21,970
Inholdings (State, private)	100
Within the Area Not Recommended for Wilderness	
BLM	33,255
Split-Estate[1]	955
Total BLM Land Not Recommended for Wilderness	34,210
Inholdings (private)	580

[1] Appendix 1 is a detailed description of split-estate tracts included within the study. For purposes of this report, split-estate lands are defined only as those lands with Federal surface and non-Federal subsurface (minerals). Lands that have Federal minerals but non-Federal surface are classified in this report according to surface estate.

swallow, chukar, big brown bat, little brown myotis (bat) and many other species. Raptors using the cliffs include golden eagles, American kestrels, red-tailed hawks and great horned owls. Other upland habitat varies greatly in vegetation and wildlife species.

Low-elevation low sagebrush and big sagebrush provide good habitat for antelope in the western half of the WSA. Mule deer summer east of the Blitzen River, and there is crucial deer winter range in the northern half of the WSA. Water, forage and cover are well interspersed, providing good habitat for deer. Rocky Mountain elk make light winter and summer use of the WSA.

Western rattlesnake, bullsnake, horned lark, common nighthawk, sage grouse, golden eagle, black-tailed jackrabbit, least chipmunk and coyote are a few of the other species using the sagebrush habitats.

Common flicker, yellow-bellied sapsucker, mountain bluebird, American kestrel and red-tailed hawk all use junipers or their cavities for nesting. Common flicker, yellow-bellied sapsucker and other cavity nesters also use aspens.

The unnatural features within the boundary, and those which affect the area from outside the WSA, do not significantly influence the naturalness of the WSA.

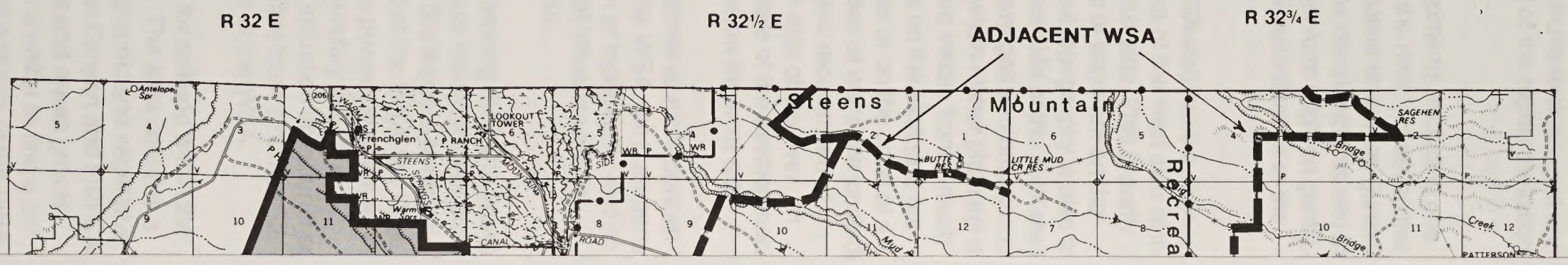
The study area contains 84 unnatural features and includes 54 water developments consisting of 52 small earthen reservoirs, one developed spring, a 2-mile irrigation ditch, 12 fences totaling 33 miles and 18 vehicle ways totaling approximately 58 miles. It is estimated that approximately 7 percent of the study area is influenced by these features.

On the west side of the river within the area recommended nonsuitable for wilderness designation (Area A on Map 1), there are 22 water developments, including the irrigation ditch. The reservoirs

R 32 E

R 32½ E

R 32¾ E



RECOMMENDED FOR WILDERNESS

RECOMMENDED FOR NONWILDERNESS

LAND OUTSIDE WSA RECOMMENDED FOR WILDERNESS

SPLIT ESTATE

STATE (None)

PRIVATE

- N -

Blitzen River Proposal

MAP-1

0 1 2 3

MILES

OR-2-86E
January, 1991

Table 1. Land Status and Acreage Summary of the Study Area

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Within the Area Not Recommended for Wilderness	
BLM	33,255
Split-Estate[1]	955
Total BLM Land Not Recommended for Wilderness	34,210
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[1] Appendix 1 is a detailed description of split-estate tracts included within the study. For purposes of this report, split-estate lands are defined only as those lands with Federal surface and non-Federal subsurface (minerals). Lands that have Federal minerals but non-Federal surface are classified in this report according to surface estate.

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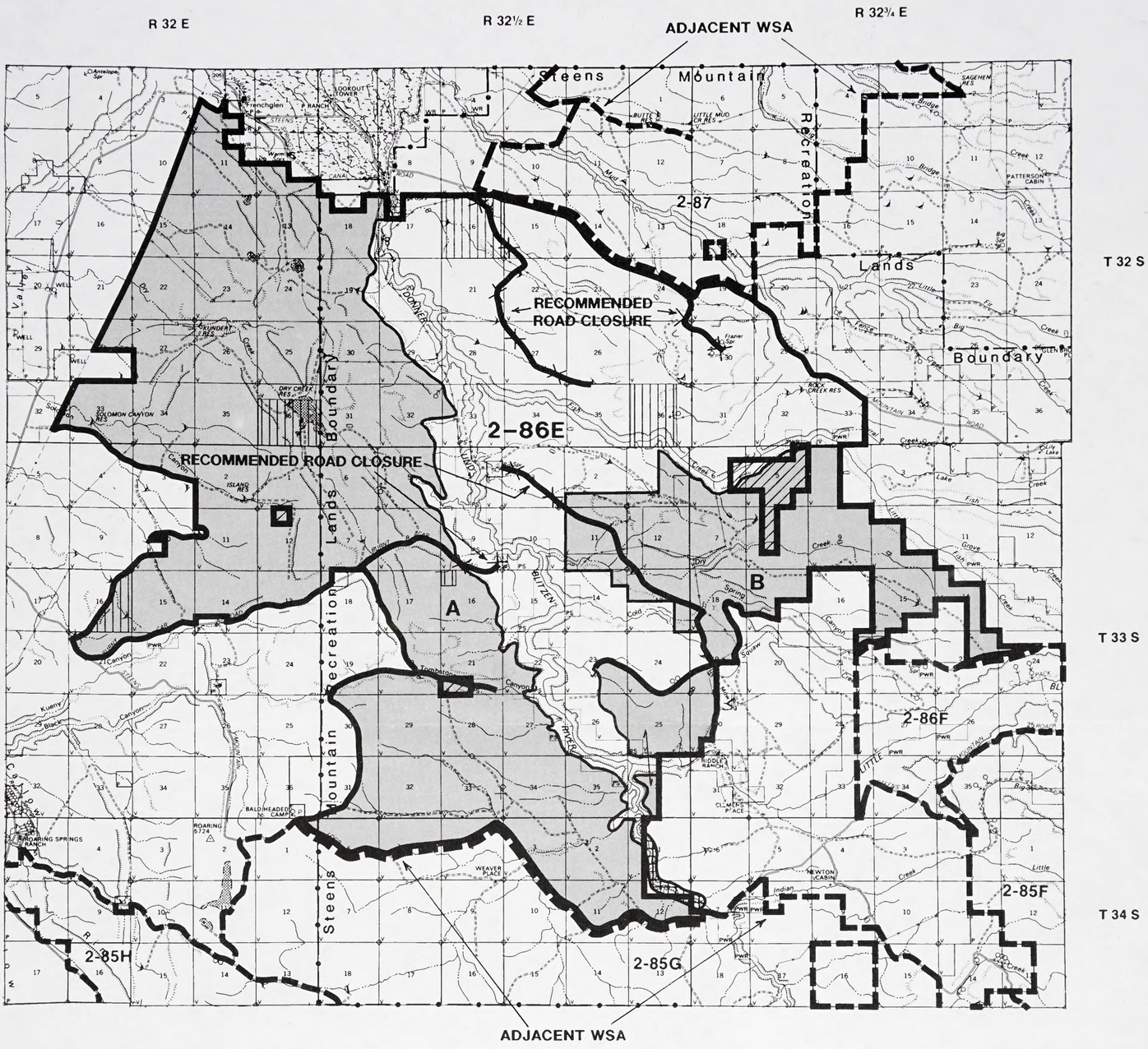
Common flicker, yellow-bellied sapsucker, mountain bluebird, American kestrel and red-tailed hawk all use junipers or their cavities for nesting. Common flicker, yellow-bellied sapsucker and other cavity nesters also use aspens.

The unnatural features within the boundary, and those which affect the area from outside the WSA, do not significantly influence the naturalness of the WSA.

The study area contains 84 unnatural features and includes 54 water developments consisting of 52 small earthen reservoirs, one developed spring, a 2-mile irrigation ditch, 12 fences totaling 33 miles and 18 vehicle ways totaling approximately 58 miles. It is estimated that approximately 7 percent of the study area is influenced by these features.

On the west side of the river within the area recommended nonsuitable for wilderness designation (Area A on Map 1), there are 22 water developments, including the irrigation ditch. The reservoirs



RECOMMENDED FOR WILDERNESS

RECOMMENDED FOR NONWILDERNESS

LAND OUTSIDE WSA RECOMMENDED FOR WILDERNESS

SPLIT ESTATE

STATE (None)

PRIVATE

N

Blitzen River Proposal

MAP–1

0 1 2 3 MILES

OR–2–86E
January, 1991

T13S
T12S
R4E
R5E
Study Area

are fairly large and have a much greater influence than developments on the east side of the river. On the west side of the study area, the drainages flow through fairly wide valleys bounded by plateaus. The developments often occur in these drainages and are quite visible from most of the higher elevations which surround them.

There are 32 water developments, including one spring, on the east side of the river. However, the increased amount of vegetative screening (juniper), the small size of most of the developments and the location of many of the reservoirs (high on gentle side slopes) reduces the visual influence of the developments.

Vehicle ways within the WSA also have a stronger influence on the naturalness of the west side of the river than they do on the east side. This is partly because 40 of the 58 miles of ways are on the western side of the area, but topography is also a factor. The ways on the west side of the river are in the broad valleys of the drainages and because most of these drainages are between higher plateaus and ridges, the vehicle tracks are visible from a much greater distance. The ways on the east side are located in shallow drainages or on the crest of a ridge. Approximately 11 miles of ways are located within Area B Map 1, the area recommended nonsuitable for designation east of the river. In addition, juniper screens more of the developments on the east side than it does on the west side.

Although the fences are somewhat more concentrated on the west side of the WSA, they are generally screened by vegetation or topography and do not have a substantial visual influence on any particular portion of the WSA.

Outside developments influencing the naturalness of the study area are few. These developments include four small reservoirs along the western boundary, the roads which surround most of the WSA, the Page Springs Campground and a powerline which forms part of the northwestern boundary line. The powerline has the greatest influence on naturalness in the study area as it is visible from a number of areas on the northwest side of the WSA.

B. Solitude: Opportunities for solitude within the study area are outstanding. The area contains a substantial amount of topographic and vegetative screening. The Blitzen River Canyon and Fish Creek Canyon, along with junipers and aspen groves, enhance the opportunity for a visitor to find a secluded spot. There are small portions of the WSA, mostly near the western boundary, where finding seclusion would be difficult because there is a lack of topographic or vegetative screening.

C. Primitive and Unconfined Recreation: Opportunities for primitive recreation activities are outstanding within the WSA, including day hiking, camping, backpacking, horseback riding, hunting, fishing, observing wildlife, sightseeing and photography.

It is likely that the bulk of day hiking would originate from the Page Springs Campground area (outside of the WSA along the northern boundary) and would be concentrated in the northern portions of the Blitzen River Canyon. The high canyon walls and perennial stream of the Blitzen River Canyon offer an enjoyable and relatively easy hike along the river bottom. Several small, steep, side drainages provide challenging opportunities for leaving the canyon and returning via a different route.

Primary attractions for backpacking and camping are likely to be the drainages of the Blitzen River and Fish Creek. The steepness of the canyons provide a challenge for visitors trying to leave or enter the canyons from side drainages. Additionally, the water and riparian vegetation create an enjoyable atmosphere for hiking. The gentleness of the river bottom terrain and the presence of vegetative cover provide excellent opportunities for visitors to find suitable places of camping. The availability of water within this area is limited, the only dependable sources being Fish Creek and the Donner und Blitzen River.

There are also outstanding opportunities for horseback riding. The gentleness of most of the terrain would provide relatively easy access to the majority of the WSA.

Opportunities for hunting, especially mule deer, are considered excellent. The WSA is located within the summer ranges of deer and antelope. There are also opportunities for hunting chukar and waterfowl along the lower Blitzen River.

Opportunities for fishing on the Donner und Blitzen River and Fish Creek are outstanding. The river and its upstream tributaries are managed entirely for wild trout. This area is attractive to anglers due to its remoteness and excellent angling for large trout.

D. Special Features: Features in the Blitzen River WSA which add to the value of this area for wilderness include scenic quality and wildlife.

The area's scenery is outstanding, particularly in Blitzen River Canyon and Fish Creek Canyon and in

the areas of aspen groves and meadows on the east side of the area. The topography of the WSA offers spectacular scenery with steep, rugged canyons and adjacent ridgelines covered by a combination of juniper and sagebrush, intermixed with outcroppings of dark basalt rock, which together offer spectacular scenery.

Special wildlife features found in the study area include a sage grouse strutting ground, crucial deer winter range, redband trout habitat and raptor nesting area.

The sage grouse strutting ground is located near the northern boundary. This is an area where the sage grouse conduct an extensive courtship dance prior to mating. The same area is often used year after year and the birds usually nest within a 2-mile radius of the strutting ground. Sage grouse is a candidate for Federal listing under the Endangered Species Act.

Crucial deer winter range is found in the northeastern part of the study area. Yearlong summer range for both deer and antelope is found throughout the WSA.

The WSA contains redband trout, a native fish with limited range. Redband trout is a candidate for Federal listing under the Endangered Species Act.

Raptor nesting habitat is located in the Blitzen River Canyon, as well as portions of Fish Creek Canyon.

Diversity in the National Wilderness Preservation System (NWPS)

A. Expanding the Diversity of Natural Systems and Features as Represented by Ecosystems: Wilderness designation of this WSA would add an ecosystem (Bailey-Kuchler classification) not presently represented in Oregon, and represented in the National Wilderness Preservation System by only three areas. There are sixty-six other BLM areas in the state under study with this ecosystem. The information is summarized in Table 2.

According to the Bailey-Kuchler system of classifying ecosystems, the study area is in the Intermountain Sagebrush Province and the potential natural vegetation is sagebrush-steppe.

Plant communities identified in the Basin and Range section of the Oregon Natural Heritage Plan which occur in this study area are big sagebrush/Idaho fescue, big sagebrush/bluebunch wheatgrass and low sagebrush/Sandberg's bluegrass. Western juniper-dominated communities are western juniper/big sagebrush/Idaho fescue, western juniper/low sagebrush/Sandberg's bluegrass and western juniper/bluebunch wheatgrass. Mountain mahogany in the southern Basin and Range Province, snowbrush and bittercherry community complex and aspen groves are the other plant communities.

B. Assessing the Opportunities for Solitude or Primitive Recreation Within a Day's Driving Time (5 hours) of Major Population Centers: The Blitzen River WSA is within a 5-hour drive of one major population center (over 100,000): Boise Idaho. Table 3 summarizes the number and acreage of designated areas and other BLM study areas within 5 hours drive of the population centers.

C. Balancing the Geographic Distribution of Wilderness Areas: The Blitzen River WSA would contribute to balancing the geographic distribution of areas within the National Wilderness Preservation System. There is only one designated wilderness area within 100 miles of this WSA.

Manageability

(The area must be capable of being effectively managed to preserve its wilderness character.)

The Blitzen River WSA could be managed as wilderness under the all wilderness alternative; however manageability problems would occur in the area, primarily because of private inholdings, boundary locations and adjacent private lands. Manageability problems could also result from continued vehicle use on the seven dead-end roads which would remain open under this alternative.

The location of the private land within the study area, and adjacent to the northeastern boundary, could also result in manageability problems with respect to recreation use. Most of these lands are not fenced or otherwise marked to indicate private ownership, making management difficult in some portions of the WSA, particularly within drainages and portions of the eastern boundary where recreation use would occur.

Under the all wilderness with acquisitions and road closures alternative, the manageability of the area would be improved with acquisition of the inholdings and some lands along the boundary. Boundary identification problems could still occur along the extreme eastern side of the area, but those problems could be lessened with signing or fencing.

Table 2. Ecosystems Representation

Bailey - Kuchler Classification	NWPS Areas	NWPS Acres	Other BLM Studies Areas	Other BLM Studies Acres
Province/Potential Natural Vegetation				
NATIONWIDE				
Intermountain Sagebrush Sagebrush Steppe	3	76,699	136	4,314,460
OREGON				
	0	0	66	1,927,194

Table 3. Wilderness Opportunities for Residents of Major Population Centers

Population Centers	NWPS Areas	NWPS Acres	Other BLM Areas	Other BLM Areas Acres
Boise, Idaho	16	4,741,570	126	5,060,460

The acquisition of the mineral estate of split-estate lands and the 1,110 acres of private inholdings, as well as the inclusion of adjacent public land parcels, would eliminate the possibility of these lands being developed or used in ways that would be incompatible with wilderness management. Land acquisition would also eliminate the need for access to the private parcels.

The area would also be manageable as wilderness under the recommendation and partial alternatives. Most of the inholdings and boundary parcels fall within the areas recommended nonsuitable for wilderness. Acquisitions would eliminate problems with the private and split-estate parcels which are located in the Fish Creek drainage. Some manageability problems could occur where the canyons cross the study area boundary to private land along the perimeter of the WSA. These problems could be reduced with signing or other visitor information methods.

The portion of the Donner und Blitzen River flowing through the WSA is part of a 73-mile segment of the river that has been designated a wild river component of the National Wild and Scenic Rivers System. The Federal designation withdraws from mineral location and leasing all public lands within 0.25 mile on each side of the river (approximately 4,960 acres in the WSA).

The restrictions for the Wild and Scenic River designation would continue to apply within the WSA whether or not the area is designated wilderness.

Energy and Mineral Resource Values

The U.S. Geological Survey (USGS) and U.S. Bureau of Mines (USBM) evaluated the area recommended for wilderness in the Blitzen River WSA. Their 1988 report is titled "Mineral Resources of the Blitzen River Wilderness Study Area, Harney County, Oregon," and published as USGS Bulletin 1740. They identified no mineral resources and no mineral potential. They identified no potential for oil

and gas resources, and moderate potential for geothermal energy resources at the northwestern boundary of the area recommended for wilderness.

The EIS states that Blitzen River WSA has moderate potential for copper, gold, mercury, molybdenum and silver throughout and high potential for these minerals in a 250-acre parcel in the extreme eastern edge of the WSA. The entire WSA was considered to have low potential for energy resources. No mine developments were projected.

The USGS/USBM study included reconnaissance geochemical sampling as well as mapping. They note that the geologic setting in this WSA is different from the area that contains the nearby Steens-Pueblo mining district. Although the USGS/USBM study is limited to the recommended portion of the WSA, the geology of the recommended portion is similar to that throughout the WSA. The USGS/USBM study of the High Steens WSA (USGS Bulletin 1740-A) noted that anomalous concentrations of gold, silver, mercury and copper in the same lava flows found in the Blitzen River WSA are due to high initial magma values in the lava flows and thus far below prospectively minable concentrations. In that report they also reported anomalous molybdenum concentrations but reported no molybdenum potential.

As of May, 1991, there were no mining claims within this WSA.

The USGS/USBM assessment of geothermal energy potential in the northwestern part of the WSA is based on the presence of hot springs along faults that are 2 to 5 miles north of the Blitzen River WSA. The EIS noted low potential for energy resources probably because the Oregon Department of Geology and Mineral Industries classified the area around these same hot springs as potentially containing water at depth that is suitable for direct heat applications but not hot enough for energy production.

The Blitzen River WSA contains no potential for mineral or oil and gas resources and some potential for geothermal energy resources at its northwestern boundary.

Local Social and Economic Considerations

Livestock use at the current level of 4,561 AUMs, and recreation use totaling 1,800 visitor days per year are the primary resource outputs that generate economic activity in the WSA. Local personal income generated annually from these existing use levels amounts to approximately $54,732 for livestock grazing and $21,600 related to recreation use of the WSA, for an overall total of $76,332.

Under this recommendation, livestock grazing would remain at 4,561 AUMs. Overall recreation use would decrease by 600 visitor days per year. In conclusion annual local personal income generated from resource outputs in the WSA would decrease by approximately $7,000.

There were no social issues identified with the study of this WSA.

Summary of WSA-Specific Public Comments

Public involvement has occurred throughout the wilderness review process. Certain comments received during the inventory process and early stages of the EIS preparation were used to develop significant study issues and various alternatives for the ultimate management of those lands found to have wilderness values.

During formal public review of the draft EIS, and Supplement to the draft EIS, a total of 21 comments specifically addressing this WSA were received. Of those, 17 were written and 4 were oral statements received at the 24 public hearings on the EIS. In general, 13 commenters supported wilderness designation for all or part of the WSA. Seven commenters supported no wilderness for the WSA, while one commenter addressed the relative merits of the EIS, but took no formal position on wilderness designation.

Those favoring wilderness commented that this WSA should be combined with three other adjacent WSAs to form one large wilderness area. Others commented that designation of this WSA as wilderness would help protect ecosystems by maintaining an ecological diversity, preserving gene pools, and providing an area where wildlife could propagate. Some commented that cultural resources would best be protected by having the area designated as wilderness. A few commented that wilderness will help protect those threatened and endangered species, both wildlife and vegetation, that may experience further hardship outside nationally-designated wilderness.

Those opposing designation commented that the area is already wild and that it does not need any formal wilderness designation to maintain its natural integrity. Others commented that wilderness is for the elite and that the aged, young and handicapped

are "locked out" of the area due to the lack of access. Some commented that the area could not be managed as wilderness due to adjacent private lands along with inholdings located in the WSA. A few commented that wilderness designation would have an adverse impact on the range and mineral industry due to the stringent regulations associated with wilderness designations.

The Idaho Air National Guard commented that they did not wish to discourage the designation of wilderness, but that they did want to express concern over the possible conflict between low altitude overflights and the feeling of solitude sought by wilderness area users. They stated that these low-level military training routes were of vital importance to combat training and readiness. Military training route VR1301 directly passes through the Blitzen River WSA at an altitude of approximately 1,500 feet above ground level. This flight route has an estimated 540 operations annually.

The Department Fish and Wildlife Commission commented that portions of this WSA are within an area of a key deer winter range. They go on to say that potential winter range habitat improvements, as well as proposed predator control operations, would be affected under wilderness designation. Therefore, they recommend the area not be designated wilderness.

Both the County Court for Harney County and the Burns Paiute Reservation commented that this WSA is suitable for wilderness as recommended by the BLM's preferred alternative with the deletion of the road closures. They explain that the roads should be left open for designated livestock permittees and administrative use only.

There was one comment letter received on the final EIS for this WSA

Impacts on Resources

The following comparative impact table summarizes the effects on pertinent resources for all the alternatives considered including designation and nondesignation of the entire area as wilderness.

Table 4 - Comparative Summary of the Impacts by Alternative

Issue Topics	Recommendation (Partial Wilderness Alternative)	Wilderness Alternative
Impacts on Wilderness Values	Wilderness designation of 21,970 acres would result in protection and enhancement of the existing wilderness values in the area. The 34,210 acres recommended nonsuitable would be subject to projected resources activities that would both directly and indirectly impair wilderness values over approximately 400 acres, with further declines from other potential uses over the long term.	Wilderness designation of 55,880 acres would result in the protection of the existing wilderness values and probable enhancement of those values.
Impacts on Energy and Mineral Development	No impact to energy or mineral development is expected.	No impact to energy or mineral development is expected.
Impacts on Vegetation	The 8 miles of ways and 8 miles of dead-end roads would naturally revegetate. Riparian areas along 1.4 miles of Fish Creek would continue to slowly decline. Approximately 15 acres would be disturbed due to range and wildlife projects. Overall vegetation would remain basically the same in the rest of the area.	The 48 miles of ways would naturally revegetate. Riparian vegetation would substantially improve along 1.4 miles of stream. Overall vegetation would remain unchanged.
Impacts on Wildlife	Wildlife habitat and populations would be maintained on 22,070 acres designated wilderness. In the area recommended as nonsuitable, the rehabilitation of Kundert Reservoir for a warm-water fishery project would be completed.	Wildlife habitat and populations would be maintained on 55,880 acres and enhanced in the 1.4- mile riparian area on Fish Creek. Fishery studies and construction of a warm-water fishery project would be foregone.
Impacts on Watershed	Soil erosion, turbidity and overall water quality would continue to slowly decline on upper Fish Creek. Overall water quality would remain unchanged in the rest of the area.	Active gullies would begin to stabilize and water quality would improve within the 1.4-mile riparian exclosure. There would be little change over the rest of the area.

All Wilderness, with acquisitions and road closures, Alternative	Partial Wilderness Alternative	No Wilderness/No Action Alternative
Wilderness designation of 59,240 would result in protection of existing wilderness values and enhancement of those values.	Wilderness designation of 8,735 acres would result in protection and enhancement of the existing wilderness values in the area. The 47,145 acres recommended nonsuitable would be subject to projected resource activities that would both directly and indirectly impair wilderness values over 900 acres, with further declines from other potential uses over the long term.	In the absence of wilderness designation, projected activities would both directly and indirectly impair wilderness values over 12,000 acres, with further declines from other potential uses over the long term.
No impact to energy or mineral development is expected.	No impact to energy or mineral development is expected.	No impact to energy or mineral development is expected.
The 51 miles of ways and 17 miles of dead-end roads would revegetate naturally. Riparian areas along Fish Creek would not recover. Overall vegetation would remain the same over the rest of the WSA.	The 1 mile of dead-end road and 1 mile of way would naturally revegetate. Riparian vegetation along 1.4 miles of stream would substantially improve. Vegetation would be removed on 25 acres from range and wildlife projects.	Riparian vegetation would substantially improve on 1.4 miles of Fish Creek. Vegetation would be removed on 30 acres from projects.
Wildlife habitat and populations would be maintained on 59,240 acres. Fishery studies and construction of a warm-water fishery project would be foregone.	Wildlife habitat and populations would be maintained on 8,835 acres designated wilderness. In the area recommended as nonsuitable, the rehabilitation of Kundert Reservoir for a warm-water fishery project would be completed.	Habitat for game and nongame species and their existing levels of populations would be maintained throughout the area.
Soil erosion, turbidity and declining water quality would continue on upper Fish Creek. Overall water quality in the WSA would remain unchanged.	Active gullies would begin to stabilize and water quality improve by excluding livestock within the 1.4 mile riparian exclosure. There would be little change in watershed over the rest of the area.	Active gullies would begin to stabilize and and water quality improve by excluding livestock within the 1.4-mile riparian exclosure. There would be little change in watershed over the rest of the area.

Table 4 - Comparative Summary of the Impacts by Alternative

Issue Topics	Recommendation (Partial Wilderness Alternative)	Wilderness Alternative
Impacts on Livestock Grazing	Livestock use would remain at 4,561 AUMs. Livestock distribution would improve over the entire WSA due to projected range developments. Vehicle use on 8 miles of ways and 8 miles of dead-end roads would be precluded, causing slight inconvenience and some additional expense to livestock operators.	Livestock use would remain at 4,561 AUMs. Vehicle use on 48 miles of ways would be precluded with some inconvenience and slight additional expense to livestock operators.
Impacts on Recreation Use	A net reduction of the area's overall recreation use level, from 1,800 visitor days per year to 1,200 visitor days per year would occur.	Recreation use would decrease from the current level of 1,800 visitor days per year to approximately 1,200 visitor days per year.
Impacts on Personal Income	Annual local personal income would decrease by approximately $7,000.	Annual local personal income would decrease by approximately $7,000.

All Wilderness, with acquisitions and road closures, Alternative	Partial Wilderness Alternative	No Wilderness/No Action Alternative
Livestock use would remain at 4,561 AUMs. Vehicle use on 51 miles of ways and 17 miles of dead-end roads would be precluded with some inconvenience and increased expense to livestock operators.	Livestock use would remain at 4,561 AUMS. Vehicle use would be precluded on 1 mile of way and 1 mile of dead-end road, causing slight inconvenience and increased cost to livestock operators.	Livestock use would remain at 4,561 AUMs. Livestock distribution would improve from projects.
Recreation use would decrease from the current level of 1,800 visitor days per year to approximately 900 visitor days per year.	Wilderness designation would result in a reduction of the overall recreation use level, from 1,800 visitor days per year to approximately 1,500 visitor days per year.	Recreation use would increase over time from 1,800 visitor days per year to 4,500 visitor days per year.
Annual local personal income would decrease by approximately $11,000.	Annual local personal income would decrease by approximately $4,000.	Annual local personal income would increase by approximately $32,000.

Appendix 1 - Estimated Costs of Acquisition of Non-Federal Holdings Within Areas Recommended for Designation [1]

Legal Description (Prior to any Subdivision	Total Acreage	Number of Owners	Type of Ownership by Estate (Federal, State Private, other) Surface Estate	Subsurface Estate	Presently Proposed for Acquisition (Yes, No)	Preferred Method of Acquisition (Purchase, Exchange, Other)	Estimated Cost of Acquisition [2] Land Costs	Processing Costs
Parcel No. 1, (private inholding) T. 33 S., R. 32 3/4 E., Section 5 SW of SW 1/4	40	1	Private	Private	No	Purchase	$128,000	$6,000
Parcel No. 2, (private inholding) T. 33 S., R. 32 3/4 E., Section 6 SE of NE 1/4	60	1	Private	Private	No	Purchase	[3]	[3]
Parcel No. 3, (split estate) T. 32 S., R. 32 1/2 E., Section 36 all of central and western half of section.	475	1	Federal	State	No	Exchange	$10,000 [44]	
Parcel No. 4, (split estate) T. 32 S., R. 32 1/2 E. Section 16 (Entire)	640	1	Federal	State	No	Exchange	$10,000 [44]	

[1]The estimated costs listed in this appendix in no way represent a formal appraised value of the land or mineral estate, but are rough estimates based on sales or exchanges of lands or mineral estates with similar characteristics to those included in the WSA. The estimates for purposes of establishing a range of potential costs to the government of acquiring non-Federal holdings and in no way represent an offer to purchase or exchange at the cost estimate included in this appendix. Processing costs are all miscellaneous expenses other than land costs. These include work month costs, appraisals, title work, escrow costs, etc.
[2]Only administrative costs are shown for exchanges.
[3]Part of same parcel as # 1 therefore costs are shared
[4]Would be part of a larger exchange.

Bridge Creek Wilderness Study Area

1. The Study Area —14,545 acres

The Bridge Creek Wilderness Study Area (WSA) (OR-2-87) is located about 55 miles south of Burns and 3.5 miles east of Frenchglen in Harney County. The area is about 3.5 miles east of Oregon State Highway 205 and is adjacent to the northern section of the Steens Mountain Loop Road.

The study area contains 14,060 acres of BLM land in a roughly square configuration. Within the study area is a 40-acre parcel of private land situated in the southeastern corner, and 485 acres of split-estate land located in the northern portion (see Table 1).

The boundary line on the north and south is formed by BLM roads. The western boundary line is formed by BLM public land with crested wheatgrass seedings and the boundary line of the Malheur National Wildlife Refuge, while the eastern side of the study area is bounded entirely by private land. Also forming part of the western boundary line is a dead-end road which extends toward the center of the study area for over 2 miles. Two dead-end roads totaling 4 miles are located in the WSA.

The Bridge Creek WSA lies on the western face of the Steens Mountain Fault Block, sloping gently from east to west. The highest point in the study area is at the northeastern corner at 6,060 feet, while the lowest elevation is on the northwestern boundary at 4,260 feet.

The study area is deeply carved by two prominent drainages, Bridge Creek and Mud Creek, which dissect the study area from east to west; they are the primary topographic features of the WSA. Both are steep canyons with sheer, darkly colored rock walls which reach a maximum depth of 400 feet in Mud Creek. The average depth of the canyons is about 175 feet in Bridge Creek and 200 feet in Mud Creek. Mud Creek and the lower 4 miles of Bridge Creek are perennial streams. The upper portion of Bridge Creek is intermittent.

Most of the land which lies between the drainages is flat to gently rolling. A number of small drainages cut through the flatter terrain prior to entering Bridge or Mud Creeks.

The dominant vegetation in the Bridge Creek WSA is big and low sagebrush and western juniper. Riparian vegetation occurs along Mud Creek and the lower portion of Bridge Creek.

The WSA was initially studied under Section 603 of the Federal Land Policy and Management Act (FLPMA). Lands added after the wilderness inventory were studied under Section 202, also of FLPMA. These areas were included in the final Oregon Environmental Impact Statement (EIS) filed in February 1990.

The Bridge Creek WSA has been modified to include two parcels (485 acres) of land acquired in an exchange with the state of Oregon since completion of the wilderness inventory phase. The state of Oregon has retained the subsurface mineral estate, resulting in 485 acres of split-estate (federally managed surface, state subsurface or mineral rights) land within the WSA.

There were two alternatives analyzed in the EIS: an all wilderness alternative designating all 14,545 acres of public land; and a no wilderness/no action alternative, which is the recommendation in this report. These lands are shown on Map 1.

2. Recommendation and Rationale:

—0 acres recommended for wilderness,
14,545 acres recommended for nonwilderness

The recommendation for this WSA is to release the entire 14,545 acres for uses other than wilderness. The all wilderness alternative is considered to be the environmentally preferable alternative. However, the no wilderness/no action alternative would be implemented in a manner which would utilize all practical means to avoid or minimize adverse environmental impacts.

The recommendation would provide benefits by allowing for construction of both range improvement and wildlife projects, and would also provide for more flexible management capabilities which are considered to outweigh the wilderness values present in the WSA. The WSA does possess the minimum wilderness characteristics for qualification as a wilderness study area, but has few distinguishing features. The area is basically in a natural condition; however, unnatural developments influence approximately 12 percent of the WSA. The area possesses outstanding opportunities for solitude and provides for several types of primitive recreation activities. These wilderness characteristics are primarily associated with the major drainages of Bridge and Mud Creeks. The study area's wildlife habitat and cultural resource values are special wilderness features, but there are no exceptional values identified within the area which warrant protection through wilderness designation.

Under the recommendation, and the subsequent release of these lands from further wilderness review, the following projects are foreseen. One wildlife project is planned. An estimated 3 miles of fence would be constructed to exclude livestock from 4.6 miles of Mud Creek in order to alleviate livestock pressure on riparian areas, allowing for the improvement of fish and wildlife habitat and recovery of streambanks along Mud Creek. In addition, construction of four reservoirs and 3 miles of pipeline for livestock management would provide water for livestock in areas with under-utilized forage. Making this under-utilized forage available to livestock would allow an increase in grazing use of 520 AUMs.

3. Criteria Considered in Developing the Wilderness Recommendation

Wilderness Characteristics

A. Naturalness: The Bridge Creek WSA is in a relatively natural condition. The topography in this WSA creates magnificent areas of naturalness. The steep canyons, rolling hills and vegetative screening enhance the sense of naturalness in this area.

The Bridge Creek WSA provides a variety of habitats for wildlife species. Wintering mule deer make heavy use of the juniper, big sagebrush and low sagebrush habitats found in the southern part of the WSA, and moderate use in the remainder of the deer winter range. Light deer use also occurs during the summer in this area. In springtime, pronghorn antelope use the seedings and burn area found at lower elevations. Occasionally, elk use the WSA, generally during winter months.

Mud Creek and Bridge Creek Canyons are important components of the wildlife habitat. Four golden eagle nests have been located near Bridge Creek and three near Mud Creek. At least one of these nests is usually active in each canyon. Other raptors nesting in the area include turkey vultures, American kestrels and great horned owls.

Songbirds include those commonly found near big sagebrush, low sagebrush, western juniper, riparian

RECOMMENDED FOR WILDERNESS (None)

RECOMMENDED FOR NONWILDERNESS

LAND OUTSIDE WSA RECOMMENDED FOR WILDERNESS (None)

SPLIT ESTATE

STATE (None)

PRIVATE

- N -

Bridge Creek Proposal

MAP-1

0 1 2 3

MILES

OR-2-87

January, 1991

Table 1. Land Status and Acreage Summary of the Study Area

	Acres
Within the Wilderness Study Area	
BLM (surface and subsurface)	14,060
Split-Estate (BLM surface only) [1]	485
Inholdings (State, Private)	40
Total	14,585
Within the Recommended Wilderness Boundary	
BLM (within WSA)	0
BLM (outside WSA)	0
Split-Estate (within the WSA) [1]	0
Split-Estate (outside the WSA) [1]	0
Total BLM Land Recommended for Wilderness	0
Inholdings (State, Private)	0
Within the Area Not Recommended for Wilderness	
BLM	14,060
Split-Estate[1]	485
Total BLM Land Not Recommended for Wilderness	14,545
Inholdings (Private) [1]	40

[1]For purposes of this report, split-estate lands are defined only as those lands with Federal surface and non-Federal subsurface (minerals).

and cliff habitats. Some of these include Brewer's sparrow, western meadowlark, sage sparrow, mountain chickadee, robin, canyon wren and yellow warbler. Common mammals include deer mice, least chipmunk, badgers, black-tailed jackrabbits and coyotes, with bushy-tailed woodrats near rimrocks and beaver near streams. Chukars are found in the rocky canyons and nearby uplands. Wintering Canada geese feed on the seedings and burn areas, mostly north of Bridge Creek and within 2 miles of the Malheur National Refuge boundary.

Riparian habitat occurs along 12.8 miles of stream courses within the WSA. The condition of riparian habitat along 2.6 miles of Mud Creek and 4.1 miles of Bridge Creek is poor. Habitat along 3.1 miles of Mud Creek is in fair condition and the remaining 3.0 miles of Bridge Creek is in good condition.

The study area contains 32 unnatural features: 21 reservoirs, four fences totaling 6 miles, six ways totaling 7 miles and one crested wheatgrass seeding of about 1,200 acres. The majority of the developments are scattered throughout the WSA in the areas between the canyons, although a few reservoirs occur along the northern boundary. An estimated 12 percent of the study area is influenced by human developments.

Reservoirs scattered throughout the WSA create the next largest influence upon the area's naturalness. Although these features are small and individually present only a minor visual impact, collectively they influence 1,750 acres. Most of the reservoirs are located in small drainages or are surrounded by vegetation, which reduces their overall visibility.

The visual influence of the ways and fences is slight. Most of the vehicle ways are located within the relatively-flat portions of the study area which are covered with sagebrush and the tracks are not readily seen. In addition, ways extending into the eastern portion of the WSA are frequently screened by juniper. Since none of the fences within the study area are bladed, the visual influence of these developments is also very minor.

Outside sights and sounds influencing the study area are few and are primarily the result of the boundary roads. The Steens Mountain Loop Road forming the southern boundary line is the outside development with the largest single influence. This road receives heavy motor vehicle use during the summer, and its size and the amount of its improvement make it visible from a larger portion of the area than the other roads. The northern boundary road and the interior dead-end road have only a small visual influence because the topography screens these developments.

The seedings and fences which form the western boundary are visible for only a short distance into the WSA. They are (as are the other outside developments) on virtually the same plane from which they are likely to be viewed. Since this is generally a horizontal view, the impact of these developments is quite small. Most of the fences which mark the eastern boundary line are screened by juniper and are not a visual influence on any portion of the study area.

B. Solitude: Opportunities for experiencing solitude in the Bridge Creek WSA are outstanding. Topographic and vegetative screening, as well as the size of the study area, provide areas where visitors can find a secluded spot. However, this screening is primarily limited to Bridge Creek and Mud Creek canyons and the eastern portion of the WSA.

In the canyons of Bridge Creek and Mud Creek, the visitor is well screened by high canyon walls from the remainder of the study area. Topographic screening within the canyons themselves is also good; the numerous bends and turns in the drainages restrict long views. The tributary drainages to these larger canyons provide some screening for visitors. Although these drainages tend to be relatively shallow throughout most of their length, they enhance the opportunities for solitude by providing some topographic relief from the gently rolling nature of the remainder of the WSA.

The presence of juniper in the eastern half of this study area enhances the visitors ability to find solitude. Moderate to dense stands of juniper occur primarily along the drainage corridors. Although the density of the juniper cover lessens between the drainages, it is still sufficient to provide some screening for visitors. The major drainages also have a moderate amount of riparian vegetation which tends to enhance solitude.

The western portion of the WSA offers little screening. Single trees or small clumps of juniper occur only occasionally and the predominance of big and low sagebrush offers little cover.

C. Primitive and Unconfined Recreation: The area provides outstanding opportunities for primitive forms of recreation, including day hiking, camping, backpacking, horseback riding, hunting and fishing. The opportunities for day hiking within the WSA are mainly associated with Bridge Creek and Mud Creek. Backpackers, horseback riders and campers would probably use the same areas.

Opportunities for hunting deer and elk are good in the eastern two-thirds of the area where there is adequate cover. Opportunities for antelope hunting are poor throughout the WSA due to the low number of animals within the area. Opportunities for chukar hunting are good, with the best hunting found along the rims of the canyons. The opportunities for fishing are good due to redband trout in Bridge Creek and Mud Creek.

D. Special Features: Special features include wildlife, cultural resources and scenic features, which add to the value of the study area as wilderness.

The WSA contains crucial deer winter range, a high-quality raptor nesting area and a sage grouse strutting ground. Sage grouse is a candidate for Federal listing for threatened or endangered in Oregon under the Endangered Species Act. The majority of the study area is crucial deer winter range. Good raptor nesting sites are located along both Bridge Creek and Mud Creek canyons. Golden eagles commonly nest in these areas. Turkey vultures, American kestrels and great horned owls are other raptors which nest in these same areas.

The quality of scenery is good in this WSA because of the deep, winding and narrow creek canyons, a variety of colors (reds, browns, tans and greens), rugged rock outcroppings and clear, running streams in the canyon bottoms accented by green riparian vegetation.

A sage grouse strutting ground is located south of Bridge Creek on the west side of the study area. This is a site where sage grouse conduct an extensive courtship dance prior to mating. The same area is often used year after year, and the birds usually nest within a 2-mile radius of the strutting ground.

The WSA contains redband trout, a native fish with limited range. Redband trout is listed by the U.S. Fish and Wildlife Service as a Category 2 candidate for Federal listing as Threatened or Endangered (species for which there is some evidence of vulner-

ability, but for which there are not enough data to support listing as threatened or endangered at this time).

Significant cultural resources have been found in the WSA. These include Paiute village sites which are important because of their good state of preservation and their ecological context.

Diversity in the National Wilderness Preservation System (NWPS)

A. Expanding the Diversity of Natural Systems and Features as Represented by Ecosystems: Wilderness designation of this WSA would add an ecosystem (Bailey-Kuchler classification) not presently represented in Oregon, and represented in the National Wilderness Preservation System by only three areas. There are 66 other BLM areas in the state under study with this ecosystem. The information is summarized in Table 2.

According to the Bailey-Kuchler system of classifying ecosystems, the WSA is located in the Intermountain Sagebrush Province and its potential natural vegetation is sagebrush-steppe communities.

The WSA contains four plant communities listed in the Basin and Range section of the Oregon Natural Heritage Plan. These include western juniper/big sagebrush/bluebunch wheatgrass and western juniper/big sagebrush/Idaho fescue, which occur on the steep slopes of drainages. In areas of lower topographic relief, the ecosystems are big sagebrush/bluebunch wheatgrass and low sagebrush/Sandberg's bluegrass.

B. Assessing the Opportunities for Solitude or Primitive Recreation Within a Day's Driving Time (5 hours) of Major Population Centers: The Bridge Creek WSA is within a 5-hour drive of one major population center (over 100,000). Table 3 summarizes the number and acreage of designated areas and other BLM study areas within 5 hours drive of the population center.

C. Balancing the Geographic Distribution of Wilderness Areas: The Bridge Creek WSA would contribute to balancing the geographic distribution of areas within the National Wilderness Preservation System. There is only one designated wilderness area within 100 miles of this WSA.

Manageability

(The area must be capable of being effectively managed to preserve its wilderness character.)

The Bridge Creek WSA is manageable as wilderness under the all wilderness alternative. The dead-end road which enters the area from the west would present only a minor manageability problem if the area were designated as wilderness. Likewise, the split-estate land and private inholdings would not result in substantial manageability problems. These lands are outside the areas identified as moderately favorable for diatomite and there are no known plans to develop these parcels for other uses.

Boundary identification problems would not be expected along most of the eastern side of the WSA where the boundary is adjacent to private land because, with the exception of the drainages, most of this boundary is already identified by fencing. Signing placed in the canyons would adequately reduce potential management problems resulting from recreational use in this part of the WSA.

Energy and Mineral Resource Values

The geology, energy and mineral resources of the Bridge Creek WSA were evaluated by interpreting existing literature, reviewing mining claims and mineral leasing records, correlating rock units in the WSA with similar environments in other areas that are known to contain mineral deposits. Technical details of the evaluation are in a mineral resources assessment report, Catlow Rim Geologic Resource Area (GRA OR-020-20), Harney County Oregon, prepared by Terradata in 1982, a BLM contractor, and in a BLM report on the South Harney GRA.

Due west of the WSA is an area rated as moderately favorable for geothermal resources. The area consists of young volcanic rocks, three hot springs, and numerous deep-seated faults which have localized low-temperature geothermal potential which may be suitable for direct-use heat applications. The geothermal potential does not appear to extend into the WSA.

Diatomite is rated as having a moderate potential for occurrence in portions of the WSA. The rating was based on the presence of tuffaceous lacustrine sediments similar to those in other Tertiary basins in southeastern Oregon which are known to contain diatomite. Aside from abundant road aggregate sources, there are no known occurrences of mineral deposits within the WSA.

As of May 1991, there were no mining claims in this WSA.

Table 2. Ecosystem Representation

Bailey-Kuchler Classification	NWPS areas	NWPS acres	Other BLM Studies areas	Other BLM Studies acres
Province/Potential Natural Vegetation				
NATIONWIDE				
Intermountain Sagebrush Province/Sagebrush Steppe	3	76,699	136	4,345,340
OREGON				
	0	0	66	1,958,074

Table 3. Wilderness Opportunities for Residents of Major Population Centers

Population Centers	NWPS areas	NWPS acres	Other BLM Studies areas	Other BLM Studies acres
Boise, ID	16	4,741,570	126	5,060,460

Local Social and Economic Considerations

Livestock use at the current level of 1,246 AUMs and recreation use totaling 300 visitor days per year are the primary resource outputs that generate economic activity in the WSA. Local personal income generated annually from these existing levels amounts to approximately $14,952 for livestock grazing, and $3,600 related to recreation use of the WSA, for an overall total of $18,552.

Under the recommendation, livestock grazing would increase by 520 AUMs. Overall recreation use would increase by 200 visitor days per year. Annual local personal income generated from resource outputs in the WSA would increase by approximately $9,000.

There were no social issues identified with the study of this WSA.

Summary of WSA-Specific Public Comments

Public involvement has occurred throughout the wilderness review process. Certain comments received during the inventory process and early stages of the EIS preparation were used to develop significant study issues and various alternatives for the ultimate management of those lands found to have wilderness values.

During formal public review of the Draft EIS and its Supplement, a total of 14 comments specifically addressing this WSA were received. Of those, 12 were written and two were oral statements received at the 24 public hearings on the EIS. In general, six commenters supported wilderness designation for all or part of the WSA. Four commenters supported no wilderness for the WSA, while four commenters addressed the relative merits of the EIS, but took no formal position on wilderness designation.

Those favoring wilderness commented that the nation needs more wilderness and that designation of this area as wilderness will help perpetuate the preservation of plant and wildlife habitat within its natural environment. Others commented that wilderness designation will help protect cultural values found within the general area. Some commented that designating the area as wilderness would help protect the area from overgrazing. A few commented that the area was unique in Oregon and that these merits alone classified it as wilderness to be incorporated into the national wilderness preservation system.

Those opposing designation commented that the area could not be managed as wilderness because of the configuration, size, overall human-created livestock projects, fire occurrences, adjacent private property and lack of a definable boundary along the western portion of the WSA. Others commented that the wildlife would suffer and could not be properly managed. Some commented that wilderness designation would adversely impact the range industry and/or individual livestock operator because livestock improvement projects would be restricted and a level of inconvenience would be imposed due to limitation of mechanized vehicles in wilderness areas. A few commented that the area should not be designated because wilderness is for the elite and that the aged, young and handicapped are "locked out" because of restricted vehicle use.

The Idaho Air National Guard commented that they did not wish to discourage the designation of wilderness areas, but wanted to express concern over the possible conflict between low altitude overflights and the feeling of solitude sought by the wilderness area users. They stated that these routes are of vital importance to combat training and readiness, and any constraint on the use of existing routes could have a severe impact on unit readiness. The Bridge Creek WSA is located between two low level military flights (VR 1301 and VR 1352) although neither of these two flight paths are routed directly over the WSA. Between the two flight routes there are an estimated 1,280 flights annually.

The Oregon Department of Fish and Wildlife (ODFW) commented that more discussion of the impacts from past livestock grazing was needed and more discussion of the effect introduced plant species have had on native plant communities. They believe a discussion of big game, habitat diversity and nongame components should be included in the section on environmental consequences.

The County Court for Harney County and the Burns Paiute Reservation concurs with the BLM's recommendation of this WSA as nonsuitable for wilderness, their rationale being to allow for construction of range improvement projects and wildlife projects, and to provide more flexible management capabilities that would not be allowed within a designated wilderness area.

There was one comment letter received on the final EIS for this WSA.

Impacts on Resources

The following comparative impact table summarizes the effects on pertinent resources for all the alternatives considered including designation and nondesignation of the entire area as wilderness.

Table 4 - Comparative Summary of the Impacts by Alternative

Issue Topics	Recommendation (No Wilderness/No Action Alternative)	All Wilderness Alternative
Impacts on Wilderness Values	Projected resource activities and developments would directly impair wilderness values over approximately 20 acres of surface disturbance and 2,700 acres of indirect influence with further declines from other potential uses over the long term.	Wilderness designation of the entire 14,545 acres in the Bridge Creek WSA would result in the protection of existing wilderness values and probable enhancement of those values.
Impacts on Energy and Mineral Development	No impact to energy or mineral development is projected.	No impact to energy or mineral development is projected.
Impacts on Vegetation	Range improvements would result in a direct loss of vegetation on 20 acres. Riparian vegetation within the exclosure would substantially improve. There would be a 520 AUM increase in utilization, with a corresponding decrease in residual ground cover, over approximately 1,200 acres of the WSA, resulting in a more grazed appearance.	The 4 miles of ways (totaling 4 acres) would naturally revegetate. Overall vegetation would remain unchanged. Riparian vegetation along 4.6 miles of Mud Creek would substantially improve.
Impacts on Wildlife	Riparian and fish habitat would improve along Mud Creek and Bridge Creek. Streambank erosion would be reduced. Nongame species populations would increase due to constructed water developments.	Wildlife habitat and populations would be maintained and continue to improve on 14,545 acres designated wilderness. Riparian and fish habitat would be improved along 4.6 miles of Mud Creek by excluding livestock. Maintenance of the riparian fences along Bridge Creek would become more difficult, allowing possible cattle intrusion into an estimated 2 miles of riparian habitat.
Impacts on Watershed	Water quality and streambank stability would improve dramatically within the area to be excluded and slightly so on the remainder of the streams. There would be little change in the watershed over the rest of the area.	Water quality and streambank stability would improve substantially within the exclosure on Mud Creek. The existing riparian exclosures could deteriorate and result in declining water quality. The remainder of the study area would remain basically unchanged.

Table 4 - Comparative Summary of the Impacts by Alternative (continued)

Issue Topics	Recommendation (No Wilderness/No Action Alternative)	All Wilderness Alternative
Impacts on Livestock Grazing	An additional 520 AUMs of livestock grazing would be realized.	Livestock use would remain at 1,246 AUMs. Vehicle use on 4 miles of ways would be severely limited.
Impacts on Recreation Use	Recreation use would increase from the current level of 300 visitor days per year to approximately 500 visitor days per year.	Recreation use would increase from the current level of 300 visitor days per year to approximately 500 visitor days per year.
Impacts on Local Personal Income	Annual local personal income would increase by approximately $9,000.	Annual local personal income would increase by approximately $2,000.

Strawberry Mountain Wilderness Study Areas

1. The Study Areas - 1,149 acres

The Strawberry Mountain Wilderness Study Areas (WSAs) are three small study areas located adjacent to the U.S. Forest Service Strawberry Mountain Wilderness in Grant County. All of the study areas lie within ten miles of each other around the perimeter of the Strawberry Mountain Range and on the northern and western boundaries of the Strawberry Mountain Wilderness.

Pine Creek

The Pine Creek study area (OR-2-98A) is located on the north side of the wilderness in the John Day Valley about 5.5 miles southeast of Canyon City and John Day. The Pine Creek WSA contains 200 acres of BLM land (see Table 1). The area is 0.75 miles in length and just over half a mile in width. It is bounded on the south by the Strawberry Mountain Wilderness and on the remaining sides by private land.

The Pine Creek WSA is situated on a steep north-facing slope which varies in elevation from 4,440 feet on the southeast in the Pine Creek drainage to 5,760 feet on the southwest side at the top of a ridge. Ponderosa pine and Douglas fir blanket the drainages with interspersed open grassy areas along the ridgelines. Small drainages and steep slopes make up the general topography of the area. A small portion of Pine Creek cuts through the southeastern corner of the WSA.

Sheep Gulch

The Sheep Gulch study area (OR-2-98C) is on the western side of the wilderness in the Canyon Creek drainage, 2.5 miles south of Canyon City. The WSA contains 741 acres of BLM land and is the largest of the three study areas. The parcel is bounded on the east by the Strawberry Mountain Wilderness and on the north, west and south by private land. The nearest major highway is US Highway 395 within 0.5 mile of the Sheep Gulch area on the west. The area is two miles long and half a mile wide.

The Sheep Gulch WSA lies on a steep west-facing slope of Little Canyon Mountain (on the west end of the Strawberry Mountains). A perennial stream, Sheep Gulch, runs east to west through the center of the area. Steep ridgelines and intermittent drainages forested with mountain mahogany and scattering of ponderosa pine and Douglas fir are also characteristic of this WSA. The elevation of the area varies from

3,680 feet on the western boundary near Canyon Creek to 5,560 feet on the eastern boundary near the Strawberry Mountain Wilderness.

Indian Creek

The Indian Creek WSA (OR-2-98D) lies to the east of the Pine Creek area and is also on the north side of the wilderness approximately six miles south of Prairie City. The Indian Creek WSA contains 208 acres of BLM land. It is bounded on the south by the Strawberry Mountain Wilderness and by a non-wilderness portion of the Malheur National Forest. On the north a mine and private land form the boundary, while on the east and west the area is bounded by roads. The area is nearly one mile long and half a mile wide.

The parcel is in an area of foothills and benches on the north side of the Strawberry Mountain Range. Indian Creek, a perennial stream, runs south to north through the center of the area for about a half mile. The elevation in the study area varies from 4,280 feet on the north in the bottom of the Indian Creek drainage to 4,840 in the southwest corner. Mountain mahogany with some ponderosa pine and Douglas fir are the main tree species.

These WSAs were studied under Section 202 of the Federal Land Policy and Management Act as they contain wilderness values only in conjunction with the larger existing wilderness area which they border. They were included in the Final Oregon Wilderness Environmental Impact Statement (EIS) filed in February 1990. There were two alternatives analyzed in the EIS: No Wilderness/No Action (which is the recommendation of this report), and All Wilderness. These lands are shown on Map 1.

2. Recommendations and Rationale

0 acres recommended for wilderness
1,149 acres recommended for nonwilderness

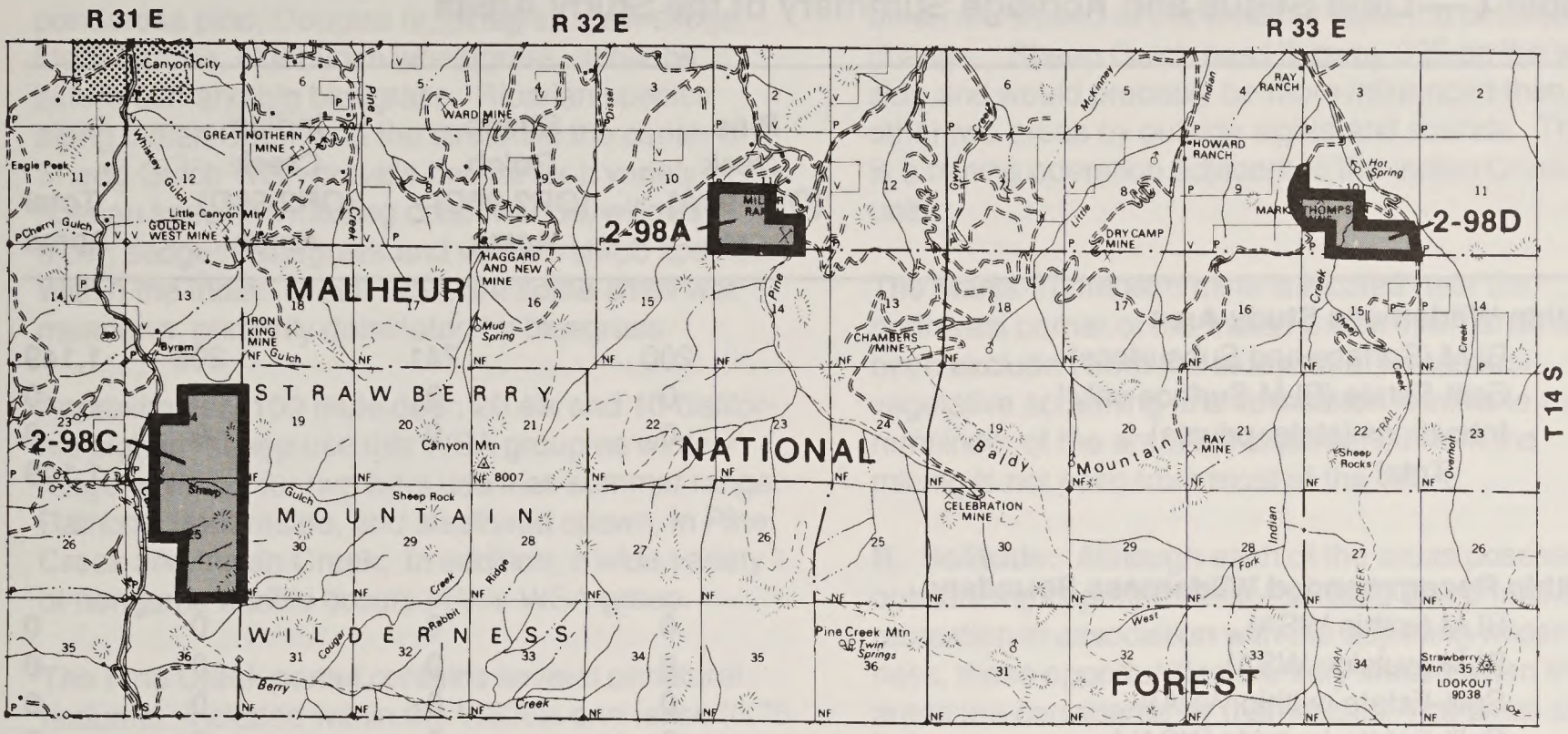
The recommendation is to release all the WSAs for uses other than wilderness. The all wilderness alternative is considered to be the environmentally preferable alternative. The recommendation, however, will be implemented in a manner which would use all practical means to avoid or minimize environmental impacts.

These areas are not being recommended for wilderness because the benefits of retaining them for possible development of mineral and timber resources outweigh the benefits of preserving the area's limited wilderness values. Potential mineral development (including two projected metallic mines) in the WSAs and the possibility of an average annual timber sale volume of seven Mbf are contributing factors to the nonsuitable recommendation for these WSAs. Mineral studies indicate that these WSAs have moderate favorability for vein-type gold deposits and for copper-silver mineralization in shear zones similar to other deposits which occur nearby on Strawberry Mountain and Little Canyon Mountain. Sheep Gulch WSA has also been rated as having high favorability for deposits of copper and silver in quartz-bearing shear zones in addition to the moderate favorability for vein-type gold deposits.

Although the study areas are basically in a natural condition and possess opportunities for solitude and primitive types of recreation, these opportunities are limited and are not considered outstanding within each of the individual WSAs when considered on their own merits. The opportunities for solitude or recreation could only be recognized as outstanding when considered as part of the larger existing Strawberry Mountain Wilderness.

The wilderness values of these three small study areas would be enhanced by combining the areas with the existing Strawberry Mountain Wilderness; however, the addition of the WSAs to the existing wilderness would not contribute new values or improve the administration of the existing wilderness area. Further, the addition of these WSAs is not necessary to complete the Strawberry Mountain Wilderness.

Manageability problems could occur where a suitable designation lacks identifiable boundaries. Because of the areas' small sizes, narrow configurations and steep slopes, any motorized or mechanical activity adjacent to these areas has the potential of completely dominating the majority of the acreage in each one, severely impacting the quality of the wilderness resource. This is especially the case with Pine Creek and Sheep Gulch WSAs which are bounded on three sides by private land, and with Indian Creek being a narrow area (0.25 mile wide) bordering private land on either side.



RECOMMENDED FOR WILDERNESS (None)

RECOMMENDED FOR NONWILDERNESS

LAND OUTSIDE WSA RECOMMENDED FOR WILDERNESS (None)

SPLIT ESTATE (None)

STATE (None)

PRIVATE (None)

- N -

Strawberry Mountain Proposal

MAP-1

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MILES

OR-2-98A,C,D

January, 1991

Table 1 — Land Status and Acreage Summary of the Study Areas

	Pine Creek (OR2-98A) Acres	Sheep Gulch (OR2-98C) Acres	Indian Creek (OR2-98D) Acres	Total Acres
Within Wilderness Study Area				
BLM (Surface and Subsurface)	200	741	208	1,149
Split-Estate (BLM Surface only)[1]	0	0	0	0
Inholdings (state, private)	0	0	0	0
Total				1,149
Within Recommended Wilderness Boundary				
BLM (within WSA)	0	0	0	0
BLM (outside WSA)	0	0	0	0
Split-Estate (within WSA)[1]	0	0	0	0
Split-Estate (outside WSA)[1]	0	0	0	0
Total BLM Land Recommended for Wilderness	0	0	0	0
Inholdings (State, private)	0	0	0	0
Within Area Not Recommended for Wilderness				
BLM	200	741	208	1,149
Split-Estate (within WSA)[1]	0	0	0	0
Total BLM Land Not Recommended for Wilderness	200	741	208	1,149
Inholdings (State, private)	0	0	0	0

1/ For purposes of this report, split-estate lands are defined only as those lands with Federal surface and non-Federal subsurface (minerals).

3. Criteria Considered in Developing the Wilderness Recommendation

Wilderness Characteristics

A. Naturalness: Each of the WSAs appears to be in a natural condition with few constructed features present or visible within the areas.

Pine Creek WSA is natural in appearance with steep north-facing hills that have open meadows with long vistas to the valley far below. Clear turbulent creeks flow out of the steep forested ravines to the John Day River Valley. These creeks provide spawning areas for steelhead and salmon. They also provide a good water source for the deer, elk and other wildlife using the area. The predominant vegetation in the Pine Creek WSA is ponderosa pine and Douglas fir with an understory of grasses. The open, rocky areas support a variety of plants including bluebunch wheatgrass, Sandberg's bluegrass, bitterbrush and sagebrush. Riparian areas provide habitat for a variety of riparian species including cottonwoods, willows, alder, sedges, bluegrass and various shrub species. In spring and early summer months the meadows are full of wildflowers, and in the winter months they are snow laden.

Indian Creek WSA and Sheep Gulch WSA are very similar in nature.

In the Sheep Gulch and Indian Creek WSAs, the predominant vegetation is mountain mahogany with an understory of grasses. Some forested areas

found in the western portion of the Indian Creek WSA and scattered in the Sheep Gulch WSA include ponderosa pine, Douglas fir, pinegrass, elk sedge, Idaho fescue, bluebunch wheatgrass, antelope bitterbrush and big bluegrass. Riparian species along Indian Creek and the stream in the center of Sheep Gulch WSA provide habitat for a variety of riparian species including cottonwoods, willows, alder, sedges, bluegrass and various shrub species. Within the Indian Creek WSA are some small wet meadows, primarily dominated by bluegrass.

Approximately 100 mule deer, 20 elk and 10 California bighorn sheep use this WSA group as winter range while lesser numbers use it as summer range. Rainbow trout reside, and steelhead spawn, in Pine Creek and Indian Creek. In addition, a wide variety of nongame wildlife occurs in this WSA group.

The Pine Creek parcel contains several unnatural features. Included within the WSA is one fence (0.75 mile long), one small water diversion, four areas of past mining activity and four vehicle ways totaling 0.75 mile. The fence runs along a ridgeline through the center of the area and is not a noticeable feature except within the immediate vicinity. The water diversion is located on the eastern corner of the area where Pine Creek leaves the WSA. The diversion used for irrigation is a small development and is generally screened by vegetation. It is not noticeable except along the drainage. The areas of mining activity are small and are located on a steep ridge in the south-central part of the WSA. Because of the steepness of the terrain, the excavations are difficult to see from within the WSA. The total ara of influence of these developments in the WSA is less than 20 acres (ten percent of the WSA).

As stated before, Sheep Gulch is natural in appearance with open meadows and steep forested hillsides. Sheep Gulch is nearly unaffected by human activities. One way enters the WSA from the north for about 0.1 mile. The way is located in a small drainage and is well screened by vegetation and topography. The area of influence of this way is oneacre.

Indian Creek also has steep forested hillsides and open meadows. A gentle, flowing creek runs through the center of the WSA. The open meadows provide great viewing of the valley far below. The Indian Creek parcel has an old timber sale in the west end of the area. It is not noticeable and its area of influence on the naturalness of the WSA is less than 15 acres (two percent of the WSA). An old way also cuts through this area for about 0.5 mile. It is partially overgrown and not noticeable, influencing two acres. Outside sights and sounds which influence these areas are limited at this time but have the potential to change. Sheep Gulch has Highway 395 on the west side and would probably be more influenced than the other two areas by outside sights and sounds. There is a mining operation adjacent to the Indian Creek unit.

The Marks-Thompson mine is located near the northwest corner of the Indian Creek WSA and has been excluded from the study area. Becauseof vegetative screening and its location relative to the remainder of the area, the disturbance from the mining is not seen from most of the WSA.

B. Solitude: Although each of the areas possesses outstanding opportunities for solitude and primitive recreation in association with the adjoining wilderness, these opportunities are very limited when the areas are considered by themselves. The small size of each of the parcels would severely restrict visitors' movement and would substantially increase the chance of visitors or parties encountering each other. Opportunities for solitude, however, are available within each of the areas due to the ruggedness of the mountain terrain. This topographic diversity would provide sufficient screening for a visitor to find areas of solitude.

In addition, the WSAs also contain areas of vegetative screening which enhance opportunities for solitude. Screening is provided by Douglas fir, ponderosa pine, juniper, mountain mahogany, hardwood trees (in the riparian zones) and various shrub species. This vegetative cover would greatly help to reduce the influence of other visitors within each of the small parcels.

C. Primitive and Unconfined Recreation: The opportunities for primitive types of recreation were not found to be outstanding in these small study areas. Of the recreational activities available within the study areas, the best opportunities are for day hiking. Although each of the areas is small, the ruggedness of the topography, the vegetation cover and the adjacent scenery would provide the visitor with interesting and challenging short hikes.

Opportunities for sightseeing, photography and viewing wildlife are also available in the study areas. Views of the surrounding country, including the Strawberry Mountains, the Canyon Creek drainage and the John Day River Valley provide good opportunities for sightseeing and photography from the study areas. Although the study areas themselves are attractive, there are no known exceptionally scenic

attractions within the small parcels. Opportunities for viewing or photographing wildlife are somewhat greater in the Sheep Gulch area because of the year-round bighorn sheep range and the seasonal presence of deer and elk.

Opportunities for backpacking, camping and horseback riding are limited because of the small size of the study areas. None of the individual areas are of sufficient size to support an extended hike or backpacking trip. The primary use of the areas for these activities would be as trailhead for trips into adjacent areas.

Some opportunities may exist for hunting and fishing within the WSAs. Deer and elk may seek cover on the lower slopes of the Strawberry Mountains during severe fall weather. At these times the chances for hunting success within these small areas may be better than at higher elevations. Limited fishing opportunities are also available as each of the WSAs contains a perennial stream.

D. Special Features: The Sheep Gulch WSA contains ten California bighorn sheep, a Category 2 Federal candidate species under the Endangered Species Act. Both Pine Creek and Indian Creek contain spawning habitat for steelhead trout.

Diversity in the National Wilderness Preservation System

A. Expanding the Diversity of Natural Systems and Features as Represented by Ecosystems: According to the Bailey-Kuchler system of classifying ecosystems, the WSAs are in the Rocky Mountain Forest Province and their potential natural vegetation is western ponderosa forest and grand fir-Douglas fir forest. Refer to Table 2.

Wilderness designation of the Strawberry Mountain WSA would add a combination of ecosystems presently represented in Oregon by four wilderness areas and represented in the National Wilderness Preservation System by only five areas. There are no other BLM areas in the state or nation under study with this combination of ecosystems.

Eight of the vegetative communities listed in the Ochoco, Blue and Wallowa Mountains section of the Oregon Natural Heritage Plan occur in these WSAs. All three WSAs include Douglas fir-ponderosa pine/elk sedge within the mixed conifer forest and a low elevation riparian forest with cottonwoods, hawthorne and alder.

The Pine Creek WSA additionally includes ponderosa pine/bluebunch wheatgrass communities with separate areas of Idaho fescue and bluebunch wheatgrass.

In the Sheep Gulch area, the vegetative communities also include Douglas fir-ponderosa pine/pinegrass, mountain mahogany/bunchgrass communities, and western juniper/low sagebrush/bunchgrass communities at lower to mid-elevations of the WSA.

In the Indian Creek WSA the communities include ponderosa pine/bitterbrush/bunchgrass, mountain mahogany/bunchgrass communities and moist native bluegrass meadows.

B. Assessing Opportunities for Solitude or Primitive Recreation Within a Day's Driving Time (5 hours) of Major Population Centers: The study area is within five hours' driving time of six major population centers: Boise, Idaho; Eugene/Springfield, Portland and Salem, Oregon, and Richland/Kennewick/Pasco, and Yakima, Washington. Table 3 summarizes the number and acreage of designated areas and other BLM study areas within five hours' drive of major population centers.

C. Balancing the Geographic Distribution of Wilderness Areas: None of these WSAs would contribute to balancing the geographic distribution of areas within the National Wilderness Preservation System. There are eight designated wilderness areas within 100 miles of these WSAs.

Manageability

(The area must be capable of being effectively managed to preserve its wilderness character.)

Although presently manageable as wilderness, these three small study areas would be difficult to manage under the all wilderness alternative even though they would be incorporated into the larger Strawberry Mountain Wilderness. This is primarily because Pine Creek and Sheep Gulch are bounded on three sides by private land and Indian Creek is a narrow area (0.25 mile wide) with private land on either side. Even though changes in the use of adjacent private land are not indicated at the present, it could change at the discretion of the owner. Because of the areas' small sizes, narrow configurations and steep slopes, any motorized or mechanical activity adjacent to these areas has the potential of completely dominating the majority of the acreage in each one, severely impacting the quality of the wilderness resource.

Table 2. Ecosystem Representation

Bailey - Kuchler Classification	NWPS Areas	NWPS Acres	Other BLM Studies Areas	Other BLM Studies Acres
Province/Potential Natural Vegetation				
NATIONWIDE				
Rocky Mountain Forest Province/ Western Ponderosa Forest and Grand fir/Douglas-fir Forest	5	836,199	0	0
OREGON				
	4	285,969	0	0

Table 3. Wilderness Opportunities for Residents of Major Population Centers

Population Centers	NWPS Area	NWPS Acres	Other BLM Studies Area	Other BLM Studies Acres
Eugene/Springfield, OR	42	2,859,994	43	770,436
Portland, OR	48	4,537,392	16	91,762
Salem, OR	45	2,888,764	18	210,085
Richland/Kennewick/ Pasco, WA	45	5,816,707	8	67,186
Yakima, WA	48	5,447,447	8	67,186
Boise, ID	16	4,741,570	126	5,060,460

Energy and Mineral Resource Values

The geology, energy and mineral resources of the Strawberry Mountain WSA were evaluated by interpreting existing literature, reviewing mining claim and mineral leasing records and correlating rock units in the WSA with similar environments in areas known to contain mineral resources.

Pine Creek and Indian Creek WSAs have moderate favorability for the occurrence of low to moderate temperature geothermal resources suitable for direct use applications. These resources may be localized along fault zones on the north side of Strawberry Mountain. (Limekiln Hot Springs is located about 0.25 miles north of Indian Creek WSA.)

Pine Creek and Indian Creek WSAs have known deposits of chromite and high favorability for the occurrence of chromite elsewhere in the units. Several seams of chromite are exposed in the eastern portion of Pine Creek WSA in surface outcrops and prospect adits (underground workings). The Marks-Thompson mine, located near Indian Creek WSA, produced 400 tons of chromite in 1916 and 1917. Each of these WSAs has high potential for chromite. The chromite resources are associated with serpentinite, dunite and olivinite rock types.

These WSAs have moderate favorability for the occurrence of chrysotile asbestos due to the presence of serpentine. They also have moderate favorability for vein-type gold deposits and for

copper-silver mineralization in shear zones similar to other deposits which occur nearby on Strawberry Mountain and Little Canyon Mountain.

Sheep Gulch WSA has been rated as having high favorability for deposits of copper and silver in quartz-bearing shear zones and moderate favorability for vein-type gold deposits. This is based on known deposits of copper within the area boundaries, as well as good indications of silver from a sample site nearby. Gold favorability is more speculative and is based on the nearby occurrence of numerous gold veins located about one to two miles to the north on Little Canyon Mountain.

Chromium, chrysotile asbestos, and copper are considered to be strategic and critical minerals. Known deposits of strategic and critical minerals occur in each unit of the WSA.

As of May 1991, there were 15 mining claims within these WSAs.

Local Social and Economic Considerations

Livestock use at the current level of five AUMs, timber harvest of an average annual volume of seven Mbf and recreation use totaling 200 visitor days per year are the primary resource outputs that generate economic activity in the WSA. Local personal income generated annually from these existing use levels amounts to less than $100 for livestock grazing, $1,900 for timber production and $2,400 related to recreation use of the WSA, for an overall total of approximately $4,400.

Under the recommendation, livestock grazing would remain at five AUMs and average annual timber production would remain at 7 Mbf. Projected mineral development could amount to two metallic mines. Overall recreation use would remain unchanged at 200 visitor days per year. Annual local personal income generated from resource outputs in the WSA would remain at approximately $4,400 with an unknown level of increase attributed to projected mineral development.

There were no social issues identified with the study of this WSA.

Summary of WSA-Specific Public Comments

Public involvement has occurred throughout the wilderness review process. Certain comments received during the inventory process and early stages of the EIS preparation were used to develop significant study issues and various alternatives for the ultimate management of those lands found to have wilderness values.

During formal public review of the Draft EIS and its Supplement, a total of 22 comments specifically addressing all three WSAs were received. Of those, 16 were written and six were oral statements received at the 24 public hearings on the EIS. One written comment was received on each WSA specifically. All of the comments received supported wilderness designation.

Those favoring wilderness commented that timber values in the WSAs were not significant enough to stop designation of the area as wilderness. Most commenters stated that wilderness designation would help protect the antelope and bighorn sheep habitat, and fisheries habitat, and also would serve as a good addition to the existing Strawberry Wilderness Area managed by the US Forest Service.

There were no recorded comments opposing designation as wilderness.

No WSA-specific comments were received from any Federal or local agencies.

There were two comment letters received on the final EIS for this WSA.

Impacts on Resources

The following comparative impact table summarizes the effects on pertinent resources for the two alternatives considered: designation and nondesignation of the entire area as wilderness.

Table 4. Comparative Summary of the Impacts by Alternatives

Issue Topics	Recommendation (No Wilderness/No Action Alternative)	All Wilderness Alternative
Impacts on Wilderness Values	Projected management actions would impair wilderness values on approximately 800 acres with further declines from other potential uses over the long term.	Wilderness designation of 1,149 acres would protect and enhance existing wilderness values. These acres would be added to the existing Strawberry Mountain Wilderness.
Impacts on Energy and Mineral Development	Projected production from one chromium mine and one copper-silver mine would occur.	Projected production from one chromium mine and one copper-silver mine would be foregone.
Impacts on Vegetation	Projected mineral development would disturb 10 acres while timber harvest would alter 98 acres of vegetation.	Revegetation would occur on 1.35 mile of ways.
Impacts on Wildlife	Existing populations would be maintained. Oregon Department of Fish and Wildlife goals would be met. Disturbance would result from mineral development, timber harvest and continued vehicle use.	Existing populations would be maintained with less disturbance from motor vehicles. ODFW goals would be met.
Impacts on Livestock Grazing	No impact to livestock grazing.	Authorized livestock use would remain at five AUMs. Vehicle use of 0.5 mile of ways would be precluded with slight inconvenience and increase in cost to the livestock operator.
Impacts on Wood Products Harvest	Projected average annual harvest of seven Mbf would occur.	Average annual harvest of seven Mbf would be foregone.
Impacts on Recreation Use	No impact to recreation use.	Recreation use associated with motorized vehicles would be precluded on 1.35 miles of ways. Overall recreation use would increase slightly.
Impacts on Local Personal Income	Annual local personal income would remain at approximately $4,400.	Annual local personal income would decrease by approximately $700.

Aldrich Mountain Wilderness Study Area

1. The Study Area —9,395 acres

The Aldrich Mountain Wilderness Study Area (WSA) (OR-2-103) is located three miles south of Dayville (and U.S. Highway 26) and 26 miles west of John Day in Grant County.

The study area contains 9,395 acres of BLM land in an irregular configuration (see Table 1). The area is over seven miles long and varies in width from three miles to 0.25 mile. There are no inholdings but State land protrudes into the area in two locations in the central portion of the WSA which creates the narrow portions of the boundary. Private land also protrudes into the area in the north.

With the exception of bladed roads which form the southern and a portion of the western boundary, the study area's boundaries consist of private and State land. A portion of the western boundary is formed by State land managed by the Oregon Department of Fish and Wildlife (ODFW).

The northern portion of the WSA is primarily bounded by private land although there are ODFW lands on the northeast. Most of the eastern boundary lies adjacent to the Malheur National Forest. One parcel of private land also makes up part of the eastern boundary. Also forming part of the eastern boundary are two dead-end timber haul roads which each extend about 0.5 miles into the study area.

The main feature of the WSA is the steep foothills on the western side of Aldrich Mountain which contain a series of ridges and drainages. They lie parallel to and just east of the south fork of the John Day River. Smokey Creek and Oliver Creek are the major drainages which cut through the area from east to west, but there are several other smaller tributaries and drainages. Due to the narrow width of the area, only small portions of the major drainages are included in the WSA.

The elevation of the area ranges from 2,560 feet on the lower slopes along the western boundary to 5,680 feet along the eastern boundary just north of Jackass Creek. The vegetation within the area includes scattered ponderosa pine and Douglas fir in the drainages and on the northern slopes in the higher elevations and sagebrush/grass and sagebrush/juniper communities in the lower foothills.

The WSA was studied under Section 603 of the Federal Land Policy and Management Act. It was

included in the Final Oregon Wilderness Environmental Impact Statement (EIS) filed in January 1990. There were two alternatives analyzed in the EIS, a no wilderness/no action alternative (which is the recommendation of this report), and an all wilderness alternative. These lands are shown on Maps 1 and 2.

2. Recommendation and Rationale:

—0 acres recommended for wilderness,
9,395 acres recommended for nonwilderness

The recommendation for this WSA is to release the entire area for uses other than wilderness. The all wilderness alternative is considered to be the environmentally preferable alternative as it would result in the least change from the natural environment over the long term. The recommendation, however, would be implemented in a manner which would use all practical means to avoid or minimize environmental impacts.

The no wilderness/no action alternative is the proposed action for the Aldrich Mountain WSA because the benefits of retaining options for resource development outweigh the benefits of preserving wilderness values. Although the study area contains a number of wilderness values, including naturalness, outstanding opportunities for solitude and recreation, as well as scenic and wildlife values, the benefits of preserving those values are outweighed by the benefits of developing the area's resources through intensive management practices. The lands within the WSA have the potential for the development of 60 additional AUMs of livestock forage through reserving construction and a 280-acre seeding, wildlife habitat improvements including the guzzlers and a 4,000-acre prescribed burn and an average timber harvest volume of 76 MBF.

3. Criteria Considered in Developing the Wilderness Recommendation

Wilderness Characteristics

A. Naturalness: The Aldrich Mountain WSA appears to be in a relatively natural condition. This WSA has a great diversity of vegetation from large conifer trees on the steep rocky slopes to riparian vegetation along the numerous side creeks which flow westward into the South Fork of the John Day. The geologic rock formations give a stark natural beauty to the area.

Forested sites, supporting Douglas fir/elk sedge communities, occur on the steep north-facing slopes which are in the upper and headland portions of the steep canyons. On the southerly aspects there are ponderosa pine-mountain mahogany/elk sedge-Idaho fescue communities. Big sagebrush/bunchgrass communities are found on the rims and steep, rocky slopes below the forested sites. Western juniper trees occur throughout these communities. Juniper/bunchgrass communities are found on the benches below the rims and on steep slopes. There are no known threatened or endangered plant species in the WSA.

The WSA provides yearlong habitat for over 75 California bighorn sheep (a category 2 Federal candidate species), 300 mule deer, 50 elk and 100 antelope. An additional 1,200 mule deer and 250 elk winter in the WSA. Chukar, valley quail and mourning doves are game birds found in the WSA. Sage grouse, a category 2 (see definition under Special Features section) Federal candidate species historically occurring in the WSA, have recently been seen in areas adjacent to the southern boundary of the WSA. Beaver, mink, weasels, raccoon, black bear, cougar and bobcat are fur bearers occurring in the WSA. Nongame wildlife inhabiting the WSA during all or part of the year include yellow warblers, mountain and western bluebirds, whiteheaded and Lewis' woodpeckers, flickers, western meadowlarks, western rattlesnakes, American kestrels, golden eagles, goshawks, Cooper's hawks and red-tailed hawks. There is no fishery in the WSA.

While the area generally appears natural there are 23 unnatural features within the WSA. They include four vehicle ways totaling 3.5 miles, six developed springs, five fences totaling seven miles, four guzzlers, two old crested wheatgrass seedings covering 300 to 700 acres, and two areas of past timber harvest. These developments are scattered within the study area and influence approximately 2,000 acres (21 percent of the WSA).

The vehicle ways are relatively inconspicuous, well screened by vegetative cover and traverse the study area for short distances. Approximately 0.75 miles of way currently have a seasonal closure from December 1 through April 30 as part of the Murderer's Creek Wildlife Management Area. One of

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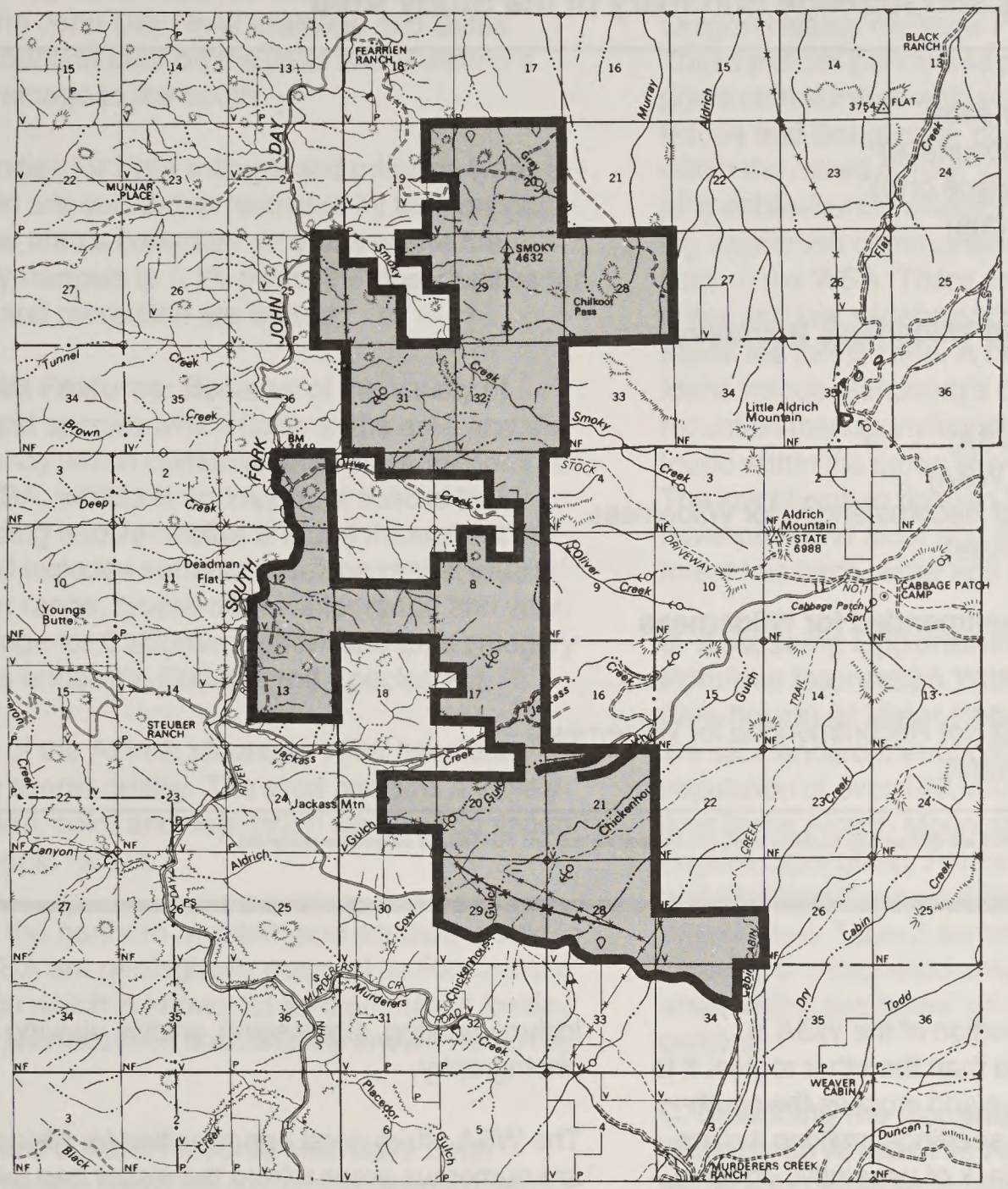


RECOMMENDED FOR WILDERNESS (None)

RECOMMENDED FOR NONWILDERNESS

LAND OUTSIDE WSA RECOMMENDED FOR WILDERNESS (None)

SPLIT ESTATE (None)

STATE (None)

PRIVATE (None)

- N -

Aldrich Mountain Proposal

MAP-1

0 1 2 3

MILES

OR-2-103

January, 1991

Table 1 - Land Status and Acreage Summary of the Study Area

Within Wilderness Study Area	
BLM (surface and subsurface)	9,395
Split Estate (BLM surface only)	0
Inholdings (state, private)	0
Total	9,395
Within the Recommended Wilderness Boundary	
BLM (within WSA)	0
BLM (outside WSA)	0
Split Estate (within WSA)[1]	0
Split Estate (outside WSA)[1]	0
Total BLM Land Recommended for Wilderness	0
Inholdings (state, private)	0
Within the Area Not Recommended for Wilderness	
BLM	9,395
Split Estate [1]	0
Total BLM Land Not Recommended for Wilderness	9,395
Inholdings (state, private)[1]	0

[1]For purposes of this report, split estate lands are defined only as those lands with Federal surface and non-Federal subsurface (minerals).

the ways in the northern portion of the WSA is somewhat more noticeable than the other routes. It is the longest of the four ways and crosses the southern edge of one of the old seedings, making it more visible due to the general lack of vegetative cover in the area. It receives light use from ranchers and hunters.

B. Solitude: The Aldrich Mountain WSA offers outstanding opportunities for solitude. Both topographic and vegetative screening are available throughout most of the study area. The WSA has steep slopes with deep drainages which form diverse topography and enhance opportunities for solitude. Vegetative screening is provided by Douglas fir and ponderosa pine, primarily along north facing slopes, while riparian areas and scattered stands of juniper also provide sufficient screening in the lower elevations of the area. The narrow and irregular configuration of the WSA does, however, subject wilderness users to influences outside the WSA as they move through the area and as a result somewhat reduces opportunities for solitude.

C. Primitive and Unconfined Recreation: Outstanding opportunities for primitive types of recreation are present within the study area and include hunting, sightseeing, wildlife viewing and photography.

The WSA offers good opportunities for hiking. There are numerous areas where the visitor can take leisurely hikes up a drainage or a more challenging hike up a ridgeline for rewarding views of the surrounding area from the higher elevations.

Opportunities for backpacking and camping are also good in the WSA. Level camping spots are limited to the extreme western and southern portions of the area. There are a few level areas in the upper elevations but these are scattered and limited to ridgetops. Scattered camping areas are also located in the timbered areas which offer a high degree of seclusion. There are good opportunities for hunting mule deer, Rocky Mountain elk and antelope in the Aldrich Mountain WSA.

Opportunities for sightseeing, photography and wildlife viewing are good. Depending on the time of year, there are opportunities to view deer, elk, antelope and bighorn sheep. In addition, not only is there scenic quality within the study area, but the higher elevation provides ample opportunities to view and photograph much of the surrounding country.

This includes more of Aldrich Mountain to the east, the John Day River Valley to the north, the South Fork of the John Day River drainage and Battle Creek Mountain area on the west and Murderer's Creek drainage to the south.

Opportunities for both solitude and primitive types of recreation are somewhat restricted by the configuration of the area's boundary. In areas where the boundary narrows to 0.25-miles, the opportunities for solitude and recreation are limited.

D. Special Features: Because of the variety of habitat and species which occur in the area and the dependency which certain animals have for portions of the WSA, wildlife is an important special feature. Outstanding wildlife habitat is found throughout the WSA and includes summer antelope range, crucial elk winter range, crucial deer winter range and year-round range for California bighorn sheep, a category 2 species under the Endangered Species Act.

Portions of the Aldrich Mountain WSA have outstanding scenic quality. The area contains a variety of landform, color and vegetation which all contribute to the scenic values.

Areas in the northern, western and southern portions of the WSA are geologically mapped as Rattlesnake Formation which is known for its mammalian fossils, however, no localities are currently known within the WSA.

Although no cultural resource sites have been recorded within the WSA, there is excellent potential for discovering both prehistoric and historic sites due to the area's proximity to the South Fork John Day River.

Diversity in the National Wilderness Preservation System

A. Expanding the Diversity of Natural Systems and Features as Represented by Ecosystems: Wilderness designation of the Aldrich WSA would add a unique combination of ecosystems not presently represented in Oregon nor represented in the entire National Wilderness Preservation System (NWPS). There are no other BLM areas in the state or nation under study with this combination of ecosystems.

According to the Bailey-Kuchler system of classifying ecosystems, the Aldrich Mountain WSA is located in the Rocky Mountain Forest Province and its potential natural vegetation is western ponderosa pine and sagebrush steppe.

Ten of the vegetative communities listed in the Ochoco, Blue and Wallowa Mountains section of the Oregon Natural Heritage Plan occur in this WSA. These include ponderosa pine/bluebunch wheatgrass communities with separate areas of Idaho fescue and Douglas fir- ponderosa pine/elk sedge within the mixed conifer forest. There are western juniper/bluebunch wheatgrass and western juniper/big sagebrush communities at lower to mid-elevations of the WSA. There are big sagebrush/bunchgrass and low sagebrush/bunchgrass communities inside the forest zone. A bluebunch wheatgrass-Idaho fescue-Sandberg's bluegrass complex and mountain mahogany/bunchgrass communities are found within the same elevation as the juniper area. The low elevation riparian forest has cottonwoods, hawthorne and alder and the high elevation riparian forest has birch, alder and dogwood.

B. Assessing Opportunities for Solitude or Primitive Recreation Within a Day's Driving Time (five hours) of Major Population Centers: There are six standard metropolitan statistical areas with a population of over 100,000 within five hours' driving time of the Aldrich Mountain WSA: Boise, Idaho, Eugene/Springfield, Portland and Salem, Oregon, and Richland/Kennewick/Pasco, and Yakima, Washington. Table 3 summarizes the number and acreage of designated areas and other BLM study areas within five hours' drive of major population centers.

C. Balancing the Geographic Distribution of Wilderness Areas: The Aldrich Mountain WSA would not contribute to balancing the geographic distribution of areas within the National Wilderness Preservation System. There are six designated wilderness areas within 100 miles of the WSA.

Manageability

(The area must be capable of being managed to preserve its wilderness character.)

The area would be manageable as wilderness under the all wilderness alternative. The narrow and irregular configuration of the study area's boundary would, however, create some manageability problems by restricting movement through the area and subjecting wilderness users to influences from outside the area.

Energy and Mineral Resource Values

The geology, energy and mineral resources of the Aldrich Mountain WSA were evaluated by interpret-

Table 2 - Ecosystem Representation

Bailey-Kuchler Classification	NWPS Areas areas	NWPS Areas acres	Other BLM Studies areas	Other BLM Studies acres
Province/Potential Natural Vegetation				
NATIONWIDE				
Rocky Mountain Forest Province/ Sagebrush Steppe and Western Ponderosa Forest	0	0	0	0
OREGON				
	0	0	0	0

Table 3 - Wilderness Opportunities for Residents of Major Population Centers

Population Centers	NWPS Areas Area	NWPS Areas Acres	Other BLM Studies Area	Other BLM Studies Acres
Boise, ID	16	4,741,570	126	5,060,460
Eugene/Springfield, OR	42	2,859,994	43	770,436
Portland, OR	48	4,537,392	16	91,762
Salem, OR	45	2,888,764	18	210,085
Richland/Kennewick/ Pasco, WA	45	5,816,707	8	67,186
Yakima, WA	48	5,447,447	8	67,186

ing existing literature, reviewing mining and mineral leasing records and correlating rock units in the WSA with similar environments in other areas that are known to contain mineral deposits.

Technical details of the findings are in Terradata Report for Aldrich Mountain GRA (OR-020-13) prepared in March 1983. The evaluation is incorporated in this report on the Aldrich Mountain geologic resource area, Grant County, Oregon, prepared by Terradata, a consulting firm under contract with BLM.

There are no known energy resources within the WSA.

The entire study area has moderate favorability for the occurrence of chromite and asbestos. The presence of serpentine provides a favorable environment for the occurrence of chrysotile asbestos and indicates the presence of other rock types associated with occurrences of chromite. These rocks may underlie the entire WSA. Several chromite prospects occur just west of the WSA and an undetermined amount of chromite has been produced. Chromium and chrysotile asbestos are both considered to be strategic and critical minerals; however, there are no known deposits of strategic and critical minerals in the WSA.

As of May, 1991, there were no mining claims within this WSA.

Local Social and Economic Considerations

Livestock use at the current level of 231 AUMs, timber harvest of an average annual volume of 76 MBF and recreation use totaling 750 visitor days per year are the primary resource outputs that generate economic activity in the WSA. Local personal income generated annually from these existing use levels amounts to approximately $2,800 for livestock grazing, $20,500 for timber production and $9,000 related to recreation use of the WSA, for an overall total of $32,300.

Under the recommendation, livestock grazing would increase by 60 AUMs, while average annual timber production would remain at 76 MBF. Overall recreation use would remain at 750 visitor days per year. Annual local personal income generated from resource outputs in the WSA would increase by approximately $700 per year. There were no social issues identified with the study of this WSA.

Summary of WSA - Specific Public Comments

Public involvement has occurred throughout the wilderness review process. Certain comments received during the inventory process and early stages of the EIS preparation were used to develop significant study issues and various alternatives for the ultimate management of those lands found to have wilderness values.

During formal public review of the Draft EIS and its Supplement, a total of 33 comments specifically addressing this WSA were received. Of those, 25 were written and 8 were oral statements received at the 24 public hearings held on the EIS. In general, 22 commenters supported wilderness designation for all or part of the WSA. Five commenters supported no wilderness for the WSA, while six commenters addressed the relative merits of the EIS, but took no formal position on wilderness designation.

Another comment suggested that the EIS analysis of the socio- economic factors was inadequate; one comment suggested that analysis of impacts on vegetation, as well as fish and wildlife resulting from timber harvest and other activities, is not adequate. All these comments were addressed in the Final EIS.

There was one comment concerning five possible T&E plants that may not have been addressed in the draft EIS. Another comment suggested an enhanced alternative to include acquisition or exchanges of lands adjacent to the WSA. One comment suggested that the BLM analyze a wider range of alternatives. Three favored wilderness designation to protect bighorn sheep, ecosystems, and enhance the wilderness system. Two said it would be a good addition to existing wilderness in the state.

No WSA-specific comments were received from any Federal or local agencies.

There were two letters received on the final EIS for this WSA.

Impacts on Resources

The following comparative impact table summarizes the effects on pertinent resources for all the alternatives considered including designation or nondesignation of the entire area as wilderness.

Table 4 -Comparative Summary of the Impacts by Alternatives

Issue Topics	Recommendation (No Wilderness/No Action Alternative)	All Wilderness Alternative
Impacts on Wilderness Values	Projected management activities would impair wilderness values over approximately 3,200 acres with further declines from other potential uses over the long term.	Wilderness designation of 9,395 acres would protect and enhance existing wilderness values.
Impacts on Energy and Mineral Development	No impact.	No impact.
Impacts on Vegetation	Seral status would change away from early seral status on 4,280 acres through prescribed burning and seeding. Seral status would change toward early seral status on 1,072 acres through timber harvest. Vegetation would be disturbed on an additional 16 acres.	Revegetation of three acres of ways would occur.
Impacts on Wildlife	Habitat quality and diversity would be improved for big-game species. Old growth species would be displaced. Existing big-game populations maintained.	Precluding two guzzlers and 4,000 acres of prescribed burning would continue existing poor habitat condition in the southern portion. Habitat would be maintained on 9,395 acres.
Impacts on Watershed	Conditions would improve on 4,280 acres through prescribed burning and seeding.	No impact.
Impacts on Livestock Grazing	An additional allocation of 60 AUMs realized through reservoir construction and seeding for total allocation of 291 AUMs.	Livestock use would remain at 231 AUMs. An additional 60 AUMs of forage would be foregone. Vehicle use of 3.5 miles of ways precluded with some inconvenience and increase in cost to the livestock operators.
Impacts on Wood Products Harvest	An average annual harvest of 76 Mbf would be realized.	An average annual harvest of 76 Mbf realized would be.
Impacts on Recreation Use	Current annual level of 750 visitor days of motorized and nonmotorized recreation use would continue.	Current 750 visitor days per year overall use level would not change. A shift from motorized to nonmotorized recreation would occur.
Impacts on Personal Income	Annual local personal income would increase by approximately $700.	Annual local personal income would decrease by approximately $20,500.

Castle Rock Wilderness Study Area

1. The Study Area —6,200 acres

The Castle Rock Wilderness Study Area (WSA) (OR-3-18) is located in Malheur County, Oregon, approximately 26 miles north of the community of Juntura and U.S. Highway 20. The WSA includes 5,560 acres of BLM lands and 640 acres of split-estate lands (See Map 1 and Table 1). The WSA is roughly triangular in shape and has three narrow extensions which give it a slightly irregular perimeter. It is bounded by a combination of high standard dirt roads on public land and by private property. Most of the southern and southwestern boundary borders private land. Portions of the area are steep and support stands of ponderosa pine with Douglas fir, western juniper and mountain mahogany. The most notable physical feature of the WSA is Castle Rock. It is the highest landform within 100 miles to the south and east and 20 miles to the north and west. Castle Rock is the neck of an extinct volcano and reaches an elevation of 6,780 feet.

The WSA was initially identified and studied under section 603 of the Federal Land Policy and Management Act (FLPMA) with additional acquired split-estate lands studied under section 202. The WSA was included in the Final Oregon Wilderness Environmental Impact Statement (EIS) filed in February, 1990. There were three alternatives analyzed in the EIS: an all wilderness alternative; a partial wilderness alternative in which 5,975 acres would be designated as wilderness, an attempt would be made to acquire the mineral estate of the 640 acre split estate parcel, and 225 acres would be released for uses other than wilderness; and a no wilderness/no action alternative, which is the recommendation in this report.

2. Recommendation and Rationale

—0 acres recommended for wilderness
6,200 acres recommended for nonwilderness

The recommendation for the Castle Rock WSA is to release the entire 6,200 acres for uses other than wilderness. Designation of the entire WSA as wilderness is the environmentally preferable alternative since it would result in the least change from the natural environment over the long term. However, the no wilderness recommendation would be imple-

mented in a manner which would use all practical means to avoid or minimize environmental impacts.

The value of the benefits to be gained by retaining the options for mineral exploration and development combined with potential manageability concerns outweigh the limited wilderness values found in this WSA.

Releasing the 6,200 acres of this WSA for uses other than wilderness would preserve the option to explore the high potential for the occurrence of gold, silver, and mercury which the entire WSA is considered to have. An open pit gold/silver mine is projected to be developed in the northwest portion of the WSA if the area is not designated as wilderness.

The area does not offer outstanding opportunities for solitude. Topography creates a single major travel corridor along a ridgeline to Castle Rock. The steep terrain, limited vegetative screening on the west slope, and the relatively-small size of the WSA constrain opportunities for solitude.

Although the area could be managed as wilderness, it would be difficult to manage for preservation of wilderness values if the private lands adjacent to the WSA and the split-estate parcel were developed. Nearly half of the WSA is bordered by private land, some of which is planted with agricultural crops. Because of the open character of this part of the area, these farming activities can be seen from much of the western half of the WSA. Other private lands which may be developed are within view of the WSA. In addition to agricultural value, these lands have a potential for development as investment property. The mineral estate of the split-estate parcel may also be explored and/or developed. Because of the location of this parcel near the center of the WSA in high and steep terrain, any surface disturbance and access to the parcel could visually affect a substantial portion of the WSA. The development of either the adjacent private land or the split-estate parcel could reduce the area's apparent naturalness. Two narrow extensions in the southern part of the WSA have few wilderness values and could easily be affected by developments outside of the area.

The relatively-small size of the WSA and the constricting nature of the topography could compound the problems associated with managing the area for preservation of wilderness values if adjacent lands or the split-estate parcel were developed.

The no wilderness recommendation for Castle Rock WSA may lead to the impairment of wilderness values, but the value of retaining development options in this area exceeds these wilderness values.

3. Criteria Considered in Developing the Wilderness Recommendation

Wilderness Characteristics

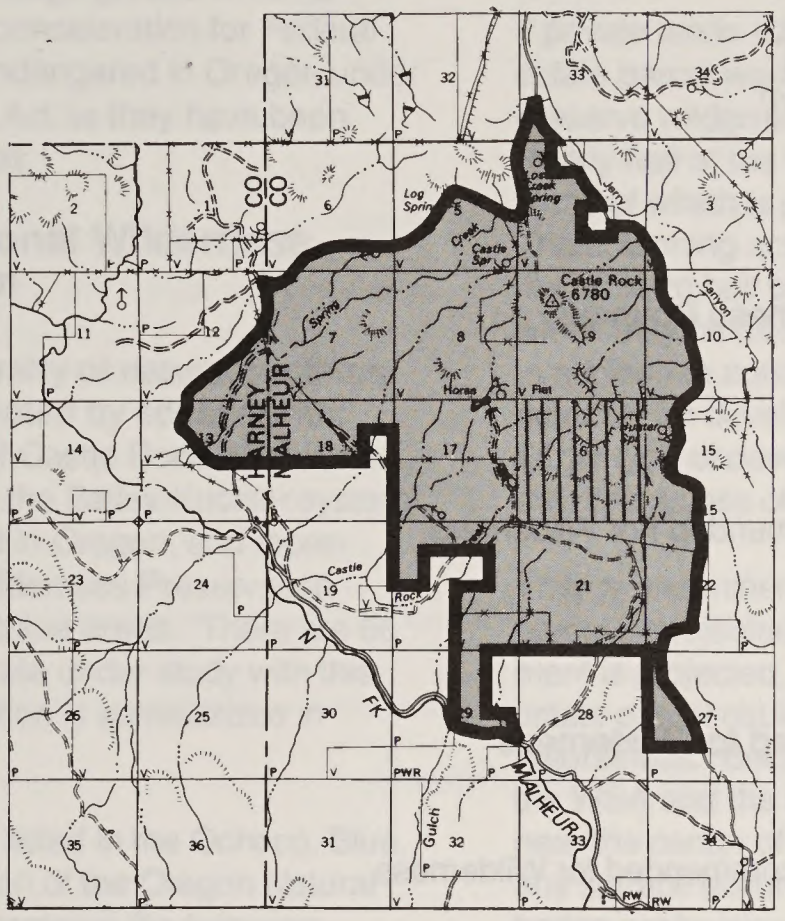
A. Naturalness: The Castle Rock WSA is in a substantially natural condition. The most notable physical feature of the WSA is Castle Rock. Castle Rock is the neck of an extinct volcano and reaches an elevation of 6,780 feet.

A variety of vegetation communities occurs in the WSA. These communities are typical of higher elevation sagebrush-steppe ecosystems bordering forest zones. The ecological status is primarily early seral in the southern and lower elevation western portions of the WSA. In the rest of the WSA, status is middle to late seral, with pristine pockets occurring on steeper slopes and at higher elevations. The area supports numerous herbaceous perennial species including phlox, collomia, daisy fleabane, lupine, aster, and scarlet gilia. Shrub species are characteristic of higher elevations; both snowberry and Oregon grape occur in the WSA. Patches of bitterbrush may be found in the drier areas.

The two major vegetation communities which occur in the area are bluebunch wheatgrass/Idaho fescue and mountain big sagebrush/Idaho fescue/bluebunch wheatgrass. Other plant communities include ponderosa pine/bunchgrass, mountain mahogany/bunchgrass, and ponderosa pine/Douglas fir. There are approximately 230 acres of ponderosa pine. Scattered stands of western juniper as well as pockets of quaking aspen also occur in the area.

The WSA has high quality big game summer range. Cover, water, and forage are all available in sufficient quantities to be especially good for deer and elk. Forest canopy cover and high quality forage are key habitat features. The WSA supports approximately 50 Rocky Mountain elk, 200 mule deer, and 10 antelope. A diverse community of upland game birds use the area, including chukar partridge, California quail, blue grouse, and sage grouse. (The sage grouse is a candidate species for Federal listing as threatened or endangered in Oregon under the Endangered Species Act.) Two reservoirs near Horse Flat support emergent vegetation and wetland meadow habitat for waterfowl, primarily mallards.

Thirteen interior unnatural features visually influence approximately 13 percent of the WSA. These



RECOMMENDED FOR WILDERNESS (None)

RECOMMENDED FOR NONWILDERNESS

LAND OUTSIDE WSA RECOMMENDED FOR WILDERNESS (None)

SPLIT ESTATE

STATE (None)

PRIVATE (None)

- N -

Castle Rock Proposal

MAP-1

0 1 2 3

MILES

OR-3-18

January, 1991

Table 1 - Land Status and Acreage Summary of the Study Area

	Acres
Within Wilderness Study Area	
BLM (surface and subsurface)	5,560
Split-Estate (BLM surface only)[1]	640
Inholdings (State, Private)	0
Total	6,200
Within the Recommended Wilderness Boundary	
BLM (within WSA)	0
BLM (outside WSA)	0
Split-Estate (within WSA)[1]	0
Split-Estate (outside WSA)[1]	0
Total BLM Land Recommended For Wilderness	0
Inholdings (State, Private)	0
Within the Area Not Recommended for Wilderness	
BLM	5,560
Split-estate[1]	640
Total BLM Land Not Recommended for Wilderness	6,200
Inholdings (State, Private)	0

[1]For purposes of this report, split-estate lands are defined only as those lands with Federal surface and non-Federal subsurface (minerals).

features consist of two reservoirs, four developed springs, one corral, an old remnant dam, three miles of three ways, eight miles of fence, and a powerline approximately 0.5 miles in length. These interior developments are generally well dispersed within the WSA. Unnatural features outside the WSA that affect the naturalness of the area include boundary roads and cultivated farm land. The steep, open, western slope of Castle Rock ridge is the area most influenced by developments on the adjoining private property. The overall influence of human imprints on the naturalness of the area as perceived by the average visitor is negligible.

B. Solitude: The Castle Rock WSA does not offer outstanding opportunities for solitude. Due to the steep terrain and the attraction of Castle Rock, most visitors to the area would travel in a narrow corridor on the ridgeline from the north boundary of the WSA to Castle Rock. This restrictive travel pattern, the area's relatively-small size, and the open western slope adversely influence opportunities for solitude. The vegetative screening found mainly on the eastern slope and topographic screening of the ridge provide some seclusion, but do not compensate for the small size and confined use pattern.

C. Primitive and Unconfined Recreation: The Castle Rock WSA, with its diverse vegetation and rugged terrain, contains outstanding opportunities for primitive and unconfined recreation including day hiking, photography, bird watching, and sightseeing. The WSA also offers opportunities for hunting, backpacking, camping, horseback riding, rock climbing, and winter sports.

D. Special Features: Castle Rock is one of the most prominent physical features in the region and is the focal point of interest in the Castle Rock WSA. The neck of an extinct volcano believed to have erupted roughly 15 million years ago, Castle Rock is a striking landmark with highly scenic qualities. The area reportedly serves as a vision quest site for the Northern Paiute Indians, though this has not been verified by the BLM. Castle Rock also served as a regional landmark during pioneer times.

The Castle Rock WSA contains an unusually large number of different plant communities compared to most areas in Malheur County. Six distinct communities occur within the WSA. The WSA supports about 50 Rocky Mountain elk. Another species inhabiting the WSA is the sage grouse which is currently a candidate for consideration for Federal listing as threatened or endangered in Oregon under the Endangered Species Act as they have been impacted by loss of habitat.

Diversity in the National Wilderness Preservation System

A. Expanding the diversity of natural systems and features as represented by ecosystems: Wilderness designation of Castle Rock WSA would add an ecosystem (using the Bailey-Kuchler system) not presently represented in Oregon, and represented in the National Wilderness Preservation System (NWPS) by only three areas. There are 66 other BLM areas in the state under study with this ecosystem. This information is summarized in Table 2.

Of the plant communities listed in the Ochoco, Blue, Wallowa Mountains section of the Oregon Natural Heritage Plan, the WSA contains the following communities: western juniper/bluebunch wheatgrass; ponderosa pine/bunchgrass in the Blue Mountains with inclusions of Idaho fescue/bluebunch wheatgrass; bluebunch wheatgrass/Idaho fescue/ Sandberg's bluegrass complex; mountain mahogany/bunchgrass; and big sagebrush/bluebunch wheatgrass inside the forest zone.

B. Assessing the opportunities for solitude or primitive recreation within a day's driving time (five hours) of major population centers: The Castle Rock WSA is within a five-hour drive of two major population centers (over 100,000). Table 3 summarizes the number and acreage of designated areas and other BLM study areas within five hours drive of the population centers.

C. Balancing the geographic distribution of wilderness areas: The Castle Rock WSA would not contribute to balancing the geographic distribution of areas within the National Wilderness Preservation System. Five designated wilderness areas are located within 100 miles of the WSA.

Manageability

(The area must be capable of being effectively managed to preserve its wilderness character.)

The Castle Rock WSA could be managed as wilderness. The single major travel corridor along a ridgeline to Castle Rock and the relatively-small size of the WSA complicate manageability of the area for solitude.

If private lands adjacent to the WSA and the split-estate parcel were developed, it would be difficult to preserve wilderness values over the long term. Nearly half of the WSA is bordered by private land, some of which is planted with agricultural crops. These farming activities can be seen from much of the western half of the WSA. Other private lands which may be developed are within view of the WSA. In addition to agricultural value, these lands have a potential for development as investment property. Either type of development would reduce the apparent naturalness of the area.

Energy and mineral exploration on the split-estate parcel is projected to occur. Although no development is projected, exploration activity on the split-estate parcel could reduce the WSA's apparent naturalness. Because of the relatively-small size of the WSA and the location of the split-estate parcel near the center of the area in high and steep terrain, any surface disturbance from energy or mineral drill-boring exploration and access to it could affect a substantial portion of the area. Exploration for geothermal resources is postulated to occur on 560 acres of split-estate land. This effort will most likely consist of geologic mapping and geo-physical surveys, followed by the drilling of a 4,000-foot deep temperature gradient hole. The resulting surface disturbance is expected to total about two acres, including one mile of new road construction. Exploration for gold, silver, mercury, and diatomite is postulated for the 640-acre split-estate parcel. This effort will most likely consist of surface examination and sampling followed by core drilling. These tests may involve up to five core holes and may disturb five acres, including three miles of new road construction.

Energy and Mineral Resource Values

Energy and mineral resources of the Castle Rock WSA were evaluated from available geologic data by TERRADATA, a consulting firm under BLM contract. BLM geologists revised the evaluation of the mineral potential of the WSA during 1987.

The entire WSA has high potential for gold, silver and mercury; a moderate potential for oil and gas; and a moderate potential for diatomite.

Table 2 - Ecosystem Representation

Bailey-Kuchler Classification	NWPS Areas areas	NWPS Areas acres	Other BLM Studies areas	Other BLM Studies acres
Province/Potential Natural Vegetation				
NATIONWIDE				
Intermountain Sagebrush Province/ Sagebrush-Steppe	3	76,699	136	4,364,140
OREGON				
	0	0	66	1,976,874

Table 3 - Wilderness Opportunities for Residents of Major Population Centers

Population Centers	NWPS Areas areas	NWPS Areas acres	Other BLM Studies areas	Other BLM Studies acres
Boise, Idaho	16	4,741,570	126	5,060,460
Kennewick/Richland/Pasco, Washington	45	5,816,707	8	67,186

An area covering approximately 3,950 acres in the southern portion of Castle Rock WSA is estimated to have moderate potential for the occurrence of geothermal resources.

In summary, quantities of various minerals are unknown, but potential for occurrence is moderate to high for some resources over the entire WSA while the potential for geothermal resources is more localized.

As of May 1991, there were no mining claims in this WSA.

Local Social and Economic Considerations

Livestock use at the current level of 1,303 AUMs and recreation use totaling 1,000 visitor days per year are the primary resource outputs that generate economic activity in the WSA. Local personal income generated annually from these existing use levels amounts to approximately $15,600 for livestock grazing and $12,000 related to recreation use of the WSA, for an overall total of $27,600.

Under the recommendation for the Castle Rock WSA, livestock grazing would decrease by 70 AUMs, projected energy and mineral development would amount to one metallic mine, and overall recreation use would decrease by 200 visitor days per year. Annual local personal income generated from resource outputs in the WSA would decrease by approximately $3,000, with an unknown increase from projected mineral development. There were no social issues identified in the study of this WSA.

Summary of WSA-Specific Public Comments

Public involvement has occurred throughout the wilderness review process. Certain public comments received during the inventory process and early stages of the EIS preparation were used to develop significant study issues and various alternatives for the ultimate management of those lands found to have wilderness values.

During formal public review of the Draft Oregon Wilderness Environmental Impact Statement and the Supplement to the Draft, a total of 15 comments specifically addressing the Castle Rock WSA were received. Of those, eleven were written and four were oral statements received at public hearings on the draft EIS and supplement. In general, 13 commenters supported wilderness designation for all or part of the WSA. No commenters supported no wilderness for the WSA, while two commenters addressed the relative merits of the EIS, but took no formal position on wilderness designation.

Those favoring wilderness commented on the high value of this area for wilderness, its importance for recreation/wilderness experiences, and the uniqueness of the area, citing the unusual volcanic land form and plant communities, including the presence of ponderosa pine in the middle of the desert, the diversity of plant communities, and that this area is a vision quest site for Northern Paiutes.

No WSA-specific comments were received from any Federal or local agencies. The Idaho Air National Guard (IDANG) commented on the draft EIS, expressing a concern over the possible conflict between low altitude overflights and the feeling of solitude sought by wilderness area users.

There were two comment letters received on the final EIS.

Impacts on Resources

The following comparative impact table summarizes the effects on pertinent resources for all the alternatives considered including designation or nondesignation of the entire area as wilderness.

Table 4 - Comparative Summary of the Impacts by Alternative

Issue Topics	Recommendation (No Wilderness/No Action Alternative)
Impacts on Wilderness Values	In the absence of wilderness designation, projected activities would both directly and indirectly impair wilderness values over approximately 5,300 acres (86%) of the WSA with further declines from other potential uses over the long term.
Impacts on Energy and Mineral Development	There would be no impact on energy development. An open pit gold/silver mine is projected to be developed.
Impacts on Vegetation	Vegetation would be removed on 450 acres in the northwestern portion of the WSA. Little or no change would take place to vegetative composition or ecological status on the remainder of the WSA.
Impacts on Wildlife	Displacement of elk, mule deer, antelope, and sage grouse would result from the projected open pit mine development, with loss of wildlife habitat on 450 acres.
Impacts on Livestock Grazing	Projected mineral development would likely reduce the allocation of forage to livestock by 70 AUMs.
Impacts on Recreation Use	Motorized recreation uses would slightly increase as mineral exploration activity occurs. Projected development of a gold/silver mine would cause a long term decline of recreation use to 800 from the current 1,000 visitor use days annually.
Impacts on Local Personal Income	Annual local personal income would decrease by approximately $3,000, with an unknown level of increase from mineral development.

All Wilderness Alternative	Partial Wilderness Alternative
Wilderness designation of 6,200 acres would protect existing wilderness values with some minor enhancement of those values.	Wilderness designation of 5,975 acres (including acquisition of the mineral estate on the 640 acre split estate parcel) would fully protect and enhance existing wilderness values. The limited wilderness values on the 225 acre nonsuitable area would be further degraded by projected mineral exploration with further declines from other potential uses over the long term.
There would be no impact on energy development. Wilderness designation would result in foregone production from one projected open pit gold/silver mine.	There would no impact on energy development. Wilderness designation would result in foregone production from a projected open pit gold/silver mine.
Little or no change would occur to vegetation.	Little or no change would occur to vegetation in the area designated wilderness. Projected mineral exploration on the 225 acres proposed for nonwilderness would disturb one acre of vegetation.
Wildlife habitat and populations would be maintained on 6,200 acres designated wilderness.	Wildlife habitat and populations would be maintained on 5,975 acres designated wilderness.
Livestock use would remain at the current use level of 1,303 AUMs. Vehicle use of three miles of ways would be precluded with some inconvenience and a slight increase in cost to livestock operators.	Livestock use would remain at 1,303 AUMs. Vehicle use of three miles of ways would be precluded with some inconvenience and a slight increase in cost to livestock operators.
The area's recreation use level of approximately 1,000 visitor days would slightly increase to around 1,200 visitor use days per year.	The area's recreation use level would slightly increase from 1,000 to approximately 1,200 visitor use days per year.
Annual local personal income would increase by approximately $2,000.	Annual local personal income would increase by approximately $2,000.

Table 4 - Comparative Summary of the Impacts by Alternative

Beaver Dam Creek Wilderness Study Area

1. The Study Area —19,580 acres

The Beaver Dam Creek Wilderness Study Area (WSA) (OR-3-27) is located in Malheur County, Oregon, approximately 14 miles south of the town of Ironside and U.S. Highway 26. The WSA contains 19,140 acres of BLM land and 440 acres of split-estate lands in two parcels located near the WSA's boundary (see Table 1). The WSA is roughly horseshoe shaped, with boundaries composed of high standard dirt roads and adjacent private land. Private land represents over 50 percent of the WSA's boundary. Adjacent private parcels along Bully Creek account for the WSA's horseshoe configuration. A one-mile dead-end road that terminates at Kitten Canyon Reservoir enters the WSA from the east, forming part of the boundary.

The WSA has a complex, mountainous appearance due to numerous ridges and draws. This is most prevalent in the north-central portion of the area. The highest point, located in the northern portion of the WSA, is in the vicinity of Sheep Rock at 5,902 feet. Numerous intermittent and perennial drainages empty into Bully Creek, which runs through mostly private land near the middle of the WSA.

Junipers and patches of mountain mahogany grow in much of the area. Quaking aspen occupy many sites near streams and a few ponderosa pine grow on some of the higher slopes. Understory vegetation is composed mostly of big sagebrush, bluebunch wheatgrass and Idaho fescue.

The WSA was initially identified and studied under Section 603 of the Federal Land Policy and Management Act (FLPMA) with additional acquired split-estate lands studied under Section 202. The WSA was included in the Final Oregon Wilderness Environmental Impact Statement (EIS) filed in February, 1990. There were two alternatives analyzed in the EIS: an all wilderness alternative and a no wilderness/no action alternative, which is the recommendation in this report. The lands of this WSA are shown on Map 1.

2. Recommendation and Rationale

—0 acres recommended for wilderness
19,580 acres recommended for nonwilderness

The recommendation for the Beaver Dam Creek WSA is to release the entire 19,580 acres for uses other than wilderness. Designation of the entire WSA as wilderness is the environmentally preferable alternative since it would result in the least change from the natural environment over the long term. However, the no wilderness recommendation will be implemented in a manner that would use all practical means to avoid or minimize environmental impacts.

Wilderness values are relatively low in much of this WSA, especially in portions affected by narrow configuration, and the area would be difficult to manage as wilderness. The recommendation avoids difficulties inherent in preserving the area's wilderness values because of the configuration of the WSA and the possibility of development of the private lands which border over 50 percent of the WSA. This may cause an impairment of wilderness values, but other resource uses outweighs preserving these wilderness values. Private property nearly divides the WSA along Bully Creek, producing two narrow extensions in the northwestern and southern portions which are about one mile or less wide and two to four miles long. Wilderness values, which are limited in these narrow extensions, would be difficult to manage because an absence of screening subjects the area to disruptive influences from the adjacent boundary roads and private property.

The recommendation also allows for other uses of the area. One use that would be preserved is the option to explore for gold, oil and gas (which have a moderate potential in the WSA), although development is not projected. Another use allowed under the recommendation would be construction of three reservoirs to improve livestock distribution, relieving pressure from areas around springs and streams that are being heavily utilized. Additionally, ways would be kept open to vehicle use by recreationists which is an important consideration since this area is popular with vehicle-based hunters, and many hunters use the ways during deer and elk seasons.

3. Criteria Considered in Developing the Wilderness Recommendation

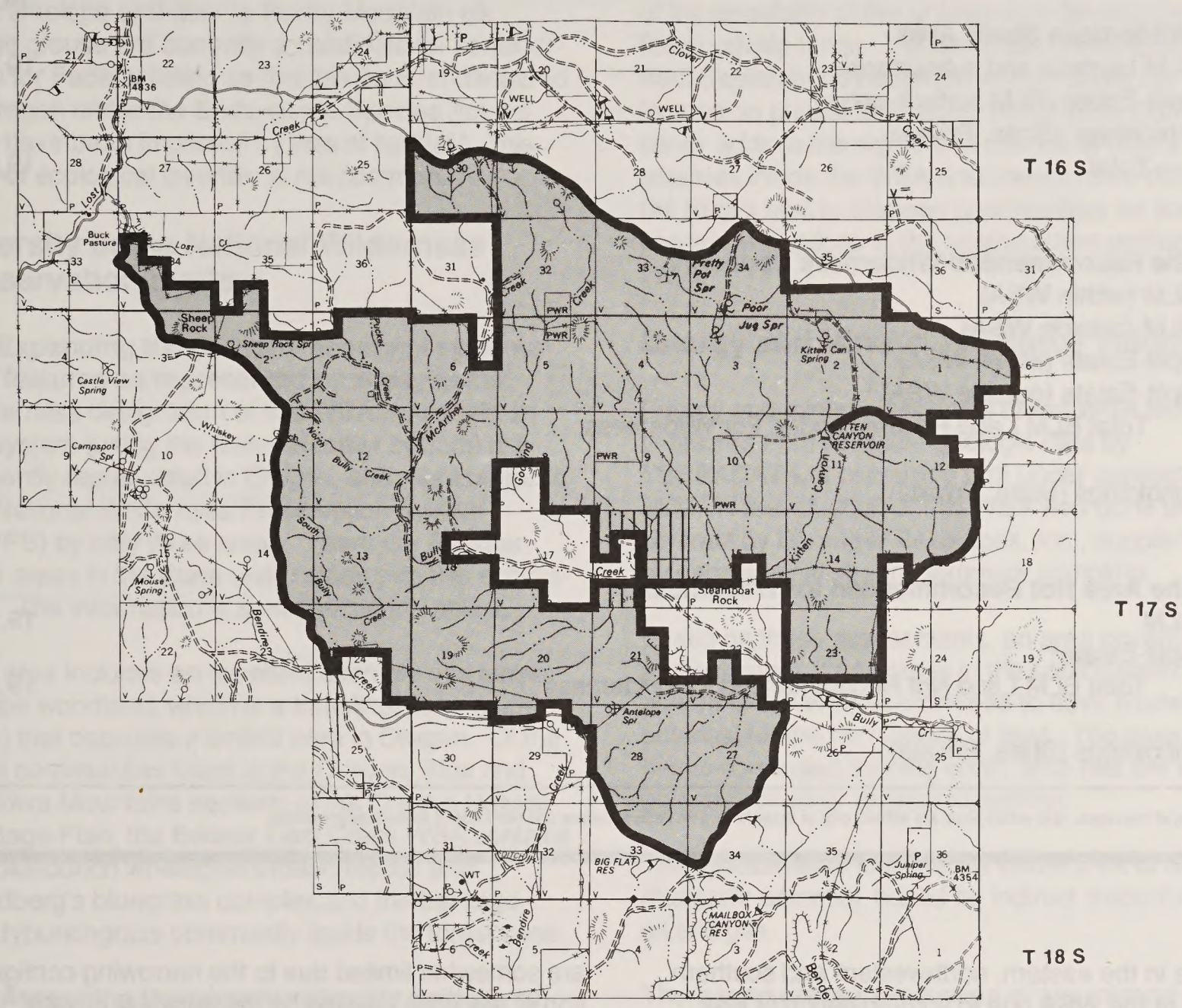
Wilderness Characteristics

A. Naturalness: The Beaver Dam Creek WSA is generally natural with minimal human imprints. The area has a complex mountainous appearance due to numerous ridges and draws. This is most prevalent in the north-central portion of the area. The highest point, located in the northern portion of the WSA, is in the vicinity of Sheep Rock at 5,902 feet. Numerous intermittent and perennial drainages empty into Bully Creek, which runs through mostly private land near the middle, yet outside, of the surrounding WSA. The one-mile dead-end road to Kitten Canyon Reservoir, branching from the WSA's east edge and part of the WSA boundary, detracts from the naturalness of the WSA's open slopes of the canyon in which it is located.

Understory vegetation is composed mostly of big sagebrush, bluebunch wheatgrass and Idaho fescue. Junipers and patches of mountain mahogany grow in much of the area. Quaking aspen occupy many sites near streams and a few ponderosa pine grow on some of the higher slopes. The interspersion of these plant communities increases wildlife habitat edge and, consequently, the diversity of the natural community. Wildlife varies from forest nesting goshawks to sage grouse and from antelope and deer to Rocky Mountain elk.

The majority of man's imprints within the WSA are associated with livestock management activities. About 16 percent of the WSA is visually influenced by 26 interior, unnatural features. Most of the influence occurs in the northeast half of the area. The unnatural features consist of 5 fences totaling 18 miles, 15 ways totaling 9 miles, 4 developed springs, a reservoir, and the ruins of an old cabin. The overall influence of human imprints on the naturalness of the area as perceived by the average visitor is minimal.

B. Solitude: Due to good screening by topographic features and vegetation in the north-central portion of the Beaver Dam Creek WSA, there are outstanding opportunities for solitude. Junipers are scattered over most of the ridges and pockets of aspen grow in the many drainages. However, outstanding opportunities for solitude are less



RECOMMENDED FOR WILDERNESS (None)

RECOMMENDED FOR NONWILDERNESS

LAND OUTSIDE WSA RECOMMENDED FOR WILDERNESS (None)

SPLIT ESTATE

STATE (None)

PRIVATE (None)

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MILES

Beaver Dam Creek Proposal

MAP-1

OR-3-27

January, 1991

Table 1. Land Status and Acreage Summary of the Study Area

	Acres
Within Wilderness Study Area	
BLM (surface and subsurface)	19,140
Split-Estate (BLM surface only) [1]	440
Inholdings (State, Private)	0
Total	19,580
Within the Recommended Wilderness Boundary	
BLM (within WSA)	0
BLM (outside WSA)	0
Split-Estate (within WSA) [1]	0
Split-Estate (outside WSA) [1]	0
Total BLM Land Recommended For Wilderness	0
Inholdings (State, Private)	0
Within the Area Not Recommended for Wilderness	
BLM	19,140
Split-Estate[1]	440
Total BLM Land Not Recommended for Wilderness	19,580
Inholdings (State, Private)	0

[1] For purposes of this report, split estate lands are defined only as those lands with Federal surface and non-Federal subsurface (minerals).

available in the eastern, northwestern and southern portions of the WSA due to a combination of less topographic and vegetative screening and/or the narrow configuration of the WSA in these locations.

The size of area available to experience a sense of outstanding solitude is notably restricted due to a combination of the WSA's narrowing configuration, predominately in its southern and western portions, and/or the lack of adequate topographic or vegetative screening in its eastern, northwestern and southern portions. Presently, few outside sights and sounds from activity on boundary roads and private property occurs along Bully Creek, except during deer hunting season when vehicle use on existing roads and ways notably increases.

C. Primitive and Unconfined Recreation: The north-central portion of Beaver Dam Creek WSA, with its varying topography associated with a multitude of Bully Creek tributaries, provides outstanding opportunities for primitive and unconfined recreation opportunities. Elsewhere, outstanding opportunities are somewhat limited due to the narrowing configuration of the WSA created by the adjacent private properties along Bully Creek or on the south and northwestern boundaries of the WSA. Most recreation use would be associated with the various drainages, which provide above average opportunities to hunt deer. Upland game hunting opportunities for chukars, Hungarian partridge and quail is good.

Numerous opportunities exist for sightseeing and photographing zoologic, botanic and scenic attractions within the area. Cross-country skiing and snowshoeing during adequate snow years are possible but such conditions occur sporadically.

D. Special Features: The area includes an excellent example of a juniper steppe woodland, which is a transition zone (ecotone) between the ponderosa pine forest and sagebrush steppe. This zone occupies a limited area in Oregon due to climatic conditions. Much of the area consists of rolling sagebrush hills that support western juniper and patches of mountain mahogany. Stands of

quaking aspen occur in pockets along drainages. The interspersion of these plant communities increases wildlife habitat edge and, consequently, the diversity of the natural community. Wildlife varies from forest nesting goshawks to sage grouse and from antelope and deer to Rocky Mountain elk. (Sage grouse are currently a candidate for consideration for Federal listing as threatened or endangered in Oregon under the Endangered Species Act, as they have been impacted by loss of habitat.) This type of ecological diversity is not common.

Diversity in the National Wilderness Preservation System

A. Expanding the diversity of natural systems and features as represented by ecosystems: Wilderness designation of this WSA would add an ecosystem (using the Bailey-Kuchler system) not presently represented in Oregon, and represented in the National Wilderness Preservation System (NWPS) by only three areas. There are 66 other BLM areas in the State under study with this ecosystem. The information is summarized in Table 2.

The area includes an excellent example of a juniper steppe woodland, which is a transition zone (ecotone) that occupies a limited area in Oregon. Of the plant communities listed in the Ochoco, Blue and Wallowa Mountains sections of the Oregon Natural Heritage Plan, the Beaver Dam Creek WSA contains the bluebunch wheatgrass/Idaho fescue and Sandberg's bluegrass complex and the big sagebrush/bunchgrass community inside the forest zone.

B. Assessing the opportunities for solitude or primitive recreation within a day's driving time (five hours) of major population centers: The Beaver Dam Creek WSA is within a five-hour drive of two major population centers (over 100,000). Table 3 summarizes the number and acreage of designated areas and other BLM study areas within five hours drive of the population centers.

C. Balancing the geographic distribution of wilderness areas: The Beaver Dam Creek WSA would not contribute to balancing the geographic distribution of areas within the National Wilderness Preservation System. Five designated wilderness areas are located within 100 miles of the WSA.

Manageability

(The area must be capable of being effectively managed to preserve its wilderness character)

The Beaver Dam Creek WSA could be managed as wilderness. However, due to the extent of the private land along the exterior boundary and along Bully Creek near the center of the WSA, a configuration results which poses management problems because of the possibility of the unrestricted development of these private lands. Vehicle-based hunting pressure from September through December along the way located on private land along Bully Creek significantly adds to the sights and sounds of man's activities inside the WSA and makes more difficult the BLM's task to manage opportunities for solitude in several locations in the southeastern portion of the WSA.

Energy and Mineral Resource Values

Energy and mineral resources of the WSA were evaluated from available geologic data by TERRADATA, a consulting firm under contract with BLM. A reevaluation of this WSA was done under contract by Barringer Resources, Inc., supplemented by geochemical stream sediment sampling.

Based on these assessments, an area covering approximately 2,040 acres in the southeastern portion of the WSA is estimated to have moderate potential for the occurrence of gold. The assessments concluded that the entire area has low or no potential for other mineral resources.

The assessments indicate the entire area to have a moderate potential, based on indirect evidence, for oil and gas.

There is no present production of any mineral or energy resources in the WSA.

As of May 1991, there were no mining claims in this WSA.

Local Social and Economic Considerations

Livestock use at the current level of 2,782 AUMs and recreation use totaling 800 visitor days per year are the primary resource outputs that generate economic activity in the WSA. Local personal income generated annually from these existing use levels amounts to approximately $33,384 for livestock grazing and $9,600 related to recreation use of the WSA, for an overall total of $42,984.

Under the recommendation, livestock grazing would remain at 2,782 AUMs and overall recreation use would remain at 800 visitor days per year. Annual local personal income generated from resource

Table 2. - Ecosystem Representation

Bailey-Kuchler Classification	NWPS Areas areas	NWPS Areas acres	Other BLM Studies areas	Other BLM Studies acres
Province/Potential Natural Vegetation				
NATIONWIDE				
Intermountain Sagebrush Province/ Sagebrush-Steppe	3	76,699	136	4,350,760
OREGON				
	0	0	66	1,963,494

Table 3. - Wilderness Opportunities for Residents of Major Population Centers

Population Centers	NWPS Areas areas	NWPS Areas acres	Other BLM Studies areas	Other BLM Studies acres
Boise, Idaho	16	4,741,570	126	5,060,460
Kennewick/Richland/Pasco, Washington	45	5,816,707	8	67,186

outputs in the Beaver Dam Creek WSA would remain at approximately $43,000. There were no social issues identified in the study of the Beaver Dam Creek WSA.

Impacts on Resources

The comparative impact table on the following page summarizes the effects on pertinent resources for the two alternatives considered, including designation or nondesignation of the entire area as wilderness.

Summary of WSA-Specific Public Comments

Public involvement has occurred throughout the wilderness review process. Certain comments received during the inventory process and early stages of the EIS preparation were used to develop significant study issues and various alternatives for the ultimate management of those lands found to have wilderness values.

During formal public review of the Draft EIS and Supplemental EIS, a total of ten comments specifically addressing this WSA were received. Of those, eight were written statements and two were given in public testimony.

All but two of the letters supported wilderness designation for this WSA and both statements made during the public hearings were in support of wilderness designation.

Those favoring wilderness designation cited the beautiful scenery, the value of wildlife and the availability of minerals outside the WSA. One

Table 4. Comparative Summary of the Impacts by Alternative

Issue Topics	Recommendation (No Wilderness/No Action Alternative)	All Wilderness Alternative
Impacts on Wilderness Values	Projected management actions would both directly and indirectly impair wilderness values over approximately 250 acres (about 1 percent) of the WSA, with future declines from other potential uses over the long term.	Wilderness designation of 19,580 acres would protect and enhance existing wilderness values.
Impacts on Energy and Mineral Development	There would be no impact on energy or mineral development.	No impact to energy or mineral development is expected since none is projected.
Impacts on Vegetation	Riparian vegetation would improve along three miles of stream. Range projects would remove vegetation on 15 acres and would improve vegetation in the vicinity of existing reservoirs and riparian areas. Little or no change over the rest of the WSA.	Riparian vegetation would improve along three miles of stream. Nine miles of ways would revegetate. Little or no change over the rest of the WSA.
Impacts on Wildlife	Habitat and populations would be maintained over most of the WSA and moderately improved along three miles of stream. Populations of mule deer, elk, antelope and sage grouse would not substantially change.	Habitat for all species would be maintained and slightly improved. Forage and cover would be moderately improved along three miles of stream. Populations of mule deer, elk, antelope and sage grouse would not substantially change.
Impacts on Watershed	Watershed and stream channel conditions would improve along three miles of stream and continue in a downward trend along nine miles of stream.	Watershed and stream channel conditions would improve along three miles of stream and continue in a downward trend along nine miles of stream.
Impacts on Livestock Grazing	Livestock grazing use would remain at 2,782 AUMs. Livestock distribution would improve. Vehicle use for livestock management would continue on nine miles of ways.	Livestock grazing use would remain at 2,782 AUMs. Vehicle use of nine miles of ways would be precluded causing slight inconvenience and increased cost to livestock operators.
Impacts on Recreation	There would be no effect on the 800 visitor days use level or type of existing use.	The area's recreation use level of 800 visitor days would not be affected. There would be a shift to primitive, nonmotorized types of recreation use.
Impacts on Local Personal Income	Annual local personal income generated from resource outputs in the WSA would remain at approximately $43,000.	Annual local personal income generated from resource outputs in the WSA would remain at approximately $43,000.

commenter stated that the degree of adjacent private land was not unusual and not a significant concern in the ability to manage the area as wilderness.

One dissenting opinion stated that the concentration of private land adjacent to the WSA boundary made the area unsuitable because the area would not be manageable as wilderness.

No WSA-specific comments were received from any Federal or local agencies. The Idaho Air National Guard expressed a concern over the possible conflict between low altitude overflights within an existing designated military training air corridor that covers a portion of Beaver Dam Creek WSA and the feeling of solitude sought by wilderness area users. The Oregon Department of Fish and Wildlife concurred with BLM's no wilderness recommendation.

There were two comment letters received on the final EIS.

Camp Creek Group Wilderness Study Areas

1. The Study Area —46,860 acres

The Camp Creek Group of Wilderness Study Areas (WSAs) includes Camp Creek (OR-3-31) which has 19,200 acres (18,520 acres BLM land and 680 acres of split-estate); Cottonwood Creek (OR-3-32) which has 8,700 acres (8,540 acres of BLM land and 160 acres of split estate); Gold Creek (OR-3-33) which has 13,600 acres (12,920 acres of BLM land and 680 acres of split estate); and Sperry Creek (OR-3-35) which has 5,360 acres of BLM land. See Table 1. The southernmost Cottonwood Creek WSA shares an 8-mile common road boundary along Cottonwood Creek canyon and Alder Creek with Camp Creek WSA. Immediately north of Camp Creek WSA across a 1-mile common road boundary is Gold Creek WSA, and to the west of Gold Creek WSA along a 4-mile common road boundary is Sperry Creek WSA. These contiguous WSAs are located in Malheur County, Oregon, approximately 32 miles southwest of Vale, adjacent to and up to 15 miles immediately south of U.S. Highway 20.

The four WSAs contain 45,340 acres of BLM land and five parcels of split estate land totaling 1,520 acres. This total acreage is a revision from the Final Oregon Wilderness Environmental Impact Statement, filed in February, 1990. The revision reflects the deletion of a 240-acre boundary parcel of split-estate land in Sperry Creek WSA that initially was included in a land exchange, but was later withdrawn from the exchange by the State Division of Lands.

The majority of the WSAs' outermost boundaries consist of roads on public land. Between Camp Creek and Cottonwood Creek WSAs there is a 40-acre private parcel located at the confluence of Cherry and Cottonwood Creeks. The north boundaries of Gold Creek and Sperry Creek WSAs mostly abut private land parcels along U.S. Highway 20. Elsewhere, each of the WSAs' outermost boundaries are partially defined by private land parcels.

The combined shape of the four WSAs resembles an hourglass approximately 15 miles long, 6 to 7 miles wide at each end, and 1.5 miles wide at the middle. The WSAs are characterized by deep, rugged canyons which dissect rimrock-edged tablelands. Elevations range from 2,700 to 5,300 feet.

The dominant vegetation on the tablelands is low sagebrush and bluebunch wheatgrass. In the canyons, it is Wyoming big sagebrush and bluebunch wheatgrass, with some bitterbrush and

Idaho fescue. The canyon bottoms support pockets of riparian vegetation.

Each WSA has its own individual natural characteristics. The northwestern portions of Camp Creek WSA are characterized by tableland, while the rest of the area is dissected by steep canyons. Four major side canyons drain into Cottonwood Creek, the study area's principal stream. Cottonwood Creek WSA is dominated by the canyons of Cottonwood Creek and Little Cottonwood Creek. The eastern half of the study area is gently sloping upland.

The southwestern portion of Gold Creek WSA is characterized by tableland. The remainder of the area contains the steep canyons of Gold Creek and the North Fork of Squaw Creek. The southern third of Sperry Creek WSA is mostly tableland, while the rest of the area is cut by the steep canyons of Sperry and Indian Creeks.

The WSAs were studied under Section 603 and 202 of the Federal Land Policy and Management Act (FLPMA), and the group was included in the Final Oregon Wilderness Environmental Impact Statement (EIS), filed in February, 1990. There were four alternatives analyzed in the EIS: 1) an all wilderness alternative; 2) an all wilderness with acquisitions and road closures alternative (described below); 3) a partial wilderness with acquisitions and road closures alternative (described below), which is the recommendation in this report; and 4) a no wilderness/no action alternative. These lands are shown on Map 1.

Under the all wilderness with acquisitions and road closures alternative, the entire area of all four WSAs would be combined into a single wilderness area. A total of 49,100 acres would be recommended suitable as wilderness. This acreage includes 2,200 acres of non-WSA BLM land in Simmons Gulch (parcel A on Map 1) which would be added to Gold Creek WSA. It also includes a 40-acre private inholding and the mineral estate of 1,520 acres of split-estate land which would be acquired, if the owners are willing, through purchase or exchange.

Under the recommendation, the partial wilderness with acquisitions and road closures alternative, a total of 46,450 acres would be recommended suitable as wilderness. The entire areas of Gold Creek WSA and Sperry Creek WSA would be combined, and portions each of Camp Creek WSA (17,770 acres) and Cottonwood Creek WSA (7,520 acres) would be combined. Each combination would be managed as a wilderness area, and a 1-mile-long road between the two combined areas would remain open. The 46,450 acres includes the addition of 2,200 acres (parcel A on Map I) of non-WSA public land in Simmons Gulch to Gold Creek WSA. It also includes a minor revision from the Final Oregon Wilderness EIS for the Cottonwood Creek WSA, by use of legal description, the deletion of 180 acres (160 acres of split-estate and 20 acres of public land) (parcel D on Map 1) in order to avoid establishing the boundary using natural landmarks which are difficult to distinguish and describe. This revision deletes a narrow finger in the WSA's southernmost area while eliminating a split-estate parcel. The mineral estate of 1,360 acres of split-estate land would be acquired if the owners are willing, through purchase or exchange. A total of 2,610 acres would be recommended nonsuitable as wilderness.

2. Recommendation and Rationale

—46,450 acres recommended for wilderness
2,610 acres recommended for nonwilderness

The recommendation for this group of WSAs is to designate 46,450 acres as wilderness and release 2,610 acres for uses other than wilderness. The lands to be designated wilderness include 17,770 acres in the Camp Creek WSA, 7,520 acres in the Cottonwood WSA, 15,800 acres in the Gold Creek WSA, and 5,360 acres in the Sperry Creek WSA.

The all wilderness with acquisitions and road closures alternative is considered to be the environmentally preferable alternative since it would result in the least change from the natural environment over the long term. However, the partial wilderness with acquisitions and road closures alternative would be implemented in a manner which would use all practical means to avoid or minimize environmental impacts.

The benefits of preserving the areas' wilderness values—including outstanding examples of rugged dissected canyonlands, high quality scenic and geologic features, outstanding habitat for raptors, other cliff-dwelling birds, sage grouse and bighorn sheep, crucial winter range for deer and antelope, redband trout populations and their cold water fisheries habitat, paleoentological and cultural values, and outstanding opportunities for solitude and primitive and unconfined recreation—have a high value as compared with the benefits of maintaining the option for mineral exploration, developing eight proposed range projects and continued vehicle

use on 13 miles of low quality roads and 12 miles of ways.

The recommendation would preserve the opportunity to enjoy, within a wilderness setting, the outstanding scenery provided by the highly diverse topography found in all four WSAs. There is a wide distribution of upper tablelands broken by rugged, dissected, deep-cut canyons. These impressive canyons dominate the landscape and are of special geologic interest.

The recommendation would help protect fisheries habitat and populations of redband trout, found in portions of Cottonwood Creek, Camp Creek and North Fork of Squaw Creek (three of the four WSAs), as well as sage grouse and their habitat which are found in all four WSAs. Both the trout and sage grouse are candidate species for listing under the Endangered Species Act. The numbers and distribution of sage grouse and chukar partridge typify the best habitat in Malheur County, which is a major upland game producer in the state.

In addition, the recommendation would protect crucial winter habitat in the north breaks of the Malheur River for approximately 250 deer and 50 antelope that occupy all four WSAs.

The recommendation would help protect numerous pockets of riparian vegetation scattered throughout the canyon bottoms which support willow, golden current, rose and herbaceous vegetation composed of sedges and rushes. Canyon segments inaccessible to livestock provide a lush mix of bitter cherry, golden current willow and rose.

Wilderness designation of this group of WSAs would add an ecosystem, intermountain sagebrush province/sagebrush-steppe, not presently represented in Oregon and represented in the National Wilderness Preservation System by only three areas.

The recommendation would preserve outstanding opportunities for solitude, due primarily to the numerous canyons providing topographic screening in all of the WSAs, and would preserve the outstanding opportunities for primitive and unconfined recreation, including backpacking, camping, day hiking, hunting, horseback riding, and scenic and wildlife viewing and photography. The recommendation would recognize and maintain all of the high wilderness values of the group of WSAs with few conflicts with other resource uses of the area. Although no development is projected, mineral and energy exploration would be prohibited under the recommendation.

Under the recommendation, closing 12 miles of ways and 13 miles of roads (4 miles of boundary road between Gold Creek and Sperry Creek WSAs, 6 miles of boundary road in Cottonwood Creek canyon between Camp Creek and Cottonwood Creek WSA, and two dead-end roads in Gold Creek WSA totaling 3 miles) would provide the greatest degree of protection to the WSAs' naturalness because impacts from vehicles would be eliminated. The roads that would be closed are low quality, usually passable only by high clearance or four-wheel vehicles and used mainly by hunters. Combining the four WSAs into two larger areas would provide greater opportunities for solitude and primitive and unconfined recreation than would four smaller, individual wilderness areas. The WSAs' special features would also receive increased protection with the combinations. The road closures would prevent damage to riparian habitat and wildlife habitat for bighorn sheep and redband trout. The two areas would have abundant topographical screening, numerous travel corridors for wilderness users and would be closed to motorized vehicles. Scenic quality would be enhanced in Cottonwood Creek Canyon, an area that receives high visitor use, and throughout the suitable portions of the WSAs as natural revegetation removes the visual influence of the closed roads and ways.

The 1-mile-long road between Gold Creek and Camp Creek WSAs would remain open, providing continued vehicle access to the two recommended suitable areas, and to range facilities and private property located west of the WSAs. With the road access, day hiking opportunities would be enhanced in Gold Creek WSA's North Fork Squaw Creek drainage and Camp Creek's Wildcat Canyon.

The construction of 6 miles of pasture fence in the recommended suitable area (5 miles of fence in Camp Creek WSA and 1 mile in Cottonwood Creek WSA) would enhance wilderness values by improving riparian vegetation and redband trout habitat along 7 miles of Cottonwood Creek.

The recommendation, by adding 2,200 acres of public land in Simmons Gulch to Gold Creek WSA (parcel A on Map 1) would provide Gold Creek WSA with a better configuration and a more identifiable boundary. Including Simmons Gulch would enhance primitive and unconfined recreation because it would increase the acreage and canyon areas available for primitive recreation activities and would provide a larger core area which is not influenced by outside unnatural features.

Under the recommendation, acquisition of 1,360 acres of mineral estate of the split-estate lands would help maintain the areas' degree of naturalness and enhance opportunities for solitude and primitive and unconfined recreation because short-term disturbances associated with projected mineral exploration would be prevented. The nonsuitable portion of 2,610 acres (parcels B, C and D on Map 1) would include 1,430 acres (parcel C) of two forks of Cherry Creek canyonlands in the southern portion of Camp Creek WSA and 1,180 acres of mostly upper tablelands in Cottonwood Creek WSA. Within Cottonwood Creek WSA, the 1,180 acres excluded include 1,000 acres (parcel B) of tableland in the eastern portion and 180 acres (parcel D) of uppermost Alder Creek Canyon in the southernmost tip of Cottonwood Creek WSA. With the deletion of the 1,430-acre public land parcel in Camp Creek WSA, a 40-acre private land parcel would no longer be surrounded by Camp Creek and Cottonwood Creek WSAs. In addition, excluding the 1,430 acres would permit a 1-mile-long way to remain open which provides the only access west from the 40-acre private parcel within Cottonwood Creek Canyon to an outside private parcel with range improvements. The 1-mile-long way with the existing Alder Creek Road and the 40-acre private parcel would, respectively, form the new southwestern boundary of the Camp Creek/ Cottonwood Creek WSAs' combination area.

Exploration for mineral resources of optical calcite, gold, and perlite is projected to occur in the nonsuitable area in the Camp Creek and Cottonwood Creek WSAs and on the 40-acre parcel of private land. No mineral development is expected, so there would be no long-term impact on wilderness values.

There has been consistently strong public support for preservation of this group of WSAs as designated wilderness.

3. Criteria Considered In Developing the Wilderness Recommendation

Wilderness Characteristics

A. Naturalness: All four of the WSAs are in a highly natural condition. All of the WSAs are characterized by deep, rugged canyons which dissect rimrock-edged tablelands. Average steepness of the slopes ranges from 25 to 90 percent, making many of them very difficult to traverse.

Each WSA has its own dividual characteristics. The northwestern portions of Camp Creek WSA are characterized by tableland, while the rest of the area is dissected by steep canyons. The nonsuitable portion of Camp Creek WSA (parcel C on Map 1) under the recommendation consists of deeply-dissected canyons with few man-made intrusions.

Four major side canyons drain into Cottonwood Creek, the study area's principal stream. Cottonwood Creek WSA is dominated by the canyons of Cottonwood Creek and Little Cottonwood Creek. The eastern half of the study area is gently sloping upland. The southernmost portion (parcel D on Map 1) recommended nonsuitable for wilderness designation in Cottonwood Creek WSA is dominated by this gently-sloping upland terrain. The eastern edge of Cottonwood Creek WSA (parcel D), recommended nonsuitable, is upper tableland.

The southwestern portion of Gold Creek WSA is characterized by tableland. The remainder of the area contains the steep canyons of Gold Creek and the North Fork of Squaw Creek. The southern third of Sperry Creek WSA is mostly tableland, while the rest of the area is cut by the steep canyons of Sperry and Indian Creeks.

Vegetation throughout all four of the WSAs is characteristic of a sagebrush-steppe ecosystem. The expanses of tableland in Camp Creek and Gold Creek WSAs support low sagebrush/bluebunch wheatgrass or sagebrush/Idaho fescue communities.

Seral stage is an expression of the relative degree to which the kinds, proportions, and amounts of plants in a community resemble that of a potential natural community. Early seral stage represents the greatest departure from the potential natural community. The tablelands of Camp Creek WSA are in mid- to late-seral stage, and in early- to mid-seral stages in Gold Creek WSA. The steep canyons in all four WSAs support support a Wyoming big sagebrush/ bluebuch wheatgrass community in late seral stage to the potential natural community, due to rugged terrain and inaccessibility to livestock. Where the steepness is moderated and at the slope toes, the Wyoming big sagebrush/bluebunch wheatgrass community is in early to mid- and late seral stages, with the mid-seral stage predominating. About half of the northern portion of Sperry Creek WSA is in early seral stage.

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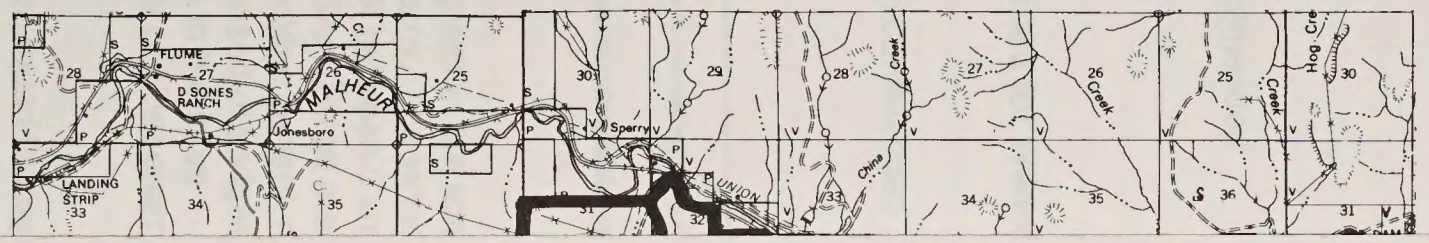

T 20 S

RECOMMENDED FOR WILDERNESS

RECOMMENDED FOR NONWILDERNESS

LAND OUTSIDE WSA RECOMMENDED FOR WILDERNESS

SPLIT ESTATE

STATE (None)

PRIVATE

-N-

Camp Creek Proposal

MAP-1

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OR-3-31,32,33, 35
January, 1991

Under the recommendation, acquisition of 1,360 acres of mineral estate of the split-estate lands would help maintain the areas' degree of naturalness and enhance opportunities for solitude and primitive and unconfined recreation because short-term disturbances associated with projected mineral exploration would be prevented. The nonsuitable portion of 2,610 acres (parcels B, C and D on Map 1) would include 1,430 acres (parcel C) of two forks of Cherry Creek canyonlands in the southern portion of Camp Creek WSA and 1,180 acres of mostly upper tablelands in Cottonwood Creek WSA. Within Cottonwood Creek WSA, the 1,180 acres excluded include 1,000 acres (parcel B) of tableland in the eastern portion and 180 acres (parcel D) of uppermost Alder Creek Canyon in the southernmost tip of Cottonwood Creek WSA. With the deletion of the 1,430-acre public land parcel in Camp Creek WSA, a 40-acre private land parcel would no longer be surrounded by Camp Creek and Cottonwood Creek WSAs. In addition, excluding the 1,430 acres would permit a 1-mile-long way to remain open which provides the only access west from the 40-acre private parcel within Cottonwood Creek Canyon to an outside private parcel with range improvements. The 1-mile-long way with the existing Alder Creek Road and the 40-acre private parcel would, respectively, form the new southwestern boundary of the Camp Creek/ Cottonwood Creek WSAs' combination area.

Exploration for mineral resources of optical calcite, gold, and perlite is projected to occur in the nonsuitable area in the Camp Creek and Cottonwood Creek WSAs and on the 40-acre parcel of private land. No mineral development is expected, so there would be no long-term impact on wilderness values.

There has been consistently strong public support for preservation of this group of WSAs as designated wilderness.

3. Criteria Considered In Developing the Wilderness Recommendation

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Vegetation throughout all four of the WSAs is characteristic of a sagebrush-steppe ecosystem. The expanses of tableland in Camp Creek and Gold Creek WSAs support low sagebrush/bluebunch wheatgrass or sagebrush/Idaho fescue communities.

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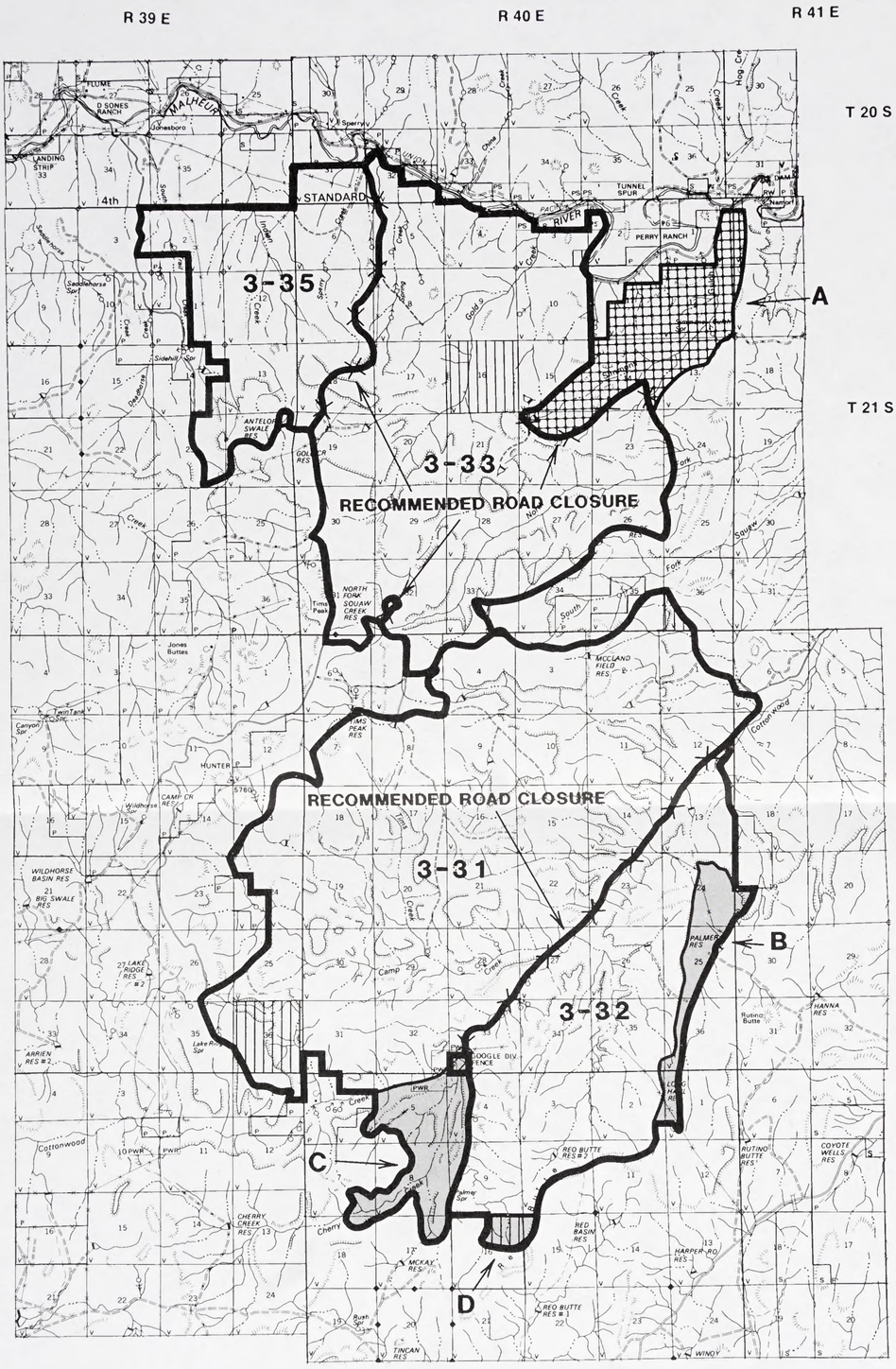

Camp Creek Proposal
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OR-3-31,32,33, 35
January, 1991

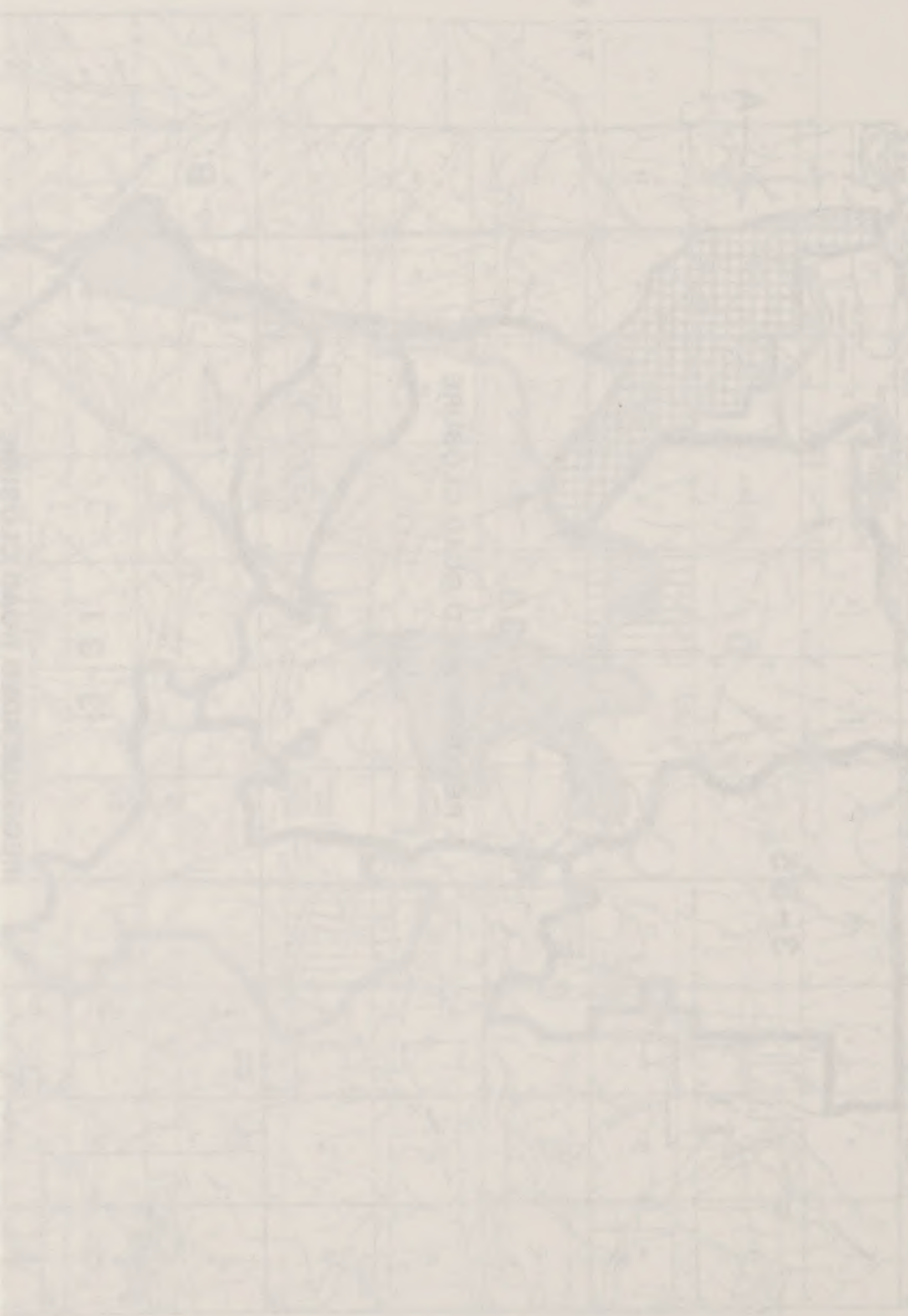


Table 1. Land Status and Acreage Summary of the Study Area

	Wilderness Study Area				
	Camp Creek (OR-3-31)	Cottonwood Creek (OR-3-32)	Gold Creek (OR-3-33)	Sperry Creek (OR-3-35)	Total Acres
Within Wilderness Study Area					
BLM (surface and subsurface)	18,520	8,540	12,920	5,360	45,340
Split-Estate (BLM surface only)[1]	680	160	680	0	1,520
Inholdings (State, Private)	0	0	0	0	0
Total	19,200	8,700	13,600	5,360	46,860
Within the Recommended Wilderness Boundary					
BLM (within WSA)	17,090	7,520	12,920	5,360	42,890
BLM (outside WSA)	0	0	2,200	0	2,200
Split-Estate (within WSA)[1]	680	0	680	0	1,360
Split-Estate (outside WSA)[1]	0	0	0	0	0
Total BLM Land Recommended for Wilderness	17,770	7,520	15,800	5,360	46,450
Inholdings (State, Private)	0	0	0	0	0
Within the Area Not Recommended for Wilderness					
BLM	1,430	1,020	0	0	2,450
Split-Estate[1]	0	160	0	0	160
Total BLM Land Not Recommended for Wilderness	1,430	1,180	0	0	2,610
Inholdings (State, Private)	0	0	0	0	0

[1] Appendix 1 is a detailed description of split-estate tracts included within the study. For purposes of this report, split-estate lands are defined only as those lands with Federal surface and non-Federal subsurface (minerals).

Numerous pockets of riparian vegetation are scattered throughout the canyon bottoms. The longest riparian area is Cottonwood Creek between Camp Creek and Cottonwood Creek WSAs. Small areas along this creek support willow, golden current, rose and herbaceous vegetation composed of sedges and rushes. Other riparian vegetation in the more inaccessible canyons is a lush mix of bitter cherry, golden current, willow and rose.

Numerous herbaceous species are found throughout the WSAs and vary considerably by vegetation types. The low sagebrush communities on the tableland are rich in wild onions, violets, daisy fleabanes, phlox, clover and smaller species of buckwheat. Arrowleaf balsamroot, lupine and buckwheats are part of the Wyoming big sagebrush communities. Pockets of wild giant wildrye also may be found on side slopes in all of the WSAs.

The group of WSAs provides good quality habitat for approximately 250 mule deer and 50 antelope. Severe winters push deer and antelope into the breaks (within Sperry Creek and Gold Creek WSAs) of the Malheur River Canyon, which is considered a crucial winter range. A variety of game and nongame bird species are found in the WSAs. The high cliffs and rock formations which dominate much of Camp Creek and Cottonwood Creek WSAs provide outstanding habitat for raptors and other cliff-dwelling birds. Raptors in the area include golden eagles, prairie falcons, turkey vultures, kestrels, red

tailed hawks and great horned owls. Upland game birds common in the WSAs include California quail and chukar partridge.

The rugged terrain has limited the number of unnatural features in each of the WSAs. Most of the developments are located near the boundary roads, and are substantially unnoticeable because of topographic screening, natural revegetation, or small size. A total of 50 unnatural features in the four WSAs influence approximately 7 percent of the combined area. These features include 13 miles of 11 fences, 21 water developments and 13 miles of 18 vehicular ways.

Most of the unnatural features in Cottonwood Creek WSA are located in parcel B (see Map 1), which is recommended nonsuitable for wilderness designation.

Unnatural features outside the WSAs that affect naturalness inside the WSAs include boundary roads, a powerline which influences the extreme southern portion of Camp Creek and Cottonwood Creek WSAs, and developments within the Malheur River Canyon, which contains U.S. Highway 20, railroad tracks, powerlines, ranch developments, pastures, fences, and dirt roads that influence the steep, northernmost slopes of Gold Creek and Sperry Creek WSAs. With parcels C and D on Map 1 recommended nonsuitable for wilderness designation, the visual influence of the powerline is substantially diminished for the remainder of Camp Creek and Cottonwood Creek WSAs.

None of these outside developments substantially diminish naturalness inside the WSAs. Even developments within the Malheur River Canyon, which could be expected to have a major impact on naturalness, influence only about 800 acres in Gold Creek and Sperry Creek WSAs, due to the steep and deeply-dissected rugged terrain of this portion of the Malheur Canyon breaks (slightly more than 4 percent of the combined area of these two WSAs).

B. Solitude: All four WSAs offer outstanding opportunities for solitude, primarily because of the areas' diverse topography. The WSAs contain more than 50 miles of major drainages and numerous side canyons. However, the areas' rugged topography restricts most visitor use to the tablelands and canyon bottoms. Travel from canyon bottoms to the tablelands is generally limited to breaks in the rimrock where game and livestock trails provide access.

The tablelands in the western portion of Camp Creek WSA and the southern portions of Gold Creek and Sperry Creek WSAs, and the gentle slopes of the southernmost tip and upper tableland on the eastern edge of Cottonwood Creek WSA (parcels B and D on Map 1, recommended nonsuitable for wilderness designation), have minimal relief and provide little topographic screening. Vegetative screening is limited primarily to pockets of riparian vegetation in the canyon bottoms.

C. Primitive and Unconfined Recreation: All four WSAs offer outstanding opportunities for primitive and unconfined recreation. Recreation opportunities in the WSAs includes backpacking, day hiking, camping, hunting, sightseeing, photography, bird and other wildlife watching, and horseback riding. The Camp Creek WSA offers the largest number of outstanding opportunities for primitive recreation because of its larger size and greater diversity.

Hunting currently is the most common recreational use. Mule deer, antelope, chukar and quail are hunted in the WSAs. Use of vehicles is limited by vehicle designation to boundary roads, two dead-end roads totaling 3 miles, and 13 miles of ways.

Because the tablelands lack the diversity of attractions offered by the canyons, most visitor use occurs in the major canyons of Cottonwood Creek, Little Cottonwood Creek, Camp Creek, Wildcat Creek, Tims Creek, the North Fork of Squaw Creek, Gold Creek, Sperry Creek and Indian Creek. The upper tablelands of eastern Cottonwood Creek WSA (parcel B on Map 1, which is recommended nonsuitable for wilderness designation), respectively, typically receives less primitive types of recreation uses than the remainder of the WSA.

D. Special Features: All of the WSAs provide outstanding examples of rugged, dissected basaltic canyonlands with areas of high scenic quality. These impressive canyons dominate the landscape and are of special geologic interest. The high cliffs and rimrocks which dominate much of the Camp Creek and Cottonwood Creek WSAs provide outstanding habitat for raptors and other cliff dwelling birds.

California bighorn sheep, a Federal candidate for listing under the Endangered Species Act, could be reintroduced into Cottonwood Creek and Camp Creek WSAs, as portions of these study areas contain suitable habitat. Two other Federal candidate species for listing under the Endangered Species Act include sage grouse and redband trout. Sage grouse have been impacted by loss of habitat,

and are present in all of the WSAs. Portions of Cottonwood Creek, Camp Creek and the North Fork of Squaw Creek are cold water fisheries which support populations of redband trout and, thus, they are present in all but Sperry Creek WSA.

The breaks of the Malheur River Canyon, in the northern halves of Gold Creek and Sperry Creek WSAs, is considered crucial winter range for deer and antelope during more severe winters.

Two archaeological sites and four paleontological sites have been identified in Cottonwood Creek WSA. Paleontologists have collected fossil remains of 36 species of small mammals.

Diversity in the National Wilderness Preservation System

A. Expanding the diversity of natural systems and features as represented by ecosystems: Wilderness designation of this group of WSAs would add an ecosystem (using the Bailey-Kuchler system) not presently represented in Oregon, and represented in the National Wilderness Preservation System by only three areas. There are 66 other BLM areas in the State under study with this ecosystem. This information is summarized in Table 2.

Of the major vegetative communities listed in the Owyhee Uplands section of the Oregon Natural Heritage Plan, all four WSAs contain big sagebrush/ bluebunch wheatgrass and low sagebrush/ bluebunch wheatgrass and low sagebrush/Idaho fescue communities.

B. Assessing the opportunities for solitude or primitive recreation within a day's driving time (five hours) of major population centers: The Camp Creek Group WSAs are within a five-hour drive of two major population centers (over 100,000). Table 3 summarizes the number and acreage of designated areas and other BLM study areas within a five-hour drive of the population centers.

C. Balancing the geographic distribution of wilderness areas: The Camp Creek Group WSAs would not contribute to balancing the geographic distribution of areas within the National Wilderness Preservation System. There are four designated wilderness areas within 100 miles of the WSA group.

Manageability

(The area must be capable of being effectively managed to preserve its wilderness character)

The recommended suitable portion of the Camp Creek Group WSAs could be managed as wilderness. Manageability would be improved by adding the non-WSA public land to Gold Creek WSA, closing the dead-end roads, which would enhance wilderness values by eliminating vehicle use and restoring the area to a more natural appearance through revegetation, acquiring the mineral estate of the split-estate land parcels which would preclude possible mineral development on the split-estate parcels, and combining the four WSAs into two wilderness areas by closing two low quality boundary roads would eliminate size and configuration problems of some of the individual WSAs.

Excluding 1,180 acres of predominately upper plateau tableland in Cottonwood Creek WSA (parcel B on Map 1) would move the boundary to rimrock overlooking Cottonwood Creek Canyon. This is a more identifiable boundary location. This excluded area borders the WSA's boundary road and contains predominately level terrain on plateau lands. It would be difficult to manage as wilderness as it would continue to be difficult to prevent vehicles from using this flat terrain.

The nonsuitable portion also includes 1,430 acres of canyonlands in the southern portion of Camp Creek WSA (parcel C on Map 1). Management as wilderness would be difficult in this area as the 40-acre private parcel between Camp Creek and Cottonwood Creek WSAs would be open to mineral exploration and development at the landowner's discretion, and because vehicle access would continue to this private land adjacent to the two WSAs.

Energy and Mineral Resource Values

The U.S. Geological Survey (USGS) and U.S. Bureau of Mines (USBM) evaluated approximately 20,310 acres of Camp Creek WSA and 7,700 acres of Cottonwood Creek WSA for mineral resources and mineral resource potential in a 1989 report titled "Mineral Resources of the Camp Creek and Cottonwood Creek Wilderness Study Areas, Malheur County, Oregon," USGS Survey Bulletin 1741-C. Resources of diatomite, pozzolan (siliceous material used in cement), sand and gravel, and building stone were identified, and volumes were estimated. Calcite, perlite and metal (antimody, arsenic, barium, gold, molybdenum, and tungsten) occurrences were observed in the WSAs but are too small and low grade to constitute resources. There are areas of moderate mineral resource potential for epithermal-vein type gold and/or silver and low mineral resource potential for diatomite in the eastern part of both WSAs and moderate mineral

Table 2. - Ecosystem Representation

Bailey-Kuchler Classification	NWPS Areas areas	NWPS Areas acres	Other BLM Studies areas	Other BLM Studies acres
Province/Potential Natural Vegetation				
NATIONWIDE				
Intermountain Sagebrush Province/Sagebrush-Steppe	3	76,699	136	4,323,480
OREGON				
	0	0	66	1,936,214

Table 3. - Wilderness Opportunities for Residents of Major Population Centers

Population Centers	NWPS Areas areas	NWPS Areas acres	Other BLM Studies areas	Other BLM Studies acres
Boise, Idaho	16	4,741,570	126	5,060,460
Kennewick/Pasco/Richland, WA	45	5,816,707	8	67,186

resource potential for hot-spring type gold throughout both WSAs. The study report also concludes that there is low mineral resource potential throughout both study areas for zeolites, building stone, and pozzolan. Both study areas have a low potential for high temperature geothermal resources and for oil and gas resources.

The USGS and USBM evaluated approximately 21,380 acres of Gold Creek and Sperry Creek WSAs (including the recommended 2,200 acres adjacent to Gold Creek WSA) for mineral resources and mineral resource potential in a 1990 report, 'Mineral Resources of the Gold Creek and Sperry Creek Wilderness Study Areas, Malheur County, Oregon," USGS Survey Bulletin 1741-E. Resources for diatomite, decorative stone, basalt for crushed aggregate, sand, gravel and fanglomerate (possibly suited for sand and gravel) were identified, and volumes were estimated. Gold, optical calcite, zeolite, and perlite were found locally in small uneconomic amounts. A northernmost parcel of the Gold Creek WSA has high mineral resource potential for gold and a very small part of that has low resource potential for geothermal energy. The northern part of the Gold Creek WSA and the east part of the Sperry Creek WSA has moderate mineral potential for gold, silver, and mercury. Both WSAs have a low potential for oil and gas energy resources.

Energy and mineral resources of the four WSAs were evaluated by TERRADATA, under BLM

contract. The evaluation was based on general geologic information and geochemical results from a limited number of stream sediment samples. Technical details of the evaluation are incorporated in the 1983 TERRADATA report, "Assessment of Geology, Energy and Mineral Resources of Lake Owyhee Geologic Resource Area (GRA)." This report was supplemented with additional information from leases, general mineral resource data and heavy minerals geochemical data from Barringer Resources, Inc., in 1984.

The TERRADATA study states that, based on indirect evidence, all four WSAs are considered to have a moderate potential for the occurrence of oil and gas. This differs from findings of the two reports by USGS/USBM, which indicate a low potential for these energy resources throughout all four WSAs.

According to the TERRADATA report, no confirmed mineral deposits have been found in any of the four WSAs. However, optical calcite is found throughout the WSAs, with fairly extensive occurrences in Sperry Creek WSA. Based on this direct evidence, the entire area of Sperry Creek WSA is considered to have a high potential for the occurrence of optical calcite. The three other WSAs (Camp Creek, Cottonwood Creek and Gold Creek) are considered to have moderate potential for the occurrence of optical calcite. This differs from findings by USGS and USBM, which identify low resource potential for calcite or optical calcite throughout all four WSAs.

In addition, the TERRADATA report indicates that, based on direct evidence, the entire area of Sperry Creek WSA is considered to have a moderate potential for the occurrence of perlite. Based on indirect evidence, the other three WSAs are considered to have moderate potential for the occurrence of perlite. The two USGS/USBM reports indicate low potential of occurrence for or, where found, very small and low grade of this mineral within the four WSAs.

The TERRADATA report indicates that, based on indirect evidence, approximately 1,900 acres in the northern portion of Camp Creek WSA, and approximately 7,600 acres in the northern portion of Gold Creek WSA, are considered to have a moderate potential for the occurrence of gold. The USGS/USBM report addressing Gold Creek WSA additionally identified a small northernmost area with high potential for gold.

According to the TERRADATA report, based on indirect evidence, all of Sperry Creek WSA is considered to have a moderate potential for the occurrence of bentonite. This mineral was not addressed in the USGS/USBM document.

In summary, the USGS/USBM findings for the four WSAs are that quantities of various locatable mineral and energy resources are unknown, but the potential for the occurrence of gold and/or silver is moderate in certain areas, with a high potential for gold in a small northernmost parcel of Sperry Creek WSA, and low potential for other locatable minerals and for geothermal, oil and gas energy resources throughout the four WSAs.

Impacts on Resources

The comparative impact table on the following pages summarizes the effects on pertinent resources for all of the alternatives considered, including designation or nondesignation of the entire group of WSAs as wilderness.

As of May 1991, there were 35 mining claims within the Gold Creek WSA and no claims within the other WSAs in this group.

Local Social and Economic Considerations

Livestock use at the current level of 5,666 AUMs and recreation use totaling 1,000 visitor days per year are the primary resource outputs that generate economic activity in the group of WSAs. Local personal income generated annually from these existing use levels amounts to approximately $67,992 for livestock grazing and $12,000 related to recreation use of the WSA, for an overall total of $79,992.

Under the recommendation, livestock grazing would remain at 5,666 AUMs and overall recreation use would increase by 700 visitor days per year. Annual local personal income generated from resource outputs in the WSA would increase by approximately $8,000. There were no social issues identified with the study of the Camp Creek Group WSAs.

Summary of WSA-Specific Public Comments

Public involvement has occurred throughout the wilderness review process. Certain comments received during the inventory process and early stages of the EIS preparation were used to develop significant study issues and various alternatives for the ultimate management of those lands found to have wilderness values.

Table 4 - Comparative Summary of the Impacts by Alternative

Issue Topics	Recommendation (Partial with Acquisitions and Road Closures Alternative)	All Wilderness Alternative
Impacts on Wilderness Values	Wilderness designation of 46,540 acres (assuming the acquisition of 1,360 acres of split estate land) would protect and enhance existing wilderness values within the designated area. Within the 2,610 acres recommended for release for uses other than wilderness, projected activities would cause short term impairment of wilderness values on three acres, with further declines from other potential uses over the long term.	Wilderness designation of the four WSAs (totaling 45,340 acres) would protect and enhance existing wilderness values.
Impacts on Energy and Mineral Development	No impact on energy or mineral development is expected.	No impact on energy or mineral development is expected.
Impacts on Utility Corridor Routing and Development	Utility corridor would not be designated within the WSAs and expansion from the existing powerline would occur to the south, with negligible difference in route length.	Utility corridor would not be designated within the WSAs and expansion form the existing powerline would occur to the south, with negligible difference in route length.
Impacts on Vegetation	Little or no change would occur to overall vegetation. Riparian vegetation would be improved along seven miles of Cottonwood Creek. Twelve miles of ways and 13 miles of roads would revegetate. Short-term removal of vegetation on three acres from mineral exploration would occur on land recommended for release for uses other than wilderness.	Little or no change would occur to overall vegetation. Riparian vegetation would be improved along seven miles of Cottonwood Creek. Thirteen miles of ways would revegetate.
Impacts on Wildlife	Wildlife habitat and populations would be maintained throughout the WSAs and enhanced in the vicinity of closed ways and roads and along Cottonwood Creek.	Wildlife habitat and populations would be maintained throughout the WSAs and enhanced in the vicinity of closed ways and along Cottonwood Creek.

All Wilderness with Acquisitions and Road Closures Alternative	No Wilderness/No Action Alternative
Wilderness designation of 49,100 acres (assuming acquisition of 1,520 acres of split estate and 40 acres of private fee simple lands) would protect and enhance existing wilderness values within the designated area.	In the absence of wilderness designation, projected activities would both directly and indirectly impair wilderness values in the short term over 1,000 acres (approximately 2 percent) of the four WSAs, with further declines from other potential uses over the long term.
No impact on energy or mineral development is expected.	There would be no impact on energy or mineral development.
Utility corridor would not be designated with the WSAs and expansion from the existing powerline would occur to the south, with negligible difference in route length.	There would be no impact on the proposed utility corridor.
Little or no change would occur to overall vegetation. Riparian vegetation would be improved along seven miles of Cottonwood Creek. Thirteen miles of ways and 16 miles of roads would revegetate.	Little or no change would occur to overall vegetation. Riparian vegetation would be improved along seven miles of Cottonwood Creek. Short term removal of vegetation on 42 acres would occur from mineral exploration. Long term removal of vegetation would occur on 14 acres from range projects, with changes in vegetative composition, and an increase in utilization level on 120 acres.
Wildlife habitat and populations would be maintained throughout the WSAs and enhanced in the vicinity of closed ways and roads and along Cottonwood Creek.	Wildlife habitat and populations would be maintained throughout the WSAs and enhanced along Cotton-wood Creek.

Table 4 - Comparative Summary of the Impacts by Alternative (continued)

Issue Topics	Recommendation (Partial with Acquisitions and Road Closures Alternative)	All Wilderness Alternative
Impacts on Watershed	Water quality and overall channel conditions would improve from fair to good in Cottonwood Creek and would remain good over the rest of the study area.	Water quality and overall channel conditions would slightly improve in Cottonwood Creek from fencing and would remain good over the rest of the study area.
Impacts on Livestock Grazing	Livestock use would remain at 5,666 AUMs. Use of 12 miles of ways and 13 miles of roads for day-to-day livestock management would be precluded with some inconvenience and slight increase in cost to livestock operators. Better livestock distribution would be foregone from precluded projects.	Livestock use would remain at 5,666 AUMs. Use of 13 miles of ways for day-to-day livestock management would be precluded with some inconvenience and slight increase in cost to livestock operators. Better livestock distribution would be foregone from precluded projects.
Impacts on Recreation Use	Within the area recommended for wilderness designation, recreation use would increase from approximately 1,000 to 1,700 visitor days per year. Within the area recommended for release for uses other than wilderness, recreation use would remain at the current level of fewer than 100 visitor days per year.	Recreation use in the four WSAs would increase from approximately 1,000 to 1,500 visitor days per year.
Impacts on Local Personal Income	Annual local personal income would increase by approximately $8,000.	Annual local personal income would increase by approximately $6,000.

All Wilderness with Acquisitions and Road Closures Alternative	No Wilderness/No Action Alternative
Water quality and overall channel conditions would improve from fair to good in Cottonwood Creek and would remain good over the rest of the study area.	Water quality and overall channel conditions would slightly improve in Cottonwood Creek from fencing and would remain good over the rest of the study area.
Livestock use would remain at 5,666 AUMs. Use of 13 miles of way and 16 miles of roads for day-to-day livestock management would be precluded with some inconvenience and slight increase in cost to livestock operators. Better livestock distribution would be foregone from precluded projects.	Livestock use would remain at 5,666 AUMs. Project development would improve livestock distribution.
Recreation use of the combined wilderness areas would increase from approximately 1,000 to 1,700 visitor days per year.	The area's recreation use level of approximately 1,000 visitor days per year would not be affected.
Annual local personal income would increase by approximately $8,000.	Annual local personal income would remain at approximately $80,000.

During formal public review of the Draft Oregon Wilderness Environmental Impact Statement and the Supplement to the Draft, a total of 36 comments specifically addressing the Camp Creek Group WSAs were received. Of those, 31 were written and five were oral statements received at public hearings on the draft and supplement EIS. In general, 30 commenters supported wilderness designation of all four WSAs, five commenters opposed any wilderness designation, and one commenter favored wilderness for Camp Creek and Cottonwood Creek WSAs while opposing wilderness designation for Gold Creek and Sperry Creek WSAs.

Those favoring wilderness designation for the group of WSAs commented on the protection wilderness designation offers to threatened and endangered species such as redband trout, the abundance of wildlife in the group of WSAs, the high quality aquatic communities of the WSAs, and that having the two combined areas would protect ecosystems, ecological diversity, watershed and nongame wildlife. Many comments reflected a preference to close the roads between Gold Creek and Sperry Creek WSAs and between Camp Creek and Cottonwood Creek WSAs, to create two larger designated areas. In addition, it was recommended that the road between Cottonwood Creek and Gold Creek be closed, combining those two areas and creating one wilderness area covering all four WSAs. There was extensive recommendation for expanding the recommended wilderness to include the Simmons Gulch area adjacent to the Gold Creek WSA, and some favored purchase of the private 40-acre land parcel within Cherry Creek of Camp Creek WSA be purchased to protect the redband trout and its habitat and to avoid deletion of a portion of the WSA from being recommended nonsuitable for wilderness designation. It was stated that the tableland of Cottonwood Creek WSA recommended as nonsuitable for wilderness should be preserved to maintain hunting areas for raptors. Another commenter stated the east boundary of this WSA was inappropriate, feeling the boundary road has vegetatively overgrown. Others did not favor the proposed grazing projects unless they enhanced wilderness values, and also said that the potential for minerals was over estimated, especially since the area has high wilderness values, in particular abundant wildlife.

Those opposing wilderness commented on the highway noise associated with U.S. Highway 20 in Malheur River Canyon adjacent to Gold Creek and Sperry Creek WSAs.

No WSA-specific comments were received from any Federal or local agencies. The Idaho Air National Guard expressed a concern over the possible conflict between low altitude overflights within an existing designated military training air corridor that covers portions of Camp Creek and Cottonwood Creek WSAs and the feeling of solitude sought by wilderness area users.

There were two comment letters received on the final EIS.

Appendix 1 - Estimated Costs of Acquisition of Non-Federal Holdings Within Areas Recommended for Designation [1]

	Legal Description (Prior to any Subdivision	Total Acreage	Number of Owners	Type of Ownership by Estate (Federal, State Private, other)		Presently Proposed for Acquisition (Yes, No)	Preferred Method of Acquisition (Purchase, Exchange, Other)	Estimated Cost of Acquisition[2]	
				Surface Estate	Subsurface Estate			Land Costs	Processing Costs
Parcel No. 1,	T. 21 S., R. 40 E., Sec. 3 SE1/2 SE1/2	40	1	Federal	State	Yes	Exchange	N/A	$15,000[3]
Parcel No. 2,	Section 16	640	1	Federal	State	Yes	Exchange	N/A	$15,000[3]
Parcel No. 3,	Section 16	80	1	Federal	State	Yes	Exchange	N/A	$15,000[3]
Parcel No. 4	T. 22 S., R. 39 E., Sec. 36 N1/2 N1/2 NW1/4 SE1/4 SW1/4 SE1/4	600	1	Federal	State	Yes	Exchange	N/A	$15,000[3]

[1] The estimated costs listed in this appendix in no way represent a formal appraised value of the land or mineral estate, but are rough estimates based on sales or exchanges of lands or mineral estates with similar characteristics to those included in the WSA. The estimates for purposes of establishing a range of potential costs to the government of acquiring non-Federal holdings and in no way represent an offer to purchase or exchange at the cost estimate included in this appendix. Processing costs are all miscellaneous expenses other than land costs. These include work month costs, appraisals, title work, escrow costs, etc. All lands identified in this table are in Oregon.

[2] Where exchange is the proposed acquisition method, only administrative costs of processing the exchange are shown. Land costs are not applicable. Where direct purchase is proposed, estimate of both the land costs and the processing costs are provided.

[3] Total District processing costs approximately $15,000 for parcels #1 - #4 as they would be acquired under one action in an exchange with the State.

Cedar Mountain Wilderness Study Area

1. The Study Area —33,600 acres

The Cedar Mountain Wilderness Study Area (WSA) (OR-3-47) is located in Malheur County, Oregon, approximately 50 miles southwest of Vale and 30 miles northwest of Jordan Valley. It lies midway (approximately 25 miles) in a triangle between State Highway 78 and U.S. Highways 20 and 95. The WSA includes 31,440 acres of BLM lands and 2,160 acres of split-estate lands. In addition, there is one 80-acre parcel of private land inside the WSA (see Table 1). The shape of the WSA is irregular. The boundary consists of a fence line on the north, and BLM roads and private land on the remainder. The eastern boundary road and the dead-end road from Seaburn Ranch to Cook Stove Basin Reservoir are low standard dirt roads, while the remaining boundary roads are high standard dirt roads. Two dead-end roads which terminate at earthen reservoirs are excluded from the WSA and serve as part of its boundary. One, extending from the northern boundary to Cook Stove Basin Reservoir, is 4.5 miles long. The other, 0.5 miles in length, extends form the western boundary to North Gallagher Reservoir.

The WSA is comprised of Cedar Mountain and its slopes, with elevations in the WSA ranging from 3,940 feet to 5,560 feet. The base of the mountain is approximately at the boundary of the WSA. Cook Stove Basin contains a natural playa (shallow lake during wet years) and is located west of the summit along the crest of Cedar Mountain. Predominant vegetation in the WSA is Wyoming big sagebrush with an understory of grasses and forbs. Higher elevation portions of the WSA support western juniper in moderately dense stands.

The WSA was studied under section 603 of the Federal Land Policy and Management Act (FLPMA), and was included in the Final Oregon Wilderness Environmental Impact Statement (EIS) filed in February, 1990. There were three alternatives analyzed in the EIS: an all wilderness alternative; an all wilderness with road closures and acquisitions alternative under which 33,600 acres would be designated as wilderness, the two dead-end roads mentioned above would be closed, and an attempt would be made to acquire 80 acres of private land and the mineral estate of 2,160 acres of split-estate parcels, 33,680 acres would be designated as wilderness if the private parcel were acquired; and a no wilderness/no action alternative, which is the recommendation in this report. These lands are shown on Map 1.

2. Recommendation and Rationale

—0 acres recommended for wilderness
33,600 acres recommended for nonwilderness

The recommendation for the Cedar Mountain WSA is to release the entire area for uses other than wilderness. Designation of the entire WSA as wilderness, with road closures and acquisitions, is the environmentally preferable alternative since it would result in the least change to the natural environment over the long term. However, the no wilderness recommendation would be implemented in a manner which would use all practical means to avoid or minimize environmental impacts.

The value of the benefits to be gained by retaining development options for a powerline, projects associated with intensive livestock management and enhancement of wildlife populations in the WSA is high as compared with the area's wilderness values. Projected activities, which would be allowed under the recommendation, include development of a proposed power transmission line through the western edge of the WSA to route a proposed 500-kV powerline along a six-mile length within the WSA and the intensive management of livestock in the area through construction and maintenance of three proposed reservoirs and nine miles of fence. This would improve livestock distribution and management by providing for long-term improved growth and vigor of vegetation, thereby improving the ecological status of vegetation in existing areas of livestock grazing. Present maintenance of numerous livestock facilities, including 13 reservoirs and 21 miles of fence, and associated motorized vehicle use of 18 miles of access roads and ways would be allowed to continue unconstrained.

The recommendation also would allow motorized recreation use to continue on the 13 miles of ways and five miles of dead-end roads. This would maintain vehicle-oriented hunting opportunities in the area and allow access for day hiking which would provide for reasonable hiking distances for a day's outing through much of the area.

Under the recommendation, the additional water provided by the projected development of three reservoirs would enhance game (including elk, deer, antelope, chukar and waterfowl) and non-game wildlife by providing expanded habitat for more of these species.

The no wilderness recommendation for Cedar Mountain WSA may lead to the impairment of wilderness values, but the value of retaining development options for the powerline and wildlife and livestock management projects exceeds these wilderness values.

3. Criteria Considered in Developing the Wilderness Recommendation

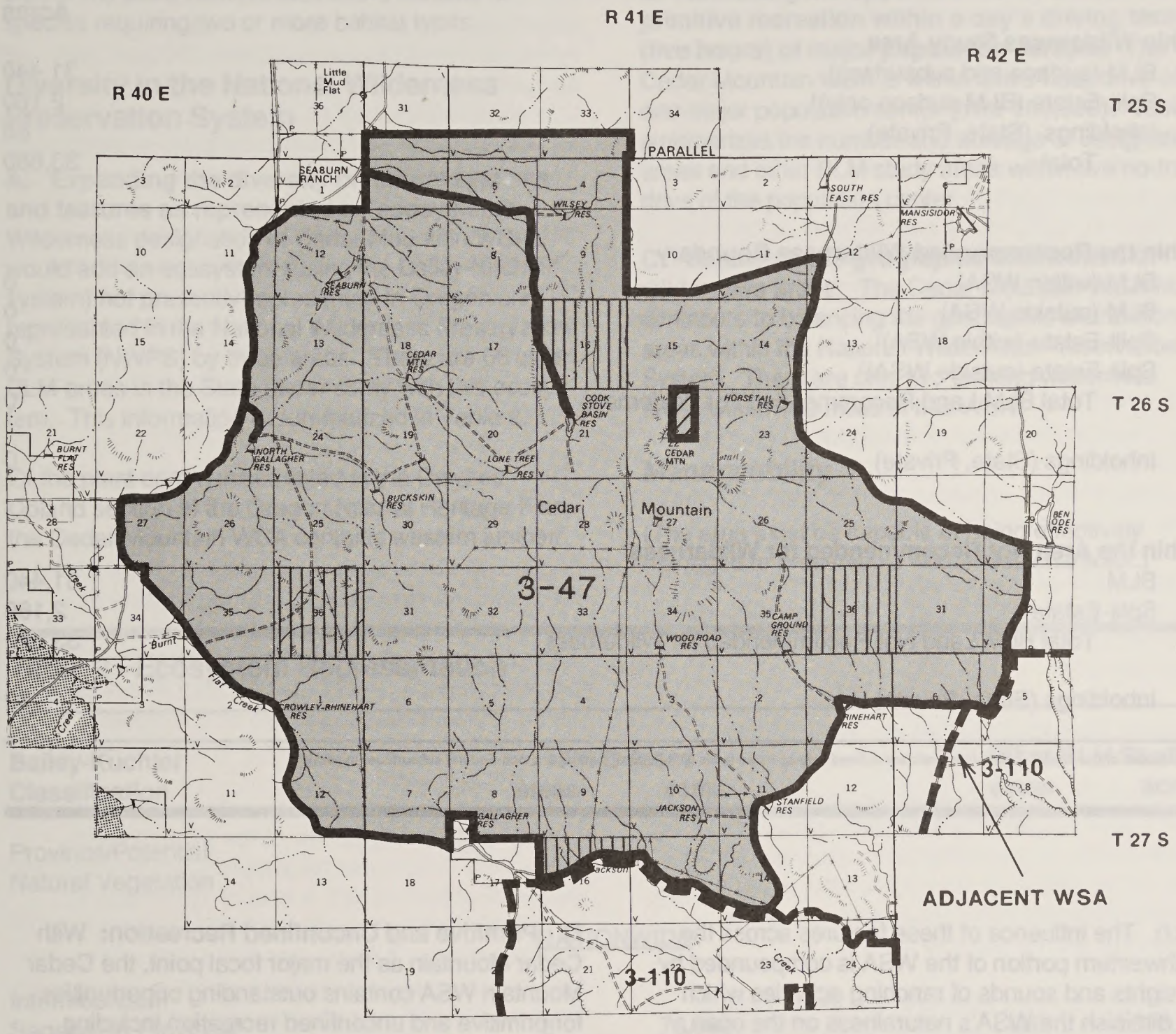
Wilderness Characteristics

A. Naturalness: The Cedar Mountain WSA is generally natural in appearance. The WSA is comprised of Cedar Mountain and its slopes, with elevations in the WSA ranging from 3,940 feet to 5,560 feet. Cook Stove Basin contains a natural playa (shallow lake during wet years) and is located west of the summit along the crest of the mountain.

The predominant vegetation in the WSA is Wyoming big sagebrush with an understory of grasses and forbs. Lower elevation communities consist of mid-seral sagebrush/bluebunch wheatgrass, with upper elevation communities in late seral stages consisting of sagebrush/Idaho fescue and lesser portions of sagebrush/bluebunch wheatgrass. Western juniper are scattered throughout the upper elevations of the WSA and are the dominant component of both major communities in places. Several dense stands of juniper occur near the summit of Cedar Mountain.

The WSA supports an expanding population of 40 Rocky Mountain elk, 50 pronghorn antelope and 200 mule deer. Upland game birds, including chukar and mourning dove, occur in moderate numbers. Reservoirs in the WSA are used for breeding habitat by waterfowl, notably mallards and cinnamon teal. The area also provides diverse habitat for a variety of non-game wildlife common in the intermountain region.

There are 21 unnatural features which influence approximately 6 percent of the WSA. These features consist of 13 reservoirs, two fences totaling 21 miles, five ways totaling 13 miles and a corral. The roads into Cook Stove Basin and North Gallagher Reservoirs, as outside features protruding into the WSA, detract from the naturalness of the slopes and drainages they traverse. Features outside the WSA which influence the naturalness of the WSA are six reservoirs, a fence, boundary roads, a way and a



RECOMMENDED FOR WILDERNESS (None)

RECOMMENDED FOR NONWILDERNESS

LAND OUTSIDE WSA RECOMMENDED FOR WILDERNESS (None)

SPLIT ESTATE

STATE (None)

PRIVATE

- N -

Cedar Mountain Proposal

MAP-1

0 1 2 3

MILES

OR-3-47

January, 1991

Table 1. Land Status and Acreage Summary of the Study Area

	Acres
Within Wilderness Study Area	
BLM (surface and subsurface)	31,440
Split-Estate (BLM surface only)[1]	2,160
Inholdings (State, Private)	80
Total	33,680
Within the Recommended Wilderness Boundary	
BLM (within WSA)	0
BLM (outside WSA)	0
Split-Estate (within WSA)[1]	0
Split-Estate (outside WSA)[1]	0
Total BLM Land Recommended For Wilderness	0
Inholdings (State, Private)	0
Within the Area Not Recommended for Wilderness	
BLM	31,440
Split-Estate[1]	2,160
Total BLM Land Not Recommended for Wilderness	33,600
Inholdings (State, Private)	80

[1]For purposes of this report, split-estate lands are defined only as those lands with Federal surface and non-Federal subsurface (minerals).

ranch. The influence of these features across the northwestern portion of the WSA is compounded by the sights and sounds of ranching activities which can diminish the WSA's naturalness on the open, west-facing slopes. The overall influence of human imprints on the naturalness of the area as perceived by the average visitor is low.

B. Solitude: The Cedar Mountain WSA offers outstanding opportunities for solitude due to the large size of the study area and the topographic and vegetative screening in the area. The undulating topography coupled with juniper on Cedar Mountain provides excellent screening for solitude. Topography and vegetation do not restrict foot travel to any identifiable corridors. Approximately 80 percent of the WSA offers a high degree of solitude. Opportunities for solitude are fewer along the perimeters of the WSA due to the influence of outside sights and sounds associated primarily with ranching activities.

C. Primitive and Unconfined Recreation: With Cedar Mountain as the major focal point, the Cedar Mountain WSA contains outstanding opportunities for primitive and unconfined recreation including backpacking, camping, horseback riding, and bird watching. Opportunities for hunting mule deer, antelope and chukar are average. Opportunities for hunting elk are very limited.

D. Special Features: The Cedar Mountain WSA supports an expanding herd of about 40 Rocky Mountain elk which have recently migrated from an established herd on Stockade Mountain. Rocky Mountain elk are a premier big game species widely sought by the hunting public.

While juniper woodlands are not necessarily unusual on the Vale District, the mature stand of western junipers on Cedar Mountain is a unique "island" ecosystem surrounded by a sagebrush desert and is at least 10 air miles from the nearest similar stand.

This isolated juniper stand provides habitat for species who use trees for nesting. The ecotone between the sagebrush and juniper communities increases the diversity of the area, and the interspersion of the plant communities offers habitats to species requiring two or more habitat types.

Diversity in the National Wilderness Preservation System

A. Expanding the diversity of natural systems and features as represented by ecosystems: Wilderness designation of Cedar Mountain WSA would add an ecosystem (using the Bailey-Kuchler system) not presently represented in Oregon and represented in the National Wilderness Preservation System (NWPS) by three areas. There are 66 other BLM areas in the State under study with this ecosystem. This information is summarized in Table 2.

Of the plant communities listed in the Owyhee Upland section of the Oregon Natural Heritage Plan, the Cedar Mountain WSA contains western juniper/ big sagebrush/bluebunch wheatgrass, big sagebrush/bluebunch wheatgrass, and big sagebrush/ Idaho fescue communities.

B. Assessing the opportunities for solitude or primitive recreation within a day's driving time (five hours) of major population centers: The Cedar Mountain WSA is within a five-hour drive of one major population center (over 100,000). Table 3 summarizes the number and acreage of designated areas and other BLM study areas within five hours drive of the population center.

C. Balancing the geographic distribution of wilderness areas: The Cedar Mountain WSA would contribute to balancing the geographic distribution of areas within the National Wilderness Preservation System. There are only two existing wilderness areas within 100 miles of this WSA.

Manageability

(The area must be capable of being effectively managed to preserve its wilderness character.)

Table 2 - Ecosystem Representation

Bailey-Kuchler Classification	NWPS Areas areas	NWPS Areas acres	Other BLM Studies areas	Other BLM Studies acres
Province/Potential Natural Vegetation				
NATIONWIDE				
Intermountain Sagebrush Province/ Sagebrush-Steppe	3	76,699	136	4,336,740
OREGON				
	0	0	66	1,949,474

Table 3. Wilderness Opportunities for Residents of Major Population Centers

Population Centers	NWPS Areas areas	NWPS Areas acres	Other BLM Studies areas	Other BLM Studies acres
Boise, Idaho	16	4,741,570	141	5,374,250

The Cedar Mountain WSA could be managed as wilderness. If the 80-acre private inholding were developed, because of this parcel's high elevation and exposed location, it may be difficult to ensure that naturalness and opportunities for solitude would be preserved over the long term in the northeast portion of the WSA. No energy or mineral development activities are projected to occur on the split-estate parcels or the private inholding. Only casual surface exploration is projected for oil and gas, but this would impact opportunities for solitude while exploration activities occur. If the 80-acre private inholding and split-estate parcels were acquired by the BLM, as proposed under the all wilderness with road closures and acquisitions alternative, the above difficulties in managing this area as wilderness would be lessened.

Although the area would be manageable as wilderness, periodic disruption of outstanding opportunities for solitude and/or primitive recreation activities would occur due to livestock management activities. There are 13 reservoirs within the WSA. Since each reservoir may require heavy equipment maintenance once every five to ten years, though not occurring during the same years for all of the reservoirs, there could be a recurring need to use heavy equipment within the WSA.

Energy and Mineral Resource Values

Energy and mineral resources of the Cedar Mountain WSA were evaluated from available geologic data by TERRADATA, a consulting firm under contract with BLM. BLM geologists reevaluated the report using additional information such as general mining information and oil and gas leases.

Based upon indirect evidence, the entire WSA is considered to have a moderate potential for the occurrence of oil and gas. Also based upon indirect evidence, no mineral resources have been identified that have a moderate or high potential for occurrence.

There is no present production of any mineral or energy resources in the WSA. In summary, quantities of various minerals and energy resources are unknown, but based on indirect evidence, the potential for occurrence of oil and gas is moderate over the entire area, while the potential for mineral resources is low.

As of May 1991, there were no mining claims in this WSA.

Local Social and Economic Considerations

Livestock use at the current level of 2,637 AUMs and recreation use totaling 200 visitor days per year are the primary resource outputs that generate economic activity in the WSA. Local personal income generated annually from these existing use levels amounts to approximately $31,644 for livestock grazing and $2,400 related to recreation use of the WSA, for an overall total of $34,044.

Under the recommendation, livestock grazing would remain at 2,637 AUMs and overall recreation use would remain at 200 visitor days per year. Annual local personal income generated from resource outputs in the Cedar Mountain WSA would remain at approximately $34,000. There were no social issues identified in the study of this WSA.

Summary of WSA-Specific Public Comments

Public involvement has occurred throughout the wilderness review process. Certain comments received during the inventory process and early stages of the environmental impact statement (EIS) preparation were used to develop significant study issues and various alternatives for the ultimate management of those lands found to have wilderness values.

During formal public review of the Draft Oregon Wilderness Environmental Impact Statement and the Supplement to the Draft, a total of 10 comments specifically addressing the Cedar Mountain WSA were received. Of those, nine were written and one was an oral statement received at public hearings on the draft EIS and supplement. In general, five commenters supported wilderness designation for all or part of the WSA. Three commenters supported enhanced wilderness for the WSA. None of the commenters supported the WSA's no wilderness alternative. Two commenters addressed the relative merits of the EIS, but took no formal position on wilderness designation.

Those favoring all wilderness commented on the high value of this area for wilderness, the national need for wilderness, the uniqueness of the area and the protection wilderness designation offers to natural resources, ecosystems, ecological diversity, the wildlife gene pool, and non-game wildlife populations, citing particularly western juniper, wildlife habitat, Rocky Mountain Elk which are rare in the desert, and cultural resources. The uneconomical

aspect of the reservoirs within the WSA boundary was also noted.

Those favoring all wilderness with road closures and acquisitions commented on the high value of this area for wilderness, the uniqueness of the area, and the protection that would be offered to the ecosystems and ecological diversity of the area. Also noted was that this alternative would not affect existing grazing privileges and patented leases, and that the mineral and energy resource values are low.

The Idaho Air National Guard (IDANG) and the Oregon Department of Fish and Wildlife (ODFW) commented on the draft EIS. The IDANG expressed a concern over the possible conflict between low altitude overflights and the feeling of solitude sought by wilderness area users. The ODFW commented that there was no discussion of the environmental consequences to the important habitat components for elk present in the WSA.

There was one comment letter received on the final EIS.

Impacts on Resources

The following comparative impact table summarizes the effects on pertinent resources for all the alternatives considered including designation or nondesignation of the entire area as wilderness.

Table 4 - Comparative Summary of the Impacts by Alternative

Issue Topics	Recommendation (No Wilderness/No Action Alternative)
Impacts on Wilderness Values	In the absence of wilderness designation, projected activities would both directly and indirectly impair wilderness values over approximately 2,950 acres of the WSA, with further declines from other potential uses over the long term.
Impacts on Energy and Mineral Development	No impact on energy or mineral development is expected.
Impacts on Utility Corridor Routing	There would be no impact to utility corridor routing and development.
Impacts on Vegetation	Twenty-nine acres of vegetation would be removed with no change in vegetation composition on most of the WSA and improvement of the ecological status from early or mid-seral stages towards a late seral stage on existing livestock grazed areas.
Impacts on Wildlife	Wildlife habitat and populations would be enhanced in the vicinity of three reservoirs and maintained in the remainder of the WSA.
Impacts on Livestock Grazing	Livestock distribution and management would be improved with construction of three reservoirs and two fences.
Impacts on Recreation Use	The area's recreation use level of approximately 200 visitor use days per year and current types of recreation use would not be affected.
Impacts on Local Personal Income	Annual local personal income would remain at approximately $34,000.

All Wilderness with Road Closures and Acquisitions Alternative	All Wilderness Alternative
Wilderness designation of 33,680 acres (assuming acquisition of the private property) would protect and enhance existing wilderness values. The acquisition of 2,160 acres of mineral estate and 80 acres of private land, and the closure of five miles of dead-end roads would further preserve wilderness values.	Wilderness designation of 33,600 acres would protect and enhance wilderness values.
No impact on energy or mineral development is expected.	No impact on energy or mineral development is expected.
The utility corridor would not be designated in the WSA and the transmission line would be rerouted four miles to the west, with negligible increase in length.	The utility corridor would not be designated in the WSA and the transmission line would be rerouted four miles to the west, with negligible increase in length.
The 13 miles of ways and five miles of dead-end roads would revegetate. Little or no change would occur in the rest of the WSA.	The 13 miles of ways would revegetate. Little or no change to vegetation would occur in the rest of the WSA.
Wildlife habitat and populations would be maintained on 33,680 acres designated wilderness (assuming acquisition of 80 acres of private property).	Wildlife habitat and populations would be maintained on 33,600 acres designated wilderness.
Existing livestock use of 2,637 AUMs would continue, some forage remaining underutilized due to precluded construction of three reservoirs and nine miles of two fences. Vehicle use of 13 miles of ways and five miles of dead-end roads would be precluded with minor inconvenience to livestock operators.	Existing livestock use of 2,637 AUMs would continue, some forage remaining underutilized due to precluded construction of three reservoirs and nine miles of two fences. Vehicle use of 13 miles of ways would be precluded with minor inconvenience to livestock operators.
The area's recreation use level of approximately 200 visitor days per year would not be affected.	The area's recreation use level of approximately 200 visitor days per year would not be affected.
Annual local personal income would remain at approximately $34,000.	Annual local personal income would remain at approximately $34,000.

Dry Creek Wilderness Study Area

1. The Study Area —23,500 acres

Dry Creek Wilderness Study Area (WSA) (OR-3-53) is located west of the Owyhee Reservoir in Malheur County, Oregon, approximately 27 miles southwest of Vale, Oregon. The WSA contains 22,500 acres of BLM land and three parcels of split-estate lands totaling 1,000 acres (see Table 1). The study area is approximately 7 miles long and 5 miles wide. It is bounded by high grade dirt roads and parcels of private property along the northern and western boundaries, and a high grade dirt road along the eastern boundary. The southern boundary is comprised of vehicular ways, a fence and topographic features. Dry Creek Buttes WSA (OR-3-56) is adjacent to the southeast boundary of Dry Creek WSA for approximately 6 miles. The two WSAs are separated by a road.

Dry Creek Canyon is the dominant topographic feature within the WSA. This scenic canyon, carved by the intermittent waterflow of Dry Creek, bisects the WSA for 9 miles until leaving it at the northeastern boundary near the Dry Creek arm of Owyhee Reservoir.

The width of the canyon's floor usually averages between 250 to 500 feet, but near the confluence of Freezeout Creek it widens to 0.75 mile. Sagecovered slopes, often with gradients greater than 50 percent, form the canyon's sides. Cliffs, rimrock and outcroppings provide picturesque diversity. These geologic features are composed of both basalt and layered ash deposits which add a variety of colors to the canyon scenery. With the exception of several drainages such as Freezeout, Deadhorse and Sheep Creeks, the terrain away from Dry Creek is less steep. Rolling hills and numerous drainages of varying lengths characterize the landscape. There also are several buttes, ridges and tablelands.

Sagebrush and grasses are the dominant plants within the WSA. However, the riparian zone along Dry Creek supports a variety of plants that are not represented in the surrounding semiarid environment. These include mock orange, willow, rushes and sedges.

The WSA was studied under Section 603 of the Federal Land Policy and Management Act (FLPMA), and was included in the Final Oregon Wilderness Environmental Impact Statement (EIS) filed in February, 1990.

There were three alternatives analyzed in the EIS: 1) and all wilderness alternative; 2) an all wilderness with acquisitions alternative, in which 23,500 acres of public land would be recommended suitable as wilderness and the mineral estate of the 1,000 acres of split-estate land would be acquired if the owners are willing, through purchase or exchange; and 3) a no wilderness/no action alternative, which is the recommendation in this report. These lands are shown on Map 1.

2. Recommendation and Rationale

—0 acres recommended for wilderness
23,500 acres recommended for nonwilderness

The recommendation for this WSA is to release the entire area for uses other than wilderness. The all wilderness, with acquisitions, alternative is considered to be the environmentally preferable alternative since it would result in the least change from the natural environment over the long term. However, the no wilderness/no action alternative would be implemented in a manner which would use all practical means to avoid or minimize environmental impacts.

The recommendation recognizes the benefits from proposed projects in the WSA that include range developments, a brush control project to increase forage for livestock, spraying to control noxious weeds and mineral exploration and development; these benefits are considered to be higher than those derived from wilderness preservation.

Four reservoirs and three springs would be built in the WSA to reduce grazing pressure at existing water sources, and to distribute livestock into previously unused areas. These water developments would provide new late season water sources for almost all species of wildlife present.

The projected spraying for noxious weeds on 150 acres would be undertaken to control the invasion of exotic thistle and broom snakeweed species in the WSA. This would promote the reestablishment of natural plant communities in the presently invaded areas.

Brush would be controlled on 2,500 acres and seeded to crested wheatgrass to increase forage for livestock. The Wyoming big sagebrush/bluebunch wheatgrass community in the northeastern portion of the WSA would be replaced. The potential increased allocation to livestock would be 500 AUMs. Neither of the plant species believed to occur in this WSA that are Federal candidates for listing under the Endangered Species Act have been found in this area, but an extensive vegetation clearance for these species would be made prior to the seeding.

Four miles of fence would be constructed along 6 miles of Dry Creek. This would allow a change in livestock management which would reduce grazing pressure on streamside vegetation. The fence would restrict movement of cattle down small tributaries into the upper canyon reaches of Dry Creek. Riparian habitat would improve, possibly allowing redband trout, mule deer and nongame bird populations to increase. The natural setting for recreational use along the creek would also be enhanced.

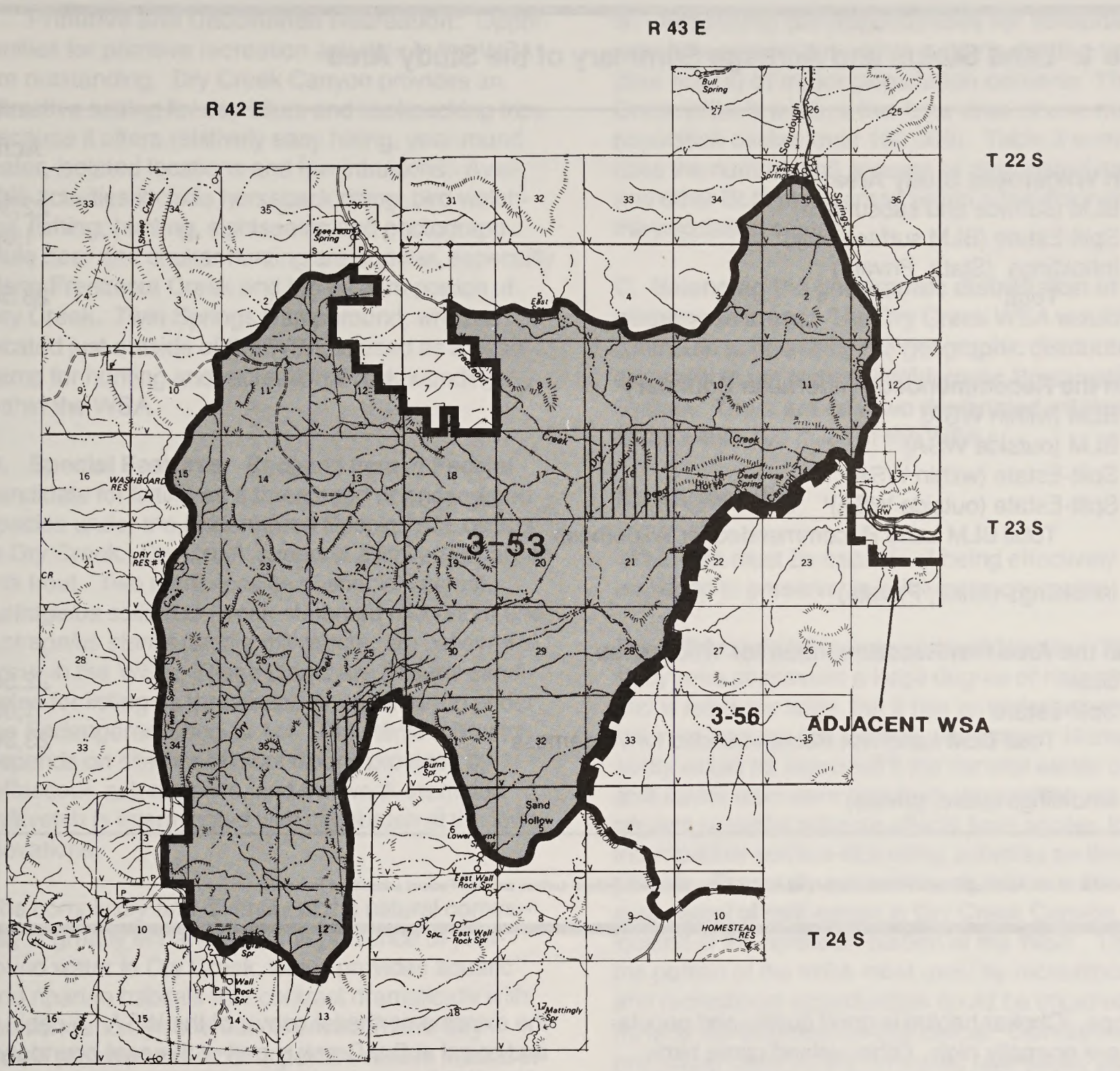
Under the recommendation, mining activity could occur in the northeastern and eastern portion of the WSA. There is a high potential for the occurrence of gemstone picture jasper and optical calcite. The development of three surface mines for picture jasper is projected to occur in the northeastern portion of the WSA. Exploration for perlite, diatomite, bentonite and zeolite could occur as there is a moderate potential for these resources. Although the area is manageable as wilderness, potential mineral development in the split estate portion in the northeast part of the WSA would complicate wilderness management of adjacent lands.

3. Criteria Considered in Developing the Wilderness Recommendation

Wilderness Characteristics

A. Naturalness: Dry Creek WSA is in a substantially natural condition. The main feature of the WSA is Dry Creek Canyon and its two side drainages, Sheep Creek and Freezeout Creek, with their diverse topography, steep walls, meanders and angular ridges. Bands of unusual soils which vary from supporting practically no vegetation to bands supporting sparse vegetation ring the hills and canyons in portions of the WSA. A wide variety of plant communities and species occur in the WSA.

The WSA supports a year-round population of approximately 100 mule deer and 50 pronghorn



RECOMMENDED FOR WILDERNESS (None)

RECOMMENDED FOR NONWILDERNESS

LAND OUTSIDE WSA RECOMMENDED FOR WILDERNESS (None)

SPLIT ESTATE

STATE (None)

PRIVATE (None)

- N -

Dry Creek Proposal

MAP-1

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MILES

OR-3-53
January, 1991

Table 1. Land Status and Acreage Summary of the Study Area

	Acres
Within Wilderness Study Area	
BLM (surface and subsurface)	22,500
Split-Estate (BLM surface only)[1]	1,000
Inholdings (State, Private)	0
Total	23,500
Within the Recommended Wilderness Boundary	
BLM (within WSA)	0
BLM (outside WSA)	0
Split-Estate (within WSA)[1]	0
Split-Estate (outside WSA)[1]	0
Total BLM Land Recommended for Wilderness	0
Inholdings (State, Private)	0
Within the Area Not Recommended for Wilderness	
BLM	22,500
Split-Estate[1]	1,000
Total BLM Land Not Recommended for Wilderness	23,500
Inholdings (state, private)	0

[1] For purposes of this report, split estate lands are defined only as those lands with Federal surface and non-Federal subsurface (minerals).

antelope. Chukar habitat is good quality and populations are normally high. Other upland game birds present include California quail, mourning doves and gray partridge.

Eighteen unnatural features influence approximately 3,300 acres (14 percent) of the WSA. These features are scattered and, because of the screening that is provided by the rugged terrain, are substantially unnoticeable. They include eight vehicle ways totaling 9 miles, five fences totaling 9 miles, three reservoirs and two developed springs. Dry Creek Canyon is influenced only by fences.

Unnatural features outside of the WSA detract from the naturalness of the study area, especially in the northern portion. A 500-kV powerline is the main outside unnatural feature that influences naturalness within the WSA. This powerline can be seen from most of the high points and ridges in the WSA and from the boundary. The powerline is not visible from inside Dry Creek Canyon and its side draws. Twin Springs Campground can be seen from two areas in the extreme northeast corner of the WSA. A cabin and corral at Dry Creek is part of the east boundary of the WSA.

B. Solitude: The WSA offers outstanding opportunities for solitude because of the diverse topography that is associated with Dry Creek and its drainages, Sheep Creek and Freezeout Creek. These canyons, with their steep walls, meanders and angular ridges, provide excellent topographic screening but are relatively short within the WSA.

Topographic screening is not good throughout the rest of the WSA because the terrain is mostly rolling, shallow drainages. Away from the canyons, vegetative screening is minimal because of the low height of shrubs and grasses.

Outside sights and sounds affecting opportunities for solitude within the WSA are minor, and are mainly associated with grazing management activities, traffic on the boundary roads and camping at Twin Springs Campground. Traffic and campground use increases noticeably during hunting seasons.

C. Primitive and Unconfined Recreation: Opportunities for primitive recreation activities in the WSA are outstanding. Dry Creek Canyon provides an attractive setting for day hikes and backpacking trips because it offers relatively easy hiking, year-round water, isolated locations and few intrusions. Available activities include horseback riding, bird watching, fishing, hunting, sightseeing and photography. Mule deer and chukar hunting are popular, especially along Freezeout Creek and the eastern portion of Dry Creek. Twin Springs Campground, which is located just outside of the WSA, is used as a base camp for hunting and recreational rockhounding within the WSA.

D. Special Features: Redband trout, a Federal candidate for listing as a threatened or endangered species under the Endangered Species Act, occurs in Dry Creek. Dry Creek supports a limited fishery of this trout. Two plant species of special interest, *Astragalus solitarius* (weak-stemmed milkvetch) and *Astragalus sterilis* (sterile milkvetch), are believed to occur in the WSA. These plants are Federal candidates for listing as threatened or endangered under the Endangered Species Act. The sterile milkvetch depends on site-specific conditions provided by tuffaceous ash deposits, and the weak-stemmed milkvetch is intermingled with sagebrush at the lower elevations.

The complexity and diversity of the natural community is greatly enhanced by the presence of year-round water in Dry Creek, which provides aquatic and riparian habitats that contrast dramatically with the surrounding semi-desert environment. Dry Creek provides the most important wildlife habitat in the WSA because of the year-round water and riparian habitat.

Diversity in the National Wilderness Preservation System

A. Expanding the diversity of natural systems and features as represented by ecosystems: Wilderness designation of the Dry Creek WSA would add an ecosystem (using the Bailey-Kuchler system) not presently represented in Oregon, and represented in the National Wilderness Preservation System (NWPS) by only three areas. There are 66 other BLM areas in the state under study with this ecosystem. This information is summarized in Table 2.

Of the plant communities listed in the Owyhee Uplands section of the Oregon Natural Heritage Plan, the WSA contains the big sagebrush-bluebunch wheatgrass community.

B. Assessing the opportunities for solitude or primitive recreation within a day's driving time (five hours) of major population centers: The Dry Creek WSA is within a five-hour drive of one major population center (over 100,000). Table 3 summarizes the number and acreage of designated areas and other BLM study areas within a five-hour drive of the population center.

C. Balancing the geographic distribution of wilderness areas: The Dry Creek WSA would contribute to balancing the geographic distribution of areas within the National Wilderness Preservation System. There are only two designated wilderness areas within 100 miles of the WSA.

Manageability

(The area must be capable of being effectively managed to preserve its wilderness character)

The WSA could be managed as wilderness. The study area possesses a large degree of naturalness and is relatively large, but it has an awkward configuration to manage the area as wilderness. Manageability would be improved if the mineral estate of the split-estate land were acquired. Acquisition would prevent potential adverse effects from access to and incompatible surface-disturbing activities on these parcels. Especially critical for acquisition is the 640-acre parcel of split-estate in Dry Creek Canyon, located in the northeast portion of the WSA. This is the portion of the WSA most used by recreationists, and recreational opportunities could be impaired by mineral development on this parcel. Development of one jasper mine on the northeast split-estate parcel would reduce recreation use because upland and big game species would be displaced and the natural setting and opportunities for solitude would decline. Manageability also is decreased by a powerline that is located just north of the WSA which is visible from most of the higher points in the WSA.

Energy and Mineral Resource Values

Energy and mineral resources of the Dry Creek WSA were evaluated by geologists from TERRADATA, Inc., a consulting firm under BLM contract. The resources were evaluated from available geologic data supplemented by a limited amount of geochemical stream sediment sampling. Technical findings are in the report, "Assessment of the Geology, Energy, and Mineral Resources of Lake Owyhee Geologic Resource Area (GRA)." Using this report and additional information, the WSA was reevaluated by BLM geologists.

Table 2. - Ecosystem Representation

Bailey-Kuchler Classification	NWPS Areas areas	NWPS Areas acres	Other BLM Studies areas	Other BLM Studies acres
Province/Potential Natural Vegetation				
NATIONWIDE				
Intermountain Sagebrush Province/Sagebrush-Steppe	3	76,699	136	4,323,480
OREGON				
	0	0	66	1,936,214

Table 3 - Wilderness Opportunities for Residents of Major Population Centers

Population Centers	NWPS Areas areas	NWPS Areas acres	Other BLM Studies areas	Other BLM Studies acres
Boise, Idaho	16	4,741,570	126	5,060,460

Based on indirect evidence, the WSA is considered to have a moderate potential for the occurrence of oil and gas.

No confirmed mineral deposits have been found in the WSA. However, gemstones (picture jasper) and optical calcite are known to occur within the study area, especially along the eastern and southern boundaries. Based on this direct geologic evidence and the presence of similar rocks throughout the WSA, the WSA is considered to have a high potential for the occurrence of gemstones and optical calcite. Picture jasper and optical calcite are indicators of gold/silver mineralization. These precious metals may occur in association with jasper and optical calcite, but none have been found in the study area.

Based on direct geologic evidence, the WSA is considered to have a moderate potential for the occurrence of perlite because of its known occurrence within the WSA and the presence of similar rocks throughout the study area.

Based on indirect evidence, the WSA is considered to have a moderate potential for the occurrence of diatomite, bentonite and zeolite.

As of May 1991, there were 519 mining claims in this WSA.

Local Social and Economic Considerations

Livestock use at the current level of 2,939 AUMs and recreation use totaling 600 visitor days per year are the primary resource outputs that generate economic activity in the WSA. Local personal income generated annually from these existing use levels amounts to approximately $35,268 for livestock grazing and $7,200 related to recreation use of the WSA, for an overall total of $42,468.

Under the recommendation, livestock grazing would increase by 500 AUMs. Projected energy and mineral development would amount to three nonmetallic mines. Overall recreation use would decrease by 200 visitor days per year. Annual local personal income generated from resource outputs in the WSA would increase by approximately $3,600. There were no social issues identified in the study of the Dry Creek WSA.

Summary of WSA-Specific Public Comments

Public involvement has occurred throughout the wilderness review process. Certain comments received during the inventory process and early stages of the EIS preparation were used to develop significant study issues and various alternatives for the ultimate management of those lands found to have wilderness values.

During formal review of the draft EIS, a total of 24 comments specifically addressing Dry Creek WSA were received. Of those, 14 were written and 10 were oral statements received at public hearings on the draft and supplement EIS.

Five commenters supported the recommendation. These commenters said that wilderness designation could impact rehabilitation work that has been done to improve range production, and that the nonsuitable recommendation is needed to allow range improvements and to permit spraying for noxious weeds which would be greatly restricted under wilderness designation. One person commented on the merits of the EIS.

The 18 commenters supporting wilderness designation said that the WSA has high scenic value, has good primitive recreation opportunities, that topographic screening is adequate within the the WSA with too much emphasis being placed on the presence of the outside powerline, that the WSA is important wildlife habitat, and that the area's wilderness values outweigh the gemstone mineral values which are widely available elsewhere in the region.

No WSA-specific comments were received from any Federal or local agencies. The Idaho Air National Guard expressed a concern over the possible conflict between low altitude overflights within an existing designated military training air corridor that covers a portion of Dry Creek WSA and the feeling of solitude sought by wilderness area users.

There was one comment letter received on the final EIS

Impacts on Resources

The following comparative impact table summarizes the effects on pertinent resources for all of the alternatives considered, including designation or nondesignation of the entire area as wilderness.

Table 4 - Comparative Summary of the Impacts by Alternative

Issue Topics	Recommendation (No Wilderness/No Action Alternative)
Impacts on Wilderness Values	In the absence of wilderness designation, projected activities would both directly and indirectly impair wilderness values over approximately 6,500 acres (almost 28 percent) of the WSA, with further declines from other potential uses in the long term.
Impacts on Energy and Mineral Development	There would be no impact on energy development. Projected development of three jasper mines would occur.
Impacts on Vegetation	Riparian vegetation would improve along 6 miles of Dry Creek. Crested wheatgrass would replace native vegetation on 2,500 acres. Vegetation would be removed on 26 acres. Noxious weeds would be controlled on 150 acres.
Impacts on Wildlife	Fifteen acres of wildlife habitat would be eliminated and 3 miles of riparian habitat would be damaged, displacing or reducing populations of redband trout, mule deer and nongame birds. Six miles of riparian habitat would be improved, enhancing populations of redband trout, mule deer and nongame birds. Diversity of forage would be reduced on 2,500 acres.
Impacts on Watershed	Water quality would improve along 6 miles of Dry Creek and would continue to decline in the more accessible portions.
Impacts on Livestock Grazing	An additional allocation of 500 AUMs would be realized. Livestock distribution would be improved.
Impacts on Recreation Use	The area's overall recreation use level would decrease from approximately 600 visitor days per year to approximately 400 visitor days per year.
Impacts on Local Personal Income	Annual local personal income would increase by approximately $3,600.

All Wilderness Alternative	All Wilderness with Acquisitions Alternative
Wilderness designation of 23,500 acres would protect and enhance existing wilderness values.	Wilderness designation of 23,500 acres would protect and enhance existing wilderness values. Acquisition of 1,000 acres of mineral estate would further protect wilderness values.
No impact on energy development is expected. Production from two projected jasper mines would be foregone.	No impact on energy development is expected. Production from three projected jasper mines would be foregone.
Riparian vegetation would improve along 6 miles of Dry Creek. Nine miles of vehicle ways would revegetate. Noxious weeds would continue to invade some poor condition sites. Little or no change would occur over the rest of the area.	Riparian vegetation would improve along 6 miles of Dry Creek. Nine miles of vehicle ways would revegetate. Noxious weeds would continue to invade some poor condition sites. Little or no change would occur over the rest of the area.
Wildlife habitat and populations would be maintained throughout the WSA and enhanced along 6 miles of Dry Creek and in the vicinity of closed ways.	Wildlife habitat and populations would be enhanced throughout the WSA.
Water quality would improve along 6 miles of Dry Creek and would continue to decline in the more accessible portions.	Water quality would improve along 6 miles of Dry Creek and would continue to decline in the more accessible portions.
Livestock use would continue at approximately 2,939 AUMs. A potential allocation increase of 500 AUMs would be foregone as would improved livestock distribution. The use of 9 miles of ways for livestock management would be precluded with some inconvenience and slight increase in cost to livestock operators.	Livestock use would continue at approximately 2,939 AUMs. A potential allocation increase of 500 AUMs would be foregone as would improved livestock distribution. The use of 9 miles of ways for livestock management would be precluded with some inconvenience and slight increase in cost to livestock operators.
The area's overall recreation use level would increase from approximately 600 visitor days per year to approximately 700 visitor days per year.	The area's overall recreation use level would increase from approximately 600 visitor days per year to approximately 900 visitor days per year.
Annual local personal income would increase by approximately $1,200.	Annual local personal income would increase by approximately $3,600.

Dry Creek Buttes Wilderness Study Area

1. The Study Area —51,800 acres

Dry Creek Buttes Wilderness Study Area (WSA) (OR-3-56) is located in Malheur County, Oregon, 30 miles southwest of Vale, Oregon and U.S. Highway 20. The study area parallels the west side of Owyhee Reservoir for more than 20 miles.
The WSA contains 49,880 acres of BLM land and three parcels of split-estate land totaling 1,920 acres (see Table 1). The northwestern and western boundaries of the WSA are formed by approximately 23 miles of high-standard or maintained dirt roads and 2 miles of substantially noticeable ways. The southern and eastern boundaries are formed by approximately 32 miles of Bureau of Reclamation lands and 2 miles of private land. Dry Creek WSA (OR-3-53) is adjacent to the northwest boundary of Dry Creek Buttes WSA for approximately 6 miles. The two WSAs are separated by a road. Across from Dry Creek Buttes WSA, and located on the east side of Owyhee Reservoir, are the additional WSAs of Upper Leslie Gulch (OR-3-74), Slocum Creek (OR-3-75), Honeycombs (OR-3-77A) and Wildhorse Basin (OR-3-77B).

There are five vehicular ways totaling 8 miles in the northern part of the WSA. One 1-mile dead-end road, and two substantially noticeable vehicular ways about a half mile each, penetrate the WSA in the Sand Hills area and form part of the western boundary. In the southern portion of the study area, 17,600 acres have been designated an off-road vehicle (ORV) closure area so that fragile soils, geologic features and wildlife habitat may be protected. The ORV closure includes North Table Mountain, South Table Mountain, Red Butte and the area surrounding these landmarks.

The WSA is a rugged area of varied terrain. Numerous gulches and ravines cut through the landscape, ultimately draining into Owyhee Reservoir. The result is a complex pattern of twisting drainages separated by hills and ridges of varying steepness and height. Rock outcrops and rimrock are scattered throughout the WSA, but are especially prevalent along Owyhee Reservoir and the WSA's southern portion.

Major physical features in the study area are Red Butte, Dry Creek Buttes, Sand Hills, North Table Mountain, South Table Mountain, and Nanny's Nipple. Acton Gulch, Deadman Gulch and an

unnamed 4-mile-long drainage 2 miles south of Deadman Gulch containing several small waterfalls, are the area's major drainages.

The southern half of the WSA is more rugged than the northern half. The landscape is more dissected, and the drainages are usually more incised. The highest concentration of pinnacles and rock outcroppings occur in the south. Typical vegetation in the WSA is sagebrush and bluebunch wheatgrass.

Dry Creek Buttes WSA was studied under Section 603 of the Federal Land Policy and Management Act (FLPMA), and was included in the Final Oregon Wilderness Environmental Impact Statement (EIS) filed in February, 1990. There were two alternatives analyzed in the EIS: an all wilderness alternative, and a no wilderness/no action alternative, which is the recommendation in this report. These lands are shown on Map 1.

2. Recommendation and Rationale

—0 acres recommended for wilderness
51,800 acres recommended for nonwilderness

The recommendation for this WSA is to release the entire area for uses other than wilderness. The all wilderness alternative is considered to be the environmentally preferable recommendation since it would result in the least change from the natural environment over the long term. However, the no wilderness alternative would be implemented in a manner which would use all practical means to avoid or minimize environmental impacts.

The recommendation would allow for projected management actions that include construction of two livestock reservoirs, and projected exploration for and development of mineral resources. The benefits from these actions are considered to outweigh benefits from wilderness preservation.

Discovery of two economic gold/silver deposits is projected and they would be developed. Mineral exploration and mine development would involve approximately 1,055 acres of surface disturbance and include construction of 36 miles of access roads (31.5 miles for exploration and 4.5 for mine development). The gold/silver open-pit mines and access roads would be in the northeastern portion of the WSA on existing claims, and in the southwestern portion on Red Butte, the geologic feature within the WSA with the highest elevation. In addition to the mines being located on high elevation features where they would be highly visible, the lack of adequate vegetation in the WSA to screen mining activities also would contribute to their extensive visual influence over a large area (approximately 80 percent of the WSA). It is possible that mineral exploration and development would occur in areas where special interest plants grow, but monitoring and mitigation measures would be proposed to avoid or minimize impacts to these plants.

Two livestock reservoirs are proposed to be constructed in the central portion of the WSA. Construction of the reservoirs would provide additional late season water sources for game and nongame species. Also, livestock distribution within the WSA would be improved, resulting in a less-grazed appearance around existing water sites.

3. Criteria Considered in Developing the Wilderness Recommendations

Wilderness Characteristics

A. Naturalness: Dry Creek Buttes WSA is in a substantially natural condition. The WSA is largely a rugged area of highly varied terrain. Numerous gulches and ravines cut through the landscape, creating a complex pattern of twisting drainages separated by hills and ridges of varying steepness and height. The WSA has rock outcrops and rimrock scattered throughout it, especially facing Owyhee Reservoir and in the southern portion of the WSA which is noted for its steep, rugged "badlands" with striking spires and deeply-eroded slopes.

The WSA supports year-long populations of approximately 300 mule deer and 30 pronghorn antelope. Most wildlife habitat in the WSA is in good to excellent condition. Birds of prey and a variety of nongame species occupy the cliffs, spires and rimrock areas. Upland game birds that are common in the WSA include chukar, California quail and mourning dove. The WSA also provides excellent reptile habitat.

Fifteen interior, unnatural features which influence approximately 3,600 acres (7 percent) of the WSA are scattered throughout the study area. These features include two fences totaling 4 miles, a reservoir, two wildlife guzzlers, two old abandoned

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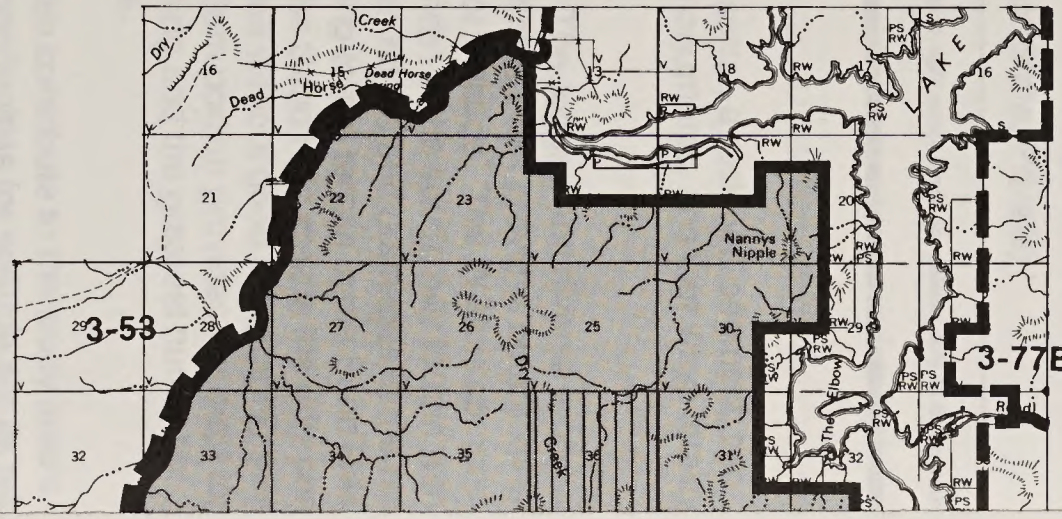

T 23 S

RECOMMENDED FOR WILDERNESS (None)

RECOMMENDED FOR NONWILDERNESS

LAND OUTSIDE WSA RECOMMENDED FOR WILDERNESS (None)

SPLIT ESTATE

STATE (None)

PRIVATE (None)

- N -

Dry Creek Buttes Proposal

MAP-1

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MILES

OR-3-56
January, 1991

unnamed 4-mile-long drainage 2 miles south of Deadman Gulch containing several small waterfalls, are the area's major drainages.

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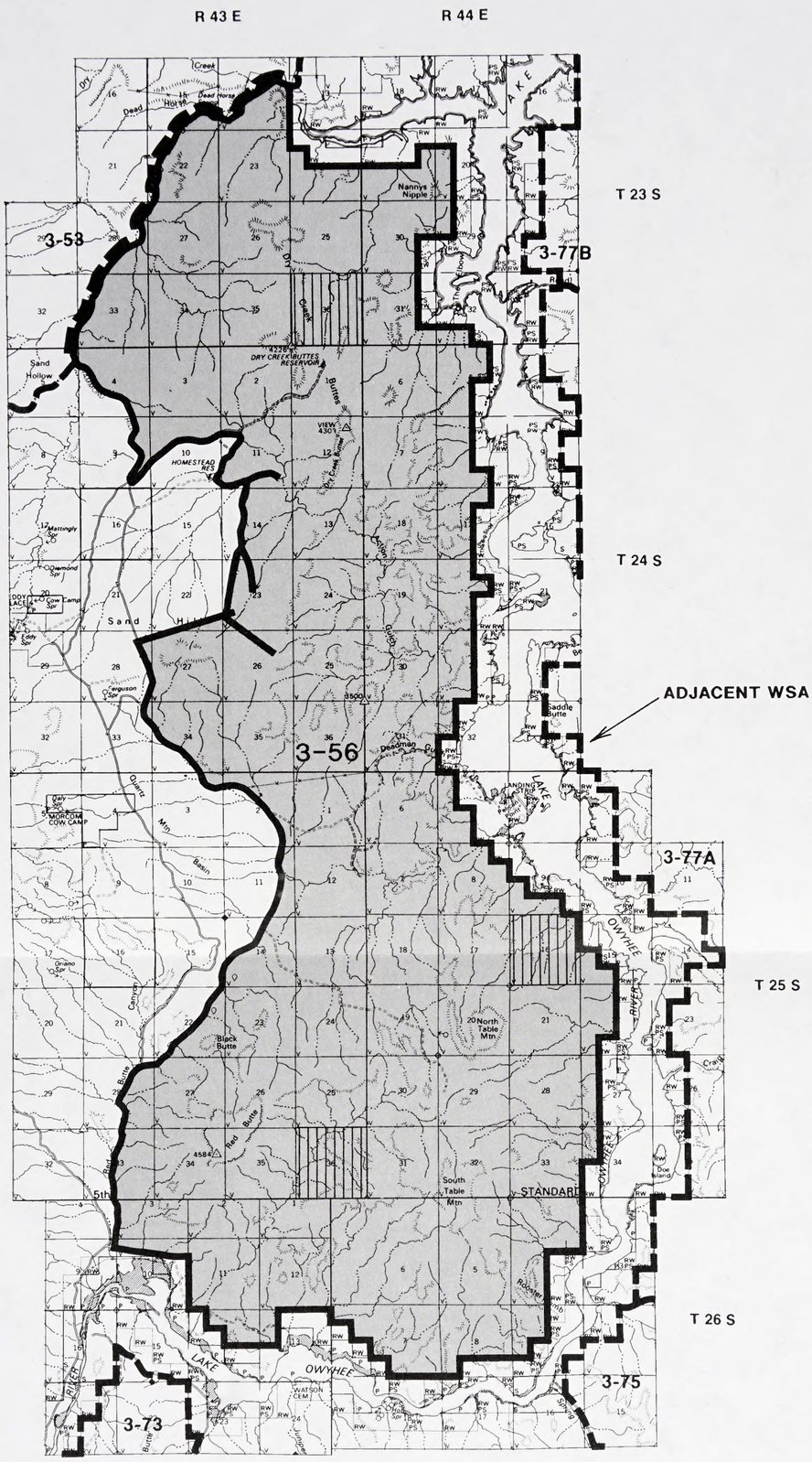
The WSA supports year-long populations of approximately 300 mule deer and 30 pronghorn antelope. Most wildlife habitat in the WSA is in good to excellent condition. Birds of prey and a variety of nongame species occupy the cliffs, spires and rimrock areas. Upland game birds that are common in the WSA include chukar, California quail and mourning dove. The WSA also provides excellent reptile habitat.

Fifteen interior, unnatural features which influence approximately 3,600 acres (7 percent) of the WSA are scattered throughout the study area. These features include two fences totaling 4 miles, a reservoir, two wildlife guzzlers, two old abandoned



RECOMMENDED FOR WILDERNESS (None)

RECOMMENDED FOR NONWILDERNESS

LAND OUTSIDE WSA RECOMMENDED FOR WILDERNESS (None)

SPLIT ESTATE

STATE (None)

PRIVATE (None)

N

Dry Creek Buttes Proposal

MAP-1

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OR-3-56

January, 1991

Table 1 - Land Status and Acreage Summary of the Study Area

	Acres
Within Wilderness Study Area	
BLM (surface and subsurface)	49,880
Split Estate (BLM surface only) [1]	1,920
Inholdings (State, Private) [1]	0
Total	51,800
Within the Recommended Wilderness Boundary	
BLM (within WSA)	0
BLM (outside WSA)	0
Split Estate (within WSA)[1]	0
Split Estate (outside WSA) [1]	0
Total BLM Land Recommended for Wilderness	0
Inholdings (State, Private) [1]	0
Within the Area Not Recommended for Wilderness	
BLM	49,880
Split Estate [1]	1,920
Total BLM Land Not Recommended for Wilderness	51,800
Inholdings (State, Private) [1]	0

[1]For purposes of this report, split estate lands are defined only as those lands with Federal surface and non Federal subsurface (minerals).

horse traps, a corral, a rock wall segment, two sheepherder monuments, and four ways totaling 8 miles.

B. Solitude: The rugged and diverse topography of Dry Creek Buttes WSA provides outstanding opportunities for solitude. The WSA is composed of incised "badlands" in the south, hilly terrain with a series of broken ridges and drainages in the north, and gently rolling-to-flat terrain in the Sand Hills area in the west. The Sand Hills area is the only portion of the study area without good topographic screening. The southern portion provides the most topographic screening and the greatest number of secluded spots.

Factors that also contribute to the study area's outstanding opportunities for solitude are its relatively large size and numerous travel corridors. Although scenic and geologic attractions might concentrate wilderness visitors in the southern portion of the WSA, this section contains rugged terrain with abundant topographic screening. There is little vegetative screening in the WSA.

C. Primitive and Unconfined Recreation: Opportunities for primitive and unconfined recreation are outstanding in the WSA, especially for day hiking, backpacking, photography and sightseeing. Because of the WSA's large size and numerous geologic features, the setting is challenging for primitive and unconfined recreation. Other recreation opportunities include hunting, horseback riding, wildlife viewing, and rockhounding.

D. Special Features: Scenery in the southern portion of the WSA is outstanding mainly due to the interesting variety of land forms and vivid color combinations. The Deer Butte Formation is an excellent example of sandstone and shale strata. Other geologic formations and landmarks found in the WSA include Rooster Comb, Red Butte, and Sand Hills.

There are opportunities for educational and scientific study of the area's geology, wildlife and distinctive ecological interrelationships. Talus slopes and rock outcrops offer shelter to small animals, and birds use the cliffs and spires for roosts and nesting sites. Cracks and cavities may harbor bats and other

animals. Clay cliffs and tuffaceous ash deposits found north and west of Red Butte could have unique soil properties supporting unusual plant species. Two plant species of special interest, *Astragalus solitarius* (weak-stemmed milkvetch) and *Astragalus sterilis* (sterile milkvetch) occur in the WSA. These plants are Federal candidate species for listing under the Endangered Species Act.

Northern bald eagles, listed as a Federal threatened species in Oregon under the Endangered Species Act, pass through the area during fall and spring migrations, and some eagles winter on adjacent Owyhee Reservoir. A herd of California bighorn sheep, a Federal candidate species for listing as threatened or endangered, occupies the Red Butte area of the WSA.

Three paleontologic sites are located in the southwestern portion of the WSA and six additional sites are located immediately adjacent to the WSA. Thirty-six species of fossilized mammals dating to the Late Miocene Era were found during excavations in 1960 and 1961.

Vegetation on the tops of the larger buttes and mesas (Red Butte, North Table Mountain and South Table Mountain) is nearly pristine. The tops of these buttes and mesas are either ungrazed or have been only lightly grazed, because the steep slopes and rimrocks make these areas nearly inaccessible to livestock.

Diversity in the National Wilderness Preservation System

A. Expanding the diversity of natural systems and features as represented by ecosystems: Wilderness designation of Dry Creek Buttes WSA would add an ecosystem (using the Bailey-Kuchler system) not presently represented in Oregon, and represented in the National Wilderness Preservation System (NWPS) by only three areas. There are 66 other BLM areas in the state under study with this ecosystem. This information is summarized in Table 2.

Of the plant communities listed in the Owyhee Uplands section of the Oregon Natural Heritage Plan, the WSA contains the big sagebrush/ bluebunch wheatgrass community and alkaline vegetative mosaic with representative communities including greasewood, shadscale, saltgrass and hopsage types.

B. Assessing the opportunities for solitude or primitive recreation within a day's driving time (five hours) of major population centers: Dry Creek WSA is within a five-hour drive of one major population center (over 100,000). Table 3 summarizes the number and acreage of designated areas and other BLM study areas within a five-hour drive of the population center.

C. Balancing the geographic distribution of wilderness areas: Dry Creek Buttes WSA would contribute to balancing the geographic distribution of areas within the National Wilderness Preservation System. There are only three designated wilderness areas within 100 miles of the WSA.

Manageability

(The area must be capable of being effectively managed to preserve its wilderness character)

The WSA could be managed as wilderness. The study area is large, has a high degree of naturalness, has diverse topography (particularly in the southern portion), and has numerous travel corridors that help to disperse visitors. Although not projected, should mineral exploration and/or development on 1,920 acres of split-estate lands occur, along with the projected development on existing mining claims in the northeastern and southwestern portions of the WSA, wilderness manageability would become more difficult in these areas.

Energy and Mineral Resource Values

Geologists from the Oregon Department of Geology and Mineral Industries (DOGAMI) evaluated the energy and mineral resources of the WSA. Technical details of the evaluation are in the report titled "Geology and Mineral Resources of 18 BLM Wilderness Study Areas, Harney and Malheur Counties, Oregon." BLM geologists used this information, and heavy-mineral data submitted by Barringer Resources, Inc., to reevaluate the study area.

The WSA has been nominated as an Area of Critical Mineral Potential (ACMP). An ACMP is an area that has been nominated by members of the public as having mineral potential that is important to the local, regional or national economy, or that could become important in the future.

Based on indirect evidence, the entire WSA is considered to have a moderate potential for the occurrence of oil and gas. Also based on indirect evidence, an estimated 9,660 acres in the southwestern portion of the WSA are considered to have a moderate potential for the occurrence of uranium.

Table 2 - Ecosystem Representation

Bailey-Kuchler Classification	NWPS Areas areas	NWPS Areas acres	Other BLM Studies areas	Other BLM Studies acres
Province/Potential Natural Vegetation				
	NATIONWIDE			
Intermountain Sagebrush Province/ Sagebrush-Steppe	3	76,699	136	4,318,540
	OREGON			
	0	0	66	1,931,274

Table 3 - Wilderness Opportunities for Residents of Major Population Centers

Population Centers	NWPS Areas areas	NWPS Areas acres	Other BLM Studies areas	Other BLM Studies acres
Boise, Idaho	16	4,741,570	126	5,060,460

No confirmed mineral deposits have been found in the WSA. However, gold and silver are known to occur throughout the WSA, with fairly substantial occurrences located near Red Butte in the southwestern portion of the WSA, and in the Dry Creek Buttes area in the northeastern portion of the WSA. Based on this direct evidence, the entire WSA is considered to have a high potential for the occurrence of gold and silver.

Based on direct evidence, the entire WSA is considered to have a moderate potential for the occurrence of optical calcite and zeolites because of their known occurrences and the presence of similar rock types throughout the WSA.

Based on indirect evidence, the entire WSA is considered to have a moderate potential for the occurrence of bentonite.

As of May 1991, there were 724 mining claims within this WSA.

Impacts on Resources

The following comparative impact table summarizes the effects on pertinent resources for the two alternatives considered: designation or nondesignation of the entire area as wilderness.

Local Social and Economic Considerations

Livestock use at the current level of 2,241 AUMs and recreation use totaling 1,000 visitor days per year are the primary resource outputs that generate economic activity in the WSA. Local personal income generated annually from these existing use levels amounts to approximately $26,892 for livestock grazing and $12,000 related to recreation use of the WSA, for an overall total of $38,892.

Table 4 - Comparative Summary of the Impacts by Alternative

Issue Topics	Recommendation (No Wilderness/No Action Alternative)	All Wilderness Alternative
Impacts on Wilderness Values	In the absence of wilderness designation, projected activities would both directly and indirectly impair wilderness values over approximately 41,500 acres (80 percent) of the WSA, with further declines from other potential uses over the long term.	Wilderness designation of 51,800 acres within Dry Creek Buttes WSA would protect and enhance existing wilderness values.
Impacts on Energy and Mineral Development	There would be no impact to energy or mineral development. Production would occur from two gold/silver mines.	No impact to energy development is expected. Wilderness designation would result in foregone production from one projected gold/silver mine. Production would occur from one projected gold/silver mine.
Impacts on Vegetation	Projected actions would result in the removal of vegetation on approximately 1,010 acres. Nearly pristine vegetation on Red Butte would be disturbed.	Eight miles of vehicle ways would revegetate. Little or no change would occur to vegetation over the rest of the WSA.
Impacts on Wildlife	Populations of mule deer, bighorn sheep and small terrestrial wildlife species such as reptiles would be displaced or reduced by 1,010 acres of direct habitat loss and increased human disturbance on approximately 8,500 acres.	Wildlife habitat and populations would be maintained throughout the WSA.
Impacts on Livestock Grazing	Existing livestock use of approximately 2,241 AUMs would decrease by 48 AUMs. Livestock distribution would be improved.	Existing livestock use would remain at approximately 2,241 AUMs. Use of 8 miles of ways for livestock management would be precluded with some inconvenience and slight increase in cost to livestock operators. Improved livestock distribution would be foregone.
Impacts on Recreation Use	Overall recreation use would decrease from approximately 1,000 visitor days per year to approximately 500 visitor days per year.	Overall recreation use would increase from approximately 1,000 visitor days per year to approximately 1,500 visitor days per year.
Impacts on Local Personal Income	Annual local personal income would decrease by approximately $7,000, with an unknown level of increase from projected mineral development.	Annual local personal income would increase by approximately $6,000.

Under the recommendation, livestock grazing would decrease by 48 AUMs. Projected energy and mineral development would amount to two metallic mines. Overall recreation use would decrease by 500 visitor days per year. Annual local personal income generated from resource outputs in the WSA would decrease by approximately $7,000, with an unknown level of increase from projected mineral development. There were no social issues identified in the study of the Dry Creek Buttes WSA.

Summary of WSA-Specific Comments

Public involvement has occurred throughout the wilderness review process. Certain comments received during the inventory process and early stages of the EIS preparation were used to develop significant study issues and various alternatives for the ultimate management of those lands found to have wilderness values.

During formal review of the draft EIS, a total of 49 comments specifically addressing Dry Creek Buttes WSA were received. Of those, 35 were written and 14 were oral statements received at public hearings on the draft and supplement EIS. Five commenters supported the recommendation while the rest supported wilderness designation.

Commenters supporting wilderness designation remarked on the WSA's high scenic value; that the WSA is important for educational reasons because of its diversity of geologic formations, flora, fauna and habitat, which should be protected from projected management actions; that the study area contains outstanding opportunities for solitude, and for primitive and unconfined recreation activities, especially hiking; and that wilderness designation would protect the habitat of threatened and endangered sensitive plant species, and the habitats of Federal listed northern bald eagles and bighorn sheep. In addition, commenters said that Rooster Comb Arch was not mentioned in the EIS as an outstanding geologic feature, and that Red Butte, Dry Creek Buttes and Acton Gulch are of high value as wilderness resources.

Commenters also addressed "inadequate or insufficient mineral data," saying that the WSA's scenic quality, recreational use potential and other wilderness values would be marred by impacts caused by the projected mineral development. Some commenters stated that inadequate data was provided about wildlife and plant species. Several commentors also stated that Dry Creek Buttes WSA should be combined with Honeycombs WSA (OR-3-77A) (separated by Owyhee Reservoir and associated Bureau of Reclamation-administered Federal lands), and that wilderness designation would complement designation of other WSAs associated with the Owyhee River/Reservoir corridor.

One comment was received from the Oregon State Department of Fish and Wildlife, specifically addressing the Dry Creek Buttes WSA. The agency supports wilderness designation of the WSA due to the various wilderness values identified in the EIS with the WSA, and stated the Red Butte area of the WSA is a number one priority reintroduction site for California bighorn sheep by their agency. The Idaho Air National Guard expressed a concern over the possible conflict between low altitude military overflights in an existing designated low level training route which includes the Dry Creek Buttes WSA and the feeling of solitude sought by wilderness users. No other specific comments were received from any Federal or local agencies.

There was one comment letter received on the final EIS.

Owyhee Breaks Wilderness Study Area

1. The Study Area —13,380 acres

The Owyhee Breaks Wilderness Study Area (WSA) (OR-3-59) is located in Malheur County, Oregon, approximately 24 miles northwest of Jordan Valley, Oregon, and U.S. Highway 95. The WSA is roughly oval shaped, approximately 7 miles long, and from 2 to 6 miles wide. It contains 13,380 acres of BLM land. In addition, four 40-acre parcels of private property are in the northern portion of the study area (see Table 1). The WSA is bordered on the south and southwest by high standard county dirt roads and private property, on the northwest by a graded dirt BLM road and private property, and on the northeast by private property and public land administered by the Bureau of Reclamation. Seven parcels of private property adjoin the WSA. Three WSAs are adjacent to the Owyhee Breaks WSA: Blue Canyon WSA (OR-3-73) on the northeast; Jordan Craters WSA (OR-3-128) on the southeast; and Lower Owyhee Canyon (OR-3-110) on the west. The four WSAs are separated by roads.

Approximately 75 percent of the WSA is located in rugged, dissected badlands along the Owyhee River. The study area is characterized by cliffs, outcrops, steep bluffs, dramatic erosional features, twisting gulches, sharp ridgelines and a deep river canyon. The "Owyhee Breaks" refers to this rugged topography. The Owyhee River, flowing through the badlands, bisects the WSA. The southern 25 percent of the study area is a gently-rolling plateau overlooking the river that is approximately 1,700 feet below. Vegetation throughout the WSA is characteristic of a sagebrush steppe ecosystem, with sagebrush and grasses dominant. Salt desert shrub communities are represented in approximately a third of the area, and riparian vegetation occurs along the Owyhee River and Birch Creek.

Approximately 660 acres of the Jordan Craters Research Natural Area (RNA) and Area of Critical Environmental Concern (ACEC) are located in the southeast portion of the Owyhee Breaks WSA. In addition, approximately 3,020 acres of the Owyhee River ACEC is in the WSA. The portion of the Owyhee River flowing through the WSA is part of a 50-mile segment that has been designated a wild river component of the National Wild and Scenic River System. The stretch of the Owyhee River in the WSA also is designated an Oregon State Scenic Waterway.

Several private parcels, acquired by BLM under the National Wild River Management Plan for the Owyhee River, have been incorporated into the WSA. They include two parcels inside the WSA, a 160-acre parcel spanning the Owyhee River at Greeley Bar, a 40-acre parcel north of Greeley Bar, and an 80-acre parcel fronting the Owyhee River and adjacent to the western portion of the WSA.

The Owyhee Breaks WSA was initially identified and studied under Section 603 of the Federal Land Policy and Management Act (FLPMA) with additional acquired lands studied under section 202. The WSA was included in the Final Oregon Wilderness Environmental Impact Statement (EIS) filed in February, 1990. There were three alternatives analyzed in the EIS: an all wilderness alternative; a partial wilderness with acquisitions alternative, which is the basis for the recommendation in this report, in which 10,645 acres would be designated as wilderness and an attempt made to acquire four 40-acre private inholdings (10,805 acres would be designated as wilderness if the private parcels were acquired), and 2,735 acres would be released for uses other than wilderness; and a no wilderness/no action alternative. These lands are shown on Map 1.

2. Recommendation and Rationale

—10,596 acres recommended for wilderness
2,784 acres recommended for nonwilderness

The recommendation for this WSA is to designate 10,596 acres of B LM land as wilderness and attempt to acquire four 40-acre private inholdings and two adjacent parcels of private land totaling 87 acres. There would be 10,843 acres designated as wilderness if the private parcels were acquired, and 2,784 acres would be released for uses other than wilderness. This represents a change from the Final Oregon Wilderness EIS which does not consider the acquisition of two parcels of private land, totaling 87 acres, which are between the WSA boundary and roads which, where they abut public land, form the boundary between the Lower Owyhee Canyon WSA and the Owyhee Breaks WSA. The private land adjacent to, and on the other side of the road from, these two parcels of private land, are adjacent to the Lower Owyhee Canyon WSA and are recommended for acquisition and subsequent wilderness designation. This is addressed for the Lower Owyhee Canyon WSA in the final EIS. The acquisition and subsequent wilderness designation of the 87 acres of private land adjacent to and on the Owyhee Breaks WSA side of the roads would enhance wilderness values for both WSAs. A further change from the final EIS is the exclusion from wilderness designation of a 200-foot corridor along two miles of Birch Creek Road to allow for needed road maintenance and realignment. This reduces the area recommended for wilderness by 49 acres.

The all wilderness alternative is considered to be the environmentally preferable alternative since it would result in the least change from the natural environment over the long term. However, the partial wilderness, with acquisitions, alternative would be implemented in a manner which would use all practical means to avoid or minimize environmental impacts.

In the portion recommended for wilderness, the benefits of preserving the area's high wilderness values—including a complex pattern of dissected topography, outstanding scenic quality, excellent nesting habitat for a variety of raptors, northern bald eagle winter range, river otter habitat, and numerous cultural resources—have a high value as compared with the benefits of projected mineral development of picture jasper and gold, silver and mercury. In the portion recommended for uses other than wilderness, which has little topographic screening, the recommendation would allow for projected mineral exploration.

Wilderness designation of 10,843 acres would protect and enhance existing wilderness values. Most of the WSA's special features occur along the Owyhee River. This area contains great ecological diversity. Interesting geology of the Owyhee Breaks and the diverse ecosystem of the Owyhee River, in which the river's aquatic and riparian habitats contrast with the surrounding arid environment, combine with excellent solitude and primitive and recreational opportunities to comprise a WSA with very high wilderness values.

The recommendation would preserve the opportunity to enjoy, within a wilderness setting, the outstanding scenery and area of geologic interest created by the rolling hills, twisting gulches, deep river canyon, sharp ridgelines, and steep bluffs—the complex pattern of rugged topography commonly referred to as the Owyhee Breaks.

The recommendation would protect the excellent nesting habitat provided by numerous cliffs for a wide variety and high density of raptors including golden eagles and prairie falcons. The WSA is part of the

winter range of 20-30 northern bald eagles, a Federal threatened species in Oregon. Similarly, river otter habitat would be protected.

Acquisition of 160 acres of private inholdings—four 40-acre parcels in the northern portion of the WSA—and 87 acres of private land in two parcels adjacent to the WSA, would prevent disturbance from projected energy and mineral exploration on these parcels, and ensure the preservation of naturalness and opportunities for solitude and primitive and unconfined recreation. Acquiring these lands would eliminate restricted travel corridors, creating greater access for wilderness visitors. Also eliminated through acquisition of the parcels would be short-term impacts of projected mineral exploration activities which could discourage recreation use. As hiking in the Owyhee River canyon becomes more popular, increased recreation use of the river breaks is expected to occur. The private parcel acquisitions would ensure that the natural wild environment of the river breaks is preserved.

Wilderness designation of the Owyhee Breaks WSA would add an ecosystem (intermountain sagebrush/sagebrush-steppe) not presently represented in Oregon, and represented in the National Wilderness Preservation System (NWPS) by only three areas. In addition, designation of this WSA as wilderness would contribute to balancing the geographic distribution of areas within the National Wilderness Preservation System.

A mile long livestock fence proposed for the eastern portion of the WSA would enhance wilderness values over the long term by protecting riparian habitat along 3 miles of Birch Creek and allowing riparian vegetation to recover from livestock grazing pressure. Water quality and overall channel conditions would continue to improve in this area, and by better management of livestock with the one mile fence, improved recovery of vegetation could result in increased forage for mule deer, nongame birds, and fish.

A total of 2,735 acres of public land in the southern portion of the WSA is recommended for release for uses other than wilderness. This would allow for exploration for gold, silver and mercury, which would cause short-term impacts to wilderness values. Exploration most likely would consist of surface examination and sampling, followed by the drilling of one core hole. Possible surface disturbance is estimated to be 0.5 acre, including 0.4 mile of new road construction. The influence on naturalness would be short term. Due to reclamation the disturbed site would revegetate within three to five growing seasons after completion of the exploration activities. The release of an additional 49 acres in a 200-foot corridor along a portion of Birch Creek Road for uses other than wilderness would allow for needed road maintenance and realignment.

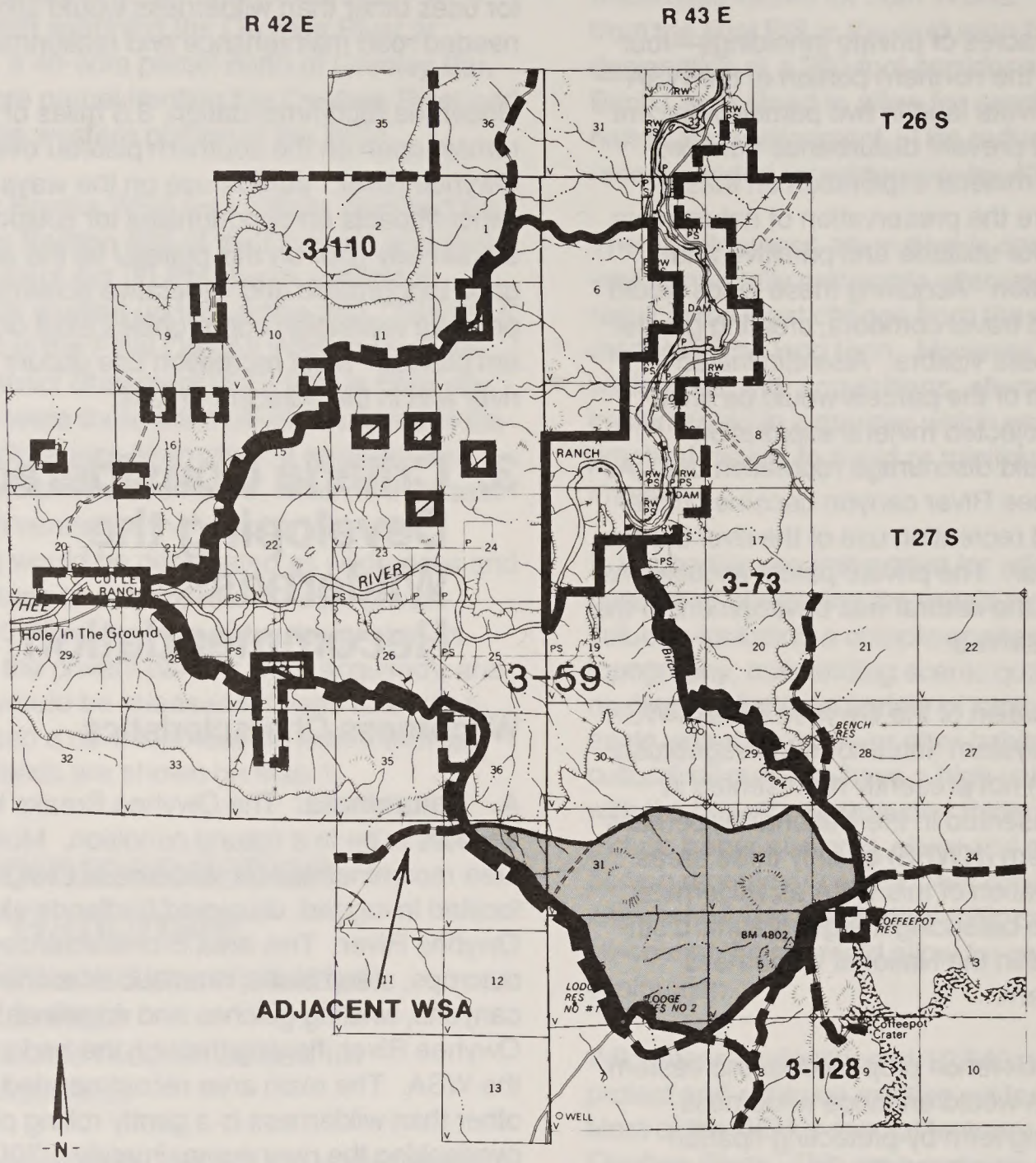
Under the recommendation, 3.5 miles of ways would remain open on the southern plateau overlooking the Owyhee River. Vehicle use on the ways would have minor impacts on opportunities for solitude, which are already poor on this plateau as the area lacks good topographic and vegetative screening. Limited primitive recreation opportunities exist on the southern plateau. Most recreation use occurs along the river and in the adjacent breaks.

3. Criteria Considered in Developing the Wilderness Recommendation

Wilderness Characteristics

A. Naturalness: The Owyhee Breaks WSA appears to be in a natural condition. Most of the area recommended for wilderness designation is located in rugged, dissected badlands along the Owyhee River. This area is characterized by cliffs, outcrops, steep bluffs, dramatic erosional features, canyons, twisting gulches and ridgelines. The Owyhee River, flowing through the badlands, bisects the WSA. The main area recommended for uses other than wilderness is a gently rolling plateau overlooking the river approximately 1,700 feet below.

The most prevalent plant communities consist of Wyoming big sagebrush with understories of bluebunch wheatgrass and bottlebrush squirreltail, Sandberg's bluegrass, or Thurber's needlegrass. North of the Owyhee River, big sagebrush communities occur in a mosaic with a shadscale/Indian ricegrass/bluebunch wheatgrass community. Greasewood also occurs in this area. Ubiquitous broom snakeweed is particularly thick in the southern portion of the WSA. Western juniper are found sparsely scattered in the vicinity of Birch Creek. Seral stage is an expression of the relative degree to which the kinds, proportions, and amounts of plants in a community resemble that of a potential natural community. Early seral stage represents the greatest departure from the potential natural community. The seral stage of the sagebrush communities south of the river is generally mid-seral, with areas inaccessible to livestock in late seral to the potential



RECOMMENDED FOR WILDERNESS

RECOMMENDED FOR NONWILDERNESS

LAND OUTSIDE WSA RECOMMENDED FOR WILDERNESS

SPLIT ESTATE (None)

STATE (None)

PRIVATE

N

Owyhee Breaks Proposal

MAP–1

0 1 2 3

MILES

OR-3-59
January, 1991

Table 1 - Land Status and Acreage Summary of the Study Area

	Acres
Within Wilderness Study Area	
BLM (surface and subsurface)	13,380
Split Estate (BLM surface only)[1]	0
Inholdings (Private)[1]	160
Total	13,540
Within the Recommended Wilderness Boundary	
BLM (within WSA)	10,596
BLM (outside WSA)	0
Split Estate (within WSA)[1]	0
Split Estate (outside WSA)[1]	0
Total BLM Land Recommended For Wilderness	10,596
Inholdings (Private)[1]	247[2]
Within the Area Not Recommended for Wildernes	
BLM	2,784
Split Estate[1]	0
Total BLM Land Not Recommended for Wilderness	2,784
Inholdings (Private)[1]	

[1] Appendix 1 is a detailed description of inholdings included within the study. For purposes of this report, split estate lands are defined only as those lands with Federal surface and non-Federal subsurface (minerals).

[2] Figure includes two private parcels totaling 87 acres adjacent to the WSA which are recommended for acquisition and subsequent wilderness designation.

natural community. North of the river, early to mid-seral stages predominate, with some pockets of late seral at higher elevations above the river.

Along the Owyhee River, willow, hackberry, and chokecherry share the riparian zone with numerous sedges and grasses. In the Birch Creek riparian zone, alder, current, mock orange, clematis, and willow occur in pockets down to the Owyhee River. Both riparian areas are showing good recovery of vegetation from historically heavy livestock use.

Land adjoining the Owyhee River provides year-round habitat for about 100 mule deer and 20 antelope. Deer use the canyon heavily during normal winters, but move north into the vicinity of Leslie Gulch during severe winters.

Rock cliffs in the canyon environment provide excellent nesting habitat for a wide variety and high density of raptor species including golden eagles and prairie falcons. Twenty to 30 northern bald eagles (a Federal listed threatened species in Oregon) use the Owyhee River and reservoir for a wintering area. Other interesting nongame and furbearing species within the WSA include river otter, beaver, raccoon, snakes, and lizards.

The Owyhee River is a perennial stream which supports a variety of warm water fish. Five species of game fish are found within the WSA, including channel catfish, black bullhead, yellow perch, whitefish, and small mouth bass. Bass populations have been increasing in recent years but catfish are still the most abundant species. Rainbow trout have been planted in the river but have not survived because of scarce spawning gravel, warm water,

and competition from nongame species including carp, squawfish, and suckers.

Hundreds of Canada geese, mallards, and chukars winter in the canyon annually.

Seventeen interior, unnatural features visually influence approximately 1,200 acres (9 percent) of the WSA. These features include seven vehicular ways totaling four miles, six fences totaling two miles, three reservoirs, and a rock retaining wall. Most of the interior, unnatural features are located along the boundary of the WSA. The overall influence of human imprints on the naturalness of the area as perceived by the average visitor is negligible.

Unnatural features outside the study area that influence naturalness within the WSA include boundary roads along the southern and southeastern sides of the WSA, Hole-in-the-Ground Ranch, and a smaller ranch northeast of the WSA. These outside, unnatural features mostly impact the high points and slopes in the WSA and are much less noticeable from the Owyhee River and the numerous drainages in the badlands along the river.

B. Solitude: Diverse topography is largely the reason for the WSA's outstanding opportunities for solitude. With the exception of the southern plateau, which is recommended for release for uses other than wilderness, the WSA offers a variety of terrain that provides good topographic screening. Opportunities for solitude are somewhat constrained in the northern portion of the WSA because 160 acres of private inholdings create narrow travel corridors that restrict a visitor's ability to avoid other visitors. Private land acquisitions associated with the Owyhee National Wild River have improved this situation, but not completely eliminated the problem.

Deer Park, located along the south side of the river, offers substantial vegetative screening. The brush is four to six feet tall and very dense. Additional trees and thick brush occur in scattered locations along the river, but are not extensive enough to provide screening.

Outside sights and sounds affecting opportunities for solitude within the WSA include ranching activity and traffic on boundary roads. Any impacts these might have on solitude are considered to be minor.

C. Primitive and Unconfined Recreation: Opportunities for primitive and unconfined recreation are outstanding. Day hikers, backpackers, and campers are attracted by the rugged, scenic beauty of the Owyhee Breaks and the Owyhee River. The size of the area is adequate for day hikes. It is not large enough to provide an outstanding opportunity for backpacking. Since the deeply-cut terrain north of the Owyhee River would discourage cross-country travel, most hikers would follow the natural travel corridors found in side drainages.

The WSA's most popular recreational attraction is float boating the Owyhee River. Approximately 5.25 miles of a 65-mile float trip are completely within the study area. Float trips on the Owyhee do not originate in the WSA, but pass through, terminating at locations downstream.

Primitive recreational activities occurring in conjunction with river float boating include wildlife viewing, photography, general sightseeing, camping and hiking. Hunting opportunities are good within the WSA because of the diversity of game species.

The southern plateau, recommended for release for uses other than wilderness, provides limited opportunities for primitive and unconfined recreation.

D. Special Features: The WSA consists of rolling hills, twisting gulches, a deep river canyon, sharp ridgelines, and steep bluffs. This complex pattern of rugged topography, commonly referred to as the Owyhee Breaks, provides an area of geologic interest. Scenic quality is outstanding in the canyon and Owyhee Breaks.

The numerous cliffs provide excellent nesting habitat for a wide variety of raptors including golden eagles and prairie falcons. The WSA is part of the winter range of 20 to 30 northern bald eagles, a Federal threatened species in Oregon.

The Owyhee River provides a very diverse ecosystem in which aquatic and riparian habitats contrast with the surrounding arid environment. Riparian vegetation includes hackberry, an unusual tree species for the desert ecosystem. Interesting animals include river otters and beavers.

The WSA is rich in cultural resources. Most of those identified are prehistoric; however, there is a historic site within the WSA—a crumbling, basalt wall of a house.

Diversity in the National Wilderness Preservation System

A. Expanding the diversity of natural systems and features as represented by ecosystems: Wilderness designation of the Owyhee Breaks WSA would add an ecosystem (using the Bailey-Kuchler

system) not presently represented in Oregon, and represented in the National Wilderness Preservation System (NWPS) by only three areas. There are 66 other BLM areas in the state under study with this ecosystem. This information is summarized in Table 2.

Of the plant communities listed in the Owyhee Uplands section of the Oregon Natural Heritage Plan, the WSA contains the big sagebrush/ bluebunch wheatgrass community and the alkaline vegetative mosaic with representative communities, including greasewood, shadscale, saltgrass, and hopsage types.

B. Assessing the opportunities for solitude or primitive recreation within a day's driving time (five hours) of major population centers: The Owyhee Breaks WSA is within a five-hour drive of one major population center (over 100,000). Table 3 summarizes the number and acreage of designated areas and other BLM study areas within a five-hour drive of the population center.

C. Balancing the geographic distribution of wilderness areas: The Owyhee Breaks WSA would contribute to balancing the geographic distribution of areas within the National Wilderness Preservation System. There are only three designated wilderness areas within 100 miles of the WSA.

Manageability

(The area must be capable of being effectively managed to preserve its wilderness character.)

The Owyhee Breaks WSA could be managed as wilderness. In the portion of the WSA recommended for wilderness designation, manageability would be improved if four 40-acre inholdings and two adjacent parcels totaling 87 acres were acquired. Such acquisitions would prevent potential adverse impacts from access to, and/or incompatible surface disturbing activities on, these parcels.

Because of the possibility that five mining claims in the WSA's east-central portion possess valid existing rights, it is conceivable that development of these

Table 2 - Ecosystem Representation

Bailey-Kuchler Classification	NWPS Areas areas	NWPS Areas acres	Other BLM Studies areas	Other BLM Studies acres
Province/Potential Natural Vegetation				
NATIONWIDE				
Intermountain Sagebrush Province/ Sagebrush-Steppe	3	76,699	136	4,356,960
OREGON				
	0	0	66	1,969,694

Table 3 - Wilderness Opportunities for Residents of Major Population Centers

Population Centers	NWPS Areas areas	NWPS Areas acres	Other BLM Studies areas	Other BLM Studies acres
Boise, Idaho	16	4,741,570	126	5,060,460

claims could continue if valuable mineral deposits are located prior to wilderness designation. Development of these claims might damage wilderness values on 200 acres adjacent to the eastern boundary road making manageability as wilderness difficult in this area.

Energy and Mineral Resource Values

The U.S. Geological Service (USGS) and U.S. Bureau of Mines (USBM) prepared a mineral survey for the Owyhee Breaks WSA. In 1990, the USGS Bulletin 1741-G, "Mineral Resources of the Blue Canyon and Owyhee Breaks Wilderness Areas, Malheur County, Oregon," was published. The Owyhee Breaks WSA contains occurrences of bentonite, jasper, and diatomite materials. It has sand and gravel deposits that are far removed from transportation routes and existing markets. No energy resources were identified. In the central part of the WSA, an area underlain by silicified lithic tuff has high mineral resource potential for gold. The rest of the study area has moderate mineral resource potential for gold in volcanic- and sediment-hosted deposits. North-trending fault zones within and adjacent to the study area have moderate potential for geothermal energy resources. Sedimentary rocks that underlie the western part of the study area have moderate mineral resource potential for bentonite and diatomite, low mineral resource potential for fluorite, and low potential for oil and gas energy resources.

These findings differ somewhat from those of the Oregon Department of Geology and Minerals (DOGAMI) as reported in their 1983 report, "Geology and Mineral Resources of 18 BLM WSAs, Harney and Malheur Counties, Oregon," and cited in the Final Oregon Wilderness EIS. The DOGAMI report identified no areas of high potential for gold. Further it indicated moderate potential for oil and gas resources over the entire WSA. The USGS/USBM report notes a high potential for gold in a portion of the WSA and low potential for oil and gas resources in portions of the WSA.

There has been minor jasper extraction, but no present production of any mineral or energy resources occurs in the WSA.

In summary, the USGS/USBM findings are that quantities of various mineral and energy resources are unknown, but the potential for the occurrence of gold, silver, mercury, and molybdenum is high in areas, while the potential for the occurrence of bentonite, diatomite, and geothermal energy resources is moderate. There are occurrences of bentonite, jasper, and zeolite materials within the WSA.

As of May, 1991, there were four mining claims in this WSA.

Local Social and Economic Considerations

Livestock use at the current level of 1,399 AUMs and recreation use totaling 3,000 visitor days per year are the primary resource outputs that generate economic activity in the WSA. Local personal income generated annually from these existing use levels amounts to approximately $16,788 for livestock grazing and $36,000 related to recreation use of the WSA, for an overall total of $52,788.

Under the recommendation, livestock grazing would remain at 1,399 AUMs. Overall recreation use would increase by 1,500 visitor days per year. Annual local personal income generated from resource outputs in the WSA would increase by approximately $18,000, with an unknown level of increase from projected mineral development. There were no social issues identified with the study of the Owyhee Breaks WSA.

Summary of WSA-Specific Public Comments

Public involvement has occurred throughout the wilderness review process. Certain comments received during the inventory process and early stages of the EIS preparation were used to develop significant study issues and various alternatives for the ultimate management of those lands found to have wilderness values.

During formal public review of the Draft Oregon Wilderness Environmental Impact Statement and the Supplement to the Draft, a total of 16 comments specifically addressing the Owyhee Breaks WSA were received. Of those, nine were written and seven were oral statements received at public hearings on the draft EIS and supplement. Thirteen commenters supported wilderness designation for all or part of the WSA. One commenter supported no wilderness. Two commenters addressed the relative merits of the EIS, but took no formal position on wilderness designation.

Those favoring wilderness commented on the protection wilderness designation would offer natural and cultural resources including wildlife habitat, watershed, and ecology. The commenter opposing

wilderness designation did not cite a specific reason for his opinion.

No WSA-specific comments were received from any Federal or local agencies. The Idaho Air National Guard (IDANG) and the Oregon Department of Fish and Wildlife (ODFW) commented on the draft EIS. The IDANG expressed a concern over the possible conflict between low altitude overflights and the feeling of solitude sought by wilderness area users. The ODFW commented that there was no discussion of the environmental consequences to deer winter range present in the WSA.

There were two comment letters received on the final EIS.

Impacts on Resources

The following comparative impact table summarizes the effects on pertinent resources for all the alternatives considered, including designation or nondesignation of the entire area as wilderness.

Table 4 - Comparative Summary of the Impacts by Alternative

Issue Topics	Recommendation (Partial Wilderness with Acquisitions Alternative)
Impacts on Wilderness Values	Wilderness designation of 10,843 acres (assuming the acquisition of six private parcels) would protect and enhance existing wilderness values over most of the WSA. On 2,784 acres recommended for other than wilderness, wilderness values would be directly impaired on 0.5 acre from projected mineral development with further declines from other potential uses over the long term.
Impacts on Energy and Mineral Development	No impact on energy development is expected. Wilderness designation would result in foregone production from one projected jasper mine and one projected gold/silver/mercury mine.
Impacts on Vegetation	Riparian vegetation would improve and 0.5 mile of ways and 0.5 acre would revegetate. Little or no change would occur to vegetative composition or ecological status over the rest of the area.
Impacts on Wildlife	Wildlife habitat and populations would be maintained on 10,843 acres designated wilderness and on 2,784 acres recommended for uses other than wilderness. Three miles of Birch Creek riparian area would improve.
Impacts on Watershed	Water quality and overall channel conditions would continue to improve along Birch Creek and would remain unchanged elsewhere.
Impacts on Livestock Grazing	Livestock use would continue at 1,399 AUMs. In the area recommended for wilderness designation, use of 0.5 mile of ways for day-to-day livestock management would be precluded with minor inconvenience to livestock operators. In the area recommended for uses other than wilderness, vehicle use would continue on 3.5 miles of ways.

All Wilderness Alternative	No Wilderness/No Action Alternative
Wilderness designation of 13,380 acres would protect and enhance existing wilderness values.	In the absence of wilderness designation, projected activities would directly and indirectly impair wilderness values over approximately 4,800 acres (about 35%) of the WSA with further declines from other potential uses over the long term. Development restrictions established by RNA, ACEC, and Wild and Scenic River designations would continue to provide some protection to wilderness values on 3,680 acres.
No impact on energy development is expected. Wilderness designation would result in foregone production from one projected jasper mine and one projected gold/silver/mercury mine.	There would be no impact on energy or mineral development.
Riparian vegetation would improve and four miles of ways would revegetate. Little or no change would occur to vegetative composition or ecological status over the rest of the area.	Projected mineral exploration and development would remove vegetation on 135 acres. Riparian vegetation would improve. Little or no change would occur to vegetative composition or ecological status over the rest of the area.
Wildlife habitat and populations would be maintained on 13,380 acres designated wilderness.	Mineral exploration and development would disturb 135 acres of habitat, displace deer, antelope, and small nongame species, and increase sedimentation of Birch Creek, possibly reducing fish populations. Fence construction would improve habitat along three miles of Birch Creek, but mine development in this area would prevent enhancement of deer and nongame species populations. ACEC, RNA, and Wild and Scenic River designations would continue to provide some protection to wildlife.
Water quality and overall channel conditions would continue to improve along Birch Creek and would remain unchanged elsewhere.	Mineral exploration and development would increase sedimentation of Birch Creek, resulting in a decline in water quality. Watershed condition would remain unchanged elsewhere.
Livestock use would continue at 1,399 AUMs. Use of four miles of ways for day-to-day livestock management would be precluded with some inconvenience and a slight increase in cost to livestock operators.	Projected mineral development would decrease allocation to livestock by 13 AUMs.

Table 4 - Comparative Summary of the Impacts by Alternative (continued)

Issue Topics	Recommendation (Partial Wilderness with Acquisitions Alternative)
Impacts on Recreation	Overall recreation use would increase from approximately 3,000 to 4,500 visitor days per year.
Impacts on Local Personal Income	Annual local personal income generated from resource outputs in the WSA would increase by approximately $18,000, with an unknown level of increase from projected mineral development.

All Wilderness Alternative	No Wilderness/No Action Alternative
Overall recreation use would increase from approximately 3,000 to 4,500 visitor days per year.	Overall recreation use would increase form approximately 3,000 to 4,300 visitor days per year, primarily from increased river use.
Annual local personal income generated from resource outputs in the WSA would increase by approximately $18,000 with an unknown level of increase from projected mineral development.	Annual local personal income generated from resource outputs in the WSA would increase by approximately $15,000 with an unknown level of increase from projected mineral development.

Appendix 1 - Estimated Costs of Acquisition of Non Federal Holdings within Areas Recommended for Designation[1]

	Legal Description (Prior to any Subdivision)[1]	Total Acreage	Number of Owners (If Parcel has been Subdivided)	Type of Ownership by Estate (Federal, State Private, other)		Presently Proposed for Acquisition (Yes, No)	Preferred Method of Acquisition (Purchase, Exchange, Other)	Estimated Cost of Acquisition	
				Surface Estate	Subsurface Estate			Land Costs	Processing Costs
	T.27S.R.42E.								
Parcel #1	sec. 12 E1/2 NW1/4								
	the portion south of road	47	1	Private	Private	no	Purchase	$2,350	[2]
Parcel #2	sec. 13 NE1/4 SW1/4	40	1	Private	Private	no	Purchase	$2,000	[3]
Parcel #3	sec. 14 SE1/4 NE1/4	40	1	Private	Private	no	Purchase	$2,000	[3]
Parcel #4	sec. 14 SE1/4 NW1/4	40	1	Private	Private	no	Purchase	$2,000	[3]
Parcel #5	sec. 23 NE1/4 NE1/4	40	1	Private	Private	no	Purchase	$4,000	[3]
Parcel #6	sec. 27 E1/2 SW 1/4, NW1/4 SE 1/4								
	the portion north of road	40	1	Private	Private	no	Purchase	$4,000	[2]

[1]The estimated costs listed in this appendix in no way represent a formal appraised value of the land or mineral estate, but are rough estimates based on sales or exchanges of lands or mineral estates with similar characteristics to those included in the WSA. The estimates are for purposes of establishing a range of potential costs to the government of acquiring non-Federal holdings and in no way represent an offer to purchase or exchange at the cost estimate included in this appendix. Processing costs are all miscellaneous expenses other than land costs. These would include work month costs, appraisals, title work, escrow costs, etc. All lands identified in this table are in Oregon.

[2]These parcels are adjacent to the WSA boundary and adjacent to parcels identified for acquisition under the recommendation for the Lower Owyhee Canyon WSA (OR-3-110). Total District processing costs would be approximately $30,000 for these parcels as well as those identified for Lower Owyhee Canyon WSA.

[3]Total District processing cost is approximately $10,000 for the four parcels identified.

Blue Canyon Wilderness Study Area

1. The Study Area —12,700 acres

The Blue Canyon Wilderness Study Area (WSA) (OR-3-73) is located in Malheur County, approximately 47 miles southwest of Vale, 20 miles northwest of U.S. Highway 95, and 26 miles northwest of Jordan Valley. The WSA contains 12,700 acres of BLM land. There is also a 40-acre private inholding located near the southeastern boundary (see Table 1). The WSA is oblong, approximately 9 miles long and 5 miles wide at its widest point. It is bordered by high standard dirt roads in the northeast, southeast and southwest, and by private and Bureau of Reclamation (BOR)-administered land on the north, west and east. The BOR lands include parcels along the Owyhee National Wild River and Owyhee Reservoir. Four parcels of private land abut the study area along the western and eastern boundaries. A 2-mile-long road which dead-ends at two jasper mines along Diamond Butte Ridge enters the study area from the southeast. The dead-end road and most of its associated mining surface disturbance form part of the study area's boundary. The WSA is separated by its southwest boundary road from the adjacent Owyhee Breaks WSA (OR-3-59).

A razorback ridge bisects the WSA in a north-south orientation, culminating at Diamond Butte in the northern end of the WSA. The main ridge is hilly and cut by numerous drainages along its flanks. West of the ridge, a "breaks" type topography composed of canyons, incised drainages, rock outcrops, and exposed sediments is characteristic. East of the ridge, the terrain is generally hilly, with talus and bands of rimrock on many of the steeper slopes.

Sagebrush and grasses are the characteristic plants within the WSA. Junipers are scattered along the drainages; in moist pockets, willows, mock orange, currants and roses are found.

The WSA was studied under Section 603 of the Federal Land Policy and Management Act (FLPMA) and was included in the Final Oregon Wilderness Environmental Impact Statement (EIS) filed in February, 1990. There were two alternatives analyzed in the EIS: an all wilderness alternative, which is the basis for the recommendation in this report; and a no wilderness/no action alternative. These lands are shown on Map 1.

2. Recommendation and Rationale

—12,700 acres recommended for wilderness
0 acres recommended for nonwilderness

The recommendation for the Blue Canyon WSA is to designate the entire 12,700 acres of BLM land as wilderness and to attempt to acquire a 40-acre private inholding from willing owners. If the private parcel were acquired, then a total of 12,740 acres would be designated as wilderness. To provide for adequate maintenance and partial realignment of the lower 2 miles of the Birch Creek boundary road, the wilderness boundary would be 200 feet from the road along this stretch of the road. The acquisition of the private inholding and deletion of the 200 foot width along Birch Creek road represent a change from the Final Oregon Wilderness EIS which considers neither the land acquisition nor the road alignment. This is the environmentally preferable alternative, as it would result in the least change from the natural environment over the long term.

The benefits of preserving the area's wilderness values—including spectacular and highly varied geologic features, outstanding scenery, northern bald eagles, and outstanding opportunities for solitude and for primitive and unconfined recreation—have a high value as compared with the benefits of maintaining the options of development of mineral resources, continued motor vehicle use on 6 miles of ways, and development of four springs.

The recommendation would preserve the opportunity to enjoy, within a wilderness setting, the outstanding scenery provided by the spectacular and highly diverse geologic features which contribute color and stark beauty to the desert landscape. Expansive vistas seen from the rim of the upper tableland and Diamond Butte ridge are exceptional, encompassing badlands, buttes, dissected ridges, colorful sedimentary strata, rock spires, crags and outcrops associated with many often very steep slopes.

Twenty to 30 northern bald eagles, a Federally listed threatened species in Oregon under the Threatened and Endangered Species Act, use the WSA for winter range. Rock cliffs in the Owyhee River canyon environment provide excellent nesting habitat for raptors including golden eagles and prairie falcons.

The recommendation would preserve outstanding opportunities for solitude and primitive recreation and would recognize and maintain all of the high wilderness values of the area. Primitive recreation opportunities available in the WSA include hiking, backpacking, camping, photography and birdwatching. The highly diverse topography and abundance of drainages, coupled with the size of the area, enhances the opportunities for solitude.

Designation of the Blue Canyon WSA as wilderness would add an ecosystem (Intermountain Sagebrush Province/Sagebrush-Steppe) not presently represented in Oregon and represented in the National Wilderness Preservation System by only three areas. It would also contribute to balancing the geographic distribution of areas within the National Wilderness Preservation System.

Acquisition of the 40-acre private inholding would enhance existing wilderness values of the area by avoiding the need to provide required reasonable access to the parcel for possible mineral exploration or other development on the parcel which would affect the high wilderness values that surround the parcel.

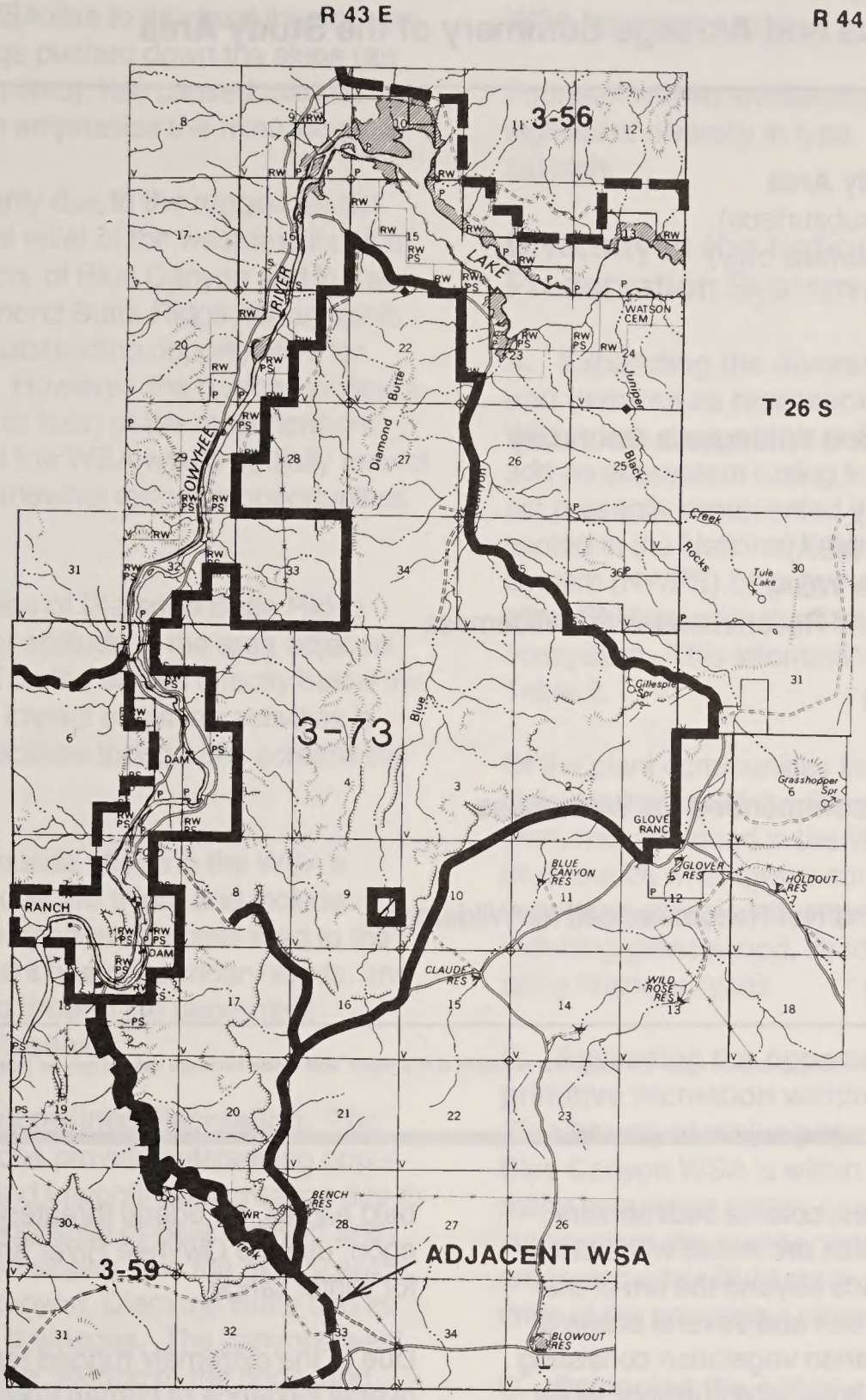
Closure of 6 miles of ways would cause a slight increase in the cost to livestock operators, and wider distribution of livestock would not happen since development of four springs would not occur under the recommendation.

Mineral development at three small, isolated locations with high mineral resource potential for gold, silver, mercury, and molybdenum is not postulated to occur. Mining activities for picture jasper gemstone may possibly continue to occur on as many as seven present claims after wilderness designation, should they be proven to have a valid discovery. This scenario is uncertain, but the high wilderness values within the vicinity of the claims is well documented.

3. Criteria Considered in Developing the Wilderness Recommendations

Wilderness Characteristics

A. Naturalness: The Blue Canyon WSA is generally natural. The "breaks" type of topography and intermittent drainages west of Diamond Butte Ridge best display the study area's predominately rugged and often steep terrain. The WSA's topography is highly diverse, with expansive areas encompassing



RECOMMENDED FOR WILDERNESS

RECOMMENDED FOR NONWILDERNESS (None)

LAND OUTSIDE WSA RECOMMENDED FOR WILDERNESS (None)

SPLIT ESTATE (None)

STATE (None)

PRIVATE

-N-

Blue Canyon Proposal

MAP-1

0 1 2 3

MILES

OR-3-73
January, 1991

Table 1 - Land Status and Acreage Summary of the Study Area

	Acres
Within Wilderness Study Area	
BLM (surface and subsurface)	12,700
Split Estate (BLM surface only)[1]	0
Inholdings (Private)[1]	40
Total	12,740
Within the Recommended Wilderness Boundary	
BLM (within WSA)	12,700
BLM (outside WSA)	0
Split Estate (within WSA)[1]	0
Split Estate (outside WSA) [1]	0
Total BLM Land Recommended for Wilderness	12,700
Inholdings (Private) [1]	40
Within the Area Not Recommended for Wilderness	
BLM	0
Split Estate [1]	0
Total BLM Land Not Recommended for Wilderness	0
Inholdings (Private) [1]	0

[1]Appendix 1 is a detailed description of inholdings included within the study. For purposes of this report, split estate lands are defined only as those lands with Federal surface and non-Federal subsurface (minerals).

badlands, dissected ridges, colorful sedimentary strata and rock spires which are mixed with buttes and some upper tablelands beyond the rim of the breaks country. Birch Creek and several draws of Blue Canyon support riparian vegetation consisting of willows, mock orange, rose, and currants, while most vegetation of the WSA is characteristic of the sagebrush-steppe ecosystem. On the flats just above the Owyhee River, the alkaline soils support a salt desert shrub mosaic with such species as greasewood, shadscale, spiny hopsage and saltgrass.

Most wildlife habitat in the WSA is in good condition. Approximately 50 mule deer and 20 pronghorn antelope occupy the WSA throughout the year. Severe winter conditions occasionally force big game animals to the north into the Black Rocks area of the WSA.

Rock cliffs in the canyon environment provide excellent nesting habitat for raptors including golden eagles and prairie falcons. Twenty to 30 northern bald eagles, a Federal threatened species in Oregon, use the Owyhee River and adjacent WSA land for winter range.

Due to the extremely rugged terrain of the WSA, the overall influence of human imprints on the naturalness of the area as perceived by the average visitor is small. Approximately six percent of the WSA is visually influenced by 14 interior, unnatural features. Most of these manmade features are located in the southern portion of the WSA and include 2 miles of three fences, 6 miles of motor vehicle ways, a rock corral, and portions of two active jasper mines. The two mines lie along a jagged, steep switchback dead-end road which climbs down a portion of the open west slope of the Owyhee Canyon "breaks," and which serves as part of the WSA's boundary. While one of the mining operations continues in a grandfathered logical pace and progression resulting in some surface disturbance within the WSA, the remaining mining activities are limited to an area of pre-FLPMA disturbed surface that is excluded from

the WSA which, within a limited area, affects the naturalness of the WSA due to its visual infuence on the area. Mine tailings pushed down the slope (an action no longer permitted), has caused marked color contrasts which emphasize the mine location.

B. Solitude: Primarily due to the rugged terrain and degree of vertical relief of the western slopes of Owyhee River Canyon, of Blue Canyon and in the side canyons of Diamond Butte Ridge, topographic screening provides outstanding opportunities for solitude in the WSA. However, the narrow configuration (about 1.5 miles or less) of the most northern and southern ends of the WSA would partially restrict visitor movement, somewhat reducing opportunities for solitude.

Mining on the west side of Diamond Butte Ridge limits opportunities for solitude in the area adjacent to the two mines and on the slopes directly below the mines. The adverse impact of mining activities is limited to this area because topography screens the rest of the WSA.

Outside sights and sounds affecting the WSA's opportunities for solitude are minor and include occasional use of the dead-end access road to the active mines, infrequent use of boundary roads, and recreation use on and around the uppermost reaches of Owyhee Reservoir.

C. Primitive and Unconfined Recreation: The Blue Canyon WSA does provide outstanding opportunities for primitive and unconfined recreation due to the steep, rugged topography of Blue Canyon and Owyhee River Canyon slopes, and the high scenic qualities of the river canyon, Diamond Butte and its associated ridge and drainages. The canyons west of Diamond Butte Ridge, the top of the ridge, and Blue Canyon and its tributaries offer excellent hiking, sightseeing, and photographic opportunities. The expansive vistas seen from ridgetops are exceptional, encompassing badlands, buttes, dissected ridges, colorful sedimentary strata, rock spires, sage-covered tablelands, and the Owyhee River. Hunting, rockhounding, camping and birdwatching are other primitive recreation opportunities in the WSA.

D. Special Features: The WSA's diverse and often rugged topography, which includes dramatic erosional patterns, rock outcrops, cliffs, spires, and incised canyons is of geologic interest and high scenic value.

Numerous cliffs provide excellent nesting habitat for raptors including golden eagles and prairie falcons. Twenty to 30 northern bald eagles, a Federal threatened species in Oregon, use portions of the WSA for winter range.

Fourteen known archaeological sites represent a significant diversity in type, making research potential high.

Diversity in the National Wilderness Preservation System

A. Expanding the diversity of natural systems and features as represented by ecosystems: Wilderness designation of Blue Canyon WSA would add an ecosystem (using the Bailey-Kuchler system) not presently represented in Oregon and represented in the National Wilderness Preservation System (NWPS) by only three areas. There are 66 other BLM areas in the State under study with this ecosystem. This information is summarized in Table 2.

Of the plant communities listed in the Owyhee Uplands section of the Oregon Natural Heritage Plan, two are found in the WSA: the big sagebrush/ blue- bunch wheatgrass community; and alkaline vegetation mosaic with representative communities, including greasewood, shadscale, saltgrass and spiny hopsage types.

B. Assessing the opportunities for solitude or primitive recreation within a day's driving time (five hours) of major population centers: The Blue Canyon WSA is within a five-hour drive of one major population center (over 100,000). Table 3 summarizes the number and acreage of designated areas and other BLM study areas within a five-hour drive of the population center.

C. Balancing the geographic distribution of wilderness areas: The Blue Canyon WSA would contribute to balancing the geographic distribution of areas within the National Wilderness Preservation System. There are only two designated wilderness areas within 100 miles of the WSA.

Manageability

(The area must be capable of being effectively managed to preserve its wilderness character)

The Blue Canyon WSA is capable of being managed to preserve its wilderness characteristics. Manageability would be improved if the 40-acre private inholding were acquired. The acquisition would prevent potential adverse impacts from development of access to, and/or incompatible surface disturbing activities on, this parcel which could adversely

Table 2 - Ecosystem Representation

Bailey-Kuchler Classification	NWPS Areas areas	NWPS Areas acres	Other BLM Studies areas	Other BLM Studies acres
Province/Potential Natural Vegetation				
	NATIONWIDE			
Intermountain Sagebrush Province/Sagebrush-Steppe	3	79,699	136	4,357,640
	OREGON			
	0	0	66	1,970,374

Table 3 - Wilderness Opportunities for Residents of Major Population Centers

Population Centers	NWPS Areas areas	NWPS Areas acres	Other BLM Studies areas	Other BLM Studies acres
Boise, Idaho	16	4,741,570	126	5,060,460

influence high wilderness values on lands immediately adjacent to the parcel.

There are two pre-FLPMA mining claims (located adjacent to each other) in the WSA, each of them for picture jasper gemstone, located in the southwestern portion of the WSA. Additional post-FLPMA claims have historically been associated with jasper. The claims, mostly grouped together, may have valid existing rights, so development after wilderness designation is a possibility, which could make manageability as wilderness difficult in a limited area in the southwestern portion of the WSA. In the event that development did occur on some or all of these claims, the area's topography would significantly screen the rest of the WSA from the mines' visual influence, and it still would be possible to manage the overall study area as wilderness.

Energy and Mineral Resource Values

The U.S. Geological Survey (USGS) and U.S. Bureau of Mines (USBM) prepared a mineral survey for the Blue Canyon WSA in 1990, "Mineral Resources of the Blue Canyon and Owyhee Breaks Wilderness Areas, Malheur County, Oregon," USGS Bulletin 1741-G. The southern part of the WSA contains identified resources of jasper and perlite and occurrences of bentonite. Silicified and brecciated tuffs exposed along two north-trending fault zones in the east central part of the WSA have three small, distinct locations with high mineral resource potential for gold, mercury, and molybdenum. The northern-most location also has high resource potential for silver. The rest of the WSA has moderate mineral resource potential for gold in volcanic- and sediment-hosted deposits. Sedimentary rocks that underlie the northern part of the area have moderate potential for bentonite and diatomite, low mineral resource potential for fluorite, and low potential for oil and gas energy resources. North-

trending fault zones within and adjacent to the WSA have moderate potential for geothermal energy resources.

Geologic data gathered under BLM contract by TERRADATA and compiled in a 1983 report titled "Assessment of Geologic, Energy, Mineral Resources of Cedar Mountain Geologic Resource Area" indicates that, based on indirect evidence, the potential for gold and silver mineral resources is considered moderate for the entire WSA. The USGS/USBM report differed, noting the exception of the three isolated high potential locations for gold. The other points on which the two reports differ is the USGS/USBM's finding of moderate, versus TERRADATA's low (based on indirect evidence), potential for diatomite throughout the WSA, and USGS/USBM's determination of low, compared to TERRADATA's moderate (based on indirect evidence), potential for oil and gas energy resources throughout the WSA.

Mining activities on the claims within the WSA, presently or in the past, have been associated with picture jasper gemstone in the more southern portion of the WSA. Five claims are adjacent to each other and located at the terminus of the 2 mile dead-end road that serves as part of the WSA's boundary. Presently, mining activities by two operators are occurring in this location. Two other claims, presently with no mining activities are located further south.

As of May, 1991, there were a total of 442 mining claims within this WSA.

Local Social and Economic Considerations

Livestock use at the current level of 1,493 AUMs and recreation use totaling 1,000 visitor days per year are the primary resource outputs that generate economic activity in the WSA. Local personal income generated annually from these existing use levels amounts to approximately $17,916 for livestock grazing and $12,000 related to recreation use of the WSA, for an overall total of $29,916.

Under the recommendation, livestock grazing would remain at 1,493 AUMs and overall recreation use would increase by 500 visitor days per year. Annual local personal income generated from resource outputs in the Blue Canyon WSA would increase by approximately $6,000. There were no social issues identified with the study of this WSA.

Summary of WSA-Specific Public Comments

Public involvement has occurred throughout the wilderness review process. Certain comments received during the inventory process and early stages of the environmental impact statement (EIS) preparation were used to develop significant study issues and various alternatives for the ultimate management of those lands found to have wilderness values.

During formal public review of the Draft Oregon Wilderness Environmental Impact Statement and the Supplement to the Draft, a total of 19 comments specifically addressing the Blue Canyon WSA were received. Of those, 11 were written and eight were oral statements received at public hearings on the draft EIS and supplement. Eighteen commentors supported wilderness designation for all or part of the WSA. One commentor supported no wilderness for the WSA.

Those favoring wilderness commented on the outstanding wilderness qualities of the area and the protection wilderness designation would offer natural resources, watersheds, ecosystems, ecological diversity, gene pool and non-game wildlife populations. Commentors noted the high scenic qualities and diversity of natural landscape in the area, and how the WSA provides a contrast to WSAs nearby and is readily accessible for floatboaters on the Owyhee National Wild River. Additionally, it was commented the WSA should be part of an Owyhee wilderness complex which would complement wilderness designation of several adjacent WSAs located along the Owyhee Reservoir and Owyhee River canyon. The area's high degree of naturalness was emphasized. Also noted was how the existing active jasper mining activities do not compromise the area from being worthy of wilderness designation due to their location and substantial screening by existing topography. One commentor said the WSA north boundary was poorly determined.

No WSA-specific comments were received from any Federal or local agencies. The Idaho Air National Guard expressed a concern over the possible conflict between low altitude military overflights in an existing designated low level training route which includes the Blue Canyon WSA and the feeling of solitude sought by wilderness area users.

There were three comment letters received on the final EIS.

Impacts on Resources

The following comparative impact table summarizes the effects on pertinent resources for all the alternatives considered including designation or non-designation of the entire area as wilderness.

Table 4 - Comparative Summary of the Impacts by Alternative

Issue Topics	Recommendation (All Wilderness Alternative)	No Wilderness/No Action Alternative
Impacts on Wilderness Values	Wilderness designation of 12,740 acres (assuming the acquisition of one private parcel) would protect and enhance existing wilderness values.	In the absence of wilderness designation, projected activities would both directly and indirectly impair wilderness values over approximately 925 acres (over 7 percent) of the WSA, with further declines from other potential uses over the long term.
Impacts on Energy and Mineral Development	No impact on energy development is expected. Wilderness designation would result in foregone production from one projected jasper mine. Production from five jasper mines on existing claims could occur.	There would be no impact on energy or mineral development. Production from six jasper mines would occur.
Impacts on Vegetation	Six miles of vehicular ways would revegetate. Upland range seral stage would advance.	Vegetation would be removed on 30 acres. Vegetation would be temporarily disturbed on 4 acres. Upland range seral stage would advance.
Impacts on Wildlife	Wildlife habitat and populations would be maintained or enhanced throughout the WSA.	Thirty acres of wildlife habitat would be lost, and fewer than ten mule deer would be replaced. Wildlife habitat would be maintained or enhanced in areas outside mineral development sites.
Impacts on Watershed	Watershed condition would remain unchanged or improve.	Water quality and watershed condition would decline slightly in Birch Creek and in intermittent streams near mining activity, and would remain unchanged elsewhere.
Impacts on Livestock Grazing	Livestock use would remain at 1,493 AUMs. The use of 6 miles of ways for livestock management would be precluded with some inconvenience and slight increase in cost to livestock operators. Improved livestock distribution would be foregone. Upland range condition would improve.	Livestock use would remain at 1,493 AUMs. Livestock distribution would improve. Upland range condition would improve.
Impacts on Recreation	Overall recreation use would increase from approximately 1,000 visitor days per year to approximately 1,500 visitor days per year.	Overall recreation use would increase from approximately 1,000 visitor days per year to approximately 1,300 visitor days per year.
Impacts on Local Personal Income	Annual local personal income would increase by approximately $6,000.	Annual local personal income would increase by approximately $4,000.

Appendix 1 - Estimated Costs of Acquisition of Non-Federal Holdings within Areas Recommended for Designation[1]

	Legal Description (Prior to any Subdivision) [1]	Total Acreage	Number of Owners (If Parcel has been Subdivided)	Type of Ownership by Estate (Federal, State Private, other)		Presently Proposed for Acquisition (Yes, No)	Preferred Method of Acquisition (Purchase, Exchange, other)	Estimated Cost of Acquisition [2]	
				Surface Estate	Subsurface Estate			Land Costs	Processing Costs
Parcel #1	T.27S., R43E. Sec 9 NE1/4 SE1/4	40	1	Private	Private	No	Purchase	$3,000	$2,500

[1]The estimated costs listed in this appendix in no way represent a formal appraised value of the land or mineral estate, but are rough estimates based on sales or exchanges of lands or mineral estates with similar characteristics to those included in the WSA. The estimates are for purposes of establishing a range of potential costs to the government of acquiring non-Federal holdings and in no way represent an offer to purchase or exchange at the cost estimate included in this appendix.

[2]Processing costs are all miscellaneous expenses other than land costs. These would include work month costs, appraisals, title work, escrow costs, etc. All lands identified in this table are in Oregon.

Table 4 – Comparative Summary of the Impacts by Alternative

Issue Topics	Proposed Action (Alt. 1 – Wilderness Alternative)	Alternative 2	Alternative 3	Alternative 4 – Preferred Alternative
Impacts on Wilderness Values	Wilderness designation of 19,140 acres (including the acquisition of 240 private acres) would protect and enhance existing wilderness values.			
Impacts on Energy and Mineral Development	No impact on energy development is expected. Wilderness designation would result in foregone production from one projected tender mine. Production from this mine or from existing claims could occur.			
Impacts on Vegetation	Ten miles of vehicular ways would be closed. Upland range land in poor would advance.			
Impacts on Wildlife	Wildlife habitat and populations would be maintained or enhanced throughout the WSA.			
Impacts on Watershed	Watershed condition would remain unchanged or improve.			
Impacts on Livestock Grazing	Livestock use would remain at 1,420 AUMs. The use of a range of ways for livestock management would be precluded with some inconvenience and slight increase in cost to livestock operators. Improved livestock distribution would be foregone. Upland range condition would improve.			
Impacts on Visitation	Overall recreation use would increase from approximately 1,000 visitor days per year to approximately 1,400 visitor days per year.			
Impacts on Local Economic Income	Annual local personal income would increase by approximately $5,000.			

Upper Leslie Gulch Wilderness Study Area

1. The Study Area —3,000 acres

The Upper Leslie Gulch Wilderness Study Area (WSA) (OR-3-74) is located in Malheur County, five miles east of the Owyhee Reservoir and approximately 50 miles south of Vale. U.S. Highway 95 is approximately 27 miles to the southeast. The WSA includes 3,000 acres of BLM land (see Table 1). It is roughly triangular with two extensions of land projecting due south. The WSA is bounded on the north by a high standard gravel road, on the west by a maintained dirt road, on the south by private land, and on the east by a fenceline on public land. The WSA is adjacent to two other WSAs, being separated by roads from the Honeycombs WSA (OR-3-77A) to the north and the Slocum Creek WSA (OR-3-75) to the west.

The surface of the WSA is overlain by thick volcanic deposits that have been cut by intermittent streams, resulting in a land pattern of alternating drainages and steep, north-south oriented ridges. Almost 85 percent of the WSA is composed of slopes with gradients exceeding 25 percent. Natural vegetation consists mostly of sagebrush and bunchgrass. Western junipers are scattered throughout the area. Two groves of mountain mahogany, totaling 240 acres, are contained in the WSA.

The WSA was studied under Section 202 of the Federal Land Policy and Management Act (FLPMA) as the area is less than 5,000 acres in size. The WSA was included in the Final Oregon Wilderness Environmental Impact Statement (EIS) filed in February, 1990. There were two alternatives analyzed in the EIS: an all wilderness alternative, which is the recommendation in this report; and a no wilderness/no action alternative. These lands are shown on Map 1.

2. Recommendation and Rationale

—3,000 acres recommended for wilderness
0 acres recommended for nonwilderness

The recommendation for the Upper Leslie Gulch WSA is to designate the entire 3,000 acres as wilderness. This is the environmentally preferable alternative as it will result in the least change from the natural environment over the long term.

The benefits of preserving the area's wilderness values—including spectacular geologic formations, outstanding scenery, a Research Natural Area (RNA), a portion of the Leslie Gulch Area of Critical Environmental Concern (ACEC), special interest plants, bighorn sheep, Rocky Mountain elk, and outstanding opportunities for solitude and primitive recreation—have a high value as compared with the benefits of maintaining the option for mineral exploration.

The all wilderness recommendation would preserve the opportunity to enjoy, within a wilderness setting, the outstanding scenery provided by the spectacular geologic formations present in the Upper Leslie Gulch WSA. The abundant and varied geologic features created by the weathering of Leslie Gulch ash-flow tuff contribute color, diversity, and stark beauty to the desert landscape. The tuff is exposed throughout the WSA and may be as much as 2,000 feet thick. Its great thickness, uniformity, and relative resistance to weathering gave rise to the impressive cliffs, outcrops, and spires that characterize this WSA.

The all wilderness recommendation would help protect five plant species of special interest found in the WSA: sterile milkvetch *(Astragalus sterilis)*, Packard's blazing star *(Mentzelia packardiae)*, Ertter's groundsel *(Senecio ertterae)*, grimy ivesia *(Ivesia rhypara)*, and Owyhee clover *(Trifolium owyheense)*. All are Federal candidate species for listing under the Endangered Species Act. The groundsel and the blazing star are annual species which evolved in, and depend upon, the specific conditions offered by Leslie Gulch ash deposits. Globally, they are found only in this WSA and on the two adjacent WSAs to the west and north. An ACEC has been designated, in part, to protect these five plant species.

Similarly, the recommendation would provide further protection to two dense groves of curlleaf mountain mahogany *(Cercocarpus ledifolius)*, located on 240 acres in the southeast corner of the WSA, which have been designated a Research Natural Area. These groves are part of the largest contiguous stand of mountain mahogany in western North America. Most of the stand is privately owned.

Wilderness preservation of the Upper Leslie Gulch WSA would add an ecosystem, intermountain sagebrush province/sagebrush-steppe, not presently represented in Oregon and represented in the National Wilderness Preservation System by only three areas. In addition, wilderness designation of this area would contribute toward balancing the geographic distribution of areas within the National Wilderness Preservation System.

The all wilderness recommendation would protect Rocky Mountain elk winter range, currently used by about five elk, and a portion of the Leslie Gulch bighorn sheep range. The WSA supports approximately 25 bighorn sheep, a Federal candidate species for listing under the Endangered Species Act.

The recommendation would preserve outstanding opportunities for solitude and primitive recreation and would recognize and maintain all of the high wilderness values of the area with few conflicts with other resource uses of the area. Although no development is projected, under this recommendation, mineral and energy exploration would be prohibited.

Very strong support for preservation of the area as wilderness was expressed by the public.

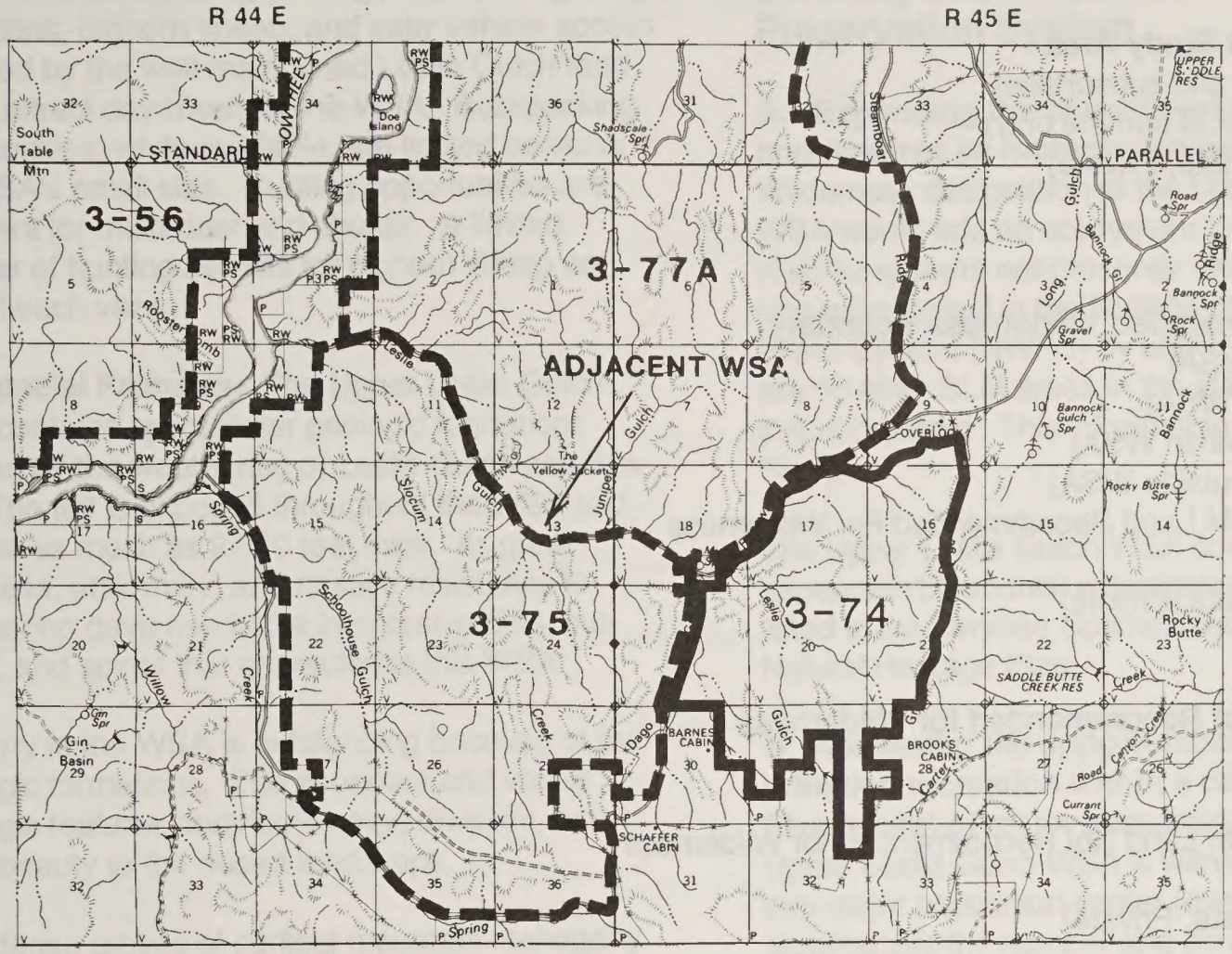
3. Criteria Considered in Developing the Wilderness Recommendation

Wilderness Characteristics

A. Naturalness: The Upper Leslie Gulch WSA is highly natural in appearance. The surface area of the WSA is overlain by thick volcanic deposits that have been cut by intermittent streams, resulting in a land pattern of alternating drainages and steep, north-south oriented ridges. Almost 85 percent of the WSA is composed of slopes with gradients exceeding 25 percent.

Vegetation throughout the area is characteristic of a sagebrush steppe ecosystem interspersed with pockets of juniper and curlleaf mountain mahogany. The most widespread plant species are sagebrush, western juniper, and bunchgrasses. Two dense stands of curlleaf mountain mahogany are located in the southeast corner of the study area. Western junipers occur over much of the study area, but never in dense stands. Bitterbrush is also found in portions of the WSA. Herbaceous perennials occur frequently in the area and include such species as Indian paintbrush, daisy fleabane, phlox, arrowleaf balsam root, and milkvetch.

Seral stage is an expression of the relative degree to which the kinds, proportions, and amounts of plants in a community resemble that of a potential natural



RECOMMENDED FOR WILDERNESS

RECOMMENDED FOR NONWILDERNESS (None)

LAND OUTSIDE WSA RECOMMENDED FOR WILDERNESS (None)

SPLIT ESTATE (None)

STATE (None)

PRIVATE (None)

- N -

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MILES

Upper Leslie Gulch Proposal

MAP-1

OR-3-74
January, 1991

Table 1 - Land Status and Acreage Summary of the Study Area

	Acres
Within Wilderness Study Area	
BLM (surface and subsurface)	3,000
Split Estate (BLM surface only) [1]	0
Inholdings (State, Private)	0
Total	3,000
Within the Recommended Wilderness Boundary	
BLM (within WSA)	3,000
BLM (outside WSA)	0
Split Estate (within WSA) [1]	0
Split Estate (outside WSA) [1]	0
Total BLM Land Recommended For Wilderness	3,000
Inholdings (State, Private)	0
Within the Area Not Recommended for Wilderness	
BLM	0
Split Estate [1]	0
Total BLM Land Not Recommended for Wilderness	0
Inholdings (State, Private)	0

[1]For purposes of this report, split estate lands are defined only as those lands with Federal surface and non-Federal subsurface (minerals).

community. Early seral stage represents the greatest departure from the potential natural community. Most of the area is in mid to late seral stage, with pockets inaccessible to livestock at the potential natural community.

Approximately 200 California bighorn sheep, a Federal candidate species for listing under the Endangered Species Act, occupy suitable habitat east of Owyhee Reservoir. The Upper Leslie Gulch WSA accounts for about 25 head in the herd. California bighorns are native to eastern Oregon. The WSA supports a year-long mule deer herd of about 50 animals. An estimated five head of elk winter in the unit and summer on nearby Mahogany Mountain.

Three interior, unnatural features influence approximately 5 percent of the WSA. These features include an overgrown cattle trail (about 0.5 mile) that penetrates the southern extension, approximately 0.25 mile of fence that passes through the mahogany stands and forms a small portion of the southeastern boundary, and eight upright juniper posts with scattered wire strands among them. Unnatural features outside the WSA that affect the naturalness of the area consist of the 2.5-mile fence forming the eastern boundary and the two boundary roads. The Leslie Gulch road is well maintained and is used by approximately 3,000 vehicles annually. The Dago Gulch road west of the WSA is improved, but lightly traveled.

B. Solitude: The Upper Leslie Gulch WSA offers outstanding opportunities for solitude. The major factor contributing to opportunities for solitude is the topographic screening provided by the steep and diverse terrain. All of the drainages offer excellent topographic screening because they are winding and steep sided. Outside sights and sounds affecting opportunities for solitude in the WSA consist of vehicle use on the boundary roads.

C. Primitive and Unconfined Recreation: The Upper Leslie Gulch WSA contains outstanding opportunities for primitive and unconfined recreation, including photography, geologic sightseeing, and hiking. The outstanding scenery, numerous geologic formations, bighorn sheep, and easy vehicle access provided by the well-maintained Leslie Gulch road would attract day hikers to the WSA. Backpacking opportunities, while available, are limited because of the WSA's small size. Hunting opportunities are excellent for mule deer and chukar. A limited number of hunting permits for bighorn sheep are issued each year.

D. Special Features: The Upper Leslie Gulch WSA contains spectacular geologic formations created by the weathering of Leslie Gulch ash-flow tuff. The tuff is exposed throughout the WSA and may be as much as 2,000 feet thick. Its great thickness, uniformity, and relative resistance to weathering gave rise to the impressive cliffs, outcrops, and spires that characterize this WSA.

Scenery in the WSA is outstanding because of the geologic formations. The abundant and varied geologic features contribute color, diversity, and stark beauty to the desert landscape.

Two dense groves of curlleaf mountain mahogany *(Cercocarpus ledifolius)*, located on 240 acres in the southeast corner of the WSA, have been designated a Research Natural Area. The stand of *Cercocarpus ledifolius* on Mahogany Mountain, of which these two groves are part, is the largest contiguous stand of mountain mahogany in western North America. The greater portion of this stand is privately owned.

Five plant species of special interest are found in the WSA. All are Federal candidate species for listing under the Endangered Species Act: sterile milkvetch *(Astragalus sterilis)*, Packard's blazing star *(Mentzelia packardiae)*, Ertter's groundsel *(Senecio ertterae)*, grimy ivesia *(Ivesia rhypara)*, and Owyhee clover *(Trifolium owyheense)*. The groundsel and the blazing star are annual species specific to Leslie Gulch ash deposits. Globally, they are found only in this WSA and on the two adjacent WSAs to the west and north.

The rugged breaks and outcrops of this WSA form part of the Leslie Gulch bighorn sheep range. The WSA supports approximately 25 bighorn sheep, a Federal candidate species for listing under the Endangered Species Act.

A small, disjunct population of Rocky Mountain elk resides year-round on Mahogany Mountain south of the WSA, and about five of these elk winter in the WSA. Rocky Mountain elk are a premier big game species widely sought by the hunting public.

Diversity in the National Wilderness Preservation System

A. Expanding the diversity of natural systems and features as represented by ecosystems: Wilderness designation of the Upper Leslie Gulch WSA would add an ecosystem (using the Bailey-Kuchler system) not presently represented in Oregon and represented in the National Wilderness Preservation System (NWPS) by only three areas. There are 66 other BLM areas in the state under study with this ecosystem. This information is summarized in Table 2.

The Upper Leslie Gulch WSA contains the low sagebrush/bluebunch wheatgrass plant community listed in the Owyhee Uplands section of the Oregon Natural Heritage Plan.

B. Assessing the opportunities for solitude or primitive recreation within a day's driving time (five hours) of major population centers: The Upper Leslie Gulch WSA is within a five-hour drive of one major population center (over 100,000). Table 3 summarizes the number and acreage of designated areas and other BLM study areas within a five-hour drive of the population center.

C. Balancing the geographic distribution of wilderness areas: The Upper Leslie Gulch WSA would contribute to balancing the geographic distribution of areas within the National Wilderness Preservation System. There are only three existing wilderness areas within 100 miles of this WSA.

Manageability

(The area must be capable of being effectively managed to preserve its wilderness character.)

The Upper Leslie Gulch WSA is capable of being managed to preserve its wilderness characteristics. Other than the projecting finger of land (approximately 200 acres) at the WSA's southeast corner, the WSA's configuration, despite its relatively small size, presents no major management problems. The projecting finger of land could be managed as wilderness (it is already managed as a Research Natural Area), but there could be some problems if it becomes subjected to future activities emanating from adjacent private land. The southern boundary of the WSA follows private property and does not

Table 2 - Ecosystem Representation

Bailey-Kuchler Classification	NWPS Areas areas	NWPS Areas acres	Other BLM Studies areas	Other BLM Studies acres
Province/Potential Natural Vegetation				
	NATIONWIDE			
Intermountain Sagebrush Province/ Sagebrush-Steppe	3	76,699	136	4,367,340
	OREGON			
	0	0	66	1,980,074

Table 3 - Wilderness Opportunities for Residents of Major Population Centers

Population Centers	NWPS Areas areas	NWPS Areas acres	Other BLM Studies areas	Other BLM Studies acres
Boise, Idaho	16	4,741,570	126	5,060,460

follow recognizable surface features. It is mostly unfenced, thereby making the boundary difficult to identify without surveying and signing. However, surveying and signing the boundary would resolve the problem.

Energy and Mineral Resource Values

The U.S. Geological Survey (USGS) and U.S. Bureau of Mines (USBM) prepared a mineral survey for the Upper Leslie Gulch WSA in 1989, "Mineral Resources of the Upper Leslie Gulch and Slocum Creek Wilderness Study Areas, Malheur County, Oregon," USGS Bulletin 1741-D. No energy or mineral resources were identified in the Upper Leslie Gulch WSA. Areas underlain by peralkaline rhyolite ash-flow and air-fall tuff and by intrusions associated with the Mahogany Mountain caldera have moderate potential for uranium and thorium resources and low potential for zinc resources. These tuffs are exposed in the west-central and eastern parts of the study area. All of the tuffs and rhyolite intrusions exposed in the study area have low potential for lithium resources. Rhyolite dikes and plugs that intrude the study area have moderate potential for gold, silver, mercury, and zinc resources. The Upper Leslie Gulch WSA has unknown potential for geothermal resources and no potential for oil and gas resources.

The Oregon Department of Geology and Minerals (DOGAMI) 1983 study, "Geology and Mineral Resources of 18 BLM Wilderness Study Areas, Harney and Malheur Counties, Oregon," cited in the Final Oregon Wilderness Environmental Impact Statement, found that, based upon indirect evidence the entire WSA is considered to have moderate potential for the occurrence of oil and gas. This differs from the USGS/USBM findings. The other point on which the two reports differ is the potential for uranium and thorium resources which the DOGAMI study considered to be low and the USGS/ USBM study considered to be moderate.

In summary, the USGS/USBM findings are that quantities of various mineral and energy resources are unknown, but the potential for the occurrence of uranium, thorium, gold, silver, mercury, and zinc resources is moderate in areas, while the potential for geothermal resources is unknown.

As of May 1991, there were no mining claims within this WSA.

Local Social and Economic Considerations

Livestock use at the current level of 250 AUMs and recreation use totaling 500 visitor days per year are the primary resource outputs that generate economic activity in the WSA. Local personal income generated annually from these existing use levels amounts to approximately $3,000 for livestock grazing and $6,000 related to recreation use of the WSA, for an overall total of $9,000. Under the recommendation, livestock grazing would remain at 250 AUMs and overall recreation use would increase by 250 visitor days per year. Annual local personal income generated from resource outputs in the Upper Leslie Gulch WSA would increase by approximately $3,000. There were no social issues identified in the study of this WSA.

Summary of WSA-Specific Public Comments

Public involvement has occurred throughout the wilderness review process. Certain comments received during the inventory process and early stages of the environmental impact statement (EIS) preparation were used to develop significant study issues and various alternatives for the ultimate management of those lands found to have wilderness values.

During the formal public review of the Draft Oregon Wilderness Environmental Impact Statement and the Supplement to the Draft, a total of 40 comments specifically addressing the Upper Leslie Gulch WSA were received. Of those, 17 were written and 23 were oral statements received at public hearings on the draft EIS and supplement. In general, 39 commentors supported wilderness designation for the WSA. One commentor supported no wilderness for the WSA.

Those favoring all wilderness commented on the outstanding wilderness qualities of the area and the protection wilderness designation offers to natural resources, ecosystems, ecological diversity, the gene pool, wildlife habitat, and non-game wildlife populations, citing particularly the unique geology, the rich and unique botanical areas and fragile plant communities present. Some commentors noted that wilderness designation would complement designations of adjacent WSAs along the Owyhee Reservoir and Owyhee National Wild River for a continuous Owyhee wilderness complex. Some commentors favored closing the Leslie Gulch boundary road and/or the road between the Upper Leslie Gulch WSA and Slocum Creek WSA (OR-3-75) thus joining together the Upper Leslie Gulch WSA with one or both of the adjacent WSAs as designated wilderness.

No WSA specific comments were received from any Federal or local agencies. The Oregon Department of Fish and Wildlife (ODFW) commented on the draft EIS noting that the Upper Leslie Gulch WSA and the Slocum Creek WSA (OR-3-75) complement each other and are a logical choice for wilderness status due to their importance to bighorn sheep and wintering mule deer.

There were two comment letters received on the final EIS.

Impacts on Resources

The following comparative impact table summarizes the effects on pertinent resources for all the alternatives considered including designation or non-designation of the entire area as wilderness.

Table 4 - Comparative Summary of the Impacts by Alternative

Issue Topics	Recommendation (All Wilderness)	No Wilderness/No Action Alternative
Impacts on Wilderness Values	Wilderness designation of 3,000 acres would result in protection of existing wilderness values.	In the absence of wilderness designation, no management actions are projected that would impair wilderness values, however, declines from other potential uses are possible over the long term.
Impacts on Energy and Mineral Development	No impact on energy or mineral development is expected.	There would be no impact on energy or mineral development.
Impacts on Vegetation	Two special interest plant species would be potentially threatened by increased visitor use. Little or no change is anticipated to vegetation over the rest of the WSA.	Two special interest plant species would be potentially threatened by increased visitor use. Little or no change is anticipated to vegetation over the rest of the WSA.
Impacts on Wildlife	Wildlife habitat and populations would be maintained throughout the WSA.	Wildlife habitat and populations would be maintained throughout the WSA.
Impacts on Livestock Grazing	Existing livestock use would remain at 250 AUMs. There would be no impact on livestock grazing or management.	Existing livestock use would remain at 250 AUMs. There would be no impact on livestock grazing or management.
Impacts on Recreation Use	Overall recreation use would increase from approximately 500 visitor days per year to approximately 750 visitor days per year.	Overall recreation use would increase from approximately 500 visitor days per year to approximately 750 visitor days per year.
Impacts on Local Personal Income	Annual local personal income would increase by approximately $3,000.	Annual local personal income would increase by approximately $3,000.

Slocum Creek Wilderness Study Area

1. The Study Area
—7,600 acres

The Slocum Creek Wilderness Study Area (WSA) (OR-3-75) is located east of Owyhee Reservoir in Malheur County, approximately 47 miles south of Vale. U.S. Highway 95 is approximately 30 miles to the southeast. The WSA includes 7,600 acres of BLM land (see Table 1). It is pear-shaped, approximately 5.5 miles long and 3 miles wide. It is bounded by the high standard, gravel Leslie Gulch road on the north; by private land and maintained dirt roads on the east, south and west; and by Bureau of Reclamation-administered land on the northwest. It is adjacent to the Honeycombs (OR-3-77A) and Upper Leslie Gulch (OR-3-74) WSAs, and separated from them by high standard or maintained dirt roads.

The WSA contains rugged topography formed by intermittent streams cutting through thick, volcanic deposits. The resulting land pattern is composed of steep-sided drainages separated by high, north-south oriented ridges. Over 85 percent of the WSA has gradients exceeding 25 percent. Natural vegetation consists mostly of sagebrush and bunchgrass. Western junipers are scattered throughout the area. A small, relict stand of ponderosa pine is located in the Dago Gulch drainage of the WSA.

The WSA was studied under Section 603 of the Federal Land Policy and Management Act (FLPMA) and was included in the Final Oregon Wilderness Environmental Impact Statement (EIS) filed in February, 1990. There were two alternatives analyzed in the EIS: an all wilderness alternative, which is the recommendation in this report; and a no wilderness/no action alternative. These lands are shown on Map 1.

2. Recommendation and Rationale
—7,600 acres recommended for wilderness
0 acres recommended for nonwilderness

The recommendation for the Slocum Creek WSA is to designate the entire 7,600 acres as wilderness. As identified in the final EIS, to provide for adequate protection and maintenance of the Leslie Gulch boundary road from the junction with the Dago Gulch road to the Owyhee Reservoir (a distance of 4 miles), the designated wilderness boundary would be either the standard setback distance from the road, at a minimum, or the alluvial valley floor of Leslie Gulch (not to exceed 400 feet from the road),

whichever is the greater in width. Where Slocum Creek Canyon meets the Leslie Gulch road, the setback distance from the road would be 1,200 feet for the width of the Slocum Creek alluvial valley floor (an average width of 300 feet) in order to control flashfloods in this drainage that could washout the Leslie Gulch road. This is the environmentally preferable alternative, as it would result in the least change from the natural environment over the long term.

The benefits of preserving the area's wilderness values—including spectacular geologic formations, outstanding scenery, a portion of the Leslie Gulch Area of Critical Environmental Concern, special interest plants, bighorn sheep, Rocky Mountain elk, northern bald eagles and outstanding opportunities for solitude and primitive recreation—have a high value as compared with the benefits of maintaining the option for mineral exploration, development of two springs, and continued motor vehicle use of a 2-mile-long way.

The recommendation would preserve the opportunity to enjoy, within a wilderness setting, the outstanding scenery provided by the spectacular geologic formations present in the Slocum Creek WSA. The highly varied features created by the weathering of the Leslie Gulch ash-flow tuff contribute color, diversity, and stark beauty throughout the area. The tuff is exposed throughout the WSA and may be as much as 2,000 feet thick. Its great thickness, uniformity, and relative resistance to weathering gave rise to the impressive outcrops and spires that characterize this WSA.

The recommendation would help protect five plant species of special interest found in the WSA. Four of them are candidate species for listing under the Endangered Species Act: sterile milkvetch (*Astragulus sterilis*), Packard's blazing star (*Mentzelia packardiae*), Ertter's groundsel (*Senecio ertterae*), and Owyhee clover (*Trifolium owyheense*). The groundsel and blazing star are annual species which evolved in, and depend upon, the specific conditions offered by Leslie Gulch ash deposits. Globally, they are found only in this WSA and in the two adjacent WSAs to the east and north. The fifth special interest plant is the only known relict stand of ponderosa pine in the Owyhee Upland, a large volcanic plateau region located in contiguous portions of a tri-state area (Oregon, Nevada, and Idaho). The stand is located along the crest of Blue Point Ridge and within the adjacent side drainage of Dago Gulch in the WSA. A 1973 count showed four mature trees around 400 years old and 45 young trees and seedlings. An Area of Critical Environmental Concern has been designated, in part, to protect these special interest plants.

Wilderness designation of the Slocum Creek WSA would add an ecosystem (Intermountain sagebrush-steppe) not presently represented in Oregon and represented in the National Wilderness Preservation System by only three areas. In addition, wilderness designation of this area would contribute to balancing the geographic distribution of areas within the National Wilderness Preservation System.

The recommendation would protect Rocky Mountain elk winter range, currently used by a small number of elk, and a portion of the Owyhee bighorn sheep range. The WSA supports approximately 75 of the 200 California big horn sheep of the Leslie Gulch herd, which are a Federal candidate species for listing under the Endangered Species Act.

The recommendation would protect northern bald eagle winter range used by 20 to 30 northern bald eagles, a Federally listed threatened species in Oregon under the Endangered Species Act.

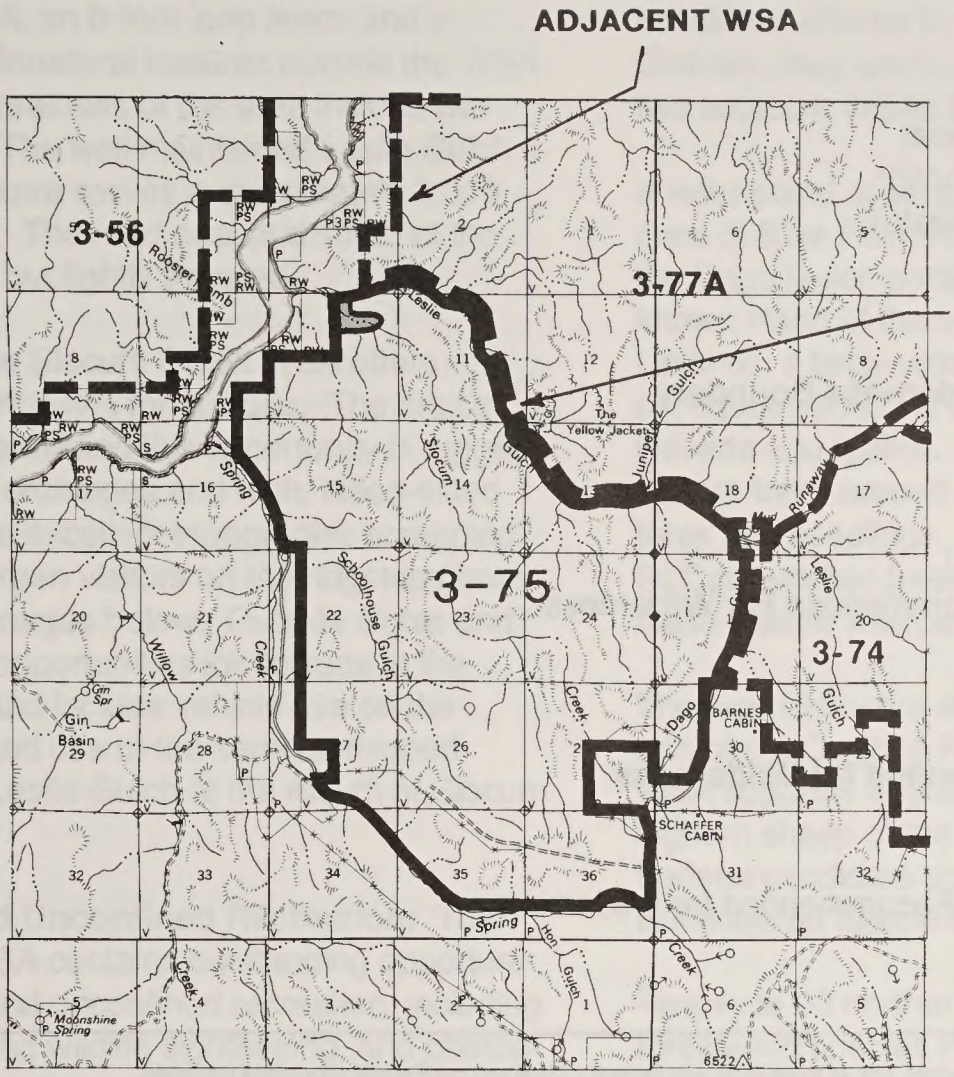
The recommendation would preserve outstanding opportunities for solitude and primitive recreation and would recognize and maintain all of the high wilderness values of the area with few conflicts with other resource uses of the area. The public strongly supported wilderness designation for the WSA.

Under this recommendation, mineral exploration would be prohibited. However, no energy or mineral development activities have been projected. The conflicts with other resource uses of this WSA are limited. Closure of one way, 2 miles long, would cause a slight additional expense for one livestock operator, and wider distribution of livestock would not occur since two springs would not be developed under the recommendation.

3. Criteria Considered in Developing the Wilderness Recommendation

Wilderness Characteristics

A. Naturalness: The Slocum Creek WSA is highly natural in appearance. The surface area of the WSA is overlain by thick volcanic deposits creating rugged topography cut by intermittent streams throughout the area. The resulting land pattern is composed of



NOTE:

Recommended boundary along Leslie Gulch Road between Dago Gulch and Owyhee Reservoir is the width of the alluvial valley floor, not to exceed 400 feet from the road. Recommended boundary at Slocum Creek mouth is 1,200 feet from WSA boundary on the alluvial valley floor, not to exceed 300 feet wide.

RECOMMENDED FOR WILDERNESS

RECOMMENDED FOR NONWILDERNESS

LAND OUTSIDE WSA RECOMMENDED FOR WILDERNESS (None)

SPLIT ESTATE (None)

STATE (None)

PRIVATE (None)

- N -

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MILES

Slocum Creek Proposal
MAP-1

OR-3-75
January, 1991

Table 1 - Land Status and Acreage of the Study Area

	Acres
Within Wilderness Study Area	
BLM (surface and subsurface)	7,600
Split Estate (BLM surface only)[1]	0
Inholdings (State, Private)[1]	0
Total	7,600
Within the Recommended Wilderness Boundary	
BLM (within WSA)	7,600
BLM (outside WSA)	0
Split Estate (within WSA)[1]	0
Split Estate (outside WSA)[1]	0
Total BLM Land Recommended For Wilderness	7,600
Inholdings (State, Private)[1]	0
Within the Area Not Recommended for Wilderness	
BLM	0
Split Estate[1]	0
Total BLM Land Not Recommended for Wilderness	0
Inholdings (State, Private)[1]	0

[1]For purposes of this report, split estate lands are defined only as those lands with Federal surface and non-Federal subsurface (minerals).

steep-sided drainages separated by high, north-south oriented ridges. Over 85 percent of the WSA is composed of slopes with gradients exceeding 25 percent.

Vegetation throughout the area is characteristic of a sagebrush steppe ecosystem, interspersed with pockets of juniper and curlleaf mountain mahogany. A unique relic stand of approximately 50 ponderosa pine is associated with one drainage of the WSA. Four plant species, each Federal candidates for listing under the Endangered Species Act, are found in the WSA. Salt desert shrub mosaics occur along the Owyhee Reservoir and include shrubs such as greasewood, spiny hopsage and shadscale. Bitterbrush is also found in portions of the area. Herbaceous perennials found throughout the WSA include arrowleaf balsamroot, phlox, penstemon, daisy fleabane and milkvetch. In the few areas where the topography is relatively flat, particularly near the Owyhee Reservoir and in the bottom of Slocum Creek and Schoolhouse Gulch, vegetation is in an early seral (ecological) stage. Seral stage is an expression of the relative degree to which the kinds, proportions, and amounts of plants in a community resemble that of a potential natural community. Early seral stage represents the greatest departure from the potential natural community. Most of the WSA is in mid-seral stage, with pockets inaccessible to livestock in late seral stage and at the potential natural community.

Approximately 200 California bighorn sheep occupy suitable habitat east of Owyhee Reservoir. The Slocum Creek WSA accounts for about 75 sheep of the herd. California bighorns are native to eastern Oregon and are a Federal candidate species for listing under the Endangered Species Act. In addition, 20 to 30 northern bald eagles, a Federally listed threatened species in Oregon, use the WSA as part of their winter range. The WSA supports about 100 wintering mule deer and a summer herd of about 20 animals. A small number of Rocky Mountain elk also winter in the area.

Four interior, unnatural features visually influence approximately 5 percent of the WSA. These features consist of a 2-mile way and 2-mile fence, both running roughly parallel in the extreme southern portion of the WSA, an 8-foot-long fence and a wildlife guzzler. Unnatural features outside the WSA that affect the naturalness of the area include two boundary roads. The well maintained Leslie Gulch road north of the area serves approximately 3,000 vehicles annually. The road east and south of the WSA is improved but lightly traveled.

B. Solitude: The Slocum Creek WSA offers outstanding opportunities for solitude. The area's primary attribute providing this opportunity is rugged terrain of winding drainages and high, steep-sided ridges that provide excellent topographic screening. False summits screen visitors on the ridgetops from visitors in the drainages below. Outside sights and sounds affecting opportunities for solitude in the WSA are minor, and include vehicle use on the boundary roads and use of the semi-developed camping area in Leslie Gulch at the mouth of Slocum Creek.

C. Primitive and Unconfined Recreation: The Slocum Creek WSA contains outstanding opportunities for primitive and unconfined recreation, including hiking, geologic and wildlife sightseeing, and photography. The outstanding scenery, numerous geologic formations, bighorn sheep, and easy vehicle access provided by the well maintained Leslie Gulch road would attract day hikers to the WSA. Backpacking opportunities, while available, are somewhat limited by the WSA's size. Hunting opportunities are excellent for mule deer and chukar. A limited number of hunting permits are issued each year.

D. Special Features: The Slocum Creek WSA contains spectacular geologic formations created by the weathering of Leslie Gulch ash-flow tuff. The tuff is exposed throughout the WSA and may be as much as 2,000 feet thick. Its great thickness, uniformity, and relative resistance to weathering gave rise to the impressive cliffs, outcrops and spires that characterize this WSA.

Scenery in the WSA is outstanding because of the geologic formations and diverse vertical relief of the terrain. The abundant and varied geologic features contribute color, diversity and stark beauty to the desert landscape.

Five plant species of special interest are found in the WSA. Four of them are candidate species for listing under the Endangered Species Act: sterile milkvetch (*Astragalus sterilis*), Packard's blazing star (*Mentzelia packardiae*), Ertter's groundsel (*Senecio ertterae*), and Owyhee clover (*Trifolium owyheense*). The groundsel and blazing star are annual species which evolved in, and depend upon, the specific conditions offered by Leslie Gulch ash deposits. Globally, they are found only in this WSA and on the two adjacent WSAs to the east and north.

A relict stand of ponderosa pine is located along the crest of Blue Point Ridge and its associated slopes in the Dago Gulch portion of the WSA. It is the only known stand of the species found in the Owyhee Uplands, a large volcanic plateau region located in contiguous portions of a tri-state area (Oregon, Nevada and Idaho). A 1973 count showed four mature trees around 400 years old and 45 young trees and seedlings. An Area of Critical Environmental Concern has been designated, in part, to protect these special interest plants.

The rugged breaks and outcrops of this WSA form part of the Owyhee River bighorn sheep range. The WSA supports approximately 75 of the 200 California bighorn sheep of the Leslie Gulch herd, which are a Federal candidate species for listing under the Endangered Species Act.

Twenty to 30 northern bald eagles, a Federally listed threatened species in Oregon under the Endangered Species Act, use the WSA as winter range. The area also supports a small disjunct population of Rocky Mountain elk during the winter, a prestigious big game species of this high desert environment.

Diversity in the National Wilderness Preservation System

A. Expanding the diversity of natural systems and features as represented by ecosystems: Wilderness designation of the Slocum Creek WSA would add an ecosystem (using the Bailey-Kuchler system) not presently represented in Oregon and represented in the National Wilderness Preservation System (NWPS) by only three areas. There are 66 other BLM areas in the State under study with this ecosystem. This information is summarized in Table 2.

The Slocum Creek WSA contains the big sagebrush/bluebunch wheatgrass plant community listed in the Owyhee Uplands section of the Oregon Natural Heritage Plan.

B. Assessing the opportunities for solitude or primitive recreation within a day's driving time (five hours) of major population centers: The Slocum Creek WSA is within a five-hour drive of one

major population center (over 100,000). Table 3 summarizes the number and acreage of designated wilderness areas and other BLM study areas within a five-hour drive of the population center.

C. Balancing the geographic distribution of wilderness areas: The Slocum Creek WSA would contribute to balancing the geographic distribution of areas within the National Wilderness Preservation System. There are only three designated wilderness areas within 100 miles of this WSA.

Manageability

(The area must be capable of being effectively managed to preserve its wilderness character)

The Slocum Creek WSA is capable of being managed to preserve its wilderness characteristics. The WSA's configuration lends itself well to wilderness management. Relative to the WSA's size and shape, the well maintained Leslie Gulch road provides adequate public access to the WSA. Access is also provided along the adjacent Owyhee Reservoir. The private land at the southeast boundary of the WSA would prevent public access to initiate at the upper end of the Slocum Creek drainage, and a private land parcel in the drainage bottom of Spring Creek along the WSA's west boundary would require visitors of the area to extend their efforts to reach portions of Schoolhouse Gulch. Since these same private land parcels constitute portions of the area's boundary and do not follow distinctive surface features, management of the area as wilderness would be improved by defining these boundary locations with adequate signing.

Energy and Mineral Resource Values

The U.S. Geological Survey (USGS) and U.S. Bureau of Mines (USBM) prepared a mineral survey for the Slocum Creek WSA in 1989, "Mineral Re-

Table 2 - Ecosystem Representation

Bailey-Kuchler Classification	NWPS Areas areas	NWPS Areas acres	Other BLM Studies areas	Other BLM Studies acres
Province/Potential Natural Vegetation				
NATIONWIDE				
Intermountain Sagebrush Province/ Sagebrush-Steppe	3	76,699	136	4,362,740
OREGON				
	0	0	66	1,975,474

Table 3 - Wilderness Opportunities for Residents of Major Population Centers

Population Centers	NWPS Areas areas	NWPS Areas acres	Other BLM Studies areas	Other BLM Studies acres
Boise, Idaho	16	4,741,570	126	5,060,460

sources of the Upper Leslie Gulch and Slocum Creek Wilderness Study Areas, Malheur County, Oregon" (USGS Bulletin 1741-D). No energy or mineral resources were identified in the Slocum Creek WSA. Areas underlain by peralkaline rhyolite ash-flow and air-fall tuff and by intrusions associated with the Mahogany Mountain volcanic caldera have moderate potential for uranium and thorium resources and low potential for zinc resources. These tuffs are exposed in the west-central and eastern parts of the study area. All of the tuffs and rhyolite intrusions exposed in the study area have low potential for lithium resources. Rhyolite dikes and plugs that intrude the study area have moderate potential for gold, silver, mercury, and zinc resources. North-trending fault zones within and adjacent to the WSA have moderate potential for geothermal resources. The WSA has no potential for oil and gas resources.

For the Final Oregon Wilderness Environmental Impact Statement (EIS), the energy and mineral resources were evaluated from available geologic data supplemented by limited geochemical stream sediment sampling by Oregon Department of Geology and Mineral Industries (DOGAMI) under BLM contract. Using the DOGAMI report, the WSA was reevaluated by BLM personnel.

The 1983 DOGAMI study "Geology and Mineral Resources of 18 BLM Wilderness Study Areas, Harney and Malheur Counties, Oregon" cited in the final EIS, found that, based upon indirect evidence, the entire WSA is considered to have moderate potential for the occurrence of oil and gas. This differs from the USGS/USBM findings. The other point on which the two reports differ is the potential for uranium and thorium resources which the DOGAMI study considered to be low and the USGS/USBM study considered to be moderate.

In summary, the USGS/USBM findings are that quantities of various mineral and energy resources are unknown, but the potential for the occurrence of uranium, thorium, gold, silver, mercury, and zinc minerals and geothermal energy resources is moderate in certain areas, while other mineral and energy resources have a low potential of occurrence within the WSA.

As of May 1991, there were no mining claims within this WSA.

Local Social and Economic Considerations

Livestock use at the current level of 356 AUMs and recreation use totaling 1,500 visitor days per year are the primary resource outputs that generate economic activity in the WSA. Local personal income generated annually from these existing use levels amounts to approximately $4,272 for livestock grazing and $18,000 related to recreation use of the WSA, for an overall total of $22,272.

Under the recommendation, livestock grazing would remain at 356 AUMs and overall recreation use would increase by 800 visitor days per year. Annual local personal income generated from resource outputs in the Slocum Creek WSA would increase by approximately $10,000. There were no social issues identified with the study of this WSA.

Summary of WSA-Specific Public Comments

Public involvement has occurred throughout the wilderness review process. Certain comments received during the inventory process and early stages of the environmental impact statement (EIS) preparation were used to develop significant study issues and various alternatives for the ultimate management of those lands found to have wilderness values.

During the formal public review of the Draft Oregon Wilderness Environmental Impact Statement and the Supplement to the Draft, a total of 48 comments specifically addressing the Slocum Creek WSA were received. Of those, 23 were written and 25 were oral statements received at public hearings on the draft EIS and supplement. In general, 44 commenters supported wilderness designation for all or part of the WSA. Four commentors supported no wilderness for the WSA.

Those favoring wilderness commented on the area's high scenic, critical wildlife habitat, and both rare and diverse botanical values, and how wilderness designation would provide protection for natural resources, watershed, nongame wildlife populations, and the ecological diversity of the area. Many commenters expressed how wilderness designation would complement designations of adjacent WSAs along the Owyhee Reservior and Owyhee National Wild River for a continuous Owyhee wilderness complex.

Some commenters favored closing the Leslie Gulch and/or the Dago Gulch boundary roads, thus joining together Slocum Creek WSA with one or both of the adjacent WSAs as designated wilderness.

Those opposing wilderness designation commented that wilderness designation would limit access to the area, and that the area should be made available to other inexplicit multiple resource uses.

The Idaho Air National Guard stated that while it does not wish to discourage the designation of wilderness areas, military aircraft use of an existing designated low level training route over the Slocum Creek WSA could conflict with the feeling of solitude sought by the wilderness area users. No other WSA-specific comments were received from any Federal, State, or local agencies.

There was one comment letter received on the final EIS specific to this WSA.

Impacts on Resources

The following comparative impact table summarizes the effects on pertinent resources for all the alternatives considered including designation or nondesignation of the entire area as wilderness.

Table 4 - Comparative Summary of the Impacts by Alternative

Issue Topics	Recommendation (All Wilderness)	No Wilderness/No Action Alternative
Impacts on Wilderness Values	Wilderness designation of 7,600 acres would protect and enhance existing wilderness values.	In the absence of wilderness designation, projected activities would both directly and indirectly impair wilderness values over approximately 50 acres of the WSA, with further declines from other potential uses over the long term.
Impacts on Energy and Mineral Development	No impact on energy or mineral development is expected.	There would be no impact on energy or mineral development.
Impacts on Vegetation	Two special interest plant species would be potentially threatened by increased visitor use. Two miles of vehicle way would revegetate. Little or no change would occur to vegetation over the rest of the WSA.	Two special interest plant species would be potentially threatened by increased visitor use. Vegetation would be removed on 1 acre by spring development. Little or no change would occur to vegetation over the rest of the WSA.
Impacts on Livestock Grazing	Existing livestock use would remain at approximately 356 AUMs. The 2-mile way would be closed, causing some inconvenience and a slight increase in cost to livestock operators. Better livestock distribution would be foregone from precluded projects.	Existing livestock use would remain at approximately 356 AUMs. Development of two springs would improve livestock distribution.
Impacts on Recreation Use	Overall recreation use would increase from approximately 1,500 visitor days per year to approximately 2,300 visitor days per year.	Overall recreation use would increase from approximately 1,500 visitor days per year to approximately 2,300 visitor days per year.
Impacts on Local Personal Income	Annual local personal income would increase by approximately $10,000.	Annual local personal income would increase by approximately $10,000.

Honeycombs Wilderness Study Area

1. The Study Area —39,000 acres

The Honeycombs Wilderness Study Area (WSA) (OR-3-77A) is located in Malheur County, Oregon, east of the Owyhee Reservoir and approximately 31 miles south of Vale. Oregon State Highway 201 is approximately 15 miles northeast of this WSA. The WSA includes 39,000 acres of BLM land. (See Table 1)

The WSA has an oblong configuration and is bounded on the south, east, and north by high standard BLM roads. The west border abuts public land administered by the Bureau of Reclamation and the State of Oregon along Owyhee Reservoir. A 40-acre plot of private land is located along the WSA's southern border. Three dead-end roads enter the WSA, forming part of the boundary. A 1.75-mile road to a horse trap in the Sheephead Basin area enters the WSA from the north. A 3-mile road enters the area at Craig Gulch and terminates at Three Fingers Gulch. A 2.5-mile branch of this road crosses Shadscale Flat and ends at Shadscale Spring. The third road, 0.75 mile long, enters the WSA one mile north of Craig Gulch and ends at a mining claim. The Honeycombs WSA is adjacent to three other WSAs. It is south of Wild Horse Basin WSA (3-77B), and north of Upper Leslie Gulch (3-74) and Slocum Creek (3-75) WSAs. It is separated from these three other WSAs by high standard dirt roads. Across from the Honeycombs WSA and located on the west side of the Owyhee Reservoir is Dry Creek Buttes WSA (3-56).

Topography in the WSA is rugged. A thick deposit of volcanic tuff is cut by numerous intermittent streams, resulting in a broken surface of ridges, hills, and drainages, with frequent outcrops and pinnacles. Several areas of relatively level land are found in Shadscale Flat and Sheephead Basin.

In the northern portion of the WSA is an area of approximately 12,000 acres called the Honeycombs. The Honeycombs is a very scenic area of steep walled canyons with sculpted, multi-colored rock formations of volcanic origin.

Sagebrush and grasses are the predominant plants in the WSA. Junipers are scattered on a few slopes and in several of the drainages.

The WSA was studied under section 603 of the Federal Land Policy and Management Act (FLPMA) and was included in the Final Oregon Wilderness

Environmental Impact Statement (EIS) filed in February, 1990. Three alternatives were analyzed in the EIS: an all wilderness alternative; a partial wilderness with road closure alternative, which is the recommendation in this report; and a no wilderness/ no action alternative. These lands are shown on Map 1.

2. Recommendation and Rationale

—36,555 acres recommended for wilderness
2,445 acres recommended for nonwilderness

The recommendation for the Honeycombs WSA is to designate 36,555 acres as wilderness and release 2,445 acres for uses other than wilderness. These acreages vary from those in the final EIS due to a change in the boundary of the area recommended for wilderness. In the area near Sheephead Ridge, the boundary, rather than following the fence, would follow the 0.5 mile dead-end road to the horse trap and then follow the boundary between the east half and west half of the east half of the section north to the northern boundary road. This revision eliminates the intrusion of the dead-end road into the area recommended for wilderness. The revised boundary is shown on Map 1. As identified in the final EIS, to provide for adequate protection and maintenance of the southern boundary road in Leslie Gulch, between Dago Gulch Road and the reservoir, the designated wilderness boundary would be either the standard distance from the Leslie Gulch Road, at a minimum, or the alluvial valley floor of Leslie Gulch (not to exceed 400 feet from the road) whichever is greater in width.

Designation of the entire WSA as wilderness is the environmentally preferable alternative. However, the recommendation would be implemented in a manner which would use all practical means to avoid or minimize environmental impacts.

The benefits of preserving the extraordinary wilderness values of the 36,555 acres recommended for wilderness—including the Leslie Gulch volcanic tuff geologic formation, a high concentration of special interest plants, bighorn sheep habitat, crucial deer winter range, northern bald eagle winter range, excellent reptile habitat, outstanding scenery, and outstanding opportunities for solitude and primitive and unconfined recreation—have a high value as compared with the benefits of maintaining options for exploration and development of energy and mineral resources, development of a spring, and continued vehicle use on six miles of ways and five miles of road.

The value of the benefits to be gained by continuing existing uses of the resources in the 2,445 acres recommended for uses other than wilderness—including continued mineral exploration and unrestricted use and maintenance of range projects and a horse trap—is high as compared with this area's relatively low wilderness values.

The partial wilderness recommendation would add further protection to the resources—bighorn sheep, volcanic formations, fragile soils, and several rare plant species and their critical habitat—for which the Honeycombs and Leslie Gulch Areas of Critical Environmental Concern (ACECs) were established.

The recommendation would preserve the opportunity to enjoy, within a wilderness setting, the outstanding scenery provided by numerous outcrops, rims, and pinnacles distributed throughout the WSA, especially in Leslie Gulch, Honeycombs, Painted Canyon, Three Fingers Gulch, and Carlton Canyon. Many of the exposed rock faces are dotted by spherical cavities, giving them a honeycomb or sponge-like appearance. These cavities often widen to form caves and shelves which are overhung by fragile stone lips with smoothly flowing contours. The WSA's abundant and varied geologic features create a landscape of stark beauty.

The recommendation would also preserve the opportunity to enjoy, within a wilderness setting, the spectacular geologic formations created by the weathering of Leslie Gulch tuff. The tuff is exposed throughout the WSA and may be as much as 2,000 feet thick. The tuff's great thickness, uniformity, and its relative resistance to weathering gave rise to the WSA's impressive cliffs, outcrops, and spires.

The partial wilderness recommendation would help protect six plant species of special interest found in the WSA. All are Federal candidate species for listing under the Endangered Species Act: sterile milkvetch (*Astragalus sterilis*), solitary milkvetch (*Astragalus solitarius*), Packard's blazing star (*Mentzelia packardiae*), Ertter's groundsel (*Senecio ertterae*), grimy ivesia (*Ivesia rhypara*), and Owyhee clover (*Trifolium owyheense*). The groundsel and the blazing star are annual species specific to Leslie Gulch ash deposits. Globally, they are found only in the southern portion of the WSA and on the two WSAs immediately to the south. Similarly, the recommendation would help protect two fern species

highly uncommon in the desert environment which occur at a few locations in the southern portion of the WSA and in the Honeycombs.

The partial wilderness recommendation would also protect Juniper Gulch, one of the most ecologically complex sites in the WSA. The gulch contains numerous geologic formations, many junipers, and a large variety of plants, including at least two species of special interest. Wilderness designation of the Honeycombs WSA would add an ecosystem (intermountain sagebrush province/sagebrush-steppe) not presently represented in Oregon, and represented in the National Wilderness Preservation System by only three areas. Wilderness designation of this area would also contribute to balancing the geographic distribution of areas within the National Wilderness Preservation System.

The recommendation would protect a portion of the Leslie Gulch bighorn sheep range formed by the rugged breaks and outcrops of this WSA. About 100 bighorn sheep use the WSA year-round. California bighorn sheep are a Federal candidate species for listing under the Endangered Species Act. Similarly, crucial deer winter range supporting a winter mule deer herd of at least 850 animals, and northern bald eagle winter range used by 20 to 30 northern bald eagles (a Federally listed threatened species in Oregon) would be protected by the partial wilderness recommendation. Further, excellent reptile habitat which supports an unusually varied population of reptiles including whiptails, collared lizards, and leopard lizards would be protected by the recommendation.

Under the recommendation, five miles of the branched, lightly-used, dead-end road in the Shadscale Flat area would be closed, allowing revegetation of the road and removing its influence from approximately 1,050 acres. Further, closure of the six miles of ways would improve naturalness on approximately 1,000 acres. Opportunities for solitude and primitive and unconfined recreation would be greatly enhanced by the closure of these ways and road. Recreation opportunities would be improved because backpackers, hikers, campers, hunters, wildlife viewers, and photographers would be provided with an extensive area in which to pursue their activities without the possibility of vehicle disturbance. Minor disturbances to bighorn sheep, reptiles, and other wildlife would be reduced, as would the possibility of inadvertent disturbances to special interest plants. Scenic values would be improved.

The recommendation would preserve outstanding opportunities for solitude and primitive recreation, recognizing and maintaining all of the high wilderness values of the recommended area of the WSA while having minimal conflicts with nonwilderness values. The recommendation would release for uses other than wilderness the portions of the WSA with lower wilderness values and significant conflicts.

The recommendation, by excluding 2,445 acres from wilderness designation, eliminates the two areas within the WSA, areas A and B on Map 1, that are most heavily influenced by unnatural features, releasing for uses other than wilderness an area containing a horse trap and a concentration of existing range projects around Sheephead Ridge in the northeastern corner of the WSA (Area A) and Craig Gulch, along the eastern boundary, where mineral activity has resulted in surface disturbance (Area B). In these areas, the partial wilderness recommendation would allow present use and maintenance of range improvements and mineral exploration to continue without wilderness constraints.

Under the recommendation, conflicts with other resource uses are limited. Vehicle use for livestock management would continue on two miles of ways and three miles of roads in the area recommended for release for uses other than wilderness, but would be precluded on six miles of ways and five miles of roads in the area recommended for wilderness designation. Additionally, the development of a spring would be precluded.

The WSA has a high potential for the occurrence of picture jasper. There is a possibility that production might occur from three jasper mines on existing claims. If this should occur, only a few acres would be affected. The economic value of the picture jasper is considered to be low. Under the recommendation, production would be foregone from one projected jasper mine and one projected gold/silver mine. The WSA has moderate potential for gold and silver resources.

Very strong support for preservation of the area as wilderness was expressed by the public.

Table 1 - Land Status and Acreage Summary of the Study Area

	Acres
Within Wilderness Study Area	
BLM (surface and subsurface)	39,000
Split-Estate (BLM surface only)[1]	0
Inholdings (State, Private)	0
Total	39,000
Within the Recommended Wilderness Boundary	
BLM (within WSA)	36,555
BLM (outside WSA)	0
Split-Estate (within WSA) [1]	0
Split-Estate (outside WSA)[1]	0
Total BLM Land Recommended For Wilderness	36,555
Inholdings (State, Private)	0
Within the Area Not Recommended for Wilderness	
BLM	2,445
Split-Estate [1]	0
Total BLM Land Not Recommended for Wilderness	2,445
Inholdings (State, Private)	0

[1] For purposes of this report, split-estate lands are defined only as those lands with Federal surface and non-Federal subsurface (minerals).

3. Criteria Considered in Developing the Wilderness Recommendation

Wilderness Characteristics

A. Naturalness: The Honeycombs WSA appears to be generally natural because the rugged terrain and lack of access have limited the number of unnatural features. Most of the WSA is pristine.

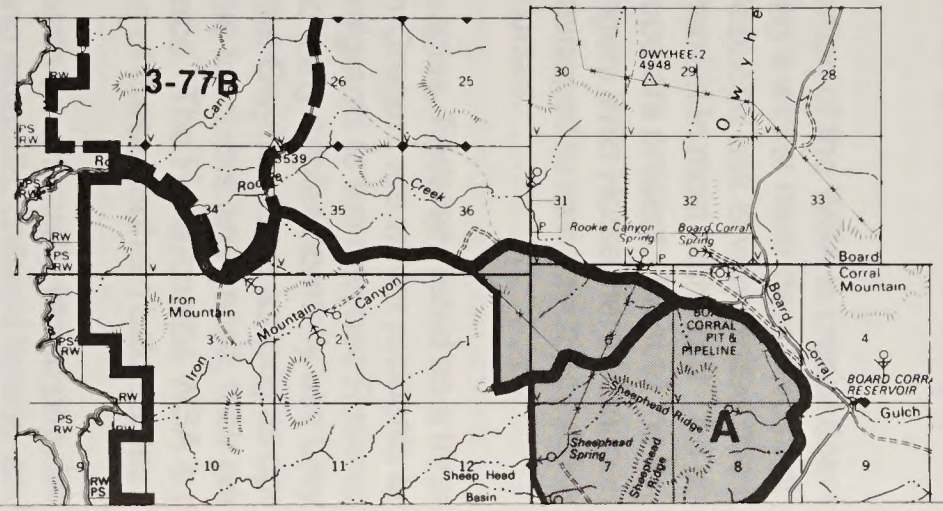
Topography in the WSA is rugged. A thick deposit of volcanic tuff is cut by numerous intermittent streams, resulting in a broken surface of ridges, hills, and drainages, with frequent outcroppings and pinnacles. Several areas of relatively level land are found in Shadscale Flat and Sheephead Basin.

In the northern portion of the WSA is an area of approximately 12,000 acres called the Honeycombs. The Honeycombs is a very scenic area of steep walled canyons with sculpted, multi-colored rock formations of volcanic origin. Several other drainages including Painted Canyon, Carlton Canyon, Three Fingers Gulch, Leslie Gulch, and Juniper Gulch also have high scenic values due to their highly diverse topography of rugged, steep terrain and sculpted rock formations.

A wide diversity of vegetation may be found throughout this WSA. The primary vegetative community is Wyoming big sagebrush/bluebunch wheatgrass. Salt desert shrub mosaics occur along the Owyhee Reservoir and include shrubs such as greasewood, spiny hopsage, and shadscale. In the southern portion of the WSA, Wyoming big sagebrush occurs with Idaho fescue in some places, and in the southeastern corner of the WSA, with western juniper and curlleaf mountain mahogany. Bitterbrush is commonly found in the southern portion. Numerous

R 44 E

R 45 E



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RECOMMENDED FOR WILDERNESS

RECOMMENDED FOR NONWILDERNESS

LAND OUTSIDE WSA RECOMMENDED FOR WILDERNESS (None)

SPLIT ESTATE (None)

STATE (None)

PRIVATE (None)

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Honeycombs Proposal

MAP-1

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OR-3-77A
January, 1991

Table 1 - Land Status and Acreage Summary of the Study Area

	Acres
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Inholdings (State, Private)	0
Total	39,000
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BLM (within WSA)	36,555
BLM (outside WSA)	0
Split-Estate (within WSA) [1]	0
Split-Estate (outside WSA)[1]	0
Total BLM Land Recommended For Wilderness	36,555
Inholdings (State, Private)	0
Within the Area Not Recommended for Wilderness	
BLM	2,445
Split-Estate [1]	0
Total BLM Land Not Recommended for Wilderness	2,445
Inholdings (State, Private)	0

[1] For purposes of this report, split-estate lands are defined only as those lands with Federal surface and non-Federal subsurface (minerals).

3. Criteria Considered in Developing the Wilderness Recommendation

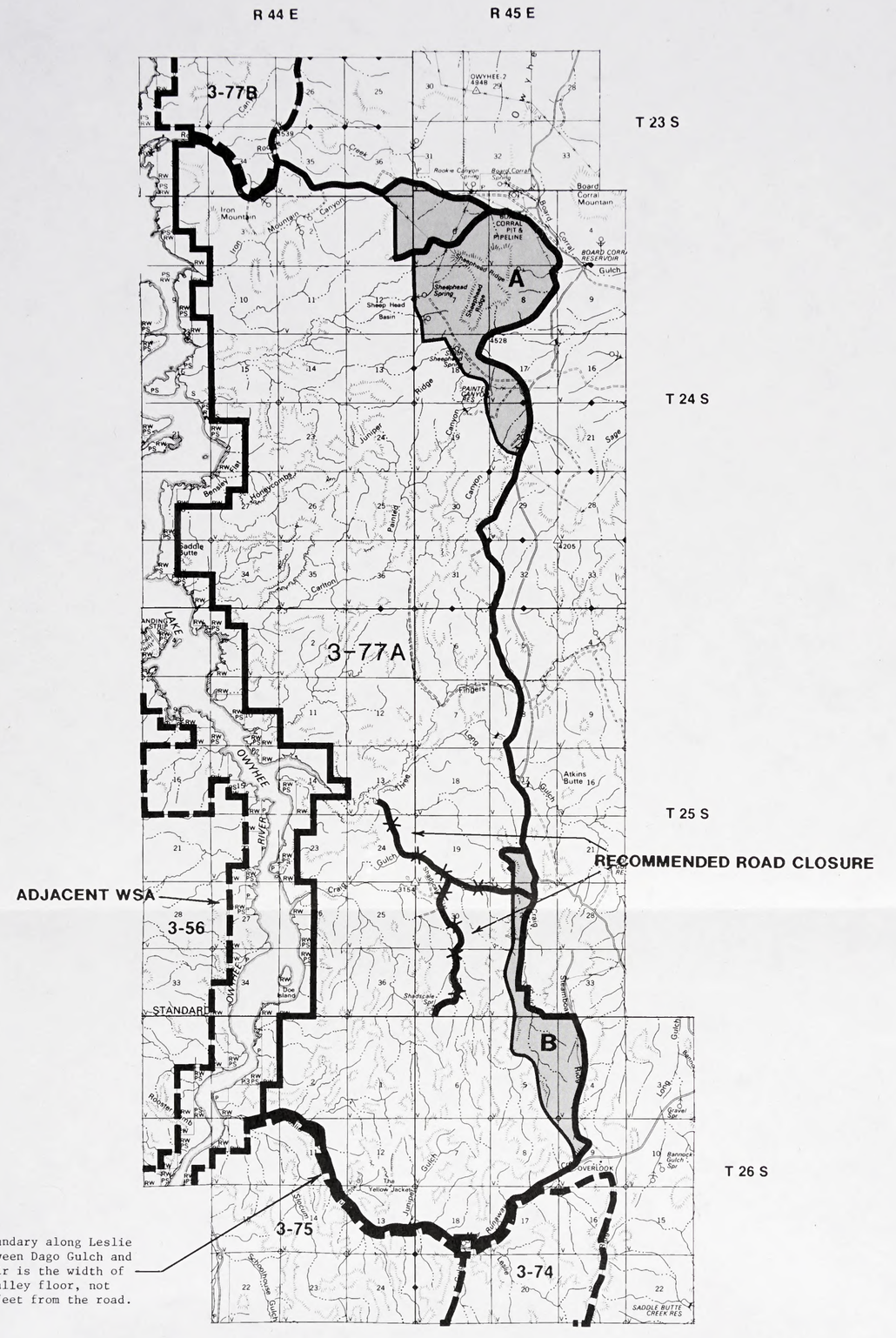
Wilderness Characteristics

A. Naturalness: The Honeycombs WSA appears to be generally natural because the rugged terrain and lack of access have limited the number of unnatural features. Most of the WSA is pristine.

Topography in the WSA is rugged. A thick deposit of volcanic tuff is cut by numerous intermittent streams, resulting in a broken surface of ridges, hills, and drainages, with frequent outcroppings and pinnacles. Several areas of relatively level land are found in Shadscale Flat and Sheephead Basin.

In the northern portion of the WSA is an area of approximately 12,000 acres called the Honeycombs. The Honeycombs is a very scenic area of steep walled canyons with sculpted, multi-colored rock formations of volcanic origin. Several other drainages including Painted Canyon, Carlton Canyon, Three Fingers Gulch, Leslie Gulch, and Juniper Gulch also have high scenic values due to their highly diverse topography of rugged, steep terrain and sculpted rock formations.

A wide diversity of vegetation may be found throughout this WSA. The primary vegetative community is Wyoming big sagebrush/bluebunch wheatgrass. Salt desert shrub mosaics occur along the Owyhee Reservoir and include shrubs such as greasewood, spiny hopsage, and shadscale. In the southern portion of the WSA, Wyoming big sagebrush occurs with Idaho fescue in some places, and in the southeastern corner of the WSA, with western juniper and curlleaf mountain mahogany. Bitterbrush is commonly found in the southern portion. Numerous



NOTE:

Recommended boundary along Leslie Gulch Road between Dago Gulch and Owyhee Reservoir is the width of the alluvial valley floor, not to exceed 400 feet from the road.

RECOMMENDED FOR WILDERNESS

RECOMMENDED FOR NONWILDERNESS

LAND OUTSIDE WSA RECOMMENDED FOR WILDERNESS (None)

SPLIT ESTATE (None)

STATE (None)

PRIVATE (None)

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Honeycombs Proposal

MAP-1

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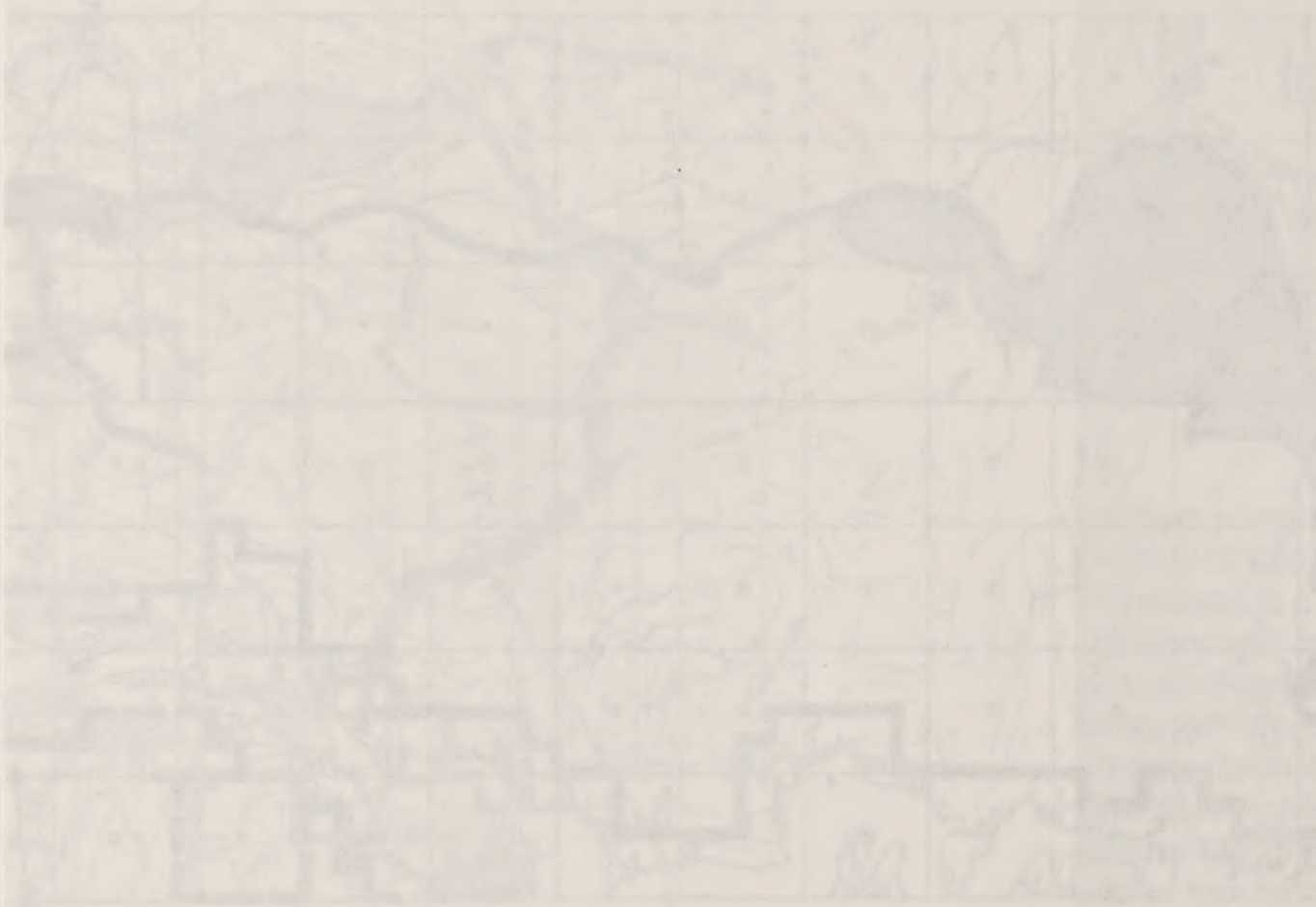
OR-3-77A

January, 1991



herbaceous perennials may be found throughout the WSA and include arrowleaf balsamroot, phlox, milkvetch, Indian paintbrush, penstemon, and desert parsley.

Seral stage is an expression of the relative degree to which the kinds, proportions, and amounts of plants in a community resemble that of a potential natural community. Early seral stage represents the greatest departure from the potential natural community. Where the topography of the unit is relatively flat, and particularly near the Owyhee Reservoir, vegetation is in early seral stage. Most of the area is in mid-seral stage, with pockets inaccessible to livestock in late seral stage and at the potential natural community.

Approximately 200 California bighorn sheep occupy suitable habitat east of Owyhee Reservoir. The Honeycombs WSA is used year-round by about 100 sheep of the herd. California bighorn sheep are native to eastern Oregon and are a Federal candidate species for listing under the Endangered Species Act.

The western portion of the WSA is crucial deer winter range, supporting a winter mule deer herd of at least 850 animals. Antelope use is very limited due to the ruggedness of terrain in most of the unit. An estimated 20 antelope are present. Most of the WSA is in the Three Fingers Wild Horse Herd Management Area which is managed to maintain a population of 75 to 150 wild horses.

Northern bald eagles, Federally listed as a threatened species in Oregon, are winter residents and spring and fall migrants to the Owyhee Reservoir area. Twenty to thirty eagles normally use Owyhee Reservoir and the Owyhee River as long as open water is available for ducks and geese, their primary winter food source. The Honeycombs WSA is part of the winter range of these northern bald eagles.

The WSA supports an unusually varied population of reptiles, including whiptails, collared lizards, and leopard lizards.

Forty-seven interior, unnatural features influence approximately 6 percent of the WSA. There are eight miles of ways, two reservoirs, three developed springs, one pipeline, eight sites with mining scars, one horse trap, remnants of five abandoned horse traps, four wildlife guzzlers, five fences (totalling five miles), and off-road vehicle closure signs installed by the BLM.

Nearly all of these unnatural features are concentrated along the northern, southern, and eastern boundaries and the dead-end road leading to Three Fingers Gulch and Shadscale Flat. The most heavily influenced areas are the east facing slopes of Sheephead Ridge (Area A, Map 1) and the ridge west of Craig Gulch (Area B, Map 1). These areas are recommended for release for uses other than wilderness.

The areas least influenced by unnatural features are the Honeycombs and the portion of the WSA between the dead-end road in Shadscale Flat and Leslie Gulch at the south end of the study area. These areas are part of the portion recommended for wilderness designation.

Major features outside the WSA that have a slight influence on the naturalness of the area include the Leslie Gulch road, a cabin in Leslie Gulch, the Owyhee Reservoir, recreational cabins along the reservoir, and the Pelican Point airstrip which is located on the west bank of Owyhee Reservoir. These unnatural features cumulatively affect only a small portion of the WSA.

B. Solitude: The Honeycombs WSA offers outstanding opportunities for solitude. The major factor contributing to outstanding opportunities for solitude is the topographic screening provided by the steep and diverse terrain found in 84 percent of the WSA. The numerous canyons, gulches, draws, and ridges provide innumerable secluded areas and locations. The remaining 16 percent of the WSA (Shadscale Flat, Sheephead Basin, and an unnamed basin north of Three Fingers Gulch) contains moderately diverse terrain. The elongated shape and large size of the WSA encourage dispersion of visitors, further enhancing opportunities for solitude.

C. Primitive and Unconfined Recreation: The Honeycombs WSA offers outstanding opportunities for primitive and unconfined recreation. Areas offering outstanding day hiking opportunities are dispersed throughout the WSA, providing recreationists with a number of choices. The most popular locations are the more easily accessible and very scenic areas off Leslie Gulch Road such as Juniper Gulch, Timber Gulch, and several unnamed drainages. Other popular areas are the numerous drainages accessible from the eastern and northern boundary roads, especially drainages providing access to the scenic Honeycombs. The Honeycombs contains a variety of attractions including impressive geologic formations, bighorn sheep, raptor habitat, and endemic plants which make it one of the WSA's most popular destinations.

Boaters on the Owyhee Reservoir hike in the WSA due to its easy accessibility by water. Some of the most attractive water access points include the mouth of Carlton Canyon, Painted Canyon, Bensley Flat, Three Fingers Gulch, and the Iron Mountain area. Of these, Bensley Flat probably receives the most use due to its location at the base of the Honeycombs. The WSA offers outstanding opportunities for backpacking because of its size and the availability of numerous routes and access points, extensive scenic values, and numerous, dispersed level areas for camping. However, scarcity of drinking water is a limiting factor for backpackers.

Hunting opportunities are excellent for mule deer and chukars. A limited number of hunting permits for bighorn sheep are issued each year. The WSA also offers outstanding opportunities for sightseeing, photography, and wildlife viewing because of the geologic formations, endemic plants, and diversity of wildlife.

D. Special Features: The Honeycombs WSA contains spectacular geologic formations created by the weathering of Leslie Gulch tuff. The tuff is exposed throughout the WSA and may be as much as 2,000 feet thick. The tuff's great thickness, uniformity, and its relative resistance to weathering gave rise to the WSA's impressive cliffs, outcrops, and spires.

Scenery in the WSA is outstanding. Numerous outcrops, rims, and pinnacles are distributed throughout the WSA but especially in Leslie Gulch, Honeycombs, Painted Canyon, Three Fingers Gulch, and Carlton Canyon. Many of the exposed rock faces are dotted by spherical cavities, giving them a honeycomb or sponge-like appearance. These cavities often widen to form caves and shelves which are overhung by fragile stone lips with smoothly flowing contours. The WSA's abundant and varied geologic features create a landscape of stark beauty.

The rugged breaks and outcrops of this WSA form part of the Owyhee River bighorn sheep range. Approximately 200 bighorn sheep roam the rocky areas east of the Owyhee Reservoir. About 100 of the bighorn sheep use the Honeycombs WSA year-round. California bighorn sheep is a Federal candidate species for listing under the Endangered Species Act.

The WSA is part of the winter range of 20 to 30 northern bald eagles, which are Federally listed as a threatened species in Oregon. This WSA supports an unusually varied population of reptiles including whiptails, collared lizards, and leopard lizards. The WSA also provides crucial deer winter range.

Six plant species of special interest are found in the WSA. All are Federal candidate species for listing under the Endangered Species Act: sterile milkvetch (Astragalus sterilis), solitary milkvetch (Astragalus solitarius), Packard's blazing star (Mentzelia packardiae), Ertter's groundsel (Senecio ertterae), grimy ivesia (Ivesia rhypara), and Owyhee clover (Trifolium owyheense). The groundsel and the blazing star are annual species specific to Leslie Gulch ash deposits. Globally, they are found only in the southern portion of the WSA and on the two WSAs immediately to the south. Although not considered endangered or threatened, two fern species highly uncommon in the desert environment also occur at a few locations in the southern portion of the WSA and in the Honeycombs.

Juniper Gulch, located at the south end of the WSA, is one of the most ecologically complex sites in the WSA. The gulch contains numerous geologic formations, many junipers, and a large variety of plants, including at least two species of special interest. Here a drier Great Basin plant community meets a more montane plant community.

Diversity in the National Wilderness Preservation System

A. Expanding the diversity of natural systems and features as represented by ecosystems: Wilderness designation of the Honeycombs WSA would add an ecosystem (using the Bailey-Kuchler system) not presently represented in Oregon and represented in the National Wilderness Preservation System (NWPS) by only three areas. There are 66 other BLM areas in the state under study with this ecosystem. This information is summarized in Table 2.

Of the plant communities listed in the Owyhee Uplands section of the Oregon Natural Heritage Plan, the WSA contains the big sagebrush/bluebunch wheatgrass and big sagebrush/Idaho fescue communities, as stated in the EIS. Further, the Honeycombs Research Natural Area (RNA), contained within the WSA, was designed to fill the plant community cell need for sagebrush/needle-and-thread grass on cinders on the Owyhee Upland Province.

B. Assessing the opportunities for solitude or primitive recreation within a day's driving time (five hours) of major population centers: The

Table 2 - Ecosystem Representation

Bailey-Kuchler Classification	NWPS Areas areas	NWPS Areas acres	Other BLM Studies areas	Other BLM Studies acres
Province/Potential Natural Vegetation				
		NATIONWIDE		
Intermountain Sagebrush Province/ Sagebrush-Steppe	3	76,699	136	4,331,340
		OREGON		
	0	0	66	1,944,074

Table 3 - Wilderness Opportunities for Residents of Major Population Centers

Population Centers	NWPS Areas areas	NWPS Areas acres	Other BLM Studies areas	Other BLM Studies acres
Boise, Idaho	16	4,741,570	126	5,060,460

Honeycombs WSA is within a five-hour drive of one major population center (over 100,000). Table 3 summarizes the number and acreage of designated areas and other BLM study areas within five hours drive of the population center.

C. Balancing the geographic distribution of wilderness areas: The Honeycombs WSA would contribute to balancing the geographic distribution of areas within the National Wilderness Preservation System. There are only three existing wilderness areas within 100 miles of this WSA.

Manageability

(The area must be capable of being effectively managed to preserve its wilderness character.)

The Honeycombs WSA is capable of being managed to preserve its wilderness characteristics. There may be manageability problems associated with continued development of mining claims along the eastern boundary, maintenance of range projects around Sheephead Ridge, and continued use of the horse trap road and the road through Shadscale Flat.

Within the area to be designated as wilderness under the recommendation, there are five existing mining claims in the eastern portion of the WSA. There is a possibility that there could be development on these claims after wilderness designation. In this event, manageability as wilderness of the immediate area would be difficult.

The partial wilderness recommendation would enhance manageability by excluding from wilderness designation the area containing a concentration of existing range projects around Sheephead Ridge (Area A, Map 1) and Craig Gulch (Area B, Map 1)

where mining activity is likely to continue. Further, the road through Shadscale Flat and the branch from it would be closed. Closing the five miles of the branched, dead-end road in the Shadscale Flat area would allow revegetation of the road and remove its influence from approximately 1,050 acres. Approximately three miles of the Shadscale Flat road may receive periodic use every five to ten years by heavy equipment needed to maintain Shadscale Spring. This infrequent use would not prevent revegetation of the road or management of the area to preserve its wilderness characteristics.

Energy and Mineral Resource Values

The U.S. Geological Survey/U.S. Bureau of Mines (USGS/USBM) report, "Mineral Resources of the Honeycombs Wilderness Study Area, Malheur County, Oregon," USGS Bulletin 1741-A, identified no mineral resources in the WSA. The study indicates moderate potential for uranium, thorium, and lithium resources in sedimentary and volcanic rocks; moderate potential for arsenic, lead, mercury, molybdenum, and zinc resources in caldera moat-fill sedimentary rocks and quartz veins; and moderate potential for arsenic and mercury resources in hydrothermal vein systems. The study area has moderate potential for zeolite resources in air-fall tuff beds and tuffaceous sedimentary rocks, moderate potential for geothermal resources, and low potential for zinc resources in volcanic rocks. The study area has low potential for fluorite resources in lacustrine deposits, low potential for tin and copper resources in hydrothermal vein systems, and low potential for petroleum and natural gas resources in sedimentary rocks. The eastern part of the study area has identified resources of picture jasper. The USGS/USBM report states that the economic value of the picture jasper is considered to be low.

Oregon Department of Geology and Mineral Industries (DOGAMI) did reconnaissance geochemical surveys of 18 WSAs including the Honeycombs WSA. These are incorporated in a 1983 DOGAMI report titled "Geology and Mineral Resources of 18 BLM Wilderness Study Areas, Harney and Malheur Counties, Oregon." The Honeycombs WSA was reevaluated by BLM geologists in April 1988. In this reevaluation, the DOGAMI report, a heavy mineral analysis conducted by Barringer Resources, Inc., and a 1987 draft of the mineral resources evaluation conducted by the U.S. Geological Survey titled, "Mineral Resources of the Honeycombs Wilderness Study Area, Malheur County, Oregon" were used. This reevaluation is the basis of the information in the final EIS which reports that, based upon indirect evidence in some areas and quantitatively minimal direct evidence in other areas, the entire WSA is considered to have moderate potential for the occurrence of gold, silver, bentonite, perlite, and oil and gas.

While the analysis for the final EIS considered oil and gas resource potentials to be moderate, the USGS/USBM study found these potentials to be low.

There has been minor jasper extraction, but no present production of any mineral or geothermal resources occurs in the WSA.

In summary, quantities of various mineral and energy resources are unknown, picture jasper is present, and the potential for the occurrence of certain other mineral and all energy resources is moderate over the entire WSA.

As of May, 1991, there were 199 mining claims within the WSA.

Local Social and Economic Considerations

Livestock use at the current level of 1,755 AUMs and recreation use totaling 2,000 visitor days per year are the primary resource outputs that generate economic activity in the WSA. Local personal income generated annually from these existing use levels amounts to approximately $21,060 for livestock grazing and $24,000 related to recreation use of the WSA, for an overall total of $45,060.

Under the recommendation, livestock grazing would remain at 1,755 AUMs and overall recreation use would increase by 2,000 visitor days per year. Annual local personal income generated from resource outputs in the Honeycombs WSA would increase by approximately $24,000. There were no social issues identified in the study of this WSA.

Summary of WSA-Specific Public Comments

Public involvement has occurred throughout the wilderness review process. Certain comments received during the inventory process and early stages of the environmental impact statement (EIS) preparation were used to develop significant study issues and various alternatives for the ultimate management of those lands found to have wilderness values.

During formal public review of the Draft Oregon Wilderness Environmental Impact Statement and the Supplement to the Draft, a total of 47 comments specifically addressing the Honeycombs WSA were received. Of those, 25 were written and 22 were oral statements received at public hearings on the draft EIS and supplement. In general, 40 commenters supported wilderness designation for all or part of the WSA. Five commenters supported no wilderness for the WSA. Two commenters addressed the relative merits of the EIS, but took no formal position on wilderness designation.

Those favoring wilderness commented on the high scenic value and the uniqueness of the location, terrain, scenery, and recreation opportunities of the area; the importance of the area for recreation and wilderness experiences; and the protection wilderness designation would provide the natural resources, watershed, and ecology of the area. It was also commented that potential manageability problems were overstated. Many commenters noted that wilderness designation would complement designations of adjacent WSAs along the Owyhee Reservoir and Owyhee National Wild River for a continuous Owyhee wilderness complex.

Some commenters favored closing the Leslie Gulch boundary road, thus joining together Honeycombs WSA with Upper Leslie Gulch WSA (OR-3-74) and Slocum Creek WSA (OR-3-75).

Those opposing wilderness designation commented that another Federal designation would be more appropriate and that wilderness designation would limit access to the area.

No WSA-specific comments were received from any Federal or local agencies. The Idaho Air National Guard (IDANG) and the Oregon Department of Geology and Mineral Industries (DOGAMI) commented on the draft EIS. The IDANG expressed a concern over the possible conflict between low altitude overflights and the feeling of solitude sought by wilderness area users. DOGAMI commented that adequate consideration was not given to the possible significant mineral potential of the WSA.

There were two comment letters received on the final EIS.

Impacts on Resources

The following comparative impact table summarizes the effects on pertinent resources for all the alternatives considered including designation or nondesignation of the entire area as wilderness.

Table 4 - Comparative Summary of the Impacts by Alternative

Issue Topics	Recommendation (Partial Wilderness with Road Closure Alternative)
Impacts on Wilderness Values	Wilderness designation of 36,555 acres would protect and enhance existing wilderness values. On 2,445 acres recommended for uses other than wilderness, wilderness values would be impaired on two acres with further declines from other potential uses over the long term.
Impacts on Energy and Mineral Development	No impact on energy development is expected, since none is projected. Wilderness designation would result in foregone production from one projected gold/silver mine and one projected jasper mine. Production would occur from three jasper mines on existing claims.
Impacts on Vegetation	Six miles of ways and five miles of road would revegetate. Vegetation would be temporarily disturbed on two acres. Little or no change would occur to vegetation over the rest of the WSA.
Impacts on Wildlife	Wildlife habitat and populations would be maintained or slightly enhanced on the 36,555 acres designated wilderness. On the 2,445 acres not designated wilderness, wildlife habitat and populations would be maintained.
Impacts on Livestock Grazing	Existing livestock use would remain at 1,755 AUMs. Six miles of ways and five miles of road would be closed to vehicles, causing some inconvenience and a slight increase in cost to livestock operators. Improved livestock distribution would be foregone.
Impacts on Recreation Use	Overall recreation use would increase from approximately 2,000 visitor days per year to approximately 4,000 visitor days per year.
Impacts on Local Personal Income	Annual local personal income would increase by approximately $24,000.

All Wilderness Alternative	No Wilderness/No Action Alternative
Wilderness designation of 39,000 acres would protect and enhance existing wilderness values.	In the absence of wilderness designation, projected activities would both directly and indirectly impair wilderness values over approximately 1,550 acres (4 percent) of the WSA, with further declines from other potential uses over the long term.
No impact on energy development is expected, since none is projected. Wilderness designation would result in foregone production from one projected gold/silver mine and one projected jasper mine. Production would occur from three jasper mines on existing claims.	There would be no impact on energy or mineral development. Production would occur from one gold/silver mine and four jasper mines.
Eight miles of ways would revegetate. Little or no change would occur to vegetation over the rest of the WSA.	Approximately 120 acres of vegetation would be removed. Twenty acres of vegetation would be temporarily disturbed. Little or no change would occur to vegetation over the rest of the area.
Wildlife habitat and populations would be maintained or slightly enhanced throughout the WSA.	Mineral development would eliminate 120 acres of wildlife habitat, causing long term displacement of bighorn sheep and mule deer, and would eliminate or severely reduce local populations of reptiles and other small terrestrial species.
Existing livestock use would remain at 1,755 AUMs. Eight miles of ways would be closed to vehicles, causing some inconvenience and a slight increase in cost to livestock operators. Improved livestock distribution would be foregone.	Existing livestock use would remain at 1,755 AUMs. A spring would be developed, improving livestock distribution.
Overall recreation use would increase from approximately 2,000 visitor days per year to approximately 4,000 visitor days per year.	Overall recreation use would increase from approximately 2,000 visitor days per year to approximately 3,000 visitor days per year.
Annual local personal income would increase by approximately $24,000.	Annual local personal income would increase by approximately $12,000.

Wild Horse Basin Wilderness Study Area

1. The Study Area —12,680 acres

The Wild Horse Basin Wilderness Study Area (WSA) (OR-3-77B) is located east of Owyhee Reservoir in Malheur County, Oregon, approximately 26 miles south of Vale and 36 miles northwest of Jordan Valley. U.S. Highway 20 lies 20 miles northwest of the WSA and U.S. Highway 95 is 15 miles east of the area.

The WSA contains 12,100 acres of BLM lands and 580 acres of split-estate lands. In addition, a 40-acre parcel of private land is located in the southeast portion of the WSA, accessed by an existing way (See Table 1). The study area is crescent shaped, approximately 6.5 miles long east to west, and three miles wide north to south at its center. The boundary of the WSA consists of roads on the south and east and Bureau of Reclamation-administered land on the north and west. A dead-end road enters the WSA from the south near Indian Creek, forming part of the boundary and extends 3.5 miles to a developed spring in Wild Horse Basin. All boundary roads are considered to be high standard dirt roads. The acreage and boundary description vary from that in the Final Oregon Wilderness Environmental Impact Statement (EIS) due to the inclusion of 580 acres of split-estate lands acquired in a land exchange with the State of Oregon. The revised boundary is shown on Map 1.

The terrain varies from steep and rugged slopes fronting the Owyhee Reservoir to rimmed plateaus and rolling hills in the eastern portion of the WSA. The canyons and ridges contain numerous basalt outcrops and rims. Elevation ranges from 2,600 feet along the west boundary near Owyhee Reservoir to 4,700 feet along Owyhee Ridge near the east boundary. Vegetation in the WSA consists mainly of sagebrush, native bunchgrasses, and cheatgrass.

The WSA was initially identified and studied under section 603 of the Federal Land Policy and Management Act (FLPMA) with additional acquired split-estate lands studied under section 202. The WSA was included in the Final Oregon Wilderness Environmental Impact Statement filed in February, 1990. Two alternatives were analyzed in the EIS: an all wilderness alternative; and a no wilderness/no action alternative, which is the recommendation in this report. These lands are shown on Map 1.

2. Recommendation and Rationale

—0 acres recommended for wilderness
12,680 acres recommended for nonwilderness

The recommendation for the Wild Horse Basin WSA is to release the entire 12,680 acres for uses other than wilderness. Designation of the entire WSA as wilderness is the environmentally preferable alternative since it would result in the least change from the natural environment over the long term. However, the no wilderness recommendation would be implemented in a manner which would use all practical means to avoid or minimize environmental impacts.

The value of the benefits to be gained by retaining development options and continuing existing uses in the WSA—including projected geothermal exploration and continued use of roads and ways for livestock management, facility maintenance, and recreational access—combined with potential manageability concerns have a high value as compared with the limited wilderness values found in this area.

The no wilderness recommendation would preserve the option to explore the high potentials for geothermal resources and optical calcite, and the moderate potential for oil and gas which the WSA is considered to have.

The recommendation would allow continued use of roads and ways for livestock management, range improvement maintenance, and recreation. While recreational opportunities individually are good and collectively are outstanding, the steep terrain and confined configuration of the WSA limit these opportunities.

The no wilderness recommendation would eliminate potential wilderness management complications posed by use of the wild horse trap, maintenance of a spring development which is part of a water pipeline right-of-way, possible development of the private inholding, and use of the dead-end road.

The no wilderness recommendation for the Wild Horse Basin WSA may lead to the impairment of wilderness values, but the value of retaining development options and continuing existing uses in this area exceeds these limited wilderness values.

Table 1 provides a summary of land status and acreage for the study area.

3. Criteria Considered in Developing the Wilderness Recommendation

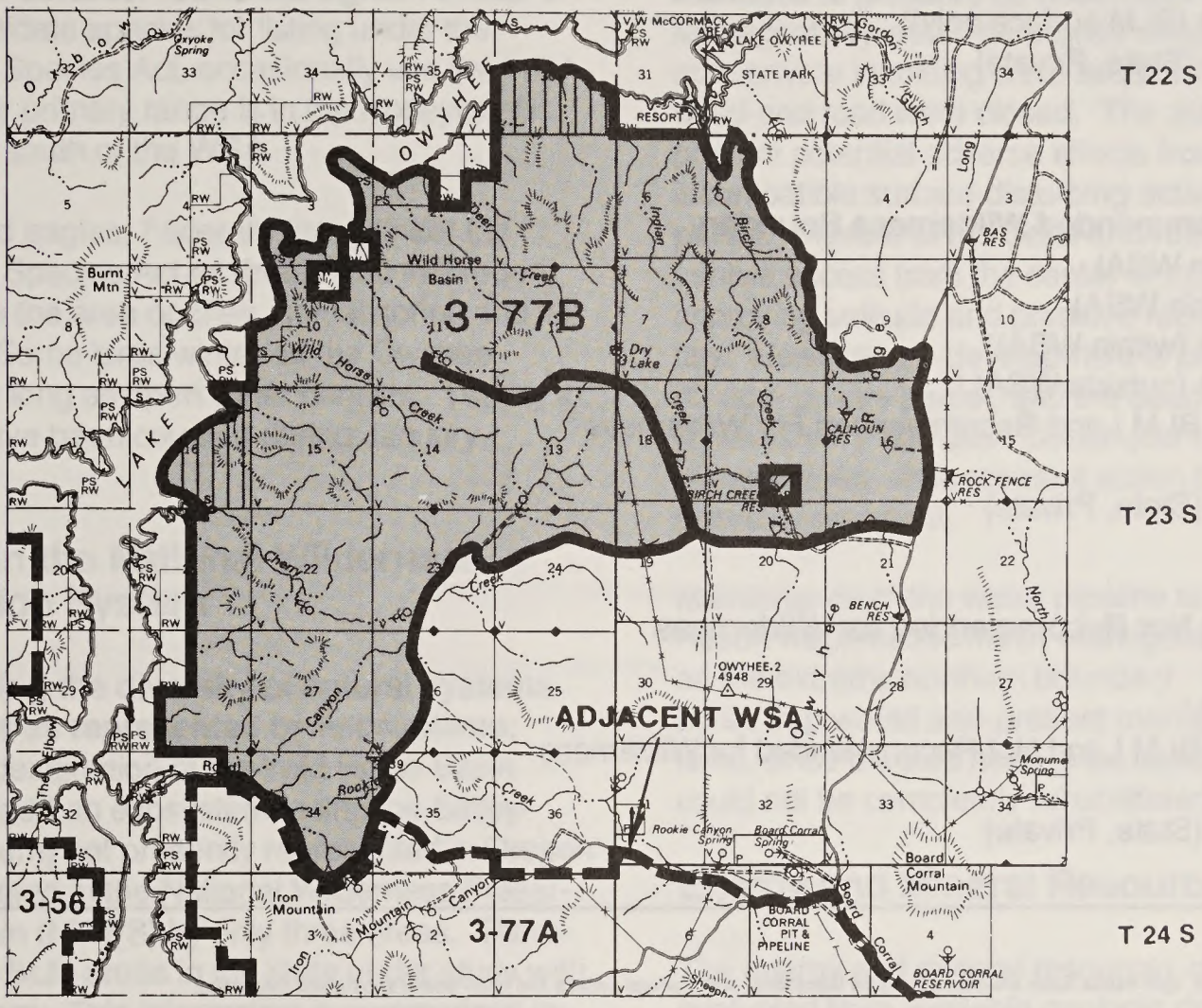
Wilderness Characteristics

A. Naturalness: The Wild Horse Basin WSA appears to be generally natural. The terrain varies from steep and rugged slopes fronting the Owyhee Reservoir to rimmed plateaus and rolling canyons in the eastern portion of the WSA. The canyons and ridges contain numerous basalt outcrops and rims. Elevation ranges from 2,600 feet along the west boundary near Owyhee Reservoir to 4,700 feet along Owyhee Ridge near the east boundary.

Vegetation is characteristic of a sagebrush-steppe ecosystem. The potential natural vegetative community in the WSA is Wyoming big sagebrush/ bluebunch wheatgrass. Seral stage is an expression of the relative degree to which the kinds, proportions, and amounts of plants in a community resemble that of a potential natural community. Early seral stage represents the greatest departure from the potential natural community. Currently, this vegetative community is predominately in an early to mid-seral ecological status. Pockets of this community in late seral status occur in areas relatively inaccessible to livestock.

Broom snakeweed, a low-growing invasive shrub, is scattered throughout the WSA. Isolated patches of riparian vegetation are found in the lower reaches of Birch Creek and Indian Creek and include species such as willow, rose, and golden currant.

Wildlife is moderately abundant due to plentiful water sources within and adjacent to the WSA. Mule deer occur throughout the area year-round. Antelope use the southeast portion of the study area during the summer. California bighorn sheep, a Federal candidate species for listing under the Endangered Species Act, occur to the south of the WSA in the Honeycombs area. Sheep occasionally use the WSA even though it is outside their primary range. Chukar, California quail, and mourning doves are common in the WSA. Most of the WSA is in the Three Fingers Wild Horse Herd Management Area which is managed to maintain a population of 75 to 150 wild horses. Northern bald eagles, Federally listed under the Endangered Species Act as threatened in Oregon, pass through the area on their annual spring and fall migrations. Some birds winter



RECOMMENDED FOR WILDERNESS (None)

RECOMMENDED FOR NONWILDERNESS

LAND OUTSIDE WSA RECOMMENDED FOR WILDERNESS (None)

SPLIT ESTATE

STATE (None)

PRIVATE

- N -

Wild Horse Basin Proposal

MAP-1

0 1 2 3

MILES

OR-3-77B
January, 1991

Table 1. Land Status and Acreage Summary of the Study Area

	Acres
Within Wilderness Study Area	
BLM (surface and subsurface)	12,100
Split Estate (BLM surface only)[1]	580
Inholdings (State, Private)	40
Total	12,720
Within the Recommended Wilderness Boundary	
BLM (within WSA)	0
BLM (outside WSA)	0
Split Estate (within WSA)[1]	0
Split Estate (outside WSA) [1]	0
Total BLM Land Recommended For Wilderness	0
Inholdings (State, Private)	0
Within the Area Not Recommended for Wilderness	
BLM	12,100
Split Estate [1]	580
Total BLM Land Not Recommended for Wilderness	12,680
Inholdings (State, Private)	40

[1] For purposes of this report, split-estate lands are defined only as those lands with Federal surface and non-Federal subsurface (minerals).

on the Owyhee Reservoir as long as open water persists. Twenty to 30 eagles have been counted during January surveys.

Eighteen interior unnatural features influence approximately 1,575 acres (12 percent) of the WSA. These features include three fences (2 miles), three reservoirs, four developed springs, a wildlife guzzler, a wild horse trap, and six ways (2 miles). The eastern portion of the WSA, adjacent to Owyhee Ridge where the terrain is level or gently rolling, is the most heavily influenced by the unnatural features.

Unnatural features outside the WSA that affect the naturalness of the area consist of boundary roads, livestock management developments, the Owyhee Resort and recreation cabins, and activities associated with Owyhee Reservoir. Most of these outside influences are concentrated to the east and northeast of the WSA and moderately diminish the naturalness in this portion of the WSA. The overall influence of human imprints on the naturalness of the area as perceived by the average visitor is minor.

B. Solitude: The Wild Horse Basin WSA offers outstanding opportunities for solitude. The broken topography provides screening on approximately 75 percent of the WSA, which substantially enhances a visitor's ability to experience solitude. The flat to gently rolling eastern portion of the WSA and the exposed slopes fronting the Owyhee Reservoir are most impacted by human activity with a corresponding decrease in solitude opportunities.

C. Primitive and Unconfined Recreation: The opportunities for primitive and unconfined recreation in the Wild Horse Basin WSA are outstanding. Recreational opportunities for hunting, bird watching, scenic and geological sightseeing and photography are good. No one activity is considered outstanding, but collectively the opportunities are outstanding.

Hikers are attracted to the scenery and challenging terrain. Hunters are drawn to game populations of deer, antelope, chukar, and quail. However, the steep terrain and confined configuration of the WSA limit these recreational opportunities.

D. Special Features: California bighorn sheep, a Federal candidate species for listing under the Endangered Species Act, occasionally use the WSA, although their primary range is in the Honeycombs area located south of the WSA.

Northern bald eagles, Federally listed under the Endangered Species Act as threatened in Oregon, pass through the area on their annual spring and fall migrations. Some birds winter on the Owyhee Reservoir as long as open water persists. Twenty to 30 eagles have been counted during January surveys.

Diversity in the National Wilderness Preservation System

A. Expanding the diversity of natural systems and features as represented by ecosystems: Wilderness designation of the Wild Horse Basin WSA would add an ecosystem (using the Bailey-Kuchler system) not presently represented in Oregon and represented in the National Wilderness Preservation System (NWPS) by only three areas. There are 66 other BLM areas in the state under study with this ecosystem. This information is summarized in Table 2.

Of the plant communities listed in the Owyhee Uplands section of the Oregon Natural Heritage Plan, the WSA contains the big sagebrush/ bluebunch wheatgrass community.

B. Assessing the opportunities for solitude or primitive recreation within a day's driving time (five hours) of major population centers: The Wild Horse Basin WSA is within a five-hour drive of one major population center (over 100,000). Table 3 summarizes the number and acreage of designated areas and other BLM study areas within five hours drive of the population center.

C.. Balancing the geographic distribution of wilderness areas: The Wild Horse Basin WSA would contribute to balancing the geographic distribution of areas within the National Wilderness Preservation System. There are only two existing wilderness areas within 100 miles of this WSA.

Manageability

(The area must be capable of being effectively managed to preserve its wilderness character.)

The Wild Horse Basin WSA is capable of being managed to preserve its wilderness characteristics. Manageability would be slightly enhanced if the 40-acre private inholding were acquired and the 3.5 mile dead-end road were closed. The acquisition would prevent potential adverse effects from access to, and incompatible surface-disturbing activities on, this parcel. Closure of the dead-end road would remove vehicle access from the center of the WSA, thus improving solitude and primitive recreation opportunities. However, no development is projected on the 40-acre private parcel, and the dead-end road receives very little use. Consequently, neither manageability enhancement action has been proposed or analyzed.

Maintenance of the water pipeline to the Owyhee Resort might cause minor manageability problems on the extreme northern boundary. Use of the wild horse trap would also present manageability problems, since it would need to be used periodically and could not be completely rehabilitated.

Energy and Mineral Resource Values

The energy and mineral resources of the WSA were evaluated from available geologic data supplemented by a limited amount of geochemical stream sediment and rock chip sampling by Oregon Department of Geology and Mineral Industries (DOGAMI) under BLM contract. This geochemical survey is the primary basis for the metallic minerals classification in the WSA. The 1983 DOGAMI report is entitled "Geology and Mineral Resources of 18 BLM Wilderness Study Areas, Harney and Malheur Counties, Oregon." The study area was reevaluated by BLM geologists utilizing the DOGAMI report and a heavy mineral analysis conducted by Barringer Resources, Incorporated.

Based on direct evidence, optical calcite has a high potential throughout the WSA due to its known occurrence in the southern portion of the WSA and the presence of similar rock types throughout the area. Also based on direct evidence, the entire WSA has a high potential for occurrence of geothermal resources due to the presence of a hot spring near the western boundary, numerous fault zones, and the abundance of igneous material with moderate to high silica content.

Table 2. - Ecosystem Representation

Bailey-Kuchler Classification	NWPS Areas areas	NWPS Areas acres	Other BLM Studies areas	Other BLM Studies acres
Province/Potential Natural Vegetation				
	NATIONWIDE			
Intermountain Sagebrush Province/ Sagebrush-Steppe	3	76,699	136	4,357,660
	OREGON			
	0	0	66	1,970,394

Table 3. - Wilderness Opportunities for Residents of Major Population Centers

Population Centers	NWPS Areas areas	NWPS Areas acres	Other BLM Studies areas	Other BLM Studies acres
Boise, Idaho	16	4,741,570	126	5,060,460

Based upon indirect evidence, the entire WSA is considered to have a moderate potential for the occurrence of oil and gas because of the possibility of oil-bearing rocks at depth. However, there has been no deep drilling in the vicinity that has penetrated the Tertiary volcanic cover.

While the Final Oregon Wilderness EIS notes that the entire WSA has a moderate potential for perlite, recent geologic fieldwork and subsequent publication of a geology and mineral resource map by DOGAMI in 1988 indicate an absence of perlite in the study area.

There is no present production of any mineral or energy resources in the WSA.

In summary, quantities of various mineral and energy resources are unknown, but the potentials for geothermal and optical calcite resources are high over the entire area, while the potential for oil and gas resources is moderate.

As of May 1991, there were 178 mining claims within this WSA.

Local Social and Economic Considerations

Livestock use at the current level of 1,513 AUMs and recreation use totaling 500 visitor days per year are the primary resource outputs that generate economic activity in the WSA. Local personal income generated annually from these existing use levels amount to approximately $18,156 for livestock grazing and $6,000 related to recreation use of the WSA, for an overall total of $24,156.

Under the recommendation, livestock grazing would remain at 1,513 AUMs and overall recreation use

would remain at 500 visitor days per year. Annual local personal income generated from resource outputs in the WSA would remain at approximately $24,000. There were no social issues identified in the study of the Wild Horse Basin WSA.

Summary of WSA-Specific Public Comments

Public involvement has occurred throughout the wilderness review process. Certain public comments received during the inventory process and early stages of the EIS preparation were used to develop significant study issues and various alternatives for the ultimate management of those lands found to have wilderness values.

During formal public review of the Draft Oregon Wilderness Environmental Impact Statement and the Supplement to the Draft, a total of 21 comments specifically addressing the Wild Horse Basin WSA were received. Of those, 12 were written and nine were oral statements received at the 24 public hearings on the draft EIS and supplement. In general, 17 commenters supported wilderness designation for the WSA, two commenters supported no wilderness for the WSA, and two commenters addressed the relative merits of the EIS, but took no formal position on wilderness designation.

Those favoring wilderness commented on the excellent opportunities for recreation, the high scenic values in the WSA including those created by the high plateaus, rock formations, diverse topography and beautiful vistas, the protection wilderness designation would provide the ecosystems, ecological diversity, gene pool, and nongame wildlife citing particularly the high quality bunchgrass communities and bighorn sheep and raptor habitat present. Further comments were that recreational use is not the only criterion for wilderness and that the benefits of preserving mineral exploration options do not outweigh wilderness values. It was also commented that the road separating the Wild Horse Basin WSA and the Honeycombs WSA (OR-3-77A) could be closed, thus joining the two WSAs.

Those favoring no wilderness commented that such a designation would leave the area open for vehicle-oriented recreation.

No WSA-specific comments were received from any Federal or local agencies. The Idaho Air National Guard (IDANG) and the Oregon Department of Fish and Wildlife (ODFW) commented on the draft EIS. The IDANG expressed a concern over the possible conflict between low altitude overflights and the feeling of solitude sought by wilderness area users. The ODFW commented that there was no discussion of the environmental consequences to the important habitat components for big game, nongame, or habitat diversity present in the WSA.

There were two comment letters received on the final EIS.

Impacts on Resources

The following comparative impact table summarizes the effects on pertinent resources for all the alternatives considered including designation or nondesignation of the entire area as wilderness.

Table 4 - Comparative Summary of the Impacts by Alternative

Issue Topics	Recommendation (No Wilderness/No Action Alternative)	All Wilderness Alternative
Impacts on Wilderness Values	In the absence of wilderness designation, projected activities would both directly and indirectly impair wilderness values over approximately 1,700 acres of the WSA, with further declines from other potential uses over the long term.	Wilderness designation of the entire 12,680-acre WSA would result in protection and enhancement of existing wilderness values.
Impacts on Energy and Mineral Development	There would be no impact on energy or mineral development.	There would be no impact on energy or mineral development.
Impacts on Vegetation	Little or no change would occur to vegetation.	The two miles of ways would revegetate. Little or no change would occur to vegetation on the rest of the WSA.
Impacts on Wildlife	Wildlife habitat and populations would be maintained throughout the WSA.	Wildlife habitat and populations would be maintained throughout the WSA.
Impacts on Livestock Grazing	Existing livestock use would remain at 1,513 AUMs. There would be no impact on livestock grazing.	Existing livestock use of 1,513 AUMs would continue, and two miles of ways would be closed causing some inconvenience and a slight increase in cost to livestock operators.
Impacts on Recreation Use	The area's recreation use level would remain at the current level of approximately 500 visitor days per year.	The area's recreation use level would remain at the current level of approximately 500 visitor days per year.
Impacts on Local Personal Income	Annual local personal income would remain at approximately $24,000.	Annual local personal income would remain at approximately $24,000.

Lower Owyhee Canyon Wilderness Study Area

1. The Study Area — 75,635 acres

The Lower Owyhee Canyon Wilderness Study Area (WSA) (OR-3-110) is located in Malheur County approximately 4 miles northwest of Rome, Oregon. Highway 95 lies 5 miles south of the WSA. The WSA contains 72,250 acres of BLM land and 3,385 acres of split-estate land in nine parcels. In addition, 1,020 acres of private land in 11 parcels, are located within the boundaries of the WSA (see Table 1).

The boundaries of the WSA are formed by high-standard gravel roads, scattered private property parcels, a Congressionally designated Wild and Scenic River boundary extending 0.25-mile from the Owyhee River in the southeast, and a line 300 feet from the rimrock along the Owyhee River in the east-central portion of the region. The study area is approximately 24 miles long north to south and is as wide as 9 miles east to west in the northern portion.

The Owyhee River Canyon is the central feature of this WSA. Along its 32-mile course through the study area, the canyon varies in width from 0.25-mile to several miles, and varies in depth from 800 to 1,000 feet. The sheer canyon walls recede near Ryegrass Creek, The Hole in the Ground, and Mud Creek. The topography of the tributaries also varies from canyon-like to gently rolling slopes. Bogus Creek is spring fed and provides the only perennial water other than the Owyhee River. Lambert Rocks and Chalk Basin, which narrow the canyon below Ryegrass Creek, are highly scenic because their white appearance provides a contrast to the surrounding country. Above the canyon rim, the plateau gently slopes upward towards the boundary of the WSA. The plateau has several playas that contain late winter and early spring water. Elevations range from 4,640 feet near the north boundary to 2,860 feet in the canyon bottoms near the south border.

Predominant vegetation in the WSA is big sagebrush with an understory of grasses. However, diversity of land forms and soils have resulted in a wide variety of ecological sites. On the plateaus above the Owyhee Canyon the major plant community is Wyoming big sagebrush/bluebunch wheatgrass. Chalk Basin contains unique ecological sites with barren soils and sparse vegetative communities. Where soils have developed or collected on the steep walls of the Owyhee River Canyon, the potential natural community is Wyoming big sagebrush/bluebunch wheatgrass, which is in pristine condition due to its inaccessibility to livestock. Large

slides of talus limit other vegetative growth to isolated pockets of giant wildrye. Along the river, riparian species include hackberry, chokecherry, willows, rushes and sedges.

The WSA was studied under Section 603 with additional acquired split-estate lands studied under Section 202 of the Federal Land Policy and Management Act (FLPMA), and it was included in the Final Oregon Wilderness Environmental Impact Statement (EIS) filed in February, 1990. There were four alternatives analyzed in the EIS: 1) an all wilderness alternative; 2) an all wilderness with acquisitions and road closures alternative (described below); 3) a partial wilderness with acquisitions and road closures alternative (described below), which is the recommendation of this report; and 4) a no wilderness/no action alternative. These lands are shown on Map 1.

Under the all wilderness with acquisitions and road closures alternative, a total of 76,875 acres would be recommended suitable as wilderness. This acreage includes private inholdings totaling 1,240 acres and the mineral estate of the 3,385 acres of split-estate which would be acquired, if the owners are willing, through purchase or exchange. Five dead-end roads totaling 7 miles in length, and 28.5 miles of ways would be closed. (The 1.5-mile road closure to the private inholding west of Bogus Ranch is proposed only if acquisition is successful.)

Under the recommendation, the partial wilderness with acquisitions and road closures alternative, a total of 65,360 acres would be recommended suitable for wilderness. The total acreage represents a minor revision of the Final Oregon Wilderness EIS whereby 65 acres of public lands were removed from the recommended category because it was necessary to designate a better defined boundary in the southeastern region of the WSA. This adjustment was necessary because the original crested wheatgrass seeding boundary is becoming obliterated by brush encroachment. The new boundary is 300 feet from the canyon rim. Private land totaling 1,200 acres and the mineral estate on 2,610 acres of split-estate would be acquired, if the owners are willing, through purchase or exchange. Four dead-end roads totaling 5 miles in length and 19.5 miles of ways would be closed. (The 1.5-mile road closure to the private inholding west of Bogus Ranch is proposed only if acquisition is successful.) A total of 10,375 acres would be recommended nonsuitable as wilderness.

2. Recommendation and Rationale

—65,360 acres recommended for wilderness
10,375 acres recommended for nonwilderness

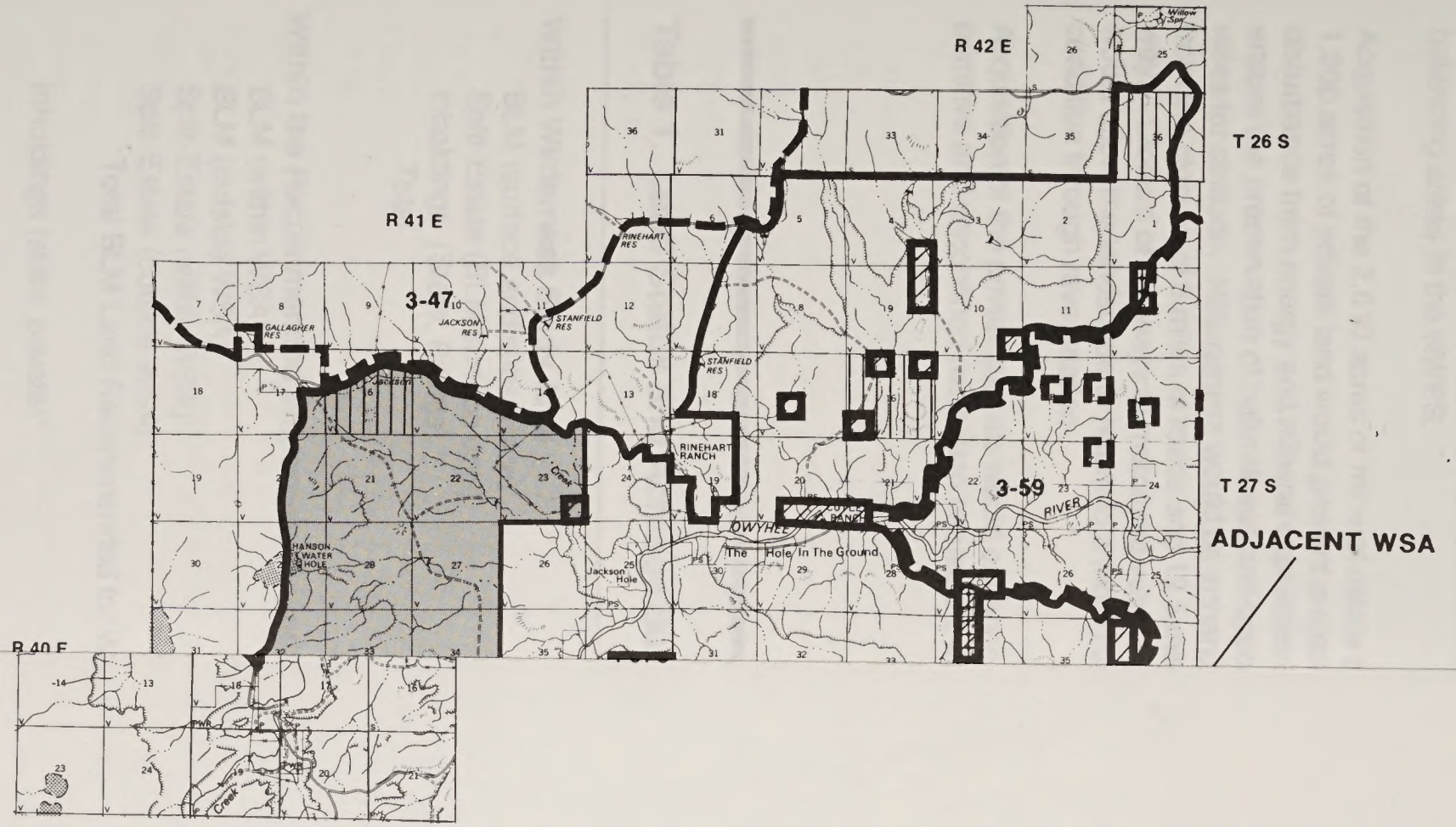
The recommendation for this WSA is to designate 65,360 acres as wilderness and release 11,540 acres for uses other than wilderness. An additional 1,200 acres of private land would become wilderness if purchased from willing owners.

The all wilderness with acquisitions and road closures alternative is considered to be the environmentally preferable alternative since it would result in the least change from the natural environment over the long term. However, the recommendation would be implemented in a manner which would use all practical means to avoid or minimize environmental impacts.

The 65,360 acres recommended for wilderness have high wilderness values which outweigh projected mineral development, range projects, an increase in AUMs, and continued vehicle use on 5 miles of roads and 19.5 miles of ways, which would be foregone.

In the portion recommended nonsuitable, projected mineral exploration would be allowed and areas considered unmanageable would be included. These areas include: 1) the northwest and extreme southern portions of the WSA (areas A and C, respectively), and 2) the Sand Springs region in the west-central portion of the WSA (area B). In all of these areas there is a moderate potential for the occurrence of gold, silver and mercury. The regions excluded also have low wilderness values because they have ways, range projects, a private parcel (in area A) and a cow camp (in area B).

Wilderness designation of 65,360 acres would protect and enhance existing wilderness values which include the best whitewater rafting in southeastern Oregon and some of the best in the northwestern United States. Special features would be protected including complex geologic formations; California bighorn sheep and northern bald eagle, both of which are candidates for Federal listing under the Endangered Species Act as threatened species; a diverse variety of raptors and rare plants; and over 100 archeological sites that provide a 9,000-year record of cultural adaptation to an arid environment.



RECOMMENDED FOR WILDERNESS

RECOMMENDED FOR NONWILDERNESS

LAND OUTSIDE WSA RECOMMENDED FOR WILDERNESS

SPLIT ESTATE

STATE (None)

PRIVATE

- N -

Lower Owyhee Canyon Proposal

MAP-1

0 1 2 3

MILES

OR-3-110
January, 1991

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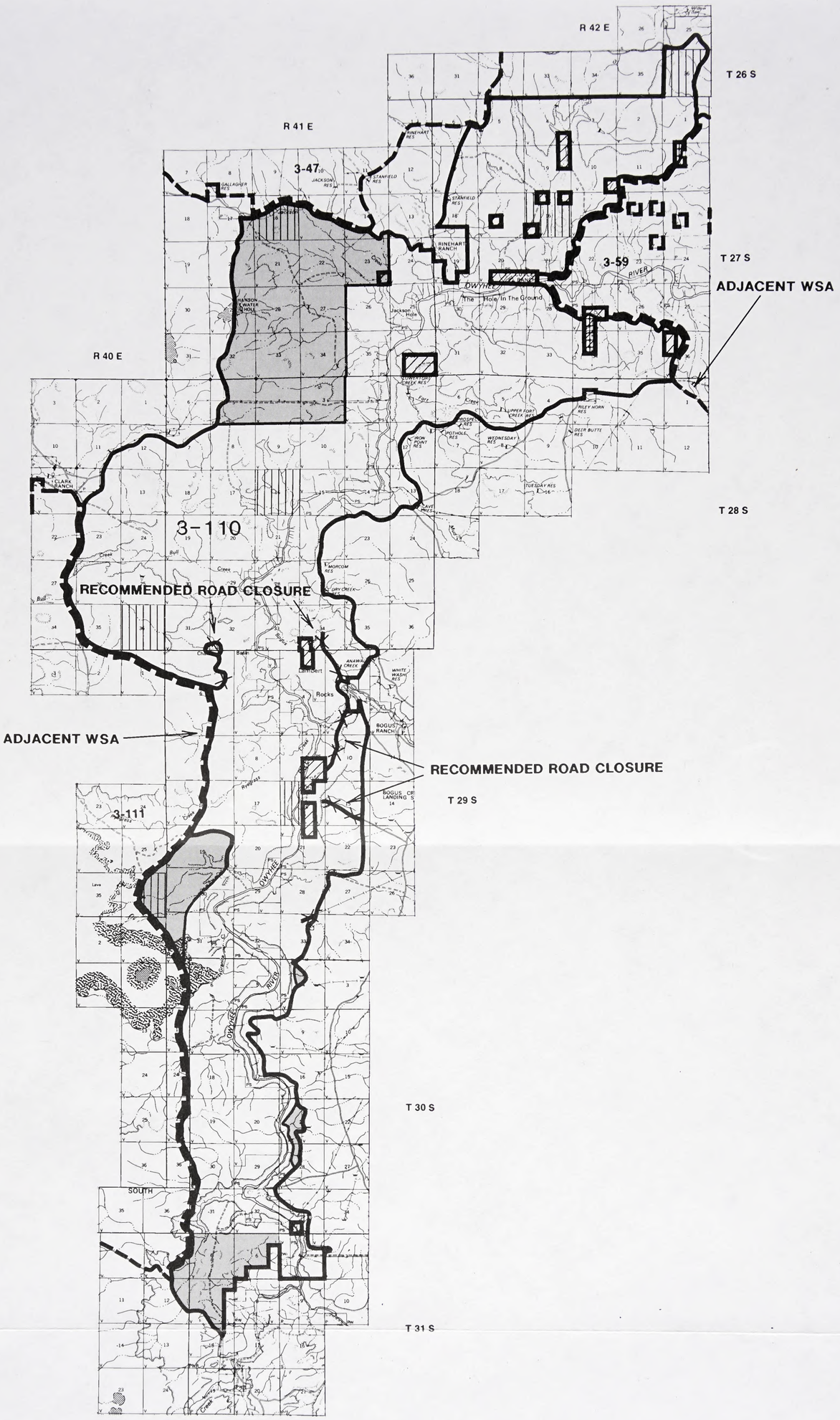


RECOMMENDED FOR WILDERNESS

RECOMMENDED FOR NONWILDERNESS

LAND OUTSIDE WSA RECOMMENDED FOR WILDERNESS

SPLIT ESTATE

STATE (None)

PRIVATE

N

Lower Owyhee Canyon Proposal
MAP-1

0 1 2 3
MILES

OR-3-110
January, 1991

RECOMMENDED LOWER CITY LIMIT
Recommended
and Rationale
wilderness
conveyances
Recommended for the
Recommended
Recommended

The recommendation would add ecological diversity to the National Wilderness Preservation System (NWPS) by including a combination of ecosystems not presently represented in the entire NWPS. In addition, the recommendation would contribute to balancing areas in the NWPS.

Acquisition of the 2,610 acres of mineral estate and 1,200 acres of private land would prevent projected disturbance from energy and mineral exploration and ensure the preservation of naturalness and opportunities for solitude. Naturalness would be enhanced from the closure of 5 miles of roads and 19.5 miles of ways. Closure of the ways to motorized vehicle use would allow the landscape to return to a more natural condition through revegetation .

Acquisition of the private parcels would enhance primitive and unconfined recreation because it would increase canyon areas available for recreation activities and would provide a larger core area which is not influenced by outside unnatural features.

Acquisition of 2,610 acres of mineral estate of the split estate lands would help maintain the area's degree of naturalness and enhance opportunities for solitude and primitive and unconfined recreation because short-term disturbances associated with projected mineral exploration would be prevented.

The 11,540 acres recommended nonsuitable would include 8,320 acres in the northwestern region (area A), 995 acres in the west-central region near Sand Springs (area B), and 2,160 acres in the southern region (area C). In the area recommended nonsuitable for wilderness, exploration for geothermal and mineral resources would cause short-term impacts to wilderness values.

Table 1. Land Status and Acreage Summary of the Study Area

	Acres
Within Wilderness Study Area	
BLM (surface and subsurface)	72,250
Split-Estate (BLM surface only)[1]	3,385
Inholdings (State, Private) [1]	1,020
Total	76,655
Within the Recommended Wilderness Boundary	
BLM (within WSA)	62,650
BLM (outside WSA)	100
Split-Estate (within WSA)[1]	2,610
Split-Estate (outside WSA)[1]	0
Total BLM Land Recommended for Wilderness	65,360
Inholdings (state, private)[1]	1,200
Within the Area Not Recommended for Wilderness	
BLM	9,600
Split-Estate[1]	775
Total BLM Land Not Recommended for Wilderness	10,375
Inholdings (State, Private)[1]	40

[1]Appendix 1 is a detailed description of inholdings and split-estate tracts included within the study. For purposes of this report, split-estate lands are defined only as those lands with Federal surface and non-Federal subsurface (minerals).

3. Criteria Considered in Developing the Wilderness Recommendations

Wilderness Characteristics

A. Naturalness: The Lower Owyhee Canyon WSA appears to be in an essentially natural condition, with 96 percent of the area in the WSA uninfluenced by unnatural features. From the river, or the plateaus overlooking the river, an expansive panorama of magnificent wind and water sculptured rock formations and palisades can be seen. Predominant vegetation in the WSA is Wyoming big sagebrush and bluebunch wheatgrass, however, diversity of land forms and soils has resulted in a wide variety of ecological sites. Riparian vegetation occurs along the Owyhee River but is limited by steep canyon walls and high water flows which flush out vegetation and debris. Large slides of talus limit other vegetative growth to isolated pockets of giant wildrye. Chalk Basin contains unique ecological sites with barren soils and sparse vegetative communities.

A high diversity and density of wildlife occur within the WSA. Rock cliffs in the canyon environment provide excellent nesting habitat for raptor species including golden eagles and prairie falcons. River otter, beaver, raccoon, Canada geese and chukar partridge may be seen along the river. California bighorn sheep have been reintroduced into the Owyhee Canyon in the vicinity of Iron Point and approximately 500 mule deer occur within the WSA. The Owyhee River supports a variety of fish, including channel catfish, black bullhead, yellow perch, whitefish, smallmouth bass, squawfish and suckers.

The rugged terrain has limited the number of unnatural features. Most of these features are associated with ranching operations. Some 33 unnatural features influence about 4 percent of the WSA. They include seven fences totaling 6 miles, nine reservoirs, a water tower, a fenced enclosure, a cow camp and corral, an old diversion dam, an abandoned canal ditch, and 12 ways totaling 28.5 miles. Outside sights and sounds affecting naturalness in the WSA include a seeding, 6 miles of fences, water towers, nine reservoirs, corrals, ranch buildings and mines. The outside sights and sounds are both near and distant, but do not diminish the WSA's naturalness to a substantial degree.

B. Solitude: The large size and abundant topographic screening of the WSA provides outstanding opportunities for solitude. The main canyon and numerous tributary drainages allow visitor movement to go relatively unnoticed. Topographic screening is outstanding in the canyonlands because they are deeply incised. Screening is limited on the sagebrush plateau because of the low vegetation, shallow depressions and low rolling hills and ridges.

The main canyon has the potential to concentrate visitors into one major corridor of use (the Owyhee River) and decrease opportunities for solitude there. This is offset, however, by the length and meandering character of the canyon and the presence of several tributaries which tend to disperse hikers and boaters.

C. Primitive and Unconfined Recreation: The area offers outstanding opportunities for primitive types of recreation, including whitewater boating, day hiking, camping, watersports, fishing, sightseeing, hunting, photography and birdwatching. Whitewater boating on the Owyhee River is considered to be the best in eastern Oregon and ranks with the best in the northwest United States. Floatboating on the portion of the Owyhee River within the WSA is possible during the spring. The steep, rugged topography of the Owyhee Canyon and its short tributaries restricts most foot travel to the canyon bottoms. Hiking the main canyon is possible for short distances but longer treks are blocked by many deep pools and sheer cliffs. Attractive campsites are numerous and fairly well spaced along the river, but few can be found elsewhere in the WSA.

Sightseeing and photographic opportunities are outstanding for enthusiasts willing to confront the difficulties of reaching and traveling through the isolated canyon of the WSA. Attractions include abundant and diverse wildlife, spectacular geologic formations and dramatic stretches of whitewater. Bird watching opportunities are also excellent. More than 150 passerine (song bird) species have been observed and waterfowl, shorebirds, raptors and upland game birds are also common. Mule deer, geese, ducks, chukar and valley quail provide good to excellent hunting opportunities, especially along the river. Poor access is the biggest deterrent to hunting, however this condition is considered to be an attribute by those hunters desiring a quality hunting experience in a wilderness setting.

D. Special Features: The Lower Owyhee Canyon WSA is characterized by contrasting topography between the Owyhee River, associated canyons and breaks, and the sagebrush plateaus overlooking the canyons. Complex geologic formations have been uncovered by erosion, leaving numerous layers of

strata exposed and readily observable for scientific study.

Riparian vegetation is concentrated in narrow bands and isolated pockets along the river. Hackberry, an unusual tree species for a desert ecosystem, occurs in groves. The Owyhee River Canyon contrasts with the surrounding arid environment and offers outstanding opportunities to study aquatic and riparian habitats in a desert area. Chalk Basin contains unique ecological sites with barren soils and sparse vegetative communities. One rare species, *Astragalus sterilis* or sterile milkvetch, which is a Candidate species for Federal listing as threatened or endangered by the U.S. Fish and Wildlife Service, is known to occur in the area.

Some of the oldest pack rat middens (nests) yet discovered in the Intermountain Sagebrush Province were found in the Owyhee River Canyon. Preserved organic material from pack rat middens has provided a record of vegetational changes over the past 30,000 years.

The canyon and breaks provide habitat for California bighorn sheep and several species of raptors, including the northern bald eagle, golden eagle and prairie falcons.

There is good evidence that a large number of archeological sites are concentrated along the river. A 1976 inventory in the Owyhee River Canyon from Crooked Creek to the upper end of the Owyhee Reservoir, plus earlier studies, indicate that the Owyhee Canyon and the adjacent plateaus have been used by humans for the past 12,000 years. The inventories identified 102 prehistoric and historic sites representing a wide diversity of types and time periods (e.g. prehistoric seasonal camps, shelters, petroglyphs, manufacturing and single activity areas, and historic homesteads, ranches, townsites and water wheels). Dirty Shame Rockshelter on Antelope Creek was excavated by a team from the University of Oregon in 1973 and provided a 9,000-year record of previously unknown cultural adaptation.

Diversity in the National Wilderness Preservation System

A. Expanding the diversity of natural systems and features as represented by ecosystems: Wilderness designation of this WSA would add a combination of ecosystems not presently represented in the entire National Wilderness Preservation System. There are 11 other BLM areas in the state under study with this combination of ecosystems. This information is summarized in Table 2.

Based on the Bailey-Kuchler method of classifying ecosystems, the WSA is in the Intermountain Sagebrush Province and its potential natural vegetation is sagebrush steppe and saltbush-greasewood. Of the plant communities listed in the Owyhee Uplands sections of the Oregon Natural Heritage Plan, the Lower Owyhee Canyon WSA contains two plant associations: big sagebrush/bluebunch wheatgrass, and alkaline vegetation mosaic with representative communities including greasewood, shadscale, saltgrass and spiny hopsage.

Of the major vegetative communities listed in the Basin and Range section of the Oregon Natural Heritage Plan, the WSA contains two plant associations: big sagebrush/bluebunch wheatgrass and alkaline vegetation mosaic with representative communities that include greasewood, shadscale, saltgrass and spiny hopsage.

B. Assessing the opportunities for solitude or primitive recreation within a day's driving time (five hours) of major population centers: The Lower Owyhee Canyon WSA is within a five hour drive of one major population center over 100,000). Table 3 summarizes the number and acreage of designated areas and other BLM study areas within a five hour drive of the population center.

C. Balancing the geographic distribution of wilderness areas: The Lower Owyhee Canyon WSA would contribute to balancing the geographic distribution of areas within the National Wilderness Preservation System. There are only three designated wilderness areas within 100 miles of this WSA.

Manageability.

(The area must be capable of being effectively managed to preserve its wilderness character.)

The portion of the WSA recommended for wilderness designation could be managed as wilderness. Manageability would be improved by closing the dead-end roads, which would enhance wilderness values by eliminating vehicle use and restoring the area to a more natural appearance through revegetation, acquiring the mineral estate of the split-estate land which would preclude mineral development on those parcels, and acquiring 1,200 acres of private land which would preclude access to and development of those lands. These actions are proposed under the recommendation.

Table 2. Ecosystem Representation

Bailey-Kuchler Classification	NWPS Areas areas	NWPS Areas acres	Other BLM Studies areas	Other BLM Studies acres
Province/Potential Natural Vegetation				
NATIONWIDE				
Intermountain Sagebrush Province/Sagebrush-Steppe & Saltbush-Greasewood	0	0	16	913,615
OREGON				
	0	0	11	606,972

Table 3. Wilderness Opportunities for Residents of Major Population Centers

Population Centers	NWPS Areas areas	NWPS Areas acres	Other BLM Studies areas	Other BLM Studies acres
Boise, Idaho	16	4,741,570	126	5,060,460

Excluding 10,375 acres in the northwestern, west-central and southern portions of the WSA from the area recommended suitable for wilderness would avoid problems with attempting to manage areas with low wilderness values and conflicts with potential development of mineral resources.

Energy and Mineral Resource Values

The U.S. Geological Survey (USGS) and U.S. Bureau of Mines together evaluated approximately 73,010 acres of the Lower Owyhee Canyon WSA during 1986 and 1987 and results from their survey were made available in a report published in 1990. According to their report entitled "Mineral Resources of the Lower Owyhee Canyon Wilderness Study Area, Malheur County, Oregon," #90-0515: the southern two-thirds of the WSA has low energy resource potential for oil and gas; the central and southern regions have low potential for geothermal energy resources; the entire WSA has low potential for gold, silver, lead, zinc, antimony and mercury; and the north and central regions have low potential for barite. The report also stated that the WSA contains an inferred sub-economic resource of 7.7 million short tons (st) of zeolite-bearing rock, less than 2,000 st of decorative stone, and sand and gravel covering approximately six square miles.

The energy and mineral resources of the WSA were also evaluated from available geologic data supplemented by a limited amount of geochemical stream sediment and rock chip sampling by the Oregon Department of Geology and Mineral Industries (DOGAMI) under BLM contract in 1983. The DOGAMI report is entitled "Geology and Mineral Resources of 18 BLM Wilderness Study Areas, Harney and Malheur Counties, Oregon." Using this report and a heavy mineral analysis conducted by Barringer Resources, Inc., the study area was reevaluated by BLM personnel. Based on indirect evidence, the entire WSA is considered to have a moderate potential for the occurrence of oil and gas, due to the inferred presence of buried marine sediments. Based on direct evidence and the probable presence of shallow thermal waters hot enough for direct heat use, approximately 100 acres in the central portion of the WSA is considered to have a moderate potential for the occurrence of

geothermal resources. Based on indirect evidence, the remainder of the WSA is also considered to have a moderate potential for the occurrence of geothermal resources.

No confirmed mineral deposits have been found in the WSA. However, gold silver and mercury are known to occur in portions of the WSA. Consequently, based on this direct evidence, approximately 23,150 acres, contained in ten separate areas scattered throughout the WSA, are considered to have a moderate potential for the occurrence of these minerals. Based on direct evidence, approximately 320 acres in the southwestern tip of the WSA are considered to have a moderate potential for the occurrence of zeolites. The remainder of the WSA is also considered to have a moderate potential for the occurrence of zeolites; however, this is based on indirect evidence and the inferred presence of zeolites. Based on the same indirect evidence, all of the WSA is considered to have a moderate potential for the occurrence of bentonite and fluorite.

The USGS and Bureau of Mines report differed from the DOGAMI and Barringer report in that it assigned lower potentials for most energy and mineral resource values. Oil, gas and geothermal energy resources, and gold, silver and mercury were all considered to have low potential for occurrence in the USGS and Bureau of Mines report, whereas all of these resources were given a moderate potential for occurrence in the DOGAMI report. As of May, 1991 there were three mining claims located within this WSA.

Local Social and Economic Considerations

Livestock use at the current level of 7,106 AUMs and recreation use totaling 6,000 visitor days per year are the primary resource outputs that generate economic activity in the WSA. Local personal income generated annually from these existing use levels amounts to approximately $85,000 for livestock grazing and $72,000 related to recreation use of the WSA, for an overall total of $157,000.

Under the recommendation, livestock grazing would remain at 7,106 AUMs and overall recreation use would remain unchanged at approximately 6,000 visitor days per year. Annual local personal income generated from resource outputs in the WSA would remain at approximately $157,000. There would also be an unknown level of increase attributable to the projected mineral development. There were no social issues identified with the study of the Lower Owyhee Canyon Wilderness Study Area.

Summary of WSA-Specific Public Comments

Public involvement has occurred throughout the wilderness review process. Certain comments received during the inventory process and early stages of the EIS preparation were used to develop significant study issues and various alternatives for the ultimate management of those lands found to have wilderness values.

During formal review of the Draft and Supplemental EIS, a total of 31 comments specifically addressing the Lower Owyhee Canyon WSA were received. Of those, 18 were written and 13 were oral statements received at public hearings on the draft and supplemental EIS. Twenty-two commenters supported wilderness designation and six opposed it.

Those favoring wilderness designation commented on the outstanding scenery and naturalness of the area. Three written responses favored the all wilderness with acquisitions alternative. Other reasons given for supporting wilderness for the Lower Owyhee Canyon WSA included the importance of protecting wildlife habitat and cultural resources, and the importance of offering wilderness recreation experiences to the public.

Those opposing wilderness designation believed that wilderness would not allow for multiple use, that there was already enough land set aside as wilderness or that Wild and Scenic River status already conferred enough protection for the region. One writer stated that wilderness designation was adverse to the mining industry and that the high number of private inholdings had already compromised the wilderness character of the area. Although no AUMs would be lost due to wilderness designation, one writer objected to the loss of forage that would occur under wilderness status.

Three State agencies made specific comments on the Lower Owyhee Canyon WSA. The Office of the Governor for the State of Oregon emphasized that the Owyhee River is a State Scenic Waterway and stated that the wilderness recommendation should be "compatible with continued management of the river corridor to provide outdoor recreation for Oregonians and enhance tourism." The Oregon Department of Fish and Game expressed disappointment that the impacts of wilderness designation on wildlife habitat were not discussed in detail. The Idaho Air National Guard expressed concern over "the possible conflict between low altitude overflights and the feeling of solitude sought by the wilderness area users." No WSA-Specific comments were received from any Federal or local agencies.

There was one comment received on the Final EIS specific to this WSA.

Impacts on Resources

The following comparative impact table summarizes the effects on pertinent resources for all of the alternatives considered, including designation or non-designation of the entire area as wilderness.

Table 4. Comparative Summary of Impacts by Alternatives

Issue Topics	Recommendation (Partial Wilderness with acquisitions and road closures Alternative)	All Wilderness Alternative
Impacts on Wilderness Values	Wilderness designation of 65,360 acres would protect and enhance existing wilderness values. The closure of 19.5 miles of ways and 5 miles of roads would further preserve wilderness values. Wilderness values on the 10,375 acres recommended nonsuitable would be impaired by continued motor vehicle access, and energy and mineral exploration and development, with further declines from other potential uses over the long term.	Wilderness designation of the entire 75,635 acres within the Lower Owyhee Canyon WSA would result in protection and enhancement of existing wilderness values.
Impacts on Energy and Mineral Development	No impact on energy development is expected. Wilderness designation would result in foregone production from one pit gold/silver mine. Continued production of decorative stone from three existing claims would occur.	No impact on energy development is expected. Wilderness designation would result in foregone production from one open pit gold/silver mine. Decorative stone production would continue from three existing placer mining claims.
Impacts on Utility Corridor Routing	The utility corridor would not be designated in the WSA and the powerline would be rerouted 1 mile to the west, adding negligible length to the route.	The utility corridor would not be designated in the WSA and the powerline would be rerouted 1 mile to the west, adding negligible length to the route.
Impacts on Vegetation	In the suitable area, 19.5 miles of ways and 5 miles of roads would revegetate. Overall, little or no change would take place to vegetative composition or ecological status on most of the WSA. In the nonsuitable area, vegetation removed on approximately 13 acres would be reclaimed following projected mineral exploration activities.	The 28.5 miles of ways would revegetate. Overall, little or no change would take place to vegetative composition or ecological status on most of the WSA.
Impacts on Wildlife	Wildlife habitat and populations would be maintained on 65,360 acres designated wilderness. In the nonsuitable portion, energy and mineral exploration activities would cause temporary disruption of wildlife habitat on approximately 13 acres.	Wildlife habitat and populations would be maintained on 75,635 acres designated wilderness.

All Wilderness with Acquisitions and road closures Alternative	No Wilderness/No Action Alternative
Wilderness designation of 76,875 acres would protect and enhance existing wilderness values. The closure of 28.5 miles of ways and 7 miles of roads would further preserve wilderness values.	In the absence of wilderness designation, projected activities would both directly and indirectly impair wilderness values over approximately 4,600 acres of the WSA, with further declines from other potential uses over the long term.
No impact on energy development is expected. Wilderness designation would result in foregone production from one open pit gold/silver mine. Decorative stone production would continue from three existing placer mining claims.	There would be no impact on energy and mineral development.
The utility corridor would not be designated in the WSA and the powerline would be rerouted 1 mile to the west, adding negligible length to the route.	There would be no impact on the utility corridor.
The 28.5 miles of ways and 7 miles of road would revegetate. Little or no change would occur to vegetation on the rest of the area.	Vegetation would be removed on approximately 270 acres. Range projects would result in an upward trend in ecological conditions. Increases in allocation of livestock forage would result in higher utilization levels of key forage species and decreases in residual ground cover, with declining trends in ecological status possible in one allotment.
Wildlife habitat and populations would be maintained on 76,875 acres designated wilderness.	Local declines in terrestrial wildlife habitat and populations, including mule deer and bighorn sheep, would occur on approximately 270 acres.

Table 4. Comparative Summary of Impacts by Alternatives (continued)

Issue Topics	Recommendation (Partial Wilderness with acquisitions and road closures Alternative)	All Wilderness Alternative
Impacts on Watershed	There would be little impact on watershed condition and water quality.	Watershed condition and water quality would be maintained.
Impacts on Livestock Grazing	A potential allocation of 10,123 AUMs of currently available forage would be foregone. The use of 19.5 miles of ways and 5 miles of roads for day-to-day livestock management would be precluded with some inconvenience and a slight increase in cost to livestock operators.	A potential allocation of 10,123 AUMs of currently available forage would be foregone. The use of 28.5 miles of ways for day-to-day livestock management would be precluded, causing some inconvenience and a slight increase in cost to livestock operators.
Impacts on Recreation Use	The area's recreation use level of 6,000 visitor days per year would not be affected.	The area's recreation use level of 6,000 visitor days per year would not be affected.
Impacts on Local Personal Income	Annual local income would remain at approximately $157,000 with an unknown level of increase from projected mineral development.	Annual local income would remain at approximately $157,000.

All Wilderness with Acquisitions and road closures Alternative	No Wilderness/No Action Alternative
Watershed condition and water quality would be maintained.	Watershed condition and water quality would decline slightly due to projected mineral and utility corridor development.
A potential allocation of 10,123 AUMs of currently available forage would be foregone. The use of 28.5 miles of ways and 7 miles of roads for day-to-day livestock management would be precluded causing some inconvenience and a slight increase in cost to livestock operators.	Construction of two reservoirs, 2 miles of fence and development of three springs would improve livestock distribution. An additional allocation of 10,123 AUMs would be realized.
The area's recreation use level of 6,000 visitor days per year would not be affected.	The area's recreation use level of 6,000 visitor days per year would not be affected.
Annual local income would remain at approximately $157,000.	Annual local income would increase by approximately $121,000.

Appendix 1 - Estimated Costs of Acquisition of Non Federal Holdings Within Areas Recommended for Designation[1]

	Legal Description (Prior to any Subdivision)[1]	Total Acreage	Number of Owners (If Parcel has been Subdivided)	Type of Ownerhsip by Estate (Federal, State Private, other) Surface Estate	Subsurface Estate	Presently Proposed for Acquisition (Yes, No)	Preferred Method of Acquisition (Purchase, Exchange, other)	Estimated Cost of Acquisition [2] Land Costs	Processing Costs
Parcel #1	T.27S., R.41E., Sec. 16: All.	640	1	Federal	State	No	N/A	N/A	N/A
Parcel #2	T.27S., R. 41E., Sec. 23: SE1/4SE1/4	40	1	Private	Private	No	N/A	N/A	N/A
Parcel #3	T.26S., R.42E., Sec. 36: All.	640	1	Federal	State	Yes	Exchange	N/A	3
Parcel #4	T.27S., R. 41E., Sec. 36: SE1/4, E1/2SW1/4	240	1	Private	Private/State	Yes	Purchase	$ 12,000	4
Parcel #5	T.27S., R.42E., Sec. 4: SE1/4SE1/4, Sec. 9: E1/2NE1/4	200	1	Private	Private	Yes	Purchase	$ 10,000	4
Parcel #6	T.27S., R.42E., Sec. 10: SE1/4SE1/4	40	1	Private	Private/State	Yes	Purchase	$ 2,000	4
Parcel #7	T.27S., R.42E., Sec. 12: E1/2NW1/4 west of road.	33	1	Private	Private/State	Yes	Purchase	$ 1,650	5
Parcel #8	T.27S., R.42E., Sec. 16: S1/2NW1/4 NW1/4NW1/4, S1/2NE1/4, NW1/4NE1/4, SE1/4, E1/2SW1/4, NW1/4SW1/4	520	1	Federal	State	Yes	Exchange		3
Parcel #9	T.27S., R.42E., Sec. 16: NE1/4NE1/4	40	1	Private	Private/State	Yes	Purchase	$ 2,000	4
Parcel #10	T.27S., R.42E., Sec. 16: NE1/4NW1/4	40	1	Private	Private/State	Yes	Purchase	$ 2,000	4
Parcel #11	T.27S., R.42E., Sec. 16: SW1/4SW1/4	40	1	Private	Private/State	Yes	Purchase	$ 2,000	4
Parcel #12	T.27S., R.42E., Sec. 17: NE1/4SW1/4	40	1	Private	Private/State	Yes	Purchase	$ 2,000	4
Parcel #13	T.27S., R.42E., Sec. 27: E1/2SW1/4, NW1/4SE1/4, south of road	80	1	Private	Private (40) Priv/St (40)	Yes Yes	Purchase	$ 64,000	5
	Sec. 34: E1/2NW1/4	80	1	Private	Priv/St (80)	Yes	Purchase	$ 64,000	5

Appendix 1 - Estimated Costs of Acquisition of Non Federal Holdings Within Areas Recommended for Designation[1]

	Legal Description (Prior to any Subdivision)[1]	Total Acreage	Number of Owners (If Parcel has been Subdivided)	Type of Ownerhsip by Estate (Federal, State Private, other) Surface Estate	Subsurface Estate	Presently Proposed for Acquisition (Yes, No)	Preferred Method of Acquisition (Purchase, Exchange, other)	Estimated Cost of Acquisition[2] Land Costs	Processing Costs
Parcel #14	T.27S., R.42E., Sec. 36: W1/2NW1/4	80	1	Private	Private/State	Yes	Purchase	$ 2,000	4
Parcel #15	T.28S., R.40E., Sec. 36: All	640	1	Federal	State	Yes	Exchange	N/A	3
Parcel #16	T.28S., R.41E., Sec. 16: All	640	1	Federal	State	Yes	Exchange	N/A	3
Parcel #17	T.28S., R.41E., Sec. 34: SW1/4SW1/4	40	1	Private	Private	Yes	Exchange	N/A	4
	T.29S., R.41E., Sec. 4: Lots 2 & 7	62.83	1	Private	Private	Yes	Exchange	N/A	4
Parcel #18	T.29S., R.41E., Sec. 9: SE1/4	160	1	Private	Private	Yes	Purchase	$ 160,000	4
	Sec. 16: NW1/4N1/4	40	1	Private	Private/State	Yes	Purchase	$ 40,000	4
Parcel #19	T.29S., R.41E., Sec. 16: W1/2	320	1	Federal	State	Yes	Exchange	N/A	3
Parcel #20	T.29S., R.41E., Sec. 16: W1/2SE1/4	80	1	Private	Private/State	Yes	Purchase	$ 64,000	4
	Sec. 21: NW1/4NE1/4	40	1	Private	Private	Yes	Purchase	$ 32,000	4
Parcel #21	T.29S., R.40E., Sec. 36: All.	640	1	Federal	State	No	N/A	N/A	N/A
Parcel #22	T.30S., R.40 1/2 E., Sec. 36: All	327.53	1	Federal	State	No	N/A	N/A	N/A
Parcel #23	T.31 1/2 S., R.40E., Sec. 36: All.	650.28	1	Federal	State	No	N/A	N/A	N/A
Parcel #24	T.30S., R.41E., Sec. 33: SE1/4SW1/4	40	1	Private	Private	Yes	Purchase	$ 40,000	4

[1]The estimated costs listed in this appendix in no way represent a formal appraised value of the land or mineral estate, but are rough estimates based on sales or exchanges of lands or mineral estates with similar characteristics to those included in the WSA. The estimates are for purposes of establishing a range of potential costs to the government of acquiring non-Federal holdings and in no way represent an offer to purchase or exchange at the cost estimate included in this appendix. Processing costs are all miscellaneous expenses other than land costs. These would include work month costs, appraisals, title work, escrow costs, etc. All lands identified in this table are in Oregon.

[2]Where exchange is the proposed acquisition method, only administrative costs of processing the exchange are shown. Land costs are not applicable. Where direct purchase is proposed, estimate of both the land costs and the processing costs is provided.

[3]Total District processing costs would be approximately $15,000 for parcels as identified, since they would be acquired under one action in an exchange with the State.

[4]Total District processing costs would be approximately $30,000 for parcels as identified, since they would be acquired under two separate actions in a purchase from private individuals.

[5]These parcels are adjacent to the WSA boundary and adjacent to parcels identified for acquisition under the recommendation for the Owyhee Breaks (OR-3-59) WSA. Total District processing costs would be approximately $30,000 for these parcels as well as those indicated for the Owyhee Breaks WSA.

Saddle Butte Wilderness Study Area

1. The Study Area —86,300 acres

The Saddle Butte Wilderness Study Area (WSA OR-3-111) is located in Malheur County, Oregon, approximately 10 miles north of the junction of U.S. Highway 95 and Oregon State Highway 78.

The WSA contains 81,380 acres of BLM land and eight parcels of split estate lands totaling 4,920 acres (see Table 1). It is bounded on the northeast, south and east by county gravel roads. The northwest boundary of the WSA is formed by state of Oregon land.

The notable wilderness feature in the WSA is the extensive system of lava tubes which winds through the Saddle Butte lava field. This lava tube system has been designated as the Saddle Butte Lava Tubes Area of Critical Environmental Concern (ACEC).

The WSA is roughly triangular in shape and contains three distinct landforms. The northern half of the WSA is a relatively high, flat plateau that slopes gradually toward Bull Creek to the east and Ryegrass Creek to the south. The south-central portion is a lava flow which forms a wide band of rough-surfaced ridges, hillocks, depressions and lava tubes. The southeastern tip of the WSA is a relatively flat lowland, except for a few erosional channels along the eastern boundary. Much of the WSA drains east directly into the Owyhee River. The generally flat topography traps runoff in small, shallow lake beds which usually are dry by early summer. Tub Spring is the only perennial water source in the area.

Big sagebrush/bluebunch wheatgrass is the major plant community in the WSA. Along the WSA's eastern boundary, the plant community has been influenced by fire and consists primarily of grasses and other herbaceous plants. Some concentrations of shadscale and Indian ricegrass occur along the southeastern boundary. Herbaceous vegetation also grows in the lava flow where soil pockets occur.

The WSA was studied under Section 603, with additional acquired split estate lands studied under Section 202 of the Federal Land Policy and Management Act (FLPMA), and was included in the Final Oregon Wilderness Environmental Impact Statement (EIS) filed in February 1990.

There were three alternatives analyzed in the EIS: an all wilderness alternative; a partial wilderness alternative, in which 61,160 acres would be recommended suitable as wilderness, the mineral estate of six parcels of split estate land totaling 3,080 acres would be acquired, and 25,140 acres along the eastern boundary of the WSA would be recommended nonsuitable; and a no wilderness/no action alternative, which is the recommendation in this report. These lands are shown on Map 1.

2. Recommendation and Rationale

—0 acres recommended for wilderness
86,300 acres recommended for nonwilderness

The recommendation for this WSA is to release the entire area for uses other than wilderness. The all wilderness alternative is considered to be the environmentally preferable alternative since it will result in the least change from the natural environment over the long term. However, the no wilderness alternative would be implemented in a manner which would use all practical means to avoid or minimize environmental impacts.

The recommendation would allow benefits from the proposed management actions which include range and wildlife improvement projects and the development of a powerline in a proposed utility corridor. These benefits are considered to outweigh the need for wilderness preservation because the principle lava features of the WSA would remain in an ACEC.

Large areas within the WSA currently are not available to livestock for grazing because of a lack of water. The recommendation would provide for seven reservoirs and two wells to be constructed. The reservoirs and wells would improve the distribution of livestock and thereby improve rangeland condition. Under the recommendation, an additional 9,772 AUMs of livestock forage would be allocated. In addition, 10 guzzlers would be installed to provide water for upland game birds, deer and antelope, which would allow their populations to increase.

3. Criteria Considered in Developing the Wilderness Recommendations

Wilderness Characteristics

A. Naturalness: The Saddle Butte WSA exhibits a high degree of naturalness. The Saddle Butte lava field is a rough and broken terrain with an expansive panorama and many lava tube caves that provide an unusual natural setting.

The WSA offers a moderate variety of habitats for game and nongame species typical of the sagebrush steppe, such as coyotes, mule deer, antelope, chukar and mourning doves. The study area supports approximately 75 mule deer during the summer. As many as 700 head of pronghorn antelope winter in the north end of the study area, making the WSA one of the most important big game winter ranges in eastern Oregon. The lava breaks, caves and tubes provide habitat for desert woodrats, yellow bellied marmots and bobcats. At least four species of bats have been observed in the WSA.

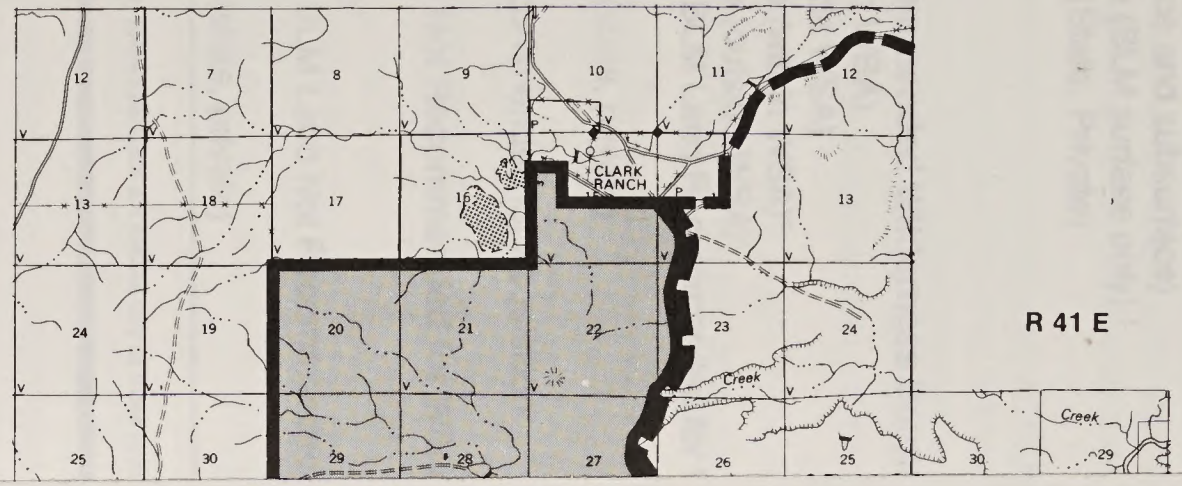
The large central portion of the WSA is virtually devoid of any signs of human activity. Thirteen unnatural features influence less than 2 percent of the WSA. These features consist of three reservoirs, four guzzlers and six ways totaling 16 miles.

B. Solitude: The WSA's large size and the exceedingly rugged terrain of the Saddle Butte lava field provide significant topographic screening and outstanding opportunities for solitude.Plateaus to the north and south of the Saddle Butte Lava Field are generally too flat to provide topographic screening. Little vegetative screening is provided anywhere in the WSA. The limited screening and the narrowness of the northern and northwestern extensions limit opportunities for solitude in these areas.

Outside sights and sounds include military jets on simulated low-level bombing runs, traffic on state Highway 78 (southern boundary) and ranching activities at the Clark Ranch (northern boundary) and Ryegrass Ranch (western boundary). Most of the intrusions upon solitude are brief or distant, and do not penetrate far into the WSA.

C. Primitive and Unconfined Recreation: The Saddle Butte WSA offers outstanding opportunities for cave exploration. Opportunities for geologic

R 40 E



R 41 E

T 28 S

RECOMMENDED FOR WILDERNESS (None)

RECOMMENDED FOR NONWILDERNESS

LAND OUTSIDE WSA RECOMMENDED FOR WILDERNESS (None)

SPLIT ESTATE

STATE (None)

PRIVATE (None)

- N -

Saddle Butte Proposal

MAP-1

0 1 2 3

MILES

OR-3-111
January, 1991

There were three alternatives analyzed in the EIS: an all wilderness alternative; a partial wilderness alternative, in which 61,160 acres would be recommended suitable as wilderness, the mineral estate of six parcels of split estate land totaling 3,080 acres would be acquired, and 25,140 acres along the eastern boundary of the WSA would be recommended nonsuitable; and a no wilderness/no action alternative, which is the recommendation in this report. These lands are shown on Map 1.

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The large central portion of the WSA is virtually devoid of any signs of human activity. Thirteen unnatural features influence less than 2 percent of the WSA. These features consist of three reservoirs, four guzzlers and six ways totaling 16 miles.

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Outside sights and sounds include military jets on simulated low-level bombing runs, traffic on state Highway 78 (southern boundary) and ranching activities at the Clark Ranch (northern boundary) and Ryegrass Ranch (western boundary). Most of the intrusions upon solitude are brief or distant, and do not penetrate far into the WSA.

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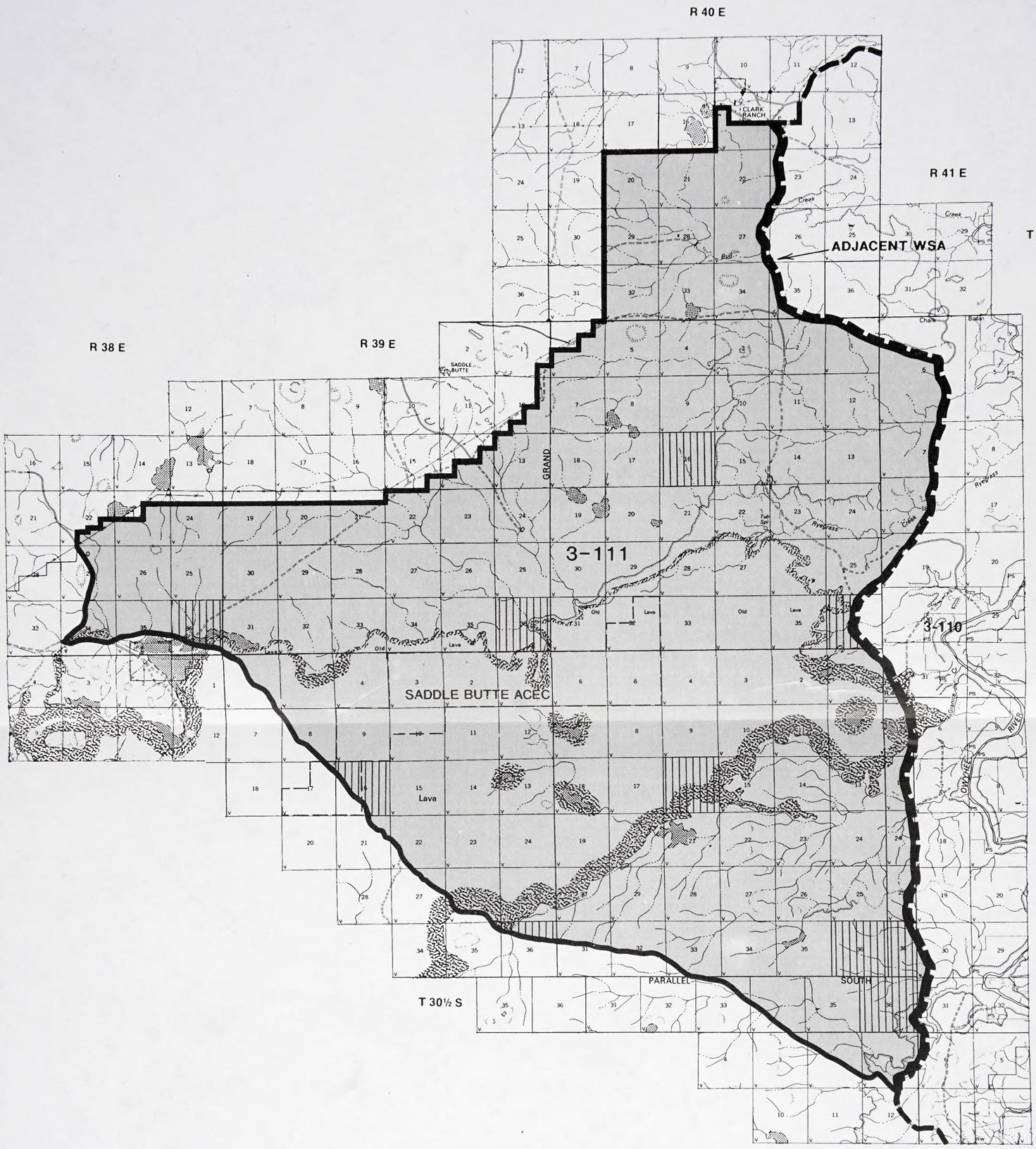

RECOMMENDED FOR WILDERNESS (None)

RECOMMENDED FOR NONWILDERNESS

LAND OUTSIDE WSA RECOMMENDED FOR WILDERNESS (None)

SPLIT ESTATE

STATE (None)

PRIVATE (None)

N

Saddle Butte Proposal
MAP-1

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OR-3-111
January, 1991

Table 1. Land Status and Acreage Summary of the Study Area

	Acres
Within Wilderness Study Area	
BLM (surface and subsurface)	81,380
Split-Estate (BLM surface only) [1]	4,920
Inholdings (State, Private)	0
Total	86,300
Within the Recommended Wilderness Boundary	
BLM (within WSA)	0
BLM (outside WSA)	0
Split-Estate (within WSA)[1]	0
Split-Estate (outside WSA)[1]	0
Total BLM Land Recommended for Wilderness	0
Inholdings (state, private)	0
Private Recommended for Acquisition	0
Within the Area Not Recommended for Wilderness	
BLM	81,380
Split-Estate[1]	4,920
Total BLM Land Not Recommended for Wilderness	86,300
Inholdings (state, private)	0

[1]For purposes of this report, split-estate lands are defined only as those lands with Federal surface and non-Federal subsurface (minerals).

sightseeing are excellent in the lava cave area. Herds of wild horses and wintering pronghorn antelope roam the flatter sections of the WSA and provide excellent opportunities for observing and photographing wildlife. Horseback riding opportunities are considered to be excellent throughout the WSA.

D. Special Features: The Saddle Butte lava tube system is the most extensive yet discovered in Oregon. The 7,040-acre ACEC contains approximately 8 to 10 miles of known lava tubes, many of which have collapsed, leaving only short segments intact. Twenty-two uncollapsed segments have been discovered. Most of the lava tube system lies within the WSA. The caves of the Saddle Butte system provide habitat for Townsend's big-eared bat, a Federal candidate for listing under the Endangered Species Act. Populations of this species are limited in size and confine their use to the lava tube caves.The caves provide habitat with areas of constant temperature and humidity. These unusual conditions promote the growth of mosses and ferns considered to be uncommon to the dry climate and create opportunities for educational and scientific endeavors.

The WSA contains the northernmost habitat of the kit fox, which is on the Oregon Department of Fish and Wildlife's list of threatened species.

Diversity in the National Wilderness Preservation System

A. Expanding the Diversity of Natural Systems and Features as Represented by Ecosystems: Wilderness designation of the Saddle Butte WSA would add a unique combination of two ecosystems not presently represented in the National Wilderness Preservation System. There are 11 other BLM areas in the State under study with this combination of ecosystems. The information is summarized in Table 2.

Of the plant communities listed in the Owyhee Upland section of the Oregon Natural Heritage Plan,

the WSA has a big sagebrush/bluebunch wheatgrass and alkaline vegetation mosaic with representative communities including greasewood, shadscale, saltbush and spiny hopsage.

B. Assessing the Opportunities for Solitude or Primitive Recreation Within a Day's Driving Time (five hours) of Major Population Centers: The Saddle Butte WSA is within a five hour drive of one major population center (over 100,000). Table 3 summarizes the number and acreage of designated areas and other BLM study areas within a five hour drive of the population center.

C. Balancing the geographic distribution of wilderness areas: The Saddle Butte Wilderness Study Area would contribute to balancing the geographic distribution of areas within the National Wilderness Preservation System. There are only three designated wilderness areas within 100 miles of the WSA.

Manageability:

(The area must be capable of being effectively managed to preserve its wilderness character.)

The Saddle Butte WSA could be managed as wilderness. The study area is large and has a solid configuration and high degree of naturalness.

Manageability would be improved if the mineral estate of the split-estate lands, which total 4,920 acres, were acquired. The acquisitions would prevent potential adverse effects from access to, and incompatible surface-disturbing activities on, these parcels.

Energy and Mineral Resource Values

BLM geologists prepared an evaluation of the energy and mineral resources in the Saddle Butte WSA using available geologic data supplemented by a

Table 2. Ecosystem Representation

Bailey-Kuchler Classification	NWPS Areas areas	NWPS Areas acres	Other BLM Studies areas	Other BLM Studies acres
Province/Potential Natural Vegetation				
NATIONWIDE				
Intermountain Sagebrush Province/Sagebrush steppe Saltbush-greasewood	0	0	16	902,950
OREGON				
	0	0	11	596,307

Table 3. Wilderness Opportunities for Residents of Major Population Centers

Population Centers	NWPS Areas areas	NWPS Areas acres	Other BLM Studies areas	Other BLM Studies acres
Boise, Idaho	16	4,741,570	126	5,060,460

limited amount of geochemical stream sediment and rock chip sampling by BLM geologists. Technical details of the evaluation were included in a BLM report published in 1983 that was entitled "Assessment of the Saddle Butte Geologic Resource Area." Based upon indirect evidence, the entire WSA is considered to have moderate potential for the occurrence of oil and gas.

There are no confirmed mineral deposits in the WSA. Based on indirect evidence, 4,900 acres in the northwest portion of the WSA are considered to have a moderate potential for the occurrence of gold and molybdenum.

As of May 1991, there were no mining claims within this WSA.

Local Social and Economic Considerations

Livestock use at the current level of 1,916 AUMs and recreation use totaling less than 100 visitor days per year are the primary resource outputs that generate economic activity in the WSAs. Local personal income generated annually from these existing use levels amounts to approximately $23,000 for livestock grazing and $1,000 related to recreation use in the WSAs, for an overall total of $24,000.

Under the recommendation, livestock grazing would increase by 9,772 AUMs. Overall recreation use would increase by approximately 50 visitor days per year. Annual local personal income generated from resource outputs in the WSA would increase by approximately $118,000. There were no social issues identified with the study of this WSA.

Summary of WSA-Specific Public Comments

Public involvement has occurred throughout the wilderness review process. Certain comments received during the inventory process and early stages of the EIS preparation were used to develop significant study issues and various alternatives for the ultimate management of those lands found to have wilderness values.

During formal public review of the Draft EIS and its Supplement, a total of 21 comments specifically addressing the Saddle Butte WSA were received. Sixteen comments were received in letters and five were given at public hearings. Of those, 18 commenters supported wilderness designation for all or part of the WSA and one supported the no wilderness alternative. Two commenters addressed the relative merits of the EIS, but took no formal position for or against wilderness designation.

Those favoring wilderness commented on the high value of this area for wilderness and that the area is unique in Oregon, citing the geologic formation of the lava tube system, including the caves that provide an environment which supports a collection of plant communities that are uncommon in eastern Oregon, and habitat for Townsend's big-eared bat, a Federal candidate for listing under the Endangered Species Act.

Two letters were received from Federal and State agencies on the Draft EIS and its Supplement. The Bonneville Power Association of the Department of Energy supported the nonsuitable recommendation for the WSA. The Idaho Air National Guard expressed concern about conflicts that could arise because their low-altitude overflights might disturb individuals seeking solitude if the WSA were designated wilderness, but they did not express an opinion for or against wilderness designation. No WSA-specific comments were received from any local agencies.

There were two comments received on the Final EIS specific to this WSA.

Impacts on Resources

The following comparative impact table summarizes the effects on pertinent resources for all the alternatives considered including designation and nondesignation of the entire area as wilderness.

Table 4. Comparative Summary of the Impacts by Alternative

Issue Topics	Recommendation (No Wilderness/No Action Alternative)
Impacts on wilderness Values	In the absence of wilderness designation, projected activities would impair wilderness values over approximately 4,080 acres with further declines from other potential uses over the long term.
Impacts on Energy and Mineral Development	There would be no impact to energy and mineral development.
Impacts on Utility Corridor Routing	Utility corridor would be routed as proposed.
Impact on Vegetation	Little change would occur to vegetation. Utilization of forage species would increase. Vegetation would be disturbed on 50 acres.
Impacts on Wildlife	Upland game birds, antelope and deer populations would increase due to the construction of 10 guzzlers, seven reservoirs and two wells. Wildlife habitat would be altered on 50 acres.
Impacts on Livestock Grazing	An increased allocation of 9,772 AUMs would occur. Construction of seven reservoirs and two wells would enhance livestock distribution. Vehicle use by operators would continue on 16 miles of ways.
Impacts on Recreation	There would be a slight increase in visitor days by approximately 50 visitor days per year due to improved opportunities for hunting.
Impacts on Local Personal Income	Annual local personal income would increase by approximately $118,000.

Partial Wilderness Alternative	All Wilderness Alternative
Wilderness designation would protect wilderness values on 61,160 acres. Wilderness values on the 25,140 acres recommended nonsuitable would be impaired over approximately 3,200 acres with further declines from other potential uses over the long term.	Wilderness designation of the entire 86,300 acres within the WSA would result in the protection and enhancement of existing wilderness values.
No impact to energy and mineral development is expected.	No impact to energy and mineral development is expected.
Utility corridor would be routed as proposed.	Route of potential utility corridor would be relocated to the west of the WSA, adding 9.3 miles to its length and increasing construction and annual costs.
Little or no change would occur to vegetation. Nine miles of ways would revegetate. Nine miles of ways would revegetate in two to three growing seasons.	Little or no change would occur to vegetation. Sixteen miles of ways would revegetate in two to three growing seasons.
Upland game birds, antelope and deer populations would increase slightly due to the construction of 10 guzzlers, seven reservoirs and two wells. Wildlife habitat would be altered on 30 acres.	Populations of upland game birds and other wildlife species would be maintained at natural levels.
An increase allocation of 9,772 AUMs would be foregone. Vehicle use of 9 miles of ways would be precluded, causing inconvenience and a slight increased cost to livestock operators.	An increase of 9,772 AUMs would be foregone. Vehicle use of 16 miles of ways would be precluded, causing inconvenience and a slight increased cost to livestock operators.
The area's recreation use level of less than 100 visitor days per year would remain stable, although the type of recreation use would shift from motorized to more primitive, non-motorized types of recreation in the suitable portion and remain unchanged in the nonsuitable portion.	The recreation use level of less than 100 visitor days per year would be slightly reduced. Wilderness designation would result in a change to primitive, non-motorized recreation use.
Annual local personal income would remain at approximately $24,000.	Annual local personal income would decrease by approximately $100.

Bowden Hills Wilderness Study Area

1. The Study Area —59,900 acres

Bowden Hills Wilderness Study Area (WSA) (OR-3-118) is located along U.S. Highway 95, in Malheur County, Oregon, approximately 36 miles north of McDermitt, Nevada. The WSA contains 56,140 acres of BLM land and seven parcels of split-estate land totaling 3,760 acres (see Table 1).

The WSA is roughly square in shape, is about 11 miles long and 10 miles wide, and bordered mostly by BLM and Malheur County gravel roads. U.S. Highway 95 forms about 4 miles of the southwestern boundary, and fenced seedings border portions of the southern and southeastern edges. A dead-end gravel road extends approximately 5 miles into the north-central portion of the WSA, forming part of the boundary. For 0.25-mile along its northeastern tip, the WSA adjoins private land of the Bowden Ranch. All other adjoining lands are public.

Topography in the WSA consists of low rolling hills running north and south, and associated benches and shallow valleys. A large flat lies along the northwestern edge of the study area. The eastern portion contains higher ridges and prominent rims.

Surface water flows to the north, west and east via a number of small drainages. The WSA contains no perennial streams or springs. Vegetation is typically a mixture of sagebrush and bunchgrass. Most of the WSA is composed of three plant communities, each of which comprises approximately one-third of the area within the WSA: Wyoming big sagebrush-bluebunch wheatgrass, black sagebrush-bluebunch wheatgrass and shadscale-Indian ricegrass. The remainder of the area is divided between the black sagebrush-bottlebrush squirreltail community and low sagebrush-Sandberg's bluegrass community. Herbaceous perennials occur infrequently, and where found include phlox, daisy fleabane, wild onion, locoweed and arrowleaf balsamroot.

The WSA was studied under Section 603 with additional acquired split estate lands studied under Section 202 of the Federal Land Policy and Management Act (FLPMA), and was included in the Final Oregon Wilderness Environmental Impact Statement (EIS) filed in February, 1990.

There were three alternatives analyzed in the EIS: 1) an all wilderness alternative; 2) a partial wilderness with acquisitions alternative, in which 45,260 acres of public land would be recommended suitable; this includes six parcels of split-estate land

totaling 3,160 acres that would be acquired, if the owners are willing, through purchase or exchange, and 14,640 acres of public land along the western edge of the WSA would be recommended nonsuitable as wilderness; and 3) a no wilderness/no action alternative (the recommendation in this report). These lands are shown on Map 1.

2. Recommendation and Rationale

—0 acres recommended for wilderness
59,900 acres recommended for nonwilderness

The recommendation for this WSA is to release the entire area for uses other than wilderness. The all wilderness alternative is considered to be the environmentally preferable alternative since it would result in the least change from the natural environment over the long term. However, the no wilderness alternative would be implemented in a manner which would use all practical means to avoid or minimize environmental impacts.

Wilderness characteristics are limited in this WSA, while opportunities exist to allocate additional AUMs for livestock, allow for energy and mineral exploration for which there is moderate potential for the occurrence of geothermal energy, oil and gas, and gold; construct a power transmission line in a potential utility corridor and an access road along the western edge of the WSA, and install a wildlife guzzler to benefit deer, antelope and kit fox populations.

The WSA's wilderness characteristics are considered to be relatively low, especially for primitive and unconfined recreation opportunities. The WSA provides limited opportunities for hunting, sightseeing, birdwatching, horseback riding, hiking, backpacking, camping and photography, but none of these opportunities are outstanding, and there are no special features to attract and concentrate visitors. Unnatural features outside of the WSA that affect the naturalness of the area consist of boundary roads, the five-mile dead-end road, livestock grazing developments, and buildings and associated developments at Bowden Ranch, which is just outside the northeastern corner of the WSA. The sights and sounds emanating from traffic on U.S. Highway 95 detract from opportunities for solitude along much of the WSA's western edge.

The recommendation would allow for the proposed livestock grazing increase of 1,440 AUMs in affected pastures within the WSA boundary. Although no development is projected, there is moderate potential for oil and gas in the WSA, and a moderate potential for the occurrence of geothermal resources and gold in the southwest and northwest portions of the study area, respectively. It is along the northwestern edge of the WSA where little topographic screening is provided by the area's low vegetation. Exploration in the southwestern portion of the WSA for geothermal resources could involve the drilling of two 4,000-foot deep geothermal gradient wells, but would involve no new road construction as both sites would be located near existing ways. Construction of a utility corridor and access road for possible future development would cross 6 miles of the western edge of the WSA; this area includes much of the flat terrain lying along the WSA's northwestern edge. The 500-kV power transmission line would be through a potential north-south corridor.

Construction of the wildlife guzzler near the center of the WSA would benefit both game and nongame species by expanding the amount of usable habitat that previously could not be occupied because of lack of water. It was determined that this guzzler would not be allowable if the area were designated wilderness.

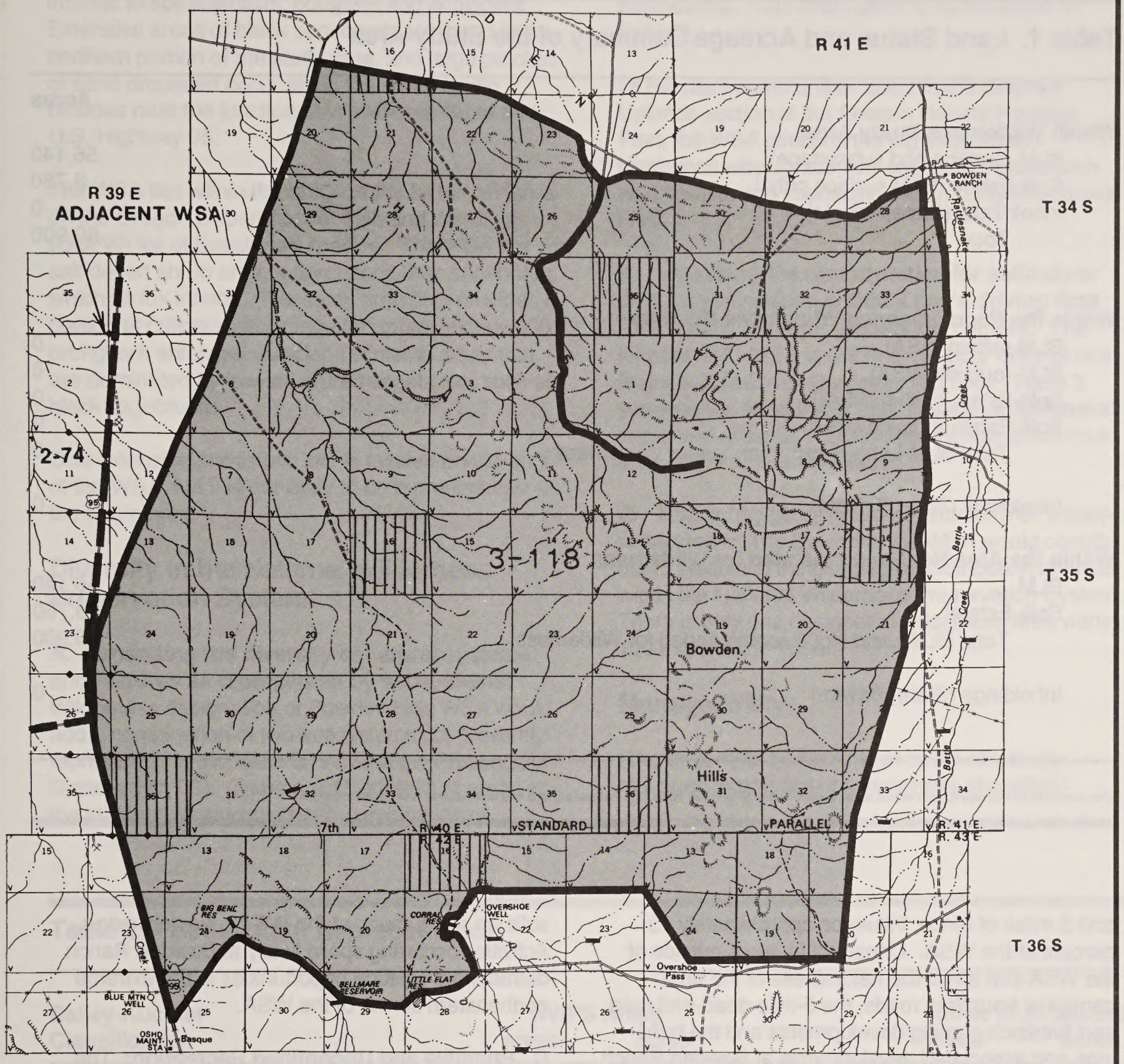
3. Criteria Considered in Developing the Wilderness Recommendations

Wilderness Characteristics

A. Naturalness: Bowden Hills WSA appears to be generally natural. Much of the eastern edge and the center of the WSA are devoid of signs of human activity. Fault-line scarps are common in the WSA, where they appear as rimrock-lined mesas projecting above rolling hills.

Wildlife is plentiful in the WSA. Pronghorn antelope occupy the area all yearlong. A relatively small population of approximately 50 individuals summers there and winter herds number from 200 to 400 head. A small population of mule deer numbering approximately 50 individuals summers in the area and winter herds can reach 200 head. Golden eagles and several species of hawks nest on rimrock ledges.

Fourteen interior unnatural features, which include nine ways totaling 19 miles, four livestock reservoirs



RECOMMENDED FOR WILDERNESS (None)

RECOMMENDED FOR NONWILDERNESS

LAND OUTSIDE WSA RECOMMENDED FOR WILDERNESS (None)

SPLIT ESTATE

STATE (None)

PRIVATE (None)

-N-

Bowden Hills Proposal

MAP-1

0 1 2 3

MILES

OR-3-118

January, 1991

Table 1. Land Status and Acreage Summary of the Study Area

	Acres
Within Wilderness Study Area	
BLM (surface and subsurface)[1]	56,140
Split-Estate (BLM surface only)[1]	3,760
Inholdings (State, Private)	0
Total	59,900
Within the Recommended Wilderness Boundary	
BLM (within WSA)	0
BLM (outside WSA)	0
Split-Estate (within WSA)[1]	0
Split-Estate (outside WSA[1]	0
Total BLM Land Recommended for Wilderness	0
Inholdings (State, Private)	0
Within the Area Not Recommended for Wilderness	
BLM	56,140
Split-Estate[1]	3,760
Total BLM Land Not Recommended for Wilderness	59,900
Inholdings (State, Private)	0

[1]For purposes of this report, split estate lands are defined only as those lands with Federal surface and non Federal subsurface (minerals).

and 5 miles of fence, influence approximately 13 percent of the WSA. Unnatural features outside of the WSA that affect the naturalness of the area consist of boundary roads, the 5-mile dead-end road, and livestock grazing developments and the buildings and associated developments at Bowden Ranch that is located just outside of the northeastern corner of the WSA.

B. Solitude: Opportunities for solitude are outstanding in the WSA. The uniform shape and large size of the study area substantially enhance a visitor's ability to experience solitude. Topographic screening is good, except on the flats along the northwestern edge of the WSA where little screening is provided by the area's low vegetation. Visitors can easily find a secluded spot in the rolling terrain, but there are no special features to attract and concentrate visitors.

The sights and sounds emanating from traffic on U.S. Highway 95 detract from opportunities for solitude along much of the WSA's western edge. Activities occurring sporadically at Bowden Ranch detract from solitude opportunities in the extreme northeastern corner of the WSA.

C. Primitive and Unconfined Recreation: The WSA provides opportunities for hunting, sightseeing, horseback riding, hiking, backpacking, camping, bird watching and photography, although none of these opportunities are outstanding. Occasional hunting for deer, antelope and chukar occurs in the study area. However, game populations are small compared to nearby areas, and hunting pressure is light. Vehicle use also is light because of the lack of attractive features and activities.

D. Special Features: The WSA is one of the few areas where black sagebrush and sand dropseed occur in southeastern Oregon, and it is the most northerly distribution of these species. These vegetative types are dependent upon unusual combinations of soils and exposure, and are of

interest to soil scientists, botanists and ecologists. Extensive areas of black sagebrush are found in the northern portion of the study area, and large patches of sand dropseed occur along the south-facing hillsides near the junction of Whitehorse Road and U.S. Highway 95.

The WSA lies within the range of the kit fox, which is on the Oregon Department of Fish and Wildlife's (ODFW) list of threatened species. The WSA is a salt desert shrub area, a dryer zone than sagebrush, which kit fox inhabit. The study area also provides a portion of critical winter range for approximately 400 pronghorn antelope. Antelope winter in areas that are dominated by low-structured vegetation, such as black sagebrush.

One extensive prehistoric site is located on the edge of the WSA, but it is not likely to be representative of the entire area.

Diversity in the National Wilderness Preservation System

A. Expanding the diversity of natural systems and features as represented by ecosystems: Wilderness designation of Bowden Hills WSA would add a combination of two ecosystems not presently represented in the National Wilderness Preservation System (NWPS). There are 11 other BLM areas in the state under study with this combination of ecosystems. This information is summarized in Table 2.

Of the plant communities listed in the Owyhee Uplands section of the Oregon Natural Heritage Plan, the WSA contains the big sagebrush-bluebunch wheatgrass, low sagebrush-bluebunch wheatgrass, and shadscale-Indian ricegrass communities.

B. Assessing the opportunities for solitude or primitive recreation within a day's driving time (five hours) of major population centers: The Bowden Hills WSA is within a five hour drive of one major population center (over 100,000). Table 3 summarizes the number and acreage of designated areas and other BLM study areas within a five hour drive of the population center.

C. Balancing geographic distribution of wilderness areas: The Bowden Hills WSA would contribute to balancing the geographic distribution of areas within the National Wilderness Preservation System. There is only one designated wilderness area within 100 miles of the WSA.

Manageability:

(The area must be capable of being effectively managed to preserve its wilderness character.)

Table 2. - Ecosystem Representation

Bailey-Kuchler Classification	NWPS Areas areas	NWPS Areas acres	Other BLM Studies areas	Other BLM Studies acres
Province/Potential Natural Vegetation				
NATIONWIDE				
Intermountain Sagebrush Province/ Sagebrush-Steppe Saltbush-Greasewood	0	0	16	929,350
OREGON				
	0	0	11	622,707

Table 3. Wilderness Opportunities for Residents of a Major Population Center

Population Center	NWPS Areas areas	NWPS Areas acres	Other BLM Studies areas	Other BLM Studies acres
Boise, Idaho	16	4,741,570	126	5,060,460

The WSA could be managed as wilderness. Manageability would be enhanced if the six parcels of split estate totaling 3,160 acres were acquired, and if the dead-end gravel road that extends approximately 5 miles into the north-central portion of the WSA were closed. Acquisition of the split estate would preclude any adverse impacts from activities associated with energy or mineral exploration, and closure of the 5-mile dead-end road would preclude public access to the interior of the WSA.

Energy and Mineral Resource Values

The energy and mineral resources of the Bowden Hills WSA were evaluated by BLM geologists who supplemented available geologic data on the study area with the findings of geochemical stream sediment samples in 1983. Technical details of the evaluation are incorporated in a BLM report, "Assessment of Geology, Energy and Mineral (GEM) Resources of Bowden Hills Geologic Resource Area (GRA)." In 1987 BLM geologists updated geothermal resource information on the WSA using additional published information.

Based on direct evidence; the presence of two shallow thermal wells located just outside of the southwestern boundary of the WSA, approximately 6,220 acres in the southwestern portion of the study area are considered to have a moderate potential for the occurrence of geothermal energy. Based on indirect evidence, the WSA is considered to have a moderate potential for the occurrence of oil and gas.

Based on indirect evidence, approximately 1,770 acres in the northwestern portion of the WSA are considered to have a moderate potential for the occurrence of gold.

As of May, 1991, there were no mining claims in this WSA.

Local Social and Economic Considerations

Livestock use at the current level of 1,584 AUMS and recreation use totaling less than 100 visitor days per year are the primary resource outputs that generate economic activity in the WSA. Local personal income generated from these existing use levels amounts to approximately $19,000 for livestock grazing and $1,000 related to recreation use of the WSA, for an overall total of $20,000.

Under the recommendation, livestock grazing would increase by 1,870 AUMs. Overall recreation use would remain at less than 100 visitor days per year. Annual local personal income generated from resource outputs in the WSA would increase by approximately $22,000. There were no social issues identified with the study of Bowden Hills WSA.

Summary of WSA-Specific Public Comments

Public involvement has occurred throughout the wilderness review process. Certain comments received during the inventory process and early stages of the EIS preparation were used to develop significant study issues and various alternatives for the ultimate management of those lands found to have wilderness values.

During formal public review of the Draft EIS and its Supplemental, a total of 17 WSA-specific comments were received. Of those, 11 were written and six were oral statements received at 24 public hearings. Sixteen commenters supported wilderness designation and one opposed it.

Those who supported wilderness designation cited the highly natural condition and ecological diversity of the area that is representative of the transistion zone between the Owyhee Uplands and Basin and Range Provinces; the importance of protecting the kit fox, which is on ODFW's list of threatened species; the unusual plant community that was "of good enough quality" to be considered for a Research Natural Area; and the outstanding opportunities for solitude.

The single opinion that supported the no wilderness alternative stated that wilderness designation would have an adverse impact on livestock operators and that low-altitude military flights would make the area unsuitable for wilderness.

Two letters were received from Federal and State agencies. The Environmental Protection Agency urged that the area be given wilderness status citing the highly natural condition, unusual plant community and good opportunities for solitude. The Idaho Air National Guard expressed concern over "the possible conflict between low altitude overflights and the feeling of solitude sought by the wilderness area users." No WSA-specific comments were received from any local agencies.

Two comments were received on the Final EIS specific to this WSA.

Impacts on Resources

The following comparative impact table summarizes the effects on pertinent resources for all of the alternatives considered, including designation or nondesignation of the entire area as wilderness.

Table 4. Comparative Summary of the Impacts by Alternative

Issue Topics	Recommendation (No Wilderness/No Action) Alternative
Impacts on Wilderness Values	In the absence of wilderness designation, projected activities would impair wilderness values over approximately 3,435 acres, with further declines from other potential uses over the long term.
Impacts on Energy and Mineral Development	There would be no impact to energy and mineral development.
Impacts on Utility Corridor Routing	There would be no impact to construction of the 500-kV powerline.
Impacts on Vegetation	There would be an increase in utilization of grasses with a corresponding decrease in residual ground cover resulting in a more grazed appearance. Construction of the powerline and one guzzler would remove vegetation on 16 acres.
Impacts on Wildlife	Wildlife habitat and populations would sustain minor, periodic harassment. Additional allocation of livestock forage would reduce nesting and escape cover. Installation of one guzzler would expand wildlife populations into a previously unutilized area.
Impacts on Livestock Grazing	An additional allocation of 1,870 AUMs would be realized. Vehicle use by operators would continue on 19 miles of ways and a 5-mile road.
Impacts on Recreation Use	The area's visitor use level of less than 100 visitor days per year would remain unchanged.
Impacts on Local Personal Income	Annual local income generated from resource outputs in the WSA would increase by approximately $22,000.

All Wilderness Alternative	Partial Wilderness Alternative with Acquisitions
Wilderness designation of 59,900 acres would result in protection and enhancement of existing wilderness values.	Wilderness designation of 45,260 acres would protect and enhance existing wilderness values in the area recommended suitable. In the area recommended nonsuitable, projected activities would impair wilderness values over approximately 3,000 acres, with further declines from other potential uses over the long term.
No impact to energy and mineral development is expected.	No impact to energy and mineral development is expected.
The proposed utility corridor would be rerouted west of the WSA, increasing its length by 2 miles.	There would be no impact to construction of the 500-kV powerline.
Little or no change would occur to vegetation on most of the area. Nineteen miles of ways would revegetate in 3 to 5 years.	Little or no change would occur to vegetation on most of the area. Eleven miles of ways would revegetate in three to five years and a 5-mile road would revegetation in five to ten years. Powerline construction would remove vegetation on 15 acres.
Wildlife habitat and populations would be maintained on 59,900 acres designated wilderness.	Within the area recommended suitable, wildlife habitat and populations would be maintained on 45,260 acres. In the area recommended nonsuitable, short-term disturbances to wildlife would occur.
An increase of 1,870 AUMs would be foregone. Vehicle use of 19 miles of ways would be precluded, causing inconvenience and an increase in cost to livestock operators.	An increase of 1,870 AUMs would be foregone. Vehicle use of 11 miles of ways and a 5-mile road within the area recommended suitable would be precluded, causing inconvenience and a slight increase in cost to livestock operators.
There would be little or no change in the recreation use level of less than 100 visitor days per year. There would be a shift toward primitive types of recreation.	There would be little or no change in the recreation use level of less than 100 visitor days per year. There would be a shift toward primitive types of recreation.
Annual local income generated from resource outputs in the WSA would remain at approximately $20,000.	Annual local income generated from resource outputs in the WSA would remain at approximately $20,000.

Clarks Butte Wilderness Study Area

1. The Study Area —31,490 acres

Clarks Butte Wilderness Study Area (WSA) (OR-3-120) is located in Malheur County, Oregon, approximately 18 miles west of Jordan Valley, Oregon, and 6 miles north of U.S. 95.

The WSA contains 31,450 acres of BLM land and 40 acres of split-estate land. While there are no private inholdings in the WSA, two 40-acre private parcels are nearly enclosed by the boundary. One parcel is adjacent to the western boundary, and the other is on the eastern boundary (See Table 1).

The WSA is bordered on the north by a BLM low standard dirt road, on the east and south by private land, and on the west by BLM low standard dirt roads and fenced areas containing extensive land treatments (crested wheatgrass seedings). A 0.5 mile-long, dead-end low standard dirt road enters the WSA, forming part of the boundary, and provides access to Junction Pit Reservoir from the western boundary road. There is one way in the WSA of 0.25 mile.

The WSA is adjacent to Jordan Craters WSA (OR-3-128), which is directly to the north of Clarks Butte WSA and separated from it by a road. The northern portion of Clarks Butte WSA includes a small portion (3,270 acres) of the Jordan Craters Research Natural Area (RNA) and Jordan Craters Area of Critical Environmental Concern (ACEC). The RNA was designated to protect unique ecological, geological and biological features for scientific and educational endeavors, and the ACEC was designated to provide special management to protect these features.

Clarks Butte is approximately 1 mile north of the study area's center and Lava Butte lies approximately 1 mile south of the WSA's center. The WSA contains two distant lava flows. The older flow includes Clarks Butte, the probable source of the flow, and the surrounding slopes. This lava flow has weathered to a relatively smooth soil mantle and occupies the northern third of the WSA.

The younger flow consists of two probable sources, Lava Butte and an unnamed companion butte, and the surrounding gently sloping circular outflow. This flow occupies most of the WSA's southern two-thirds. The surface features here are more distinct than the older Clarks Butte flow. Craters, spatter cones, lava

tubes, caves, domes and gutters still are recognizable even though some weathering and soil deposition has occurred.

Prior to a 1986 wildfire that decimated vegetative cover over the WSA, vegetation predominantly had been a Wyoming big sagebrush-bluebunch wheatgrass community. Except for remnant stands, sagebrush was eliminated by the wildfire. The WSA's community now consists predominantly of grasses and forbs. Much of the vegetation in the Lava Butte flow is relatively pristine because livestock grazing is limited by the area's lack of water and its broken surface.

The WSA was studied under Section 603 (and 202) of the Federal Land Policy and Management Act (FLPMA), and was included in the Final Oregon Wilderness Environmental Impact Statement (EIS) filed in February of 1990. There were two alternatives analyzed in the EIS: an all wilderness alternative, and a no wilderness/no action alternative (the recommendation in this report). These lands are shown on Map 1.

2. Recommendation and Rationale

—0 acres recommended for wilderness
31,490 acres recommended for nonwilderness

The recommendation for this WSA is to release the entire area for uses other than wilderness.

The all wilderness alternative is considered to be the environmentally preferable alternative since it would result in the least change from the natural environment over the long term. However, the no wilderness/no action alternative would be implemented in a manner which would use all practical means to avoid or minimize environmental impacts.

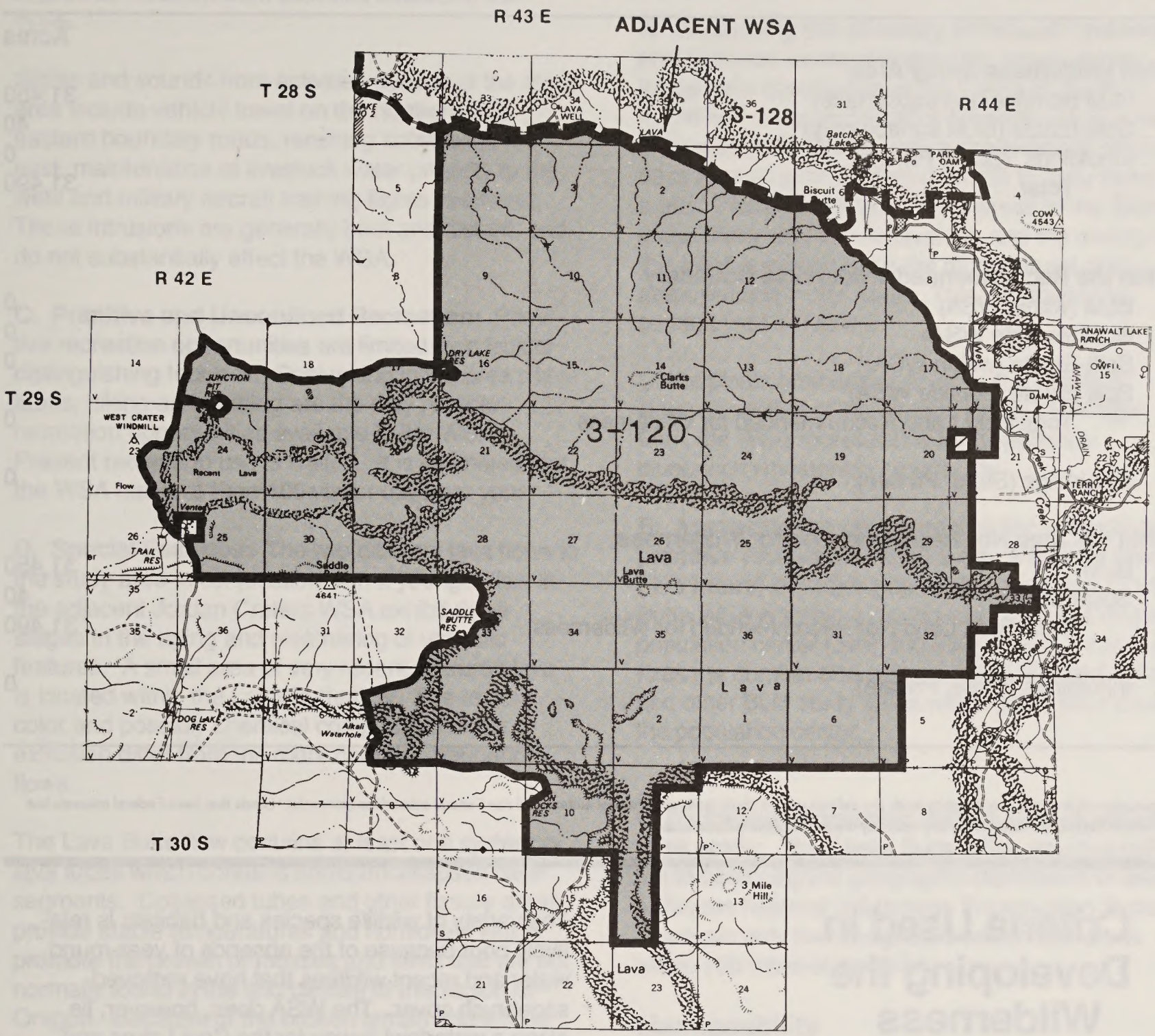
The recommendation recognizes that wilderness values in the WSA are only moderate and would allow for the proposed livestock grazing increase of 1,383 additional AUMs (183 AUMs of livestock forage in the WSA and 1,200 AUMs resulting from a wildfire); construction of range water developments to make allocation of this livestock forage possible and enhancement of wildlife populations; and projected development of a proposed utility corridor in the southeastern portion of the WSA. The recommendation also acknowledges the limited opportunities for primitive recreation within the WSA.

The current livestock use level is approximately 989 AUMs within the portion of the grazing allotment in the WSA. Currently, all public lands in the study area are leased for grazing by domestic livestock. The recommendation would permit a total of 998 AUMs of presently available but unallocated forage to be allocated, resulting in an increase in forage allocation of 998 AUMs within affected pastures. Approximately 183 of these AUMs are within the WSA.

In 1986, a wildfire in the WSA removed sagebrush on approximately 18,000 acres suitable for livestock use. A portion of this area had been identified in the draft EIS for brush control through controlled burning on 6,450 acres to increase livestock forage by 840 AUMs. The wildfire eliminated the need for the proposed brush control, and approximately 1,200 additional AUMs became available to allocate to livestock. This additional forage, however, could not be made available unless additional water sources were developed to distribute livestock into areas that have forage but lack water. Water developments are proposed for the WSA so that this increase in forage could be allocated. The facilities under consideration include four wildlife guzzlers, one reservoir, and five miles of range pipeline with five water troughs, a storage tank, plus a parallel road along the pipeline.

Development of the range pipeline, reservoir and four guzzlers would provide 10 additional water sources for mule deer, antelope, sage grouse and nongame species, resulting in some population increases. These water developments also would increase recreational opportunities that are dependent upon increased wildlife populations such as bird watching and hunting.

In addition, the recommendation would allow for the designation of a utility corridor for possible future development. The Bonneville Power Administration and Pacific Power & Light have had under long-term consideration the construction of a 500-kV power transmission line through a potential east-west corridor across southeastern Oregon. The proposed route of the powerline would cross approximately 7 miles of the southeastern portion of Clarks Butte WSA, and an access road would be constructed in conjunction with the powerline. The proposed utility corridor would not be in the vicinity of the Jordan Craters ACEC/RNA, and careful consideration would be given to its placement in regard to the lava tube caves.



RECOMMENDED FOR WILDERNESS (None)

RECOMMENDED FOR NONWILDERNESS

LAND OUTSIDE WSA RECOMMENDED FOR WILDERNESS (None)

SPLIT ESTATE (None)

STATE (None)

PRIVATE

- N -

Clarks Butte Proposal

MAP-1

0 1 2 3

MILES

OR-3-120
January, 1991

Table 1. Land Status and Acreage Summary of the Study Area

	Acres
Within Wilderness Study Area	
BLM (surface and subsurface)	31,450
Split-Estate (BLM surface only)[1]	40
Inholdings (State, Private)	0
Total	31,490
Within the Recommended Wilderness Boundary	
BLM (within WSA)	0
BLM (outside WSA)	0
Split-Estate (within WSA)[1]	0
Split-Estate (outside WSA)[1]	
Total BLM Land Recommended for Wilderness	0
Inholdings (State, Private)	0
Within the Area Not Recommended for Wilderness	
BLM	31,450
Split-Estate[1]	40
Total BLM Land Not Recommended for Wilderness	31,490
Inholdings (State, Private)	0

[1]For purposes of this report, split-estate lands are defined only as those lands with Federal surface and non Federal subsurface (minerals). Lands that have Federal minerals but non-Federal surface are classified in this report by the owner of the surface estate.

3. Criteria Used in Developing the Wilderness Recommendations

Wilderness Characteristics

A. Naturalness: Clarks Butte WSA is in a highly natural condition. The lava flows which occupy most of the surface of the WSA provide an expansive natural vista and are generally free of developments. Five developments, including a fence, two reservoirs, a 0.25-mile way and an irrigation canal, are within the WSA. The fence and one reservoir lie between Clarks Butte and the eastern boundary. The other reservoir is in the northwest corner. These developments influence about three percent of the study area. The southeastern slopes are influenced slightly by distant developments.

The variety of wildlife species and habitats is relatively poor because of the absence of year-round water and recent wildfires that have removed sagebrush cover. The WSA does, however, lie along a waterfowl flyway for the Cow Lakes and Batch Lake wetlands.

Several game species use the WSA. An estimated 100 mule deer and 20 pronghorn antelope use the study area as summer range. Other game species include a small population of valley quail and chukar partridge.

B. Solitude: The WSA offers outstanding opportunities for solitude which are enhanced by the area's relatively large size and concentrated configuration. The area provides a large core area for people to hike into and experience solitude with no disturbance from vehicle use. However, the area's relatively unpronounced topographic relief and low vegetation do not provide many secluded spots. On the buttes, which are an attraction because they provide a commanding view, visitors will readily observe and

be observed by others on the buttes or plains below. A short, southerly extension of the area is too narrow to provide isolation from activities outside of the WSA.

Sights and sounds from activities outside of the study area include vehicle travel on the northern and eastern boundary roads, ranching activities to the east, maintenance of livestock water projects to the west and military aircraft training flights overhead. These intrusions are generally brief and distant, and do not substantially affect the WSA.

C. Primitive and Unconfined Recreation: Primitive recreation opportunities are limited by a lack of distinguishing features. Spelunking in the area's lava tubes, hiking and hunting are the only notable recreation opportunities available in the WSA. Present recreation use is limited. It is estimated that the WSA has less than 100 visitor days per year.

D. Special Features: The two different lava flows in the study area in conjunction with a younger flow in the adjacent Jordan Craters WSA exhibit three stages in the aging and weathering of volcanic features. A small area of very recent, textured lava is located within the Lava Butte flow. The texture, color and possibly chemical composition of the extrusion differ from the more common pahoehoe flows.

The Lava Butte flow contains at least one system of lava tubes which contains some uncollapsed cave segments. Collapsed tubes and other fissure areas provide stable temperatures and humidities which promote the growth of mosses and ferns that are not normally found in the arid climate of this region of Oregon. Because of the broken terrain and limited forage and water, the lava flows are basically ungrazed.

The scientific and educational importance of the WSA is indicated by the results of previous scientific studies and by its inclusion in the Jordan Craters ACEC/RNA.

A small population of sage grouse occupies the WSA, and Townsend's big-eared bat use the lava tubes during breeding season. Both of these species are candidates for Federal listing under the Endangered Species Act as they have been impacted by loss of habitat.

Diversity in the National Wilderness Preservation System

A. Expanding the diversity of natural systems and features as represented by ecosystems: Wilderness designation of the Clarks Butte WSA would add an ecosystem not presently represented in Oregon, and represented in the National Wilderness Preservation System (NWPS) by only three areas. There are 66 other BLM areas in the State under study with this ecosystem, and the example in this WSA is judged to be the most natural of the areas studied in this State. This information is summarized in Table 2.

Of the plant communities listed in the Oywhee Uplands section of the Oregon Natural Heritage Plan, the WSA represents a big sagebrush-bluebunch wheatgrass community.

B. Assessing the opportunities for solitude or primitive recreation within a day's driving time (five hours) of major population centers: Clarks Butte WSA is within a five hour drive of one major population center (over 100,000). Table 3 summarizes the number and acreage of designated areas and other BLM study areas within a five hour drive of the population center.

C. Balancing geographic distribution of wilderness areas: The Clarks Butte WSA would contribute to balancing the geographic distribution of areas within the National Wilderness Preservation System. There are only two designated wilderness areas within 100 miles of the WSA.

Manageability

(The area must be capable of being effectively managed to preserve its wilderness character).

The WSA could be managed as wilderness. The study area is relatively large, has a concentrated configuration with rugged terrain, and possesses a high degree of naturalness. Since the entire WSA is public land, potential manageability problems from access and development on private land are avoided.

Table 2. - Ecosystem Representation

Bailey-Kuchler Classification	NWPS Areas areas	NWPS Areas acres	Other BLM Studies areas	Other BLM Studies acres
Province/ Potential Natural Vegetation				
	NATIONWIDE			
Intermountain Sagebrush Province/ Sagebrush-Steppe	3	76,699	136	4,338,850
	OREGON			
	0	0	66	1,951,584

Table 3. Wilderness Opportunities for Residents of a Major Population Center

Population Center	NWPS Areas areas	NWPS Areas acres	Other BLM Studies areas	Other BLM Studies acres
Boise, Idaho	16	4,741,570	126	5,060,460

Energy and Mineral Resource Values

The energy and mineral resources of Clarks Butte WSA were evaluated from available geologic data by BLM geologists in 1983. Technical details of findings of the evaluation are in a BLM report, "Assessment of Geology, Energy and Mineral Resources of Jordan Craters-Clarks Butte Geologic Resource Area." Based upon indirect evidence, the WSA is considered to have a moderate potential for the occurrence of geothermal resources, and a moderate potential for the occurrence of oil and gas. Based upon indirect evidence, no mineral resources have been identified in the WSA that have a moderate or high potential for occurrence.

Local Social and Economic Considerations

Livestock use at the current level of 989 AUMs and recreation use totaling less than 100 visitor days per year are the primary resource outputs that generate economic activity in the WSA. Local personal income generated from these existing use levels amounts to $11,868 for livestock grazing and approximately $1,000 related to recreation use of the WSA, for an overall total of $12,868.

Under the recommendation, livestock grazing would increase by 2,198 AUMs. Overall recreation use would remain at less than 100 visitor days per year. Annual local personal income generated from resource outputs in the WSA would increase by approximately $26,000. There were no social issues identified with the study of this WSA.

Summary of WSA-Specific Public Comments

Public involvement has occurred throughout the wilderness review process. Certain comments received during the inventory process and early

stages of the EIS preparation were used to develop significant study issues and various alternatives for the ultimate management of those lands found to have wilderness values.

During formal review of the draft EIS and its Supplement, a total of 28 comments specifically addressing Clarks Butte WSA were received. Of these, 20 were written and eight were oral statements received at 24 public hearings held on the draft and supplemental EIS. All of the commenters supported wilderness designation.

An array of reasons were given for supporting wilderness designation: most commenters mentioned the spectacular volcanic scenery, others emphasized the "pristine native grass communities," diversity of wildlife, the necessity of protecting threatened and endangered species, educational value of the unusual landscape and wildlife, and the opportunities for solitude. Ten individuals favored combining Clarks Butte and Jordan Craters since they are "integral parts of a whole and it is difficult to separate them," and wilderness designation of the combined area would provide enhanced protection for watershed, ecological diversity and nongame wildlife.

No WSA-specific comments were received from any Federal, State or local agencies.

Two WSA-specific comments were received on the Final EIS.

Impacts on Resources

The following comparative impact table summarizes the effects on pertinent resources for the two alternatives considered, designation or nondesignation of the entire area as wilderness.

Table 4. Comparative Summary of Impacts by Alternatives

Issue Topics	Recommendation (No Wilderness/No Action Alternative)	All Wilderness Alternative
Impacts on Wilderness Values	In the absence of wilderness designation, projected activities would both directly and indirectly impair wilderness values over approximately 5,500 acres (18 percent) of the WSA, with further declines from other potential uses over the long term.	Wilderness designation of 31,490 acres would protect and enhance the wilderness qualities and special features of the area.
Impact on Energy and Mineral Development	No impact to energy and mineral development is expected.	No impact to energy and mineral development is expected.
Impacts on Utility Corridor Routing	There would be no impact to the proposed utility corridor.	The utility corridor would not be designated in the WSA and the powerline would be rerouted 2 to 3 miles to the south, adding negligible length to the route.
Impacts on Vegetation	There would be an increase in utilization, with a corresponding decrease in residual ground cover over approximately 30 percent of the area, resulting in a more grazed appearance. Vegetation would be directly disturbed on 68 acres from projected developments.	Vegetative conditions would be maintained throughout the WSA.
Impacts on Wildlife	Most habitat for game and nongame species would be maintained throughout the WSA, however 68 acres would be lost due to road construction associated with the pipeline and powerline.	Wildlife habitat and populations would be maintained on 31,490 acres designated wilderness.
Impacts on Livestock Grazing	An increase of 998 AUMs of forage would be allocated to livestock with 183 of these AUMs being in the WSA. An increase of 1,200 additional AUMs due to a wildfire would be allocated to livestock in the WSA.	A livestock allocation increase of 998 AUMs of livestock forage (183 AUMs in the WSA) would be foregone. An additional projected increase of 1,200 AUMs would also be foregone. Vehicle use of 0.25 mile of way would be precluded with minor inconvenience to livestock operators.

Table 4. Comparative Summary of Impacts by Alternatives

Issue Topics	Recommendation (No Wilderness/No Action Alternative)	All Wilderness Alternative
Recreation Use	The areas recreation use level of less than 100 visitor days per year would not be affected.	The area's recreational use level of less 100 visitor days per year would not be affected. Wilderness designation would ensure continuation of primitive, non-motorized forms of recreational use.
Local Personal Income	Annual local personal income would increase by approximately $26,000.	Annual local personal income would remain at approximately $13,000.

Jordan Craters Wilderness Study Area

1. The Study Area —27,900 acres

Jordan Craters Wilderness Study Area (WSA) (OR-3-128) is located 15 miles west of U.S. Highway 95 in Malheur County, Oregon, approximately 20 miles northwest of Jordan Valley, Oregon.

The WSA contains 27,875 acres of BLM land and 25 acres of split-estate land. This land consists mainly of the Jordan Craters Lava Flow. An 80-acre private parcel is located within the study area at Crater Lake in the west-central portion of the WSA. A 40-acre parcel of private land is located at the end of a dead-end road to Coffee Pot Reservoir in the northern part of the WSA (see Table 1). State lands, including the shoreline of Lower Cow Lake, form the eastern boundary. The northern boundary is formed by a county gravel road. BLM high standard dirt roads form the southern and western boundaries. The WSA is adjacent to Owyhee Breaks WSA (OR-3-59) to the north, and Clarks Butte WSA (OR-3-120) to the south. These WSAs are separated from the Jordan Craters WSA by roads.

Four dead-end roads totaling 5 miles and three ways totaling 3 miles are within the WSA; however, one 0.25 mile way has been fenced off, and a second 0.25 mile way is almost completely revegetated. The third way extends 2.5 miles over extremely rough, broken terrain.

Most of the WSA is covered by the bare rock surface of a geologically recent extrusion of basaltic lava. It averages 4,450 feet in elevation and slopes gently toward the southeast. The surface is irregular with innumerable domes, cracks and sinks. Depressions in the southeastern tip of the flow fall below the water table and a number of water-filled potholes and ponds have been formed. The largest depression forms Batch Lake.

Topography adjacent to the lava flow varies from flat to gently-rolling. A north-south ridge, which defines the highest elevations in the WSA, borders the lava flow on the west. Vegetation on the lava is composed principally of lichens and mosses. The predominant vegetation outside the lava flow is a big sagebrush-bluebunch wheatgrass community.

Most of the WSA overlaps the Jordan Craters Research Natural Area (RNA) and Area of Critical Environmental Concern (ACEC). The RNA was designated to protect unique ecological, geological and biological features for scientific and educational

endeavors. The ACEC was designated to provide special management to protect these features. Only the western portion and four peninsula-like fingers along the eastern boundary of the WSA are not included. The RNA and ACEC also extend beyond the northern and southern boundaries of the WSA, and these designations indicate the WSA's scientific and educational importance.

The WSA was studied under Section 603, with additional acquired split estate lands studied under Section 202 of the Federal Land Policy and Management Act (FLPMA), and was included in the Final Oregon Wilderness Environmental Impact Statement (EIS) filed in February 1990.

There were four alternatives analyzed in the EIS: 1) an all wilderness alternative; 2) an all wilderness with acquisitions alternative, in which all 27,875 acres of public land and 25 acres of split estate land would be recommended suitable as wilderness; the two parcels of private property (120 acres) and the mineral estate of the split-estate land (25 acres) would be acquired through purchase or exchange, if the owners are willing, making the total area recommended suitable 28,020 acres; 3) a partial wilderness with acquisitions alternative, which is the recommendation in this report, in which 23,265 acres would be recommended suitable as wilderness, assuming acquisition of 40 acres of private land and 25 acres of mineral estate on the split-estate land, and 4,675 acres would be released for uses other than wilderness; and 4) a no wilderness/no action alternative. These lands are shown on Map 1.

2. Recommendation and Rationale:

23,265 acres recommended for wilderness
4,675 acres recommended for nonwilderness

The recommendation for this WSA is to designate 23,265 acres as wilderness and to release 4,675 acres for uses other than wilderness. This acreage includes 40 acres of private land which could become wilderness if acquired from the willing owners.

The all wilderness with acquisitions alternative is considered to be the environmentally preferable alternative since it would result in the least change from the natural environment over the long term. However, the partial wilderness, with acquisitions, alternative would be implemented in a manner which would use all practical means to avoid or minimize environmental impacts.

The recommendation would preserve the portion of the WSA with the highest wilderness values, while releasing from wilderness consideration that portion of the WSA with limited wilderness values, and enhance overall manageability of the area as wilderness. In the suitable portion, the recommendation acknowledges high wilderness values which outweigh an increase of 96 AUMs of livestock forage in the portions of the pastures within the WSA, and potential exploration for energy and mineral resources. Although no development is projected, the recommendation would allow for exploration for oil and gas and geothermal resources on the 4,675 acres recommended nonsuitable.

Wilderness values would be preserved on the recommended suitable portion of 23,265 acres, which includes all of the lava flow plus approximately 9 square miles adjacent to the lava. Wilderness designation would protect the geologically-recent, basaltic lava flows and unique volcanic features contained on the eastern three-quarters of the WSA; unusual plant species such as male fern, annual dropseed and Eaton hollyfern in the lava caves; and pristine vegetation on two small kipukas (isolated islands of exposed land that are older than the surrounding lava flows). In addition, habitat for Townsend's big-eared bat and long-billed curlew, both Federal candidates for listing under the Endangered Species Act, would be preserved through protection of the WSA's caves and marsh and upland areas, respectively. The great diversity of wildlife species within the WSA, and migrating and nesting waterfowl that use Batch Lake, would also be protected.

The WSA's highly natural condition would be protected by wilderness designation. Existing opportunities for solitude provided by the area's large size and relative lack of roads due to the rugged lava flows would be preserved. The WSA provides a large core area for recreationists to hike into and experience solitude with no disturbance from vehicle use.

Designation of the Jordan Craters WSA as wilderness would add an ecosystem not presently represented in Oregon and represented in the National Wilderness Preservation System (NWPS) by only three areas. In addition, wilderness designation of this area would contribute to balancing the geographic distribution of areas within the NWPS.

An increased allocation of 96 AUMs of livestock forage would be foregone under the recommenda-

tion because of potential adverse impacts on wilderness values. Although no development is projected, energy and mineral exploration would also be precluded if the mineral estate of the 25-acre parcel of split-estate land and the 40-acre private inholding were acquired. This would prevent potential disturbance from mineral exploration and ensure the preservation of naturalness, opportunities for solitude and a natural setting for primitive recreational pursuits.

In the portion recommended suitable, proposed management actions include construction of a 0.25-mile water pipeline that would extend into an adjacent WSA, and continued access to 5 miles of dead-end roads and a 2.5-mile way for recreationists and for livestock management and facility maintenance. The proposed 0.25-mile pipeline would make water available for livestock and improve their distribution in Clarks Butte WSA. It would be constructed from Lava Well in the south-central portion of Jordan Craters WSA, toward the south and into the adjacent Clarks Butte WSA. The pipeline would have little impact on naturalness since it would be constructed along an existing 0.25-mile road.

The 4,675 acres recommended nonsuitable are located west of the lava field. It is an area of limited wilderness values and is not included in the Jordan Craters RNA/ACEC. The gently-rolling terrain of the western portion of the WSA offers limited opportunities for solitude and primitive recreation, does not contain the special features of the basaltic lava formations of the eastern-three quarters of the WSA, and topography along the western boundary provides less effective topographic screening than in the suitable area. The nonsuitable area also excludes an 80-acre private parcel located at Crater Lake in the west-central portion of the WSA. The 4,675 acres of public land would be open to mineral entry, and 80 acres of private land would be open to energy/mineral exploration.

3. Criteria Considered in Developing the Wilderness Recommendations

Wilderness Characteristics

A. Naturalness: Jordan Craters WSA is in a highly natural condition. The lava flow is essentially devoid of human imprints, and it is not subject to any outside sights and sounds. Most signs of human activity are scattered around the perimeter of the WSA except for a relatively high concentration of unnatural features in the southwestern portion.

More than 300 species of wildlife have been identified within the WSA. This unusually high number of animal species is attributed to the variety of upland and reservoir riparian habitats available.

The WSA supports summer populations of approximately 100 mule deer and 20 pronghorn antelope. Eight species of bats have been observed in the study area, including Townsend's big-eared bat which is a Federal candidate for listing under the Endangered Species Act. Habitat for this species apparently is restricted to the lava tubes and small caves such as those found in the WSA.

The rangeland/lava edge provides habitat for a wide variety of nongame bird, mammal and reptile species that are common within the Intermountain region.

The most diverse and densely populated wildlife communities are associated with Batch Lake and Crater Lake. Open water, marsh habitats are rare within the lava flow region, but populations of wildlife are concentrated in them. An estimated 200 species of birds use the open water areas within and immediately adjacent to the study area. A wide variety of spring and fall migrating birds are temporary occupants. Other species of wildlife commonly seen at Batch Lake include beaver, otter and muskrat.

Unnatural features inside of the WSA include four fences, one rock corral, two reservoirs, three ways totaling 3 miles, four dead-end roads totaling 5 miles, one cabin at Crater Lake and remnants of a short, dirt access traversing a finger of lava. These features influence approximately 3 percent of the WSA and are concentrated in the southwest region. Two of the three ways, totaling 0.5 mile, are revegetating from lack of use.

Developments outside of the study area that slightly diminish the naturalness of the WSA include two old cabins and developments related to livestock management.

B. Solitude: Opportunities for solitude are outstanding in the eastern three-quarters of the WSA because of the study area's configuration, large size and broken topography.

Topography along the northern, western and southern boundaries provides less effective screening. These areas, along with Coffee Pot Crater, Cow

RECOMMENDED FOR WILDERNESS

RECOMMENDED FOR NONWILDERNESS

LAND OUTSIDE WSA RECOMMENDED FOR WILDERNESS (None)

SPLIT ESTATE

STATE (None)

PRIVATE

-N-

Jordan Craters Proposal

MAP-1

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MILES

OR-3-128

January, 1991

Table 1. Land Status and Acreage Summary of the Study Area

	Acres
Within Wilderness Study Area	
BLM (surface and subsurface)	27,875
Split-Estate (BLM surface only) [1]	25
Inholdings (State, Private)[1]	120
Total	28,020
Within the Recommended Wilderness Boundary	
BLM (within WSA)	23,200
BLM (outside WSA)	0
Split-Estate (within WSA) [1]	25
Split-Estate (outside WSA)[1]	0
Total BLM Land Recommended for Wilderness	23,225
Inholdings (State, Private)[1]	40
Within the Area Not Recommended for Wilderness	
BLM	4,675
Split-Estate [1]	0
Total BLM Land Not Recommended for Wilderness	4,675
Inholdings (State, Private)[1]	80

[1] Appendix 1 is a detailed description of inholdings and/or split-estate tracts included within the study. For purposes of this report, split-estate lands are defined only as those lands with Federal surface and non-Federal subsurface (minerals).

Lakes, Crater Lake and Batch Lake, receive the highest visitor use; consequently, opportunities for seclusion are not as great here. Sights and sounds of activities outside of the WSA include vehicle travel on boundary roads and dead-end access roads, recreation at Cow Lakes, ranching activities to the east and southeast of the WSA, and military aircraft training flights overhead. These intrusions are generally brief or distant and do not penetrate far into the WSA.

C. Primitive and Unconfined Recreation: The eastern three-quarters of the WSA offer excellent opportunities for spelunking. A complete inventory of the lava caves has not been conducted. Only the caves near Coffee Pot Crater have been explored. The scenic quality in this portion of the WSA is outstanding because of the variety of scenery due to the lava flows. The WSA offers exceptional sightseeing of the botanic, geologic and ecologic features throughout the lava field area. Excellent opportunities for bird watching and nature photography are available around Batch Lake, and day hiking, backpacking and camping are usually associated with these activities.

D. Special Features: The area in the eastern three-quarters of the WSA represents a preserved example of the volcanic aspects of geologic history. This area contains basaltic lava that may be between 4,000 and 9,000 years old. Because the lava flow is relatively geologically recent, there has been minimal erosion of the unique volcanic features such as kipukas (isolated islands of exposed lava that are older than the surrounding lava flows), pahoehoe (smooth) lava, pressure ridges, lava channels, pits, tubes and blisters, spatter cones and a large cinder cone.

Five unique and unusual habitats are associated with the Jordan Craters lava flow:

— The abrupt transition zone between the lava and the surrounding rangeland is characterized by a diverse natural community. Vegetation consists of big sagebrush and bunchgrasses kept relatively lush by runoff from the lava surface onto deep soils built up along the lava's edge. This provides cover and forage for a variety of mammals, birds and reptiles.

— The lava surface offers a harsh habitat of extreme climatic and soil conditions with little available water. Vegetation consists principally of lichens and mosses. Animals in this habitat include a few small birds and rodents.

— Beneath the lava surface there are a number of collapsed lava tube segments. Some of these segments provide stable temperature and humidity which promote the growth of mosses and ferns which are not normally found in the arid climate of this region. Townsend's big-eared bat, which inhabits the caves in the WSA, is a Federal candidate for listing under the Endangered Species Act.

—The ground water surfacing in pools, ponds and lakes of the Batch Lake and Crater Lake area support unusual vegetation and an abundance of diverse wildlife. Several unusual bird species are drawn to the area at various times of the year, including white pelican, black-crowned night heron, sandhill crane, long-billed curlew (a Federal candidate for listing under the Endangered Species Act), and northern bald eagle (Federally listed as threatened in Oregon) which uses Batch Lake during fall and spring passage.

—The lava flow contains two small kipukas, each of which is about 12 acres in size, and it nearly surrounds a large peninsula of rolling hills in the southwestern portion of the WSA. The kipukas appear ungrazed by livestock and are therefore valued as unique examples of pristine sagebrush-steppe environment. The large peninsula in the southwestern portion of the WSA also has received only occasional light grazing because of its isolated nature and lack of water.

Three plant species found in the lava tubes and fissures in the lava flow are uncommon to this area and are of special interest. These species are *Polystichum scopulinum*, commonly called Eaton hollyfern and considered rare in Oregon; *Dryopteris filix-mas*, commonly known as male fern and considered threatened in Oregon; and *Muhlenbergia minutissima*, or annual dropseed, also considered threatened in Oregon.

Two cultural sites have been located within the WSA. Both were campsites and one has petroglyphs immediately adjacent to it.

Diversity in the National Wilderness Preservation System

A. Expanding the diversity of natural systems and features as represented by ecosystems: Wilderness designation of this WSA would add an ecosystem not presently represented in Oregon, and represented in the National Wilderness Preservation System (NWPS) by only three areas. There are 66 other BLM areas in the State under study with this ecosystem, and the example in this WSA is judged to be the most natural of the areas studied in this State. This information is summarized in Table 2.

Of the plant communities listed in the Owyhee Uplands section of the Oregon Natural Heritage Plan, the WSA contains the big sagebrush-bluebunch wheatgrass community.

B. Assessing the Opportunities for Solitude and Primitive Recreation within a day's driving time (five hours) of major population centers: The Jordan Craters WSA is within a five hour drive of one major population center (over 100,000). Table 3 summarizes the number and acreage of designated areas and other BLM study areas within a five hour drive of the population center.

C. Balancing the geographic distribution of wilderness areas: Jordan Craters WSA would contribute to balancing the geographic distribution of areas within the National Wilderness Preservation System. There is only one designated wilderness area within 100 miles of the WSA.

Manageability

(The area must be capable of being effectively managed to preserve its wilderness character.)

The suitable area of the WSA, which includes all of the lava flow, could be managed as wilderness. The WSA possesses a high degree of naturalness and is large enough to ensure the availability of wilderness values. Most of the unique volcanic features for which the area has been designated an RNA and/or ACEC lie within the recommended suitable portion. Manageability would be improved by acquiring the 40-acre private inholding located at the end of a

Table 2. Ecosystem Representation

Bailey-Kuchler Classification	NWPS Areas areas	NWPS Areas acres	Other BLM Studies areas	Other BLM Studies acres
Province/ Potential Natural Vegetation				
	NATIONWIDE			
Intermountain Sagebrush Province/Sagebrush-Steppe	3	76,699	136	4,342,440
	OREGON			
	0	0	66	1,955,174

Table 3. Wilderness Opportunities for Residents of a Major Population Center

Population Center	NWPS Areas areas	NWPS Areas acres	Other BLM Studies areas	Other BLM Studies acres
Boise, Idaho	16	4,741,570	126	5,060,460

dead-end road to Coffee Pot Reservoir and the mineral estate of the split estate land. The acquisitions would prevent adverse effects from access to and incompatible surface disturbance on these parcels.

The nonsuitable portion could not be managed as wilderness. The 4,675 acres in the area recommended nonsuitable contain limited wilderness values and almost all of them are outside of the Jordan Craters RNA/ACEC. An 80-acre private inholding located at Crater Lake in the west-central part of the WSA would remain open to mineral exploration and development, which could adversely impact wilderness values. The western boundary of the WSA would be defined as the dead-end road to Crater Lake and the way to Mud Lake.

Impacts on Resources

The following comparative impact table summarizes the effects on pertinent resources for all of the alternatives considered, including designation or nondesignation of the entire area as wilderness.

Energy and Mineral Resource Values

Energy and mineral resources were evaluated from available geologic data supplemented by a limited amount of geochemical stream sediment sampling by BLM geologists. The U.S. Geological Survey (USGS) and U.S. Bureau of Mines evaluated approximately 23,225 acres of the study area for mineral resources and mineral resource potential. According to their report published in 1988 and entitled "Mineral Resources of the Jordan Craters

Table 4. Comparative Summary of the Impacts by Alternatives

Issue Topics	Recommendation (Partial Wilderness with Acquisitions Alternative)	All Wilderness Alternative
Impacts on Wilderness Values	Wilderness designation of 23,265 acres would protect and enhance wilderness values. Wilderness values on 4,675 acres designated nonsuitable would be temporarily impaired due to energy exploration, with further declines from other potential uses over the long term.	Wilderness designation of 27,900 acres would result in protection and enhancement of existing wilderness values.
Impacts on Energy and Mineral Development	No impact to mineral development is expected.	No impact to mineral development is expected.
Impacts on Vegetation	No change would take place to vegetation.	Overall, there would be no significant change in vegetation. A 2.5-mile way would revegetate.
Impacts on Wildlife	Wildlife habitat and populations would be maintained on 23,265 acres designated wilderness.	Wildlife habitat and populations would be maintained on 27,900 acres designated wilderness.
Impacts on Watershed	Watershed would remain in good condition in the vicinity of Batch Lake and continue to decline on the north and west shores of Crater Lake.	No change from current watershed condition is expected under this alternative.
Impacts on Livestock Grazing	A potential increased allocation of 1,164 AUMs of forage would be foregone. A 0.25-mile pipeline would be constructed to improve livestock distribution in Clarks Butte WSA (OR-3-120).	A potential increased allocation of 1,164 AUMs of forage would be foregone. A 0.25-mile pipeline would be constructed to improve livestock distribution in Clarks Butte WSA (OR-3-120).
Impacts on Recreation Use	The area's recreation use level of 800 visitor days per year would not be affected.	The area's recreation use level of 800 visitor days per year would not be affected. There would be a slight shift to primitive, non-motorized types of recreation use.
Impacts on Local Personal Income	Annual local personal income would remain at approximately $30,000.	Annual local personal income would remain at approximately $30,000.

All Wilderness with Acquisitions and Road Closures Alternative	No Wilderness/No Action Alternative
Wilderness designation of 28,020 acres would further preserve and protect wilderness values.	In the absence of wilderness designation, projected activities would impair wilderness values over approximately 1,500 acres, with further declines from other potential uses over the long term.
No impact to mineral development is expected.	No impact to mineral development is expected.
There would be no significant change in vegetation. A 2.5-mile way and 5 miles of roads would revegetate.	Little change would take place to vegetation. Utilization of forage species would increase and the reduced residual ground cover would result in a more grazed appearance.
Wildlife habitat and populations would be maintained on 28,020 acres designated wilderness.	Nesting and escape cover for wildlife would be slightly reduced.
Watershed would remain in good condition in the vicinity of Batch Lake and would improve on the north and west shorelines of Crater Lake.	Watershed would remain in good condition in the vicinity of Batch Lake and continue to decline on the north and west shores of Crater Lake.
A potential increase allocation of 1,164 AUMs of forage would be foregone. A 0.25-mile pipeline to improve livestock distribution in Clarks Butte WSA (OR-3-120) would be foregone.	An increase of 1,164 AUMs of forage would be allocated. A 0.25-mile pipeline would be constructed to improve livestock distribution in Clarks Butte WSA (OR-3-120).
The area's recreation use level of 800 visitor days per year would not be affected. There would be a slight shift to primitive, non-motorized types of recreation use.	The area's recreation use level of 800 visitor days per year would not be affected.
Annual local personal income would remain at approximately $30,000.	Annual local personal income would increase by approximately $14,000.

Wilderness Study Area, Malheur County, Oregon," there were no mineral resources identified within the study area, nor was any potential found for metallic, nonmetallic, uranium and thorium, or geothermal energy resources. There was a low potential for oil and gas resources in the WSA.

Another report evaluating energy and mineral potential was published in 1983 by BLM geologists and was entitled "Assessment of Geology, Energy, Mineral Resources of Jordan Craters-Clarks Butte Geologic Resource Area." Based on indirect evidence, the WSA was considered to have a moderate potential for the occurrence of geothermal resources. Because Jordan Craters WSA is within an area of geologically-recent volcanic activity and above normal heat flow, it was generally considered favorable for thermal waters for direct heat use. Also based on indirect evidence, the WSA was considered to have a moderate potential for the occurrence of oil and gas. Based on indirect evidence, no mineral resources with a moderate or high potential for occurrence have been identified within the WSA.

Generally the USGS/Bureau of Mines report considered energy and mineral potentials to be lower than those projected in the report prepared by BLM geologists.

As of May 1991, there were no mining claims within this WSA.

Local Social and Economic Considerations

Livestock use at the current level of 1,693 AUMS and recreation use totaling less than 800 visitor days per year are the primary resource outputs that generate economic activity in the WSA. Local personal income generated from these existing use levels amounts to approximately $20,316 for livestock grazing and $9,600 related to recreation use of the WSA, for an overall total of $29,916.

Under the recommendation, livestock grazing would remain at 1,693 AUMs and overall recreation use would remain at 800 visitor days per year. Annual local personal income generated from resource outputs in the WSA would remain at approximately $30,000. There were no social issues identified with the study of Jordan Craters WSA.

Summary of WSA-Specific Public Comments

Public involvement has occurred throughout the wilderness review process. Certain comments received during the inventory process and early stages of the EIS preparation were used to develop significant study issues and various alternatives for the ultimate management of those lands found to have wilderness values.

During formal public review of the draft EIS and its Supplement, a total of 38 comments specifically addressing Jordan Craters WSA were received. Of those, 19 were written and 19 were oral statements received at public hearings on the Draft EIS and its Supplement. Sixteen out of 19 letters supported wilderness designation for this WSA, and 18 of the commenters at the public hearings were in support of wilderness designation.

Those supporting wilderness designation remarked that the dead-end roads to Coffee Pot Crater and Lava Well should be closed to lessen damage caused by vehicles, and suggested that the road between Jordan Craters and Clarks Butte WSAs be closed so this entire region could be managed as one wilderness area. Five commenters mentioned the volcanic scenery of the WSA, saying that the lava features in Jordan Craters are unique in Oregon and should be protected for their educational and scientific value. Also mentioned was the study area's diverse vegetation, including the two kipukas that contain pristine sagebrush-steppe communities that have never been grazed; the diversity of ponds and lakes in the WSA which are unusual in this region; and the abundance of bird species found in the area.

Two WSA-specific comments were received from Federal and State agencies. The Bonneville Power Administration of the Department of Energy urged that access to potential geothermal energy in the WSA be assured in the future. The Idaho Air National Guard expressed concern over "the possible conflict between low altitude overflights and the feeling of solitude sought by the wilderness area users." No WSA-specific comments were received from any local agencies.

There were two comments received on the Final EIS specific to this WSA.

Appendix 1 - Estimated Costs of Acquisition of Non-Federal Holdings Within Areas Recommended for Designation [1]

Legal Description (Prior to any Subdivision	Total Acreage	Number of Owners	Type of Ownership by Estate (Federal, State Private, other)		Presently Proposed for Acquisition (Yes, No)	Preferred Method of Acquisition (Purchase, Exchange, Other)	Estimated Cost of Acquisition[2]	
			Surface Estate	Subsurface Estate			Land Costs	Processing Costs
Parcel No. 1, T. 27 S., R. 43 E. Sec. 36, SE 1/4,SW1/4,NE1/4	25	1	Federal	State	No	Exchange		15,000
Parcel No. 2 T. 28 S., R. 43 E.\ Sec. 4 NE1/4,NW1/4	40	1	Private	Private	Yes	Purchase	$2,000	$15,000

[1] The estimated costs listed in this appendix in no way represent a formal appraised value of the land or mineral estate, but are rough estimates based on sales or exchanges of lands or mineral estates with similar characteristics to those included in the WSA. The estimates for purposes of establishing a range of potential costs to the government of acquiring non-Federal holdings and in no way represent an offer to purchase or exchange at the cost estimate included in this appendix. Processing costs are all miscellaneous expenses other than land costs. These include work month costs, appraisals, title work, escrow costs, etc. All lands identified in this table are in Oregon.

[2] Where exchange is the proposed acquisition method, only administrative costs of processing the exchange are shown. Land costs are not applicable. Where direct purchase is proposed, estimate of both the land costs and the processing costs is provided.

Trout Creek Mountains Group Wilderness Study Areas

1. The Study Area —172,195 acres

The Trout Creek Mountains Group of Wilderness Study Areas (WSAs) includes five areas:

Willow Creek (OR-3-152) which has 30,565 acres (28,810 acres of BLM land and 1,755 acres of split-estate);

Disaster Peak (OR-3-153/NV-020-859) which has 18,840 acres (17,290 acres of BLM land and 1,550 acres of split-estate) (an additional 13,200 acres of BLM land located in Nevada are included in the Nevada Wilderness Study Report);

Fifteenmile Creek (OR-3-156) which has 51,290 acres (48,540 acres of BLM land and 2,750 acres of split-estate);

Oregon Canyon (OR-3-157) which has 42,900 acres (40,400 acres of BLM land and 2,500 acres of split-estate); and

Twelvemile Creek (OR-3-162) which has 28,600 acres (26,960 acres of BLM land and 1,640 acres of split-estate).

In addition there are 1,520 acres of private inholdings in the WSA Group (920 acres in Willow Creek, 40 acres in Disaster Peak, 200 acres in Fifteenmile Creek and 360 acres in Twelvemile Creek, See Table 1).

These contiguous WSAs are located in Malheur and Harney Counties, Oregon, and Humboldt County in northern Nevada, between 8 to 28 miles northwest of McDermitt, Nevada and U.S. Highway 95. The portion of the Disaster Peak WSA located in Nevada was included in the Nevada Wilderness Study Report. The Oregon portion is analyzed in this report.

The five WSAs together contain 162,000 acres of BLM land and 10,195 acres of split-estate land. The split-estate lands consist of 24 parcels that are evenly dispersed in a checkerboard pattern across the group of WSAs. Also within the WSAs are 2,680 acres of private land in 28 parcels of various sizes. All but five are 40-acre parcels. The five irregular parcels are 1,240 acres, 1,120 acres, 280 acres, 160 acres and 80 acres. The majority of the private property is concentrated in the west side of the group of WSAs (including the two largest parcels) and the

remainder are mainly in the upper northeast portion of the group.

The WSAs are bordered on the north by grass seedings (bounded by fences) on public land, with four exceptions: a BLM high-standard dirt road at the extreme northern end of the Willow Creek WSA, rimrock along Whitehorse Creek Canyon, private property at the Sweeney Ranch, and private property along Willow Creek. The western boundary is basically a seeding edge in the north, and BLM high-standard dirt roads and a large parcel of private property at Sherman Field in the south. With the exception of one small parcel of private property, the southern boundary is basically formed by BLM high-standard dirt roads along the west half and by natural features on the east half. The eastern boundary is a series of seeding fences, high-standard dirt roads, private lands, a powerline and water development projects.

Four BLM high-standard dirt roads separate the WSAs. The northern-most road is approximately 5 miles long and crosses the northward extension of the WSAs from east to west, roughly paralleling Antelope Creek. Another road, approximately 7 miles long, crosses the southwestern extension of the WSAs from north to south, roughly paralleling Little Whitehorse Creek. The third road, approximately 25 miles long, crosses the southeastern portion of the group of WSAs from the west to the east, turns north, roughly paralleling Oregon Canyon, and then joins the northern-most road mentioned above. The fourth road, approximately 5 miles long, crosses the southwestern portion of the WSA, roughly parallel to McDermitt Creek.

The five WSAs combined form an irregular shape that is approximately 31 miles long, 21 miles wide in the center and seven to eight miles wide in the north and south. The WSAs are in the Trout Creek Mountains, an uplifted and tilted geologic block with a steep escarpment along the southern and eastern extent of the range. Within the portion of the WSAs south of the range, below the escarpment, lies a collapsed volcanic dome called the McDermitt Caldera. The Quinn River Valley lies to the east and the Pueblo Valley lies to the west of the range. The Trout Creek range tilts down to the north and precipitation drains into the playa of the Coyote Lake Basin. The drainage pattern that has developed on this tilted topography is characterized by numerous semi-parallel canyons tending from the south to the northwest.

The escarpment through the WSAs is the divide between the land-locked Coyote Lake Basin in Oregon and the Humboldt Basin in Nevada. The elevation of the escarpment ranges from approximately 6,500 to 8,500 feet. The relatively high elevations cause enough year-round precipitation to support perennial streams and springs. The perennial water sources support groves of mountain mahogany, aspen and willow, as well as abundant shrub species in the headwaters and canyon bottoms throughout the range.

The predominant plant communities in the WSAs are generally typical of sagebrush/grass ecosystems, with low sagebrush dominant on the more shallow and rocky soils, Wyoming big sagebrush dominant on the deeper soils, and pockets of Basin big sagebrush on alluvium. However, a much greater shrub/tree component is located in these WSAs than is usually found in sagebrush ecosystems. Extensive stands of curlleaf mountain mahogany occur frequently in each of the WSAs, as well as groves of quaking aspen, alder and cottonwood in the headwater basins.

Each WSA has distinctive natural characteristics, the most unique being the following:

> The Willow Creek WSA has diverse terrain varying from gentle relief in the north and south to deep, wide canyons of sheer basalt rims and talus slopes in the central region.
>
> The Disaster Peak WSA sits along the northwest rim of the McDermitt Caldera, forming part of the divide that separates the Coyote Lake Basin from the Humboldt Basin. The landmark known as Disaster Peak is a large, symmetrical butte that is visible throughout the region. The western-most portion of the WSA incorporates part of an area known as The Granites, named after the abundance of very old granitic outcrops that appears at the base of the predominantly volcanic ridgeline.
>
> Topography of the Fifteenmile WSA consists of long, deep, steep-walled canyons separated by broad, smoothly rounded ridges. The canyon slopes are broken by rimrock, outcrops and scree slopes, while the ridge tops are flat or gently rolling.
>
> The Oregon Canyon WSA consists of a few long ridgelines, a deep canyon and its two steep-walled forks, and many relatively short and precipitous canyons which drain the eastern and southern slopes.

The ridge tops are broken by rock outcrops, rimrock and scree slopes. The Twelvemile WSA consists of two fault block plateaus, steeply scarped on the east and sloping gently toward the northwest. Four major canyons originate near the southeastern edge of the study area and cut deeply as they radiate to the north and northwest in a fanlike array. They are steep-sided, edged with rimrock and intersected by many tributary drainages. The ridge tops are broad and flat to gently rolling.

The WSAs were studied under Section 603, with additional acquired split estate lands studied under Section 202 of the Federal Land Policy and Management Act (FLPMA), and the group was included in the Final Oregon Wilderness Environmental Impact Statement (EIS) filed in February 1990.

There were four alternatives analyzed in the EIS: 1) an all wilderness alternative; 2) an all wilderness alternative with acquisitions and road closures (described below); 3) a partial wilderness alternative with acquisitions and road closures (also described below), which is the recommendation of this report; and 4) a no wilderness/no action alternative.

Under the all wilderness alternative with acquisitions and road closures, the entire areas of all five WSAs would be combined into a single wilderness area. A total of 190,335 acres would be recommended suitable as wilderness. This acreage includes 980 acres of non-WSA public land outside the WSAs located along the eastern boundary between the Twelvemile Creek and Fifteenmile Creek WSAs. Private inholdings totaling 3,920 acres and the mineral estate of 10,175 acres of split-estate would be acquired, if the owners are willing, through purchase or exchange. The total acreage represents a minor revision of the Final Oregon Wilderness EIS whereby 250 acres of public lands in the western region of the Disaster Peak WSA, 100 of which are split estate, were removed from the recommended category because a better defined road boundary was available.

Under the recommendation, the partial wilderness alternative with acquisitions and road closures, a total of 180,090 acres would be recommended suitable for wilderness. The portion in Oregon totals 167,990 acres. Other actions of the recommendation are as follows:

The entire areas of Oregon Canyon (42,900 acres) and Fifteenmile Creek (51,260 acres) would be combined with a portion of Twelvemile Creek (26,240 acres), and portions of Willow Creek (26,130 acres) and Disaster Peak (29,640 acres, of which 12,100 acres are in Nevada) would be combined.

In addition 2,400 acres of private parcels lying adjacent to WSA boundaries would be acquired through purchase or exchange (970 acres adjacent to Willow Creek, 1,240 adjacent to Disaster Peak and 150 acres adjacent to Fifteenmile Creek and 40 acres adjacent to 12 Mile Creek), if the owners are willing. The two combinations would create two separate wilderness areas lying adjacent to one another that would be managed as one group.

A 7-mile-long road between the two wilderness areas would remain open.

Private inholdings totaling 1,560 acres and the mineral estate on 9,365 acres of split-estate would be acquired, if the owners are willing, through purchase or exchange.

The 180,090 acres includes the Nevada portion and represents a minor revision of the Final Oregon Wilderness EIS whereby 250 acres of public lands in the western region of the Disaster Peak WSA, 100 of which are split estate, were removed from the recommended category because a better defined road boundary was available and 0.5-mile-long, 500-foot-wide section of land on both sides of the road separating the Willow Creek and Fifteenmile Creek WSAs was withdrawn from designation so that improvement work may be done at some future date.

A total of 10,205 acres would be recommended nonsuitable as wilderness. These lands are shown on Map 1. The nonsuitable acreage includes the following:

3,340 acres in Twelvemile Creek, 690 acres in the west (Area A) and 2,650 acres in the east (Area B);

4,435 acres in the northern portion of Willow Creek (Area C);

2,400 acres in Disaster Peak, 1,500 acres in the east, of which 197 acres are in Nevada (Area D); 900 acres in the south, all of which are in Nevada (Area E); 30 acres in Fifteenmile Creek.

2. Recommendation and Rationale:

—164,070 acres recommended for wilderness
9,105 acres recommended for nonwilderness

The recommendation for this group of WSAs is to designate 164,070 acres of BLM land as wilderness and release 9,105 acres for uses other than wilderness. In addition, 3,920 acres of private land would be acquired (if the owners are willing) and added to the wilderness. (These figures include ony the Oregon Portion of Disaster Peak. An additional 12,100 acres of BLM land in Nevada would be designated as wilderness and 1,100 acres would be released.) The lands to be designated wilderness include:

26,130 acres BLM and split-estate land, 1,890 acres private in the Willow Creek WSA;

17,540 acres BLM and split-estate land, 1,280 acres private in the Disaster Peak WSA;

51,260 acres BLM and split-estate land, 350 acres private in the Fifteenmile Creek WSA;

42,900 acres BLM and split-estate land in the Oregon Canyon WSA; and

26,240 acres BLM and split-estate land, 400 acres private in the Twelvemile Creek WSA.

The lands to be released from wilderness designation include 4,435 acres in the Willow Creek WSA; 1,300 acres in the Disaster Peak WSA; 30 acres in the Fifteenmile Creek WSA; and 3,340 acres in the Twelvemile Creek WSA.

The all wilderness with acquisitions and road closures alternative is considered to be the environmentally preferable alternative since it would result in the least change from the natural environment over the long term. However, the partial wilderness with acquisitions alternative would be implemented in a manner which would use all practical means to avoid or minimize environmental impacts.

The acres recommended for wilderness have extremely high wilderness values with strong public support for wilderness designation, which outweigh projected mineral development, proposed range projects and continued vehicle use on 34.5 miles of roads and 109 miles of ways, which would be closed under the recommendation.

In the portion recommended nonsuitable, projected mineral development would be allowed and regions considered unmanageable would be included. These regions include areas in the east (Area A) and west (Area B) in the Twelvemile Creek WSA; the narrow, northern projection in the Willow Creek WSA (Area C); the Area of Critical Mineral Potential (Area D) and the narrow, southern projection in the Disaster Peak WSA (Area E); all of which possess limited wilderness values.

Wilderness designation under the recommendation acres would protect and enhance existing wilderness values. Without wilderness designation, impacts from 10 projected mines would impact these values, which are recognized as some of the highest in the state. Special features would be protected including:

Willow/Whitehorse cutthroat trout and California bighorn sheep, both of which are candidates for Federal listing under the Endangered Species Act as threatened species;

Lahontan cutthroat trout, which is Federally listed as threatened in Nevada;

Lahontan redside shiner, which is an unusual species for this area; habitat for trophy mule deer;

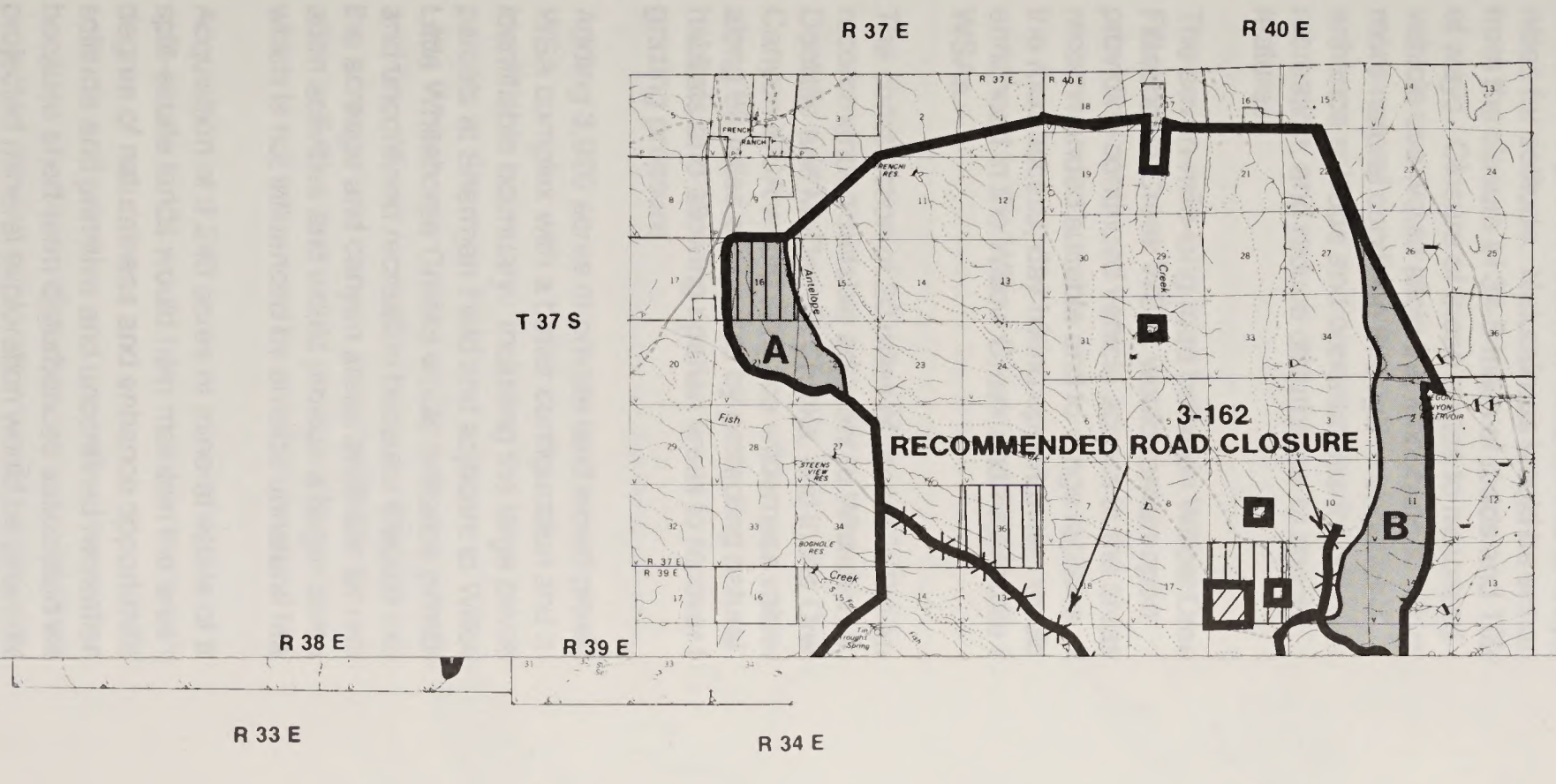
Sage grouse, a candidate for Federal listing as threatened or endangered in Oregon since they have been impacted by loss of habitat;

A high density of cultural sites; and

Outstanding ecological diversity, scenery and geologic formations.

The area contains outstanding topographic and ecological diversity. The rugged canyons, dramatic spires, extensive badlands, broad valleys and unusual vegetative composition combine with excellent solitude and primitive recreational opportunities to comprise an extremely large WSA complex with very high wilderness values.

Wilderness designation of these WSAs would add an ecosystem not presently represented in Oregon and represented in the National Wilderness Preservation System (NWPS) by only three areas. In addition, wilderness designation of these areas would contribute to balancing the geographic distribution of areas within the NWPS.



RECOMMENDED FOR WILDERNESS

RECOMMENDED FOR NONWILDERNESS

LAND OUTSIDE WSA RECOMMENDED FOR WILDERNESS

SPLIT ESTATE

STATE (None)

PRIVATE

- N -

Trout Creek Mountains Proposal

MAP-1

0 1 2 3

MILES

OR-3-152,153,156, 157,162

January, 1991

2. Recommendation and Rationale:

—164,070 acres recommended for wilderness
9,105 acres recommended for nonwilderness

The recommendation for this group of WSAs is to designate 164,070 acres of BLM land as wilderness and release 9,105 acres for uses other than wilderness. In addition, 3,920 acres of private land would be acquired (if the owners are willing) and added to the wilderness. (These figures include ony the Oregon Portion of Disaster Peak. An additional 12,100 acres of BLM land in Nevada would be designated as wilderness and 1,100 acres would be released.) The lands to be designated wilderness include:

26,130 acres BLM and split-estate land, 1,890 acres private in the Willow Creek WSA;

17,540 acres BLM and split-estate land, 1,280 acres private in the Disaster Peak WSA;

51,260 acres BLM and split-estate land, 350 acres private in the Fifteenmile Creek WSA;

42,900 acres BLM and split-estate land in the Oregon Canyon WSA; and

26,240 acres BLM and split-estate land, 400 acres private in the Twelvemile Creek WSA.

The lands to be released from wilderness designation include 4,435 acres in the Willow Creek WSA; 1,300 acres in the Disaster Peak WSA; 30 acres in the Fifteenmile Creek WSA; and 3,340 acres in the Twelvemile Creek WSA.

The all wilderness with acquisitions and road closures alternative is considered to be the environmentally preferable alternative since it would result in the least change from the natural environment over the long term. However, the partial wilderness with acquisitions alternative would be implemented in a manner which would use all practical means to avoid or minimize environmental impacts.

The acres recommended for wilderness have extremely high wilderness values with strong public support for wilderness designation, which outweigh projected mineral development, proposed range projects and continued vehicle use on 34.5 miles of roads and 109 miles of ways, which would be closed under the recommendation.

In the portion recommended nonsuitable, projected mineral development would be allowed and regions considered unmanageable would be included. These regions include areas in the east (Area A) and west (Area B) in the Twelvemile Creek WSA; the narrow, northern projection in the Willow Creek WSA (Area C); the Area of Critical Mineral Potential (Area D) and the narrow, southern projection in the Disaster Peak WSA (Area E); all of which possess limited wilderness values.

Wilderness designation under the recommendation acres would protect and enhance existing wilderness values. Without wilderness designation, impacts from 10 projected mines would impact these values, which are recognized as some of the highest in the state. Special features would be protected including:

Willow/Whitehorse cutthroat trout and California bighorn sheep, both of which are candidates for Federal listing under the Endangered Species Act as threatened species;

Lahontan cutthroat trout, which is Federally listed as threatened in Nevada;

Lahontan redside shiner, which is an unusual species for this area; habitat for trophy mule deer;

Sage grouse, a candidate for Federal listing as threatened or endangered in Oregon since they have been impacted by loss of habitat;

A high density of cultural sites; and

Outstanding ecological diversity, scenery and geologic formations.

The area contains outstanding topographic and ecological diversity. The rugged canyons, dramatic spires, extensive badlands, broad valleys and unusual vegetative composition combine with excellent solitude and primitive recreational opportunities to comprise an extremely large WSA complex with very high wilderness values.

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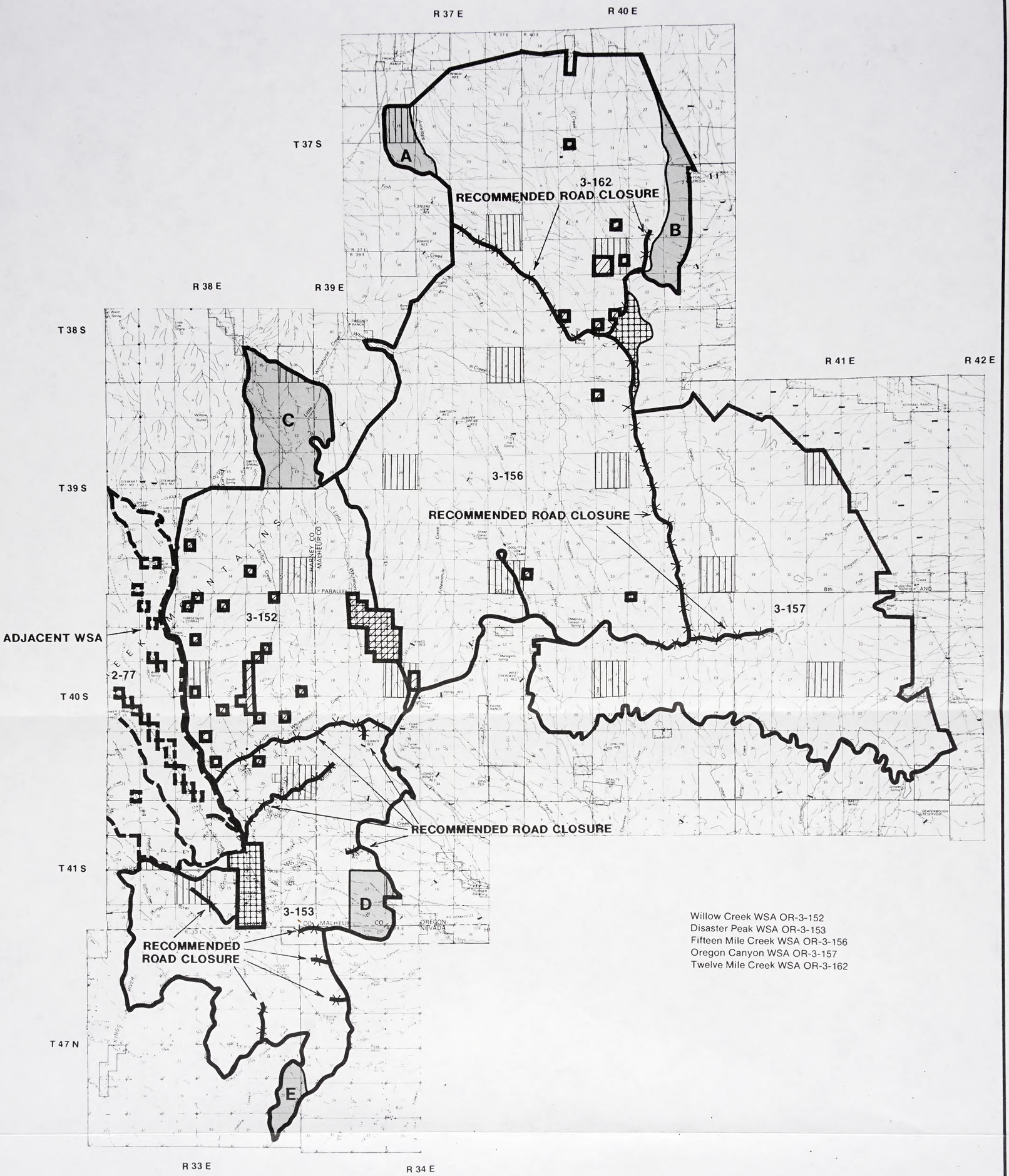


Willow Creek WSA OR-3-152
Disaster Peak WSA OR-3-153
Fifteen Mile Creek WSA OR-3-156
Oregon Canyon WSA OR-3-157
Twelve Mile Creek WSA OR-3-162

RECOMMENDED FOR WILDERNESS

RECOMMENDED FOR NONWILDERNESS

LAND OUTSIDE WSA RECOMMENDED FOR WILDERNESS

SPLIT ESTATE

STATE (None)

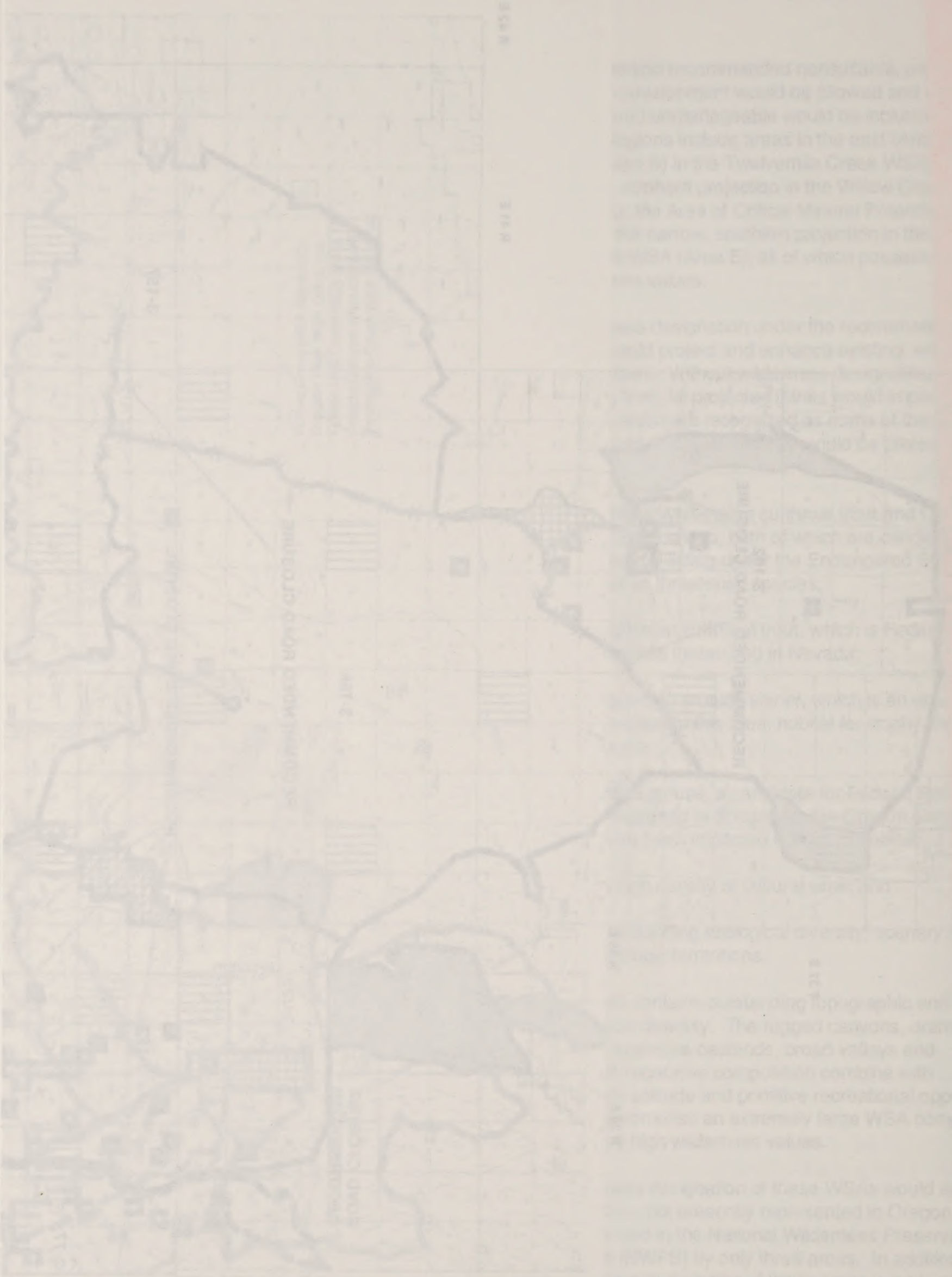
PRIVATE

-N-

Trout Creek Mountains Proposal
MAP-1

0 1 2 3
MILES

OR-3-152,153,156, 157,162
January, 1991



The high quality of wilderness values in this WSA complex is also apparent from the high number of public comments received that support wilderness designation. A total of 130 out of the 178 opinions (73 percent) received in public meetings, or in letters received from the public and Federal, State and local agencies were in favor of wilderness designation for all or parts of the Trout Creek Mountains group.

Acquisition of the 9,240 acres of mineral estate and 3,920 acres of private land would prevent projected disturbance from energy and mineral exploration and ensure the preservation of naturalness and opportunities for solitude. Naturalness would be enhanced from the closure of 34.5 miles of roads and 109 miles of ways. Closure of these routes to motorized vehicle use would allow the landscape to return to a more natural condition through re-vegetation, enhance solitude and opportunities for primitive recreation, and reduce disturbance to special features.

The seven-mile-long road between Willow Creek and Fifteenmile Creek WSAs would remain open, providing continued vehicle access to the areas recommended suitable and to range facilities. With the road access, day hiking opportunities would be enhanced in the Willow Creek and Fifteenmile Creek WSAs.

The construction of 20 miles of fences in the area recommended suitable adjacent to Whitehorse, Doolittle and McDermitt Creeks, and in the Oregon Canyon WSA would enhance wilderness values along 80 miles of streams by protecting natural habitats and allowing riparian areas to recover from grazing pressure.

Adding 3,920 acres of private land would provide the WSA complex with a better configuration and a more identifiable boundary. Including the large private parcels at Sherman Field and adjacent to Willow and Little Whitehorse Creeks would enhance primitive and unconfined recreation because it would increase the acreage and canyon areas available for recreation activities and would provide a larger core area which is not influenced by outside unnatural features.

Acquisition of 9,240 acres of mineral estate of the split-estate lands would help maintain the area's degree of naturalness and enhance opportunities for solitude and primitive and unconfined recreation because short-term disturbances associated with projected mineral exploration would be prevented.

The 10,205 acres recommended nonsuitable would include 3,340 acres along the west (Area A) and east (Area B) sides of the Twelvemile Creek WSA to improve boundary definitions, 4,405 acres in the northern portion of the Willow Creek WSA (Area C), 1,300 acres in Oregon and 1,100 acres in Nevada in the narrow southern extension (Area E) and Area of Critical Mineral Potential (Area D) in the Disaster Peak WSA. In the area recommended nonsuitable for wilderness, exploration for geothermal and mineral resources would cause short-term impacts to wilderness values, and allow for development of an open-pit gold mine in an Area of Critical Mineral Potential, including a milling/leaching complex in the east-central portion which would impair wilderness values on 800 acres over the long term. On a long-term basis, the gold mine would impair naturalness on approximately 3,000 acres; it would impair solitude for visitors in adjacent areas and primitive recreation opportunities in the vicinity of the mine.

3. Criteria Considered in Developing the Wilderness Recommendations

Wilderness Characteristics

A. Naturalness: The Trout Creek Mountains Group of WSAs are generally natural. The WSAs contain some of the most outstanding and diverse high desert wildlife habitat in eastern Oregon. The 4,500 to 8,500-foot elevations afford an excellent diversity of natural vegetative communities that vary from semi-arid sagebrush desert to stream and riparian habitats. The Trout Creek Mountains contain what is considered to be some of the highest quality mule deer and sage grouse habitat in Malheur County. Willow/Whitehorse and the Lahontan cutthroat trout occur in the WSA complex and represent two of the last remaining genetically pure strains of native trout remaining in the Pacific Northwest.

A total of 145 unnatural features in the five WSAs influence approximately 14 percent of the combined area. Unnatural features that affect the WSAs' naturalness include 32 fences totaling 60 miles, 22 reservoirs and 18 springs, six exclosures and corrals, one snow measurement station, one cabin, one building, one dump and one abandoned irrigation ditch. Unnatural features outside the WSAs that affect naturalness inside of them include boundary roads, crested wheatgrass seedings, ranches, mines, and transportation and power transmission routes.

Table 1. Land Status and Acreage Summary of the Study Areas

	Willow Creek (OR-3-152)	Disaster Peak (OR-3-153/ NV-020-859)	Fifteenmile Creek (OR-3-156)	Oregon Canyon (OR-3-157)	Twelvemile Creek (OR-3-162)	Total
Within Wilderness Study Area						
BLM (surface and subsurface)	28,810	17,290[3]	48,540	40,400	26,960	162,000
Split-Estate (BLM surface only) [1]	1,755	1,550	2,750	2,500	1,640	10,195
Inholdings (State, Private) [1]	920	40	200	0	360	1,520
Total	31,485	18,880	51,490	42,900	28,960	186,915
Within the Recommended Wilderness Boundary						
BLM (within WSA)	24,670	16,190[4]	48,510	40,400	24,080	153,850
BLM (outside WSA)	0	0	0	0	980	980
Split-Estate (within WSA)[1]	1,460	1,350	2,750	2,500	1,180	9,240
Split-Estate (outside WSA) [1]	0	0	0	0	0	0
Total BLM Land Recommended for Wilderness	26,130	17,540	51,260	42,900	26,240	164,070
Inholdings (State, Private) [1,2]	1,890	1,280	350	0	400	3,920
Within the Area Not Recommended for Wilderness						
BLM	4,140	1,100[5]	30	0	2,880	8,150
Split Estate [1]	295	200	0	0	460	955
Total BLM Land Not Recommended for Wilderness	4,435	1,300	30	0	3,340	9,105
Inholdings (State, Private) [1]	0	0	0	0	0	0

[1]Appendix 1 is a detailed description of inholdings and split-estate tracts included within the study. For purposes of this report, split-estate lands are defined only as those lands with Federal surface and non Federal subsurface (minerals).

[2]Values also include 2,400 acres of private lands adjacent to the WSAs that are recommended for acquisition (970 acres in the Willow Creek WSA, 1,240 acres in the Disaster Peak WSA, 150 acres in the Fifteenmile Creek WSA, and 40 acres in Twelvemile Creek WSA).

[3]An additional 13,200 acres are located in Nevada.

[4]An additional 12,100 acres are located in Nevada.

[5]An additional 1,100 acres are located in Nevada.

In the suitable portions, topography generally screens the unnatural features because nearly all of the developments are in draws or in basins. The rugged terrain throughout much of the Willow Creek WSA has limited developments and most unnatural features are concentrated in the northern and southern portions of the WSA. In the Disaster Peak WSA intrusions from vehicle travel on boundary roads and dead-end access roads, and ranching activities to the southeast are generally brief and distant, and their influence does not penetrate far into the WSA. The Fifteenmile Creek WSA appears natural as most of the area is devoid of signs of human activity. Many of the 53 interior developments are not obtrusive because they are small and are effectively screened by the topography and vegetation. Nearby developments have a minor influence due to topographic and vegetative screening. The Oregon Canyon WSA is in a highly natural condition and large portions of the interior have no developments. The few that exist are concentrated in the south-central portion of the WSA. Most of the developments are hidden in draws along the south and eastern escarpments or along the top of the southern escarpment. The Twelvemile Creek WSA has few unnatural features. Developments are spread across the WSA, along ridgelines and in some small tributary headwater basins above the main drainages, where they are screened by the topography.

In most of the unsuitable areas unnatural features are more obtrusive because of flat topography or poor configuration. In the Twelvemile Creek WSA, outside sights and sounds include ranches and some livestock projects such as seedings and reservoirs.

These highly visible developments diminish the perception of naturalness in the vicinity of Antelope Creek Canyon to the west (Area A) and along the eastern escarpment (Area B). In the northern extension of the Willow Creek WSA (Area C) developments are numerous and close, and their influences are strong due to the minimal screening. The narrow, southern-most extension of the Disaster Peak WSA (Area E) has a poor configuration and relatively low elevation; as a result naturalness is diminished.

B. Solitude: In the suitable portion, all five of the WSAs offer outstanding opportunities for solitude because of the areas' diverse topography. The size and configuration of the mountain range provide excellent opportunities for dispersed use. Visitors tend to use natural travel corridors along the bottoms of major canyons, easily accessible ridge tops or the headwater basins. Topography and vegetation provide excellent screening in areas with relatively high use and opportunities for solitude are outstanding. The short tributary drainages into the main canyons provide visitors with ample opportunities to find seclusion.

Each WSA has 40 to 60 miles of canyons and tributaries. The configuration and size of the canyons and tributaries in the Willow Creek, Fifteenmile Creek, Twelvemile Creek and Oregon Canyon WSAs combine with a patchwork of mountain mahogany, quaking aspen and willow in the riparian zones to offer visitors numerous opportunities to find a secluded spot. In addition to canyons and tributaries, the Disaster Peak WSA has extensive stands of vegetation that may be nearly impenetrable except where numerous game and cattle trails allow access to enclosed clearings and springs. Opportunities for solitude are generally very good in these areas.

In the unsuitable portion, opportunities for solitude are limited in the extreme east and west portions of the Twelvemile Creek WSA, the southern extension of the Disaster Peak WSA and in the northern-most extension of the Willow Creek WSA. In the Twelvemile Creek WSA the 0.25-mile wide western-most extension of the WSA contains low, rolling hills. Due to the configuration of this section, visitors would be confined and their opportunities for solitude would be reduced.

Outside sights and sound include ranching activities along the northern and eastern edges of the study area. Their influence is most prominent on the eastern escarpment and consequently opportunities for solitude along these exposed slopes are limited. In the Disaster Peak WSA solitude is compromised along the southern-most extension which is narrow with open slopes and low brush cover.

C. Primitive and Unconfined Recreation: Primitive and unconfined types of recreation opportunities are outstanding in all five WSAs. A variety of plant and wildlife species, interesting geologic formations and panoramic desert vistas provide attractions for sightseers and photographers. Trophy mule deer and other game species are available in all the WSAs and are hunted with a high degree of success. Birdwatchers can find a high abundance and diversity of raptors and passerine birds in the Willow Creek, Fifteenmile Creek, Twelvemile Creek and Oregon Canyon WSAs.

The major canyons provide many hiking and backpacking routes which vary in distance and difficulty. Some of the most challenging hikes can be found in the spectacular steep-walled canyons of Whitehorse Creek and Little Whitehorse Creek of the Fifteenmile Creek WSA, and Oregon Creek Canyon in the Oregon Canyon WSA. Water and campsites along these routes are abundant. The gentle ridgetops and consistent snowpack on the higher ridges provide good conditions for cross-country skiing and snow shoeing in the Disaster Peak, Fifteenmile Creek and Oregon Canyon WSAs. Native trout found in pools and beaver ponds of several major streams provide sport for the dedicated angler in the Willow Creek, Fifteenmile Creek and Oregon Canyon WSAs.

Portions of the WSAs do not provide outstanding opportunities for primitive and unconfined recreation. These portions include the open slopes of the southern-most and western-most extensions of the Disaster Peak WSA, and the western-most extension and the eastern escarpment of the Twelvemile Creek WSA.

D. Special Features: All of the WSAs provide outstanding examples of rugged, dissected canyonlands with areas of high scenic quality. The andesite, rhyolite and dacite flows of the Trout Creek formation provide the professional and amateur geologist an opportunity to study the overlying volcanics and the sedimentary leaf-bearing beds underneath.

There is a greater variety of plants in the Trout Creek Mountains group of WSAs than there is in most other areas of southeastern Oregon. Although few uncommon species are known to occur in the study area, topography and rainfall have resulted in a diverse array of ecosites which support over 225 species, both woody and herbaceous. One plant

species of special interest, *Collomia macrocalyx* (bristle-flowered collomia), occurs in the Oregon Canyon WSA and is a Federal candidate for listing under the Endangered Species Act.

The diversity of species is perhaps the area's most significant wildlife characteristic. This is a reflection of the variety of natural communities that vary from semi-arid sagebrush desert to stream and riparian habitats. The Trout Creek Mountains group of WSAs contain what is considered to be some of the highest quality mule deer and sage grouse habitat in Malheur County. In addition, the area provides excellent California bighorn sheep habitat and in 1987 they were re-introduced in the Oregon Canyon WSA. California bighorn sheep are Federal candidates for listing under the Endangered Species Act. Three large predators may be found in this area: Coyote, bobcat and cougar. Although they are rare, cougars have been seen along Little Whitehorse Creek.

Three species of fish are noteworthy. The Willow/ Whitehorse cutthroat trout is a candidate for Federal listing under the Endangered Species Act. Populations may be found in Willow Creek, Whitehorse Creek and their perennial tributaries. The Lahontan cutthroat trout is Federally listed as threatened in Nevada and is native to the Lahontan Basin. Native populations exist in the Sage Creek and Line Canyon drainages of the Disaster Peak WSA. These two populations are among the few remaining genetically pure strains of native trout left in the Pacific Northwest. The physiological adaptations of these species are valuable to fish biologists seeking to re-introduce trout into harsh desert stream environments. They may also be important in interpreting the biogeographical history of the Great Basin and the Columbia Plateau. Lahontan redside shiners are also found in these streams, which represent the northern-most extent of their range.

Cultural inventories performed by BLM personnel and INFOTEC Research, Inc. have discovered over 100 archeological sites within or in close proximity to the WSAs, most of which are lithic scatters. Several rock shelters and two obsidian sources have been discovered. Chronological appraisal of collected projectile points has provided information allowing for a reconstruction of human utilization of the area over the last 7,000 years.

Diversity in the National Wilderness Preservation System

A. Expanding the diversity of natural systems and features as represented by ecosystems: Wilderness designation of this group of WSAs would add an ecosystem not presently represented in Oregon, and represented in the National Wilderness Preservation System by only three areas. There are 66 other BLM areas in the state under study with this ecosystem. This information is summarized in Table 2.

Of the major vegetative communities listed in the Basin and Range section of the Oregon Natural Heritage Plan, all five WSAs contain big sagebrush/ bluebunch wheatgrass, low sagebrush/bluebunch wheatgrass, low sagebrush/Idaho fescue and Mountain Mahogany communities.

B. Assessing the opportunities for solitude or primitive recreation within a day's driving time (five hours) of major population centers: The Trout Creek Mountains Group of WSAs are within a five hour drive of two major population centers (over 100,000). Table 3 summarizes the number and acreage of designated areas and other BLM study areas within a five hour drive of the population centers.

C. Balancing the geographic distribution of wilderness areas: The Trout Creek Mountains Group WSAs would contribute to balancing the geographic distribution of areas within the National Wilderness Preservation System.

There is only one designated wilderness area within 100 miles of the WSA group.

Manageability.

(The area must be capable of being effectively managed to preserve its wilderness character).

The portion of the WSA complex recommended suitable for wilderness designation could reasonably be managed as wilderness to preserve values now present in the area. Manageability would be further enhanced by closing the dead-end roads which would enhance wilderness values by eliminating vehicle use and restoring the area to a more natural appearance through re-vegetation, acquiring the mineral estate of the split estate land parcels which would preclude mineral development on them, and combining the five WSAs into two wilderness areas.

Manageability would also be enhanced by acquiring private parcels and adjusting boundaries to more easily defined features. Acquiring 3,920 acres of private inholdings and private parcels adjacent to the WSA group would provide major improvements in the configuration of the Willow Creek, Disaster Peak and Fifteenmile Creek WSAs and increase opportu-

Table 2. Ecosystem Representation

Bailey-Kuchler Classification	NWPS Areas	NWPS Acres	Other BLM Studies Areas	Other BLM Studies Acres
Province/Potential Natural Vegetation				
NATIONWIDE				
Intermountain Sagebrush Province/Sagebrush-Steppe	3	76,699	136	4,184,985
OREGON				
	0	0	66	1,797,679

Table 3. Wilderness Opportunities for Residents of Major Population Centers

Population Centers	NWPS Areas	NWPS Acres	Other BLM Studies Areas	Other BLM Studies Acres
Boise, Idaho	16	4,741,570	126	5,060,460
Reno, Nevada	45	4,967,230	175	6,904,809

nities for solitude and primitive recreation there. Adding 980 acres to the southeastern region of the Twelvemile Creek WSA would adjust the boundary to a well-defined rimrock wall.

The portion of the WSA complex recommended nonsuitable for wilderness designation is considered to be unmanageable as wilderness. Excluding 3,340 acres in the eastern and western portions of the Twelvemile Creek WSA from the area recommended suitable for wilderness would adjust the boundary to a way along Antelope Creek and rimrock overlooking Twelvemile Creek Canyons, respectively. Excluding 4,405 acres in the northern portion of the Willow Creek WSA would improve the configuration and exclude a region with a concentration of unnatural features. Excluding 2,400 acres in the eastern and southern portion of the Disaster Peak WSA would circumvent conflicts with potential development of mineral resources and configuration problems that reduce opportunities for solitude and primitive recreation. All of these regions are in areas with low wilderness values.

Energy and Mineral Resource Values

The U.S. Geological Survey (USGS) and U.S. Bureau of Mines (USBM) evaluated 30,195 acres of Disaster Peak WSA for mineral resources and mineral resource potential in 1988. According to their report, "Mineral Resources of the Disaster Peak Wilderness Study Area, Harney and Malheur Counties, Oregon, and Humboldt, Nevada," no resources were identified within the WSA. There is high and low potential for gold resources in quartz veins in the southern part and low potential for epithermal gold, silver, mercury and uranium resources in the northeastern part of the study area. The WSA has no potential for sand and gravel, oil and gas, or geothermal energy resources.

The USGS/BM also evaluated mineral resources and mineral resource potential for parts of the four other WSAs in the group; Fifteenmile Creek WSA (51,200 acres), Oregon Canyon WSA (42,900 acres), Twelvemile Creek WSA (25,340 acres) and Willow

Creek WSA (26,130 acres). Findings of the mineral surveys were published in a 1988 report, "Mineral Resources of the Fifteenmile Creek, Oregon Canyon, Twelvemile Creek and Willow Creek Wilderness Study Areas, Malheur and Harney Counties, Oregon."

According to the report, "The four study areas lie near mineralized calderas to the south; however, none of the WSAs have any identified resources. All four study areas have low potential for zeolite resources because of their volcanic terrain. The four WSAs have a low potential for geothermal energy resources because of their proximity to warm-water wells and springs nearby. There are no oil and gas leases in the study areas, and all areas have low potential for oil and gas resources. Sand and gravel accumulations are present locally in all the study areas, but material of similar quality is available closer to potential markets."

The Oregon Department of Geology and Mineral Industries (DOGAMI) and Barringer Resources, Inc., under BLM contracts, also evaluated the energy and mineral resources of the Trout Creek Mountains group of WSAs in 1984. Resources were evaluated from available geologic data supplemented by a limited amount of geochemical stream sediment sampling. DOGAMI evaluated energy and mineral resources of that portion of the WSAs situated in Oregon, and Barringer evaluated resources of that portion of the group situated in Nevada. Findings of the DOGAMI evaluation are incorporated in the report, "Geology and Mineral Resources of 18 BLM Wilderness Study Areas, Harney and Malheur Counties, Oregon." Details of Barringer Resources' evaluation are in the report, "Geochemical and Geostatistical Evaluation of Wilderness Study Areas, Winnemucca District, Northwest Nevada." The mineral potential of the Trout Creek Mountains group was revised in 1987 using these report evaluations; a heavy mineral analysis conducted by Barringer Resources, Inc. in 1984, and new information.

Approximately 1,500 acres in the eastern portion of Disaster Peak WSA has been nominated as an Area of Critical Mineral Potential (ACMP). An ACMP is an area of existing or de facto withdrawal from mineral development that has been nominated by members of the public as having mineral potential that is important to the local, regional, or national economy, or that could become important in the future. ACMPs are used by BLM to reevaluate the withdrawals.

Based on indirect evidence, the entire Trout Creek Mountains group is considered to have a moderate potential for the occurrence of geothermal resources suitable for low-temperature, direct-heat application (e.g., space heaters) due in part to evidence of geologically recent volcanism in the area. Based on direct evidence (i.e., known occurrences in above normal concentrations), portions of the group are considered to have a moderate potential for the occurrence of uranium/thorium.

No confirmed mineral deposits have been found in the group of WSAs. However, gold, silver and mercury are known to occur in portions of the group. Fairly substantial amounts of gold occur in the eastern portion of Disaster Peak WSA. Based on this direct evidence, the eastern portion of the WSA is considered to have a high potential for the occurrence of gold. Also based on direct evidence, portions of the group are considered to have a moderate potential for gold, beryllium, silver and mercury.

Based on direct evidence, portions of Disaster Peak WSA are considered to have a moderate potential for the occurrence of lithium bentonite and zeolite.

The energy and mineral reports of the USGS and Bureau of Mines generally gave lower potentials than the DOGAMI and Barringer reports. For example, the potential for geothermal resources was reduced from moderate in the DOGAMI report to low in the USGS and Bureau of Mines report. In the case of Disaster Peak, no potential for geothermal resources was discovered by the USGS and Bureau of Mines. The potentials for gold, silver and mercury were also reduced from moderate to low in the USGS and Bureau of Mines report for the Disaster Peak WSA.

As of May, 1991, there were 11 mining claims in the Disaster Peak, WSA, 12 claims in the Fifteen Mile WSA, and no claims in the remaining WSAs in the complex

Local Social and Economic Considerations

Livestock use at the current level of 20,073 AUMs and recreation use totaling 6,000 visitor days per year are the primary resource outputs that generate economic activity in the WSAs. Local personal income generated annually from these existing use levels amounts to approximately $240,876 for livestock grazing and $72,000 related to recreation use in the WSAs, for an overall total of $312,876.

Under the recommendation, livestock grazing would remain at 20,073 AUMs and overall recreation use would remain unchanged at approximately 6,000

visitor days per year. Annual local personal income generated from resource outputs in the WSA would remain at approximately $313,000. There would also be an unknown level of increase attributable to the projected mineral development of one metallic mine. There were no social issues identified with the study of the Trout Creek Mountains Group Wilderness Study Areas.

Summary of WSA-Specific Public Comments

Public involvement has occurred throughout the wilderness review process. Certain comments received during the inventory process and early stages of the EIS preparation were used to develop significant study issues and various alternatives for the ultimate management of those lands found to have wilderness values.

During formal review of the draft EIS and Supplement to the draft EIS, a total of 198 comments specifically addressing the Trout Creek Mountains Group WSAs were received. Of those, 139 were written and 59 were oral statements received at public hearings on the draft and supplemental EIS. A total of 130 commenters supported wilderness designation for all or parts of the WSA group, 48 opposed it and 20 offered comments without expressing an opinion for or against wilderness.

Those favoring wilderness designation commented on the outstanding scenery and naturalness of the area. Many mentioned that designation would protect threatened and endangered species such as Willow/Whitehorse and Lahontan cutthroat trout, as well as ecosystems, watersheds and nongame wildlife. Some individuals felt that wilderness designation would improve tourism or that wilderness values were of greater importance than mineral resources which had been over-emphasized in the analysis and designation process.

Those opposing wilderness designation objected to removing land from multiple use management and expressed fears that the public would lose access to the area because of road closures. Livestock operators felt that costs and inconvenience would rise dramatically or that they would lose grazing privileges altogether. Many objected to the prospect of losing access to their mining claims or mineral resources in general.

Eight WSA-Specific comments were received from Federal, State and local agencies. Four comments supported wilderness designation for all or parts of the WSAs and three recommended the nonsuitable alternative. The Environmental Protection Agency supported wilderness designation for the group of WSAs citing that water quality improvements would occur. The State of Nevada submitted three comments from the Governor's office. The Governor of Nevada approved the recommendation offered by an ad hoc committee of concerned state agencies, which did not support wilderness designation for the Disaster Peak WSA because geothermal resources might occur there and the wilderness character of the area had already been lost due to the existence of roads. The Nevada Department of Minerals and Division of State Parks both concurred with the proposed action to recommend the Disaster Peak WSA for wilderness status. The Oregon Department of Fish and Wildlife supported wilderness designation on the condition that vehicle access to a controlled hunt area be maintained. (This condition would be met by continued access via the road between the Fifteenmile and Willow Creek WSAs which is the recommendation.) Harney County and the Burns Paiute Reservation both recommended a nonsuitable designation for the Willow Creek and Disaster Peak WSAs mainly because mineral development would be forfeited.

There were three comment letters received on the final EIS for this WSA.

Impacts of Resources

The following comparative impact table summarizes the effects on pertinent resources for all of the alternatives considered, including designation or non-designation of the entire area as wilderness.

Table 4. Comparative Summary of the Impacts by Alternatives

Issue Topics	Recommendation (Partial Wilderness with Acquisitions and Road Closures Alternative)	All Wilderness Alternative
Impacts on Wilderness Values	Wilderness designation of 180,090 acres would protect and enhance existing wilderness values. Acquisition of 9,365 acres of mineral estate would further protect wilderness values. On the 10,205 acres designated nonsuitable for wilderness, projected activities would directly impair wilderness values on approximately 3,900 acres (2 percent) of the five WSAs with further declines from other potential uses over the long term.	Wilderness designation of the entire area in each of the five WSAs would protect and enhance existing wilderness values on 185,395 acres.
Impacts on Energy and Mineral Development	No impact to energy development is expected, since none is projected. Production of gold/silver/mercury from eight projected mines, bentonite from one projected mine and zeolites from one projected mine would be foregone. Production would occur from one projected gold mine in the nonsuitable area.	No impact to energy development is expected, since none is projected. Production of gold, silver and mercury from nine projected mines, bentonite from one projected mine and zeolites from one projected mine would be foregone.
Impacts on Vegetation	In the suitable area, revegetation would occur on 34.5 miles of roads and 109 miles of ways. Riparian vegetation would be improved along 80 miles of streams. Upland range condition would improve. In the nonsuitable portion, development of an open-pit gold mine would result in long-term removal of vegetation on 800 acres.	A total of 115 miles of closed ways would revegetate in 3 to 5 years. Riparian vegetation would be improved on approximately 80 miles of streams. Upland range conditions would improve.
Impacts on Wildlife	In the suitable area, wildlife habitat and populations would be maintained on 176,170 acres. In the nonsuitable area, wildlife habitat and populations would be lost on 800 acres. A population of Lahontan cutthroat trout may be harmed.	Wildlife habitat and populations would be maintained on 185,085 acres.
Impacts on Watershed	Watershed condition would improve on 80 miles of streams in the suitable portion. In the nonsuitable portion, projected mine development would degrade watershed conditions on 3 miles of streams.	Watershed condition would improve on 80 miles of streams.

All Wilderness with Acquisitions and Road Closures Alternative	No Wilderness/No Action Alternative
Closing of the roads between the WSAs, combining the entire areas of the five WSAs into a single wilderness area and designating 190,335 acres as wilderness would protect and enhance existing wilderness values. The acquisition of 10,175 acres of mineral estate would further protect wilderness values.	In the absence of wilderness designation, projected activities would both directly and indirectly impair wilderness values over approximately 26,530 acres (14 percent of the five WSAs) with further declines from other potential uses over the long term.
No impact to energy development is expected, since none is projected. Production of gold/silver/mercury mines, one projected bentonite mine, and one projected zeolite mine would be foregone.	There would be no impact to energy development. Production of gold/silver/mercury from nine projected mines, bentonite from one projected mine and zeolites from one projected mine would occur.
The 53 miles of roads and 115 miles of ways would revegetate. Riparian vegetation would be improved on approximately 80 miles of streams. Upland range condition would improve.	Long-term removal of vegetation would occur on 2,680 acres. Fifty-three miles of roads and 115 miles of ways would not revegetate. Riparian vegetation would be improved along 3 miles of streams. Development of range projects would remove vegetation on 4 acres. Upland range condition would improve.
Wildlife habitat and populations would be maintained on 185,375 acres.	Mineral development would displace big game species, including mule deer, bighorn sheep and antelope, and eliminate or reduce populations of some small terrestrial species on 2,680 acres. A population of Lahontan cutthroat trout may be harmed.
Watershed condition would improve on approximately 80 miles of streams.	Watershed condition would improve on 80 miles of streams. Projected mine development would degrade watershed conditions on 3 miles of streams.

Table 4. Comparative Summary of the Impacts by Alternatives

Issue Topics	Recommendation (Partial Wilderness with Acquisitions and Road Closures Alternative)	All Wilderness Alternative
Impacts on Livestock Grazing	Livestock use would remain at 20,073 AUMs. The use of 34.5 miles of roads and 109 miles of ways for day to day livestock management would be precluded. Construction of one reservoir and two springs would be foregone.	Livestock use would remain at 20,073 AUMs. The use of 115 miles of ways for day to day livestock management would be precluded. Construction of one reservoir and two springs would be foregone.
Impacts on Recreation Use	The area's recreation use level of approximately 6,000 visitor days per year would not be affected.	The area's recreation use level of approximately 6,000 visitor days per year would not be affected. Wilderness designation would result in a change to primitive, non-motorized types of recreation use.
Impacts on Local Personal Income	Annual local personal income would remain at approximately $313,000. There would also be an unknown level of increase attributable to the projected mineral development.	Annual local personal income would remain at approximately $313,000.

All Wilderness with Acquisitions and Road Closures Alternative	No Wilderness/No Action Alternative
Livestock use would remain at 20,073 AUMs. The use of 53 miles of roads and 115 miles of ways for day to day livestock management would be precluded. Construction of one reservoir and two springs would be foregone.	Livestock use allocation would be reduced by approximately 223 AUMs to an overall use level of 19,850 AUMs. Construction of a reservoir and two springs would occur.
The area's recreation use level of approximately 6,000 visitor days per year would not be affected. Wilderness designation would result in a change to primitive, non-motorized types of recreation use.	The area's recreation use level of approximately 6,000 visitor days per year would not be affected.
Annual local personal income would remain at approximately $313,000.	Annual local personal income would decrease by approximately $3,000. There would also be an unknown level of increase attributable to the projected mineral development.

Table 4. Comparative Summary of the Impacts by Alternatives

Appendix 1 - Estimated Costs of Acquisition of Non Federal Holdings Within Areas Recommended for Designation[1]

	Legal Description (Prior to any Subdivision) 1/	Total Acreage	Number of Owners (If Parcel has been Subdivided)	Type of Ownerhsip by Estate (Federal, State Private, other) Surface Estate	Subsurface Estate	Presently Proposed for Acquisition (Yes, No)	Preferred Method of Acquisition (Purchase, Exchange, other)	Estimated Cost of Acquisition [2] Land Costs	Processing Costs
Parcel #1	T.37S., R.37E., Sec. 16: All.	640	1	Federal	State	No	N/A	N/A	N/A
Parcel #2	T.37S., R.37E., Sec. 36: All.	640	1	Federal	State	Yes	Exchange	N/A	[3]
Parcel #3	T.37S., R. 40E., Sec. 32: SE1/4NW1/4	40	1	Private	Private	Yes	OR Canyon Exchange	N/A	[4]
Parcel #4	T.38S., R.38E., Sec. 36: SW1/4, S1/2SE1/4	240	1	Federal	State	No	N/A	N/A	N/A
Parcel #5	T.38S., R.39E., Sec. 36: All.	640	1	Federal	State	Yes	Exchange	N/A	[3]
Parcel #6	T.38S., R.40E., Sec. 9: NW1/4SE1/4	40	1	Private	Private	Yes	OR Canyon Exchange	N/A	[4]
Parcel #7	T.38S., R.40E., Sec. 16: N1/2, W1/2SE1/4, SE1/4SE1/4	440	1	Federal	State	Yes	Exchange	N/A	[3]
Parcel #8	T.38S., R.40E., Sec. 16: SW1/4	160	1	Private	Private	Yes	Exchange	N/A	[3]
Parcel #9	T.38S., R.40E., Sec. 16: NE1/4SE1/4	40	1	Private	Private	Yes	OR Canyon Exchange	N/A	[4]
Parcel #10	T.38S., R.40E., Sec. 28: NW1/4NE1/4	40	1	Private	Private	Yes	Purchase	$3,000	$5,000
Parcel #11	T.38S., R.40E., Sec. 28: SW1/4NW1/4	40	1	Private	Private	Yes	OR Canyon Exchange	N/A	[4]
Parcel #12	T.38S., R.40E., Sec. 29: NW1/4NW1/4	40	1	Private	Private	Yes	OR Canyon Exchange	N/A	[4]
Parcel #13	T.39S., R.38E., Sec. 28: NE1/4SW1/4	40	1	Private	Private	Yes	Purchase	$3,000	[5]
Parcel #14	T.39S., R.38E., Sec. 35: SW1/4NW1/4	40	1	Private	Private	Yes	Purchase	$3,000	[5]
Parcel #15	T.39S., R.38E., Sec. 36:	640	1	Federal	State	Yes	Exchange	N/A	[3]

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Parcel #16	T.39S., R.39E., Sec. 16:	640	1	Federal	State	Yes	Exchange	N/A	3
Parcel #17	T.39S., R.39E., Sec. 36:	640	1	Federal	State	Yes	Exchange	N/A	3
Parcel #18	T.39S., R.40E., Sec. 4: SW1/4NW1/4	40	1	Private	Private	Yes	OR Canyon Exchange	N/A	4
Parcel #19	T.39S., R.40E., Sec. 16:	640	1	Federal	State	Yes	Exchange	N/A	3
Parcel #20	T.39S., R.40E., Sec. 31: Lot 2	40.43	1	Private	Private	Yes	Wilkinson Exchange	N/A	4
Parcel #21	T.39S., R.40E., Sec. 36:	640	1	Federal	State	Yes	Exchange	N/A	3
Parcel #22	T.39S., R.41E., Sec. 16: All.	640	1	Federal	State	Yes	Exchange	N/A	3
Parcel #23	T.40S., R.38E., Sec. 2: Lot 1	33.96	1	Private	Private	Yes	Purchase	$2,547	5
Parcel #24	T.40S., R.38E., Sec. 3: SE1/4NW1/4	40	1	Private	Private	Yes	Purchase	$3,000	5
Parcel #25	T.40S., R.38E., Sec. 4: Lot 2, SE1/4NW1/4	72.89	1	Private	Private	Yes	Purchase	$5,467	5
Parcel #26	T.40S., R.38E., Sec. 9: SW1/4NE1/4	40	1	Private	Private	Yes	Purchase	$3,000	5
Parcel #27	T.40S., R.38E., Sec. 11: SE1/4SW1/4, NW1/4SE1/4	80	1	Private	Private	Yes	Purchase	$6,000	5
Parcel #28	T.40S., R.38E., Sec. 13: SW1/4SE1/4	40	1	Private	Private	Yes	Purchase	$3,000	5
Parcel #29	T.40S., R.38E., Sec. 14: W1/2W1/2 Sec. 23: W1/2NW1/4 Sec. 24: NE1/4NE1/4	280	1	Private	Private	Yes	Purchase	$21,000	5
Parcel #30	T.40S., R.38E., Sec. 16: N1/2, N1/2S1/2, S1/2SW1/4, SE1/4SE1/4	600	1	Federal	State	Yes	Exchange	N/A	3

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Parcel #31	T.40S., R.38E., Sec. 16: SW1/4SE1/4	40	1	Private	Private	Yes	Purchase	$3,000	5
Parcel #32	T.40S., R.38E., Sec. 22: SE1/4NW1/4	40	1	Private	Private	Yes	Purchase	$3,000	5
Parcel #33	T.40S., R.38E., Sec. 23: NE1/4SW1/4	40	1	Private	Private	Yes	Purchase	$3,000	5
Parcel #34	T.40S., R.38E., Sec. 24: NW1/4SW1/4	40	1	Private	Private	Yes	Purchase	$3,000	5
Parcel #35	T.40S., R.38E., Sec. 25: SE1/4SW1/4	40	1	Federal	State	Yes	Exchange	N/A	3
	Sec. 35: SE1/4NE1/4	40	1	Federal	State	Yes	Exchange	N/A	3
	Sec. 36: All.	640	1	Federal	State	Yes	Exchange	N/A	3
Parcel #36	T.40S., R.38E., Sec. 26: SE1/4SW1/4	40	1	Private	Private	Yes	Purchase	$3,000	5
Parcel #37	T.40S., R.38E., Sec. 27: SW1/4SW1/4	40	1	Private	Private	Yes	Purchase	$3,000	5
Parcel #38	T.40S., R.38E., Sec. 28: NE1/4NE1/4	40	1	Private	Private	Yes	Purchase	$3,000	5
Parcel #39	T.40S., R.39E., Sec. 4: W1/2SW1/4	80	1	Private	Federal	Yes	Wilkinson Exchange	N/A	4
	Sec. 5: Lot 4, S1/2NW1/4, S1/2	432.55	1	Private	Federal	Yes	Wilkinson Exchange	N/A	4
	Sec. 8: NE1/4, N1/2SE1/4, SE1/4SE1/4	280	1	Private	Federal	Yes	Wilkinson Exchange	N/A	4
	Sec. 9: W1/2	320		Private	Federal	Yes	Wilkinson Exchange	N/A	4
Parcel #40	T.40S., R.39E., Sec. 16: N1/2NE1/4, SE1/4NE1/4, W1/2 W1/2SE1/4,SE1/4SE1/4	560	1	Federal	State	Yes	Exchange	N/A	3
Parcel #41	T.40S., R.39E., Sec. 16: SE1/4NE1/4, NE1/4SE1/4	80	1	Private	Private	Yes	Zimmerman Exchange	N/A	4
Parcel #42	T.40S., R.40E., Sec. 3: Lot 4	35.70	1	Private	Private	Yes	Wilkinson Exchange	N/A	4
Parcel #43	T.40S., R.40E., Sec. 16: All.	640	1	Federal	State	Yes	Exchange	N/A	3

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	Legal Description (Prior to any Subdivision) 1/	Total Acreage	Number of Owners (If Parcel has been Subdivided)	Type of Ownerhsip by Estate (Federal, State Private, other) Surface Estate	Subsurface Estate	Presently Proposed for Acquisition (Yes, No)	Preferred Method of Acquisition (Purchase, Exchange, other)	Estimated Cost of Acquisition [2] Land Costs	Processing Costs
Parcel #44	T.40S., R.41E., Sec. 16: All.	640	1	Federal	State	Yes	Exchange	N/A	3
Parcel #45	T.40S., R.41E., Sec. 36: N1/2NW1/4	80	1	Federal	State	Yes	Exchange	N/A	3
Parcel #46	T.41S., R.38E., Sec. 7: SE1/4SE1/4	40	1	Private	Federal	Yes	Purchase	$3,000	5
Parcel #47	T.41S., R.38E., Sec. 8: W1/2SW1/4, SE1/4SW1/4, SW1/4SE1/4	160	1	Federal	State	Yes	Exchange	N/A	3
Parcel #48	T.41S., R.38E., Sec. 10: SE1/4,			Private	Federal				
	Sec. 11: S1/2NW1/4, SW1/4			Private	Federal				
	Sec. 14: W1/2			Private	Fed (120) Priv (120)				
	Sec. 15: E1/2E1/2			Private	Fed (40) Priv (120)				
	Sec. 22: Lot 1, E1/2NE1/4, NE1/4SE1/4			Private	Fed (80) Priv (14.59)				
	Sec. 23: Lots 3, 4, 5 & 6			Private	Federal				
		1,281.24	1	Private	Priv/Fed	Yes	Purchase	$96,093	5
Parcel #49	T.41S., R.38E., Sec. 16: All.	640	1	Federal	State	Yes	Exchange	N/A	3
Parcel #50	T.41S., R.39E., Sec. 16: W1/2NW1/4, N1/2SW1/4	160	1	Federal	State	No	N/A	N/A	N/A

[1] The estimated costs listed in this appendix in no way represent a formal appraised value of the land or mineral estate, but are rough estimates based on sales or exchanges of lands or mineral estates with similar characteristics to those included in the WSA. The estimates are for purposes of establishing a range of potential costs to the government of acquiring non-Federal holdings and in no way represent an offer to purchase or exchange at the cost estimate included in this appendix. Processing costs are all miscellaneous expenses other than land costs. These would include work month costs, appraisals, title work, escrow costs, etc. All lands identified in this table are in Oregon.

[2] Where exchange is the proposed acquisition method, only administrative costs of processing the exchange are shown. Land costs are not applicable. Where direct purchase is proposed, estimate of both the land costs and the processing costs is provided.

[3] Total District processing costs approximately $15,000 for parcels as identified, since they would be acquired under one action in an exchange with the State.

[4] Currently the Oregon Canyon and Wilkinson Private Land Exchanges are being processed. The Zimmerman Land Exchange is still under negotiation. Processing cost for Oregon Canyon and Wilkinson Land Exchange is estimated at $41,000 and Zimmerman Land Exchange is estimated at $15,000.

[5] Total District processing cost approximately $21,000 for parcels as identified, since they would be acquired under two separate actions in a purchase from private individuals.

Upper West Little Owyhee Wilderness Study Area

1. The Study Area — 62,500 acres

The Upper West Little Owyhee Wilderness Study Area (WSA OR-3-173) is located in Malheur County, approximately 80 miles south of Jordan Valley and 10 miles northeast of McDermitt, Nevada. U.S. Highway 95 lies 10 miles west of the WSA. The WSA includes 58,660 acres of BLM lands. In addition, there are seven parcels of split estate lands totaling 3,840 acres. There is also a 160-acre private parcel within the WSA boundary (see Table 1). The WSA is bounded on the north and east by high standard dirt roads and on the south by a low standard road. The western boundary is defined by a fenceline and the McDermitt Indian Reservation.

The WSA contains level to rolling sagelands dissected by two deep, rimrock-lined canyons cut by the West Little Owyhee River and Antelope Creek. Eighteen miles of the West Little Owyhee River within the WSA were designated as a Wild River by Congressional action in October, 1988. During the dry summer season, the water in the canyons recedes and is concentrated in deep, clear, cool pools where the canyons narrow. Jeffs Reservoir is located within Massie Canyon, a tributary to the West Little Owyhee. Sagebrush and grasses are the dominant plants in the WSA. Sedges and rushes grow in the riparian zones, patches of mountain mahogany appear on a few of the canyon rims and isolated pockets of aspen grow on the slopes between the rim and the creekbed.

The WSA was studied under Section 603, with additional acquired split estate lands studied under Section 202 of the Federal Land Policy and Management Act (FLPMA), and the WSA was included in the Final Oregon Wilderness Environmental Impact Statement (EIS) filed in February 1990. There were three alternatives analyzed in the EIS: 1) an all wilderness alternative, 2) an all wilderness alternative with acquisitions and road closures (described below), which is the recommendation in this report, and 3) a no wilderness/no action alternative. These lands are shown on Map 1.

Under the recommendation, the all wilderness alternative with acquisitions and road closures, a total of 62,660 acres would be recommended suitable for wilderness. A private inholding of 160 acres and the mineral estate of 3,840 acres of split estate would be acquired if the owners are willing, through purchase or exchange.

2. Recommendation and Rationale

—62,500 acres recommended for wilderness
0 acres recommended for nonwilderness

The recommendation for this WSA is to designate the entire 62,500 acres of BLM lands, including the 3,840 acres of split estate as wilderness. In addition, it is recommended that the wilderness designation apply to a 160-acre private inholding should it be acquired through purchase or exchange with a willing owner (Map 1). (If the private parcel is acquired, the one-mile road leading to it would be closed. If the cow camp at Bell Spring can be reasonably moved to a location outside the WSA without undue hardship on the livestock operator, the one-mile road leading to it would also be closed). The all wilderness alternative, with acquisitions and road closures, is considered to be the environmentally preferable alternative since it will result in the least change from the natural environment over the long term.

Under the recommendation the area's high wilderness values would be preserved and there would be little conflict with existing or projected uses. The area is ecologically diverse ranging from the upland plateaus that support western juniper, bitterbrush, low sagebrush and a variety of grass species to riparian zones containing dense stands of willow, gooseberry, sedges and rushes, some in pristine condition. Scattered groves of mountain mahogany and quaking aspen occur on the slopes between the creekbeds and rimrock. This ecological diversity provides bountiful wildlife habitat that is populated by the largest summer concentration of pronghorn antelope, sage grouse and white-tailed jackrabbits in Malheur County, plus dense populations of raptors.

Wilderness designation of the Upper West Little Owyhee WSA would add an ecosystem (Intermountain sagebrush province-sagebrush steppe) not presently represented in Oregon, and represented in the National Wilderness Preservation System (NWPS) by only three areas. In addition, wilderness designation of this area would contribute to balancing the geographic distribution of areas within the NWPS.

The vast majority of the area is in a natural condition and provides outstanding opportunities for solitude and primitive recreation. Scenic vistas are exceptionally good near the deep, winding, narrow canyons which are rich in interesting formations, diverse colors and deep, clear pools of water. Due to the presence of water, shade, outstanding scenery and wildlife in the canyons, recreation opportunities for backpacking, day hiking, photography, camping, sightseeing, bird watching, hunting and horseback riding are excellent. Special opportunities also exist for scientific and educational study of the abundant and diverse plants and animals of the area.

Acquisition of the seven split estate parcels would maintain the existing natural setting in their undisturbed condition. Acquisition of the one 160-acre private parcel, if the land owner is willing, and moving of the Bell Spring cow camp would allow restoration of these disturbed sites to their natural condition and would eliminate vehicle disturbances in the wilderness area.

Conflicts with other resource uses in this WSA are limited. Grazing would be allowed to continue although a potential increase of 5,770 AUMs would be foregone. The present land use plan identifies the need for either riparian fencing or riparian pasture management. Wilderness management would allow either of these to occur since they both would enhance riparian and natural values. Closure of the 16 miles of ways would result in some inconvenience to livestock operators. However, much of the area is presently inaccessible to vehicles and livestock management is currently accomplished by horseback. The cow camps at Bell Spring and the private parcel would not be moved unless they can reasonably be moved without undue hardship to the livestock operators. Vehicle access for fishermen, estimated to be approximately 100 visits per year, to Jeffs Reservoir would be precluded. This loss of visitation would be more than offset by an increase in primitive recreation visitation.

There are no mines, significant prospects or mining claims located inside the WSA, and only low potential for oil and gas, silver and mercury mineral resources identified by the U.S. Geological Survey and Bureau of Mines. In addition, strong public support was received for wilderness designation of this area during the public comment periods.

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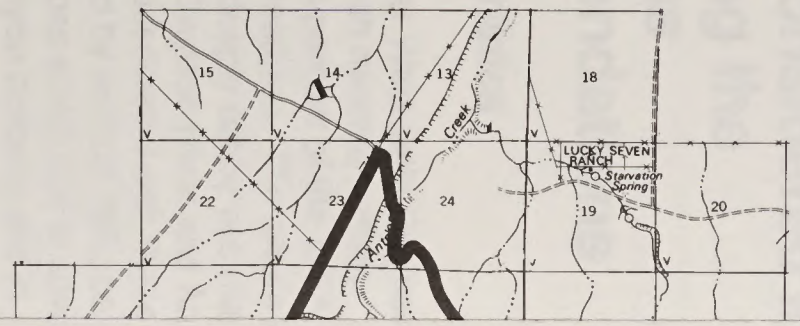

T 38 S

RECOMMENDED FOR WILDERNESS

RECOMMENDED FOR NONWILDERNESS (None)

LAND OUTSIDE WSA RECOMMENDED FOR WILDERNESS (None)

SPLIT ESTATE

STATE (None)

PRIVATE

-N-

Upper West Little Owyhee Proposal

MAP-1

0 1 2 3

MILES

OR-3-173
January, 1991

2. Recommendation and Rationale

—62,500 acres recommended for wilderness
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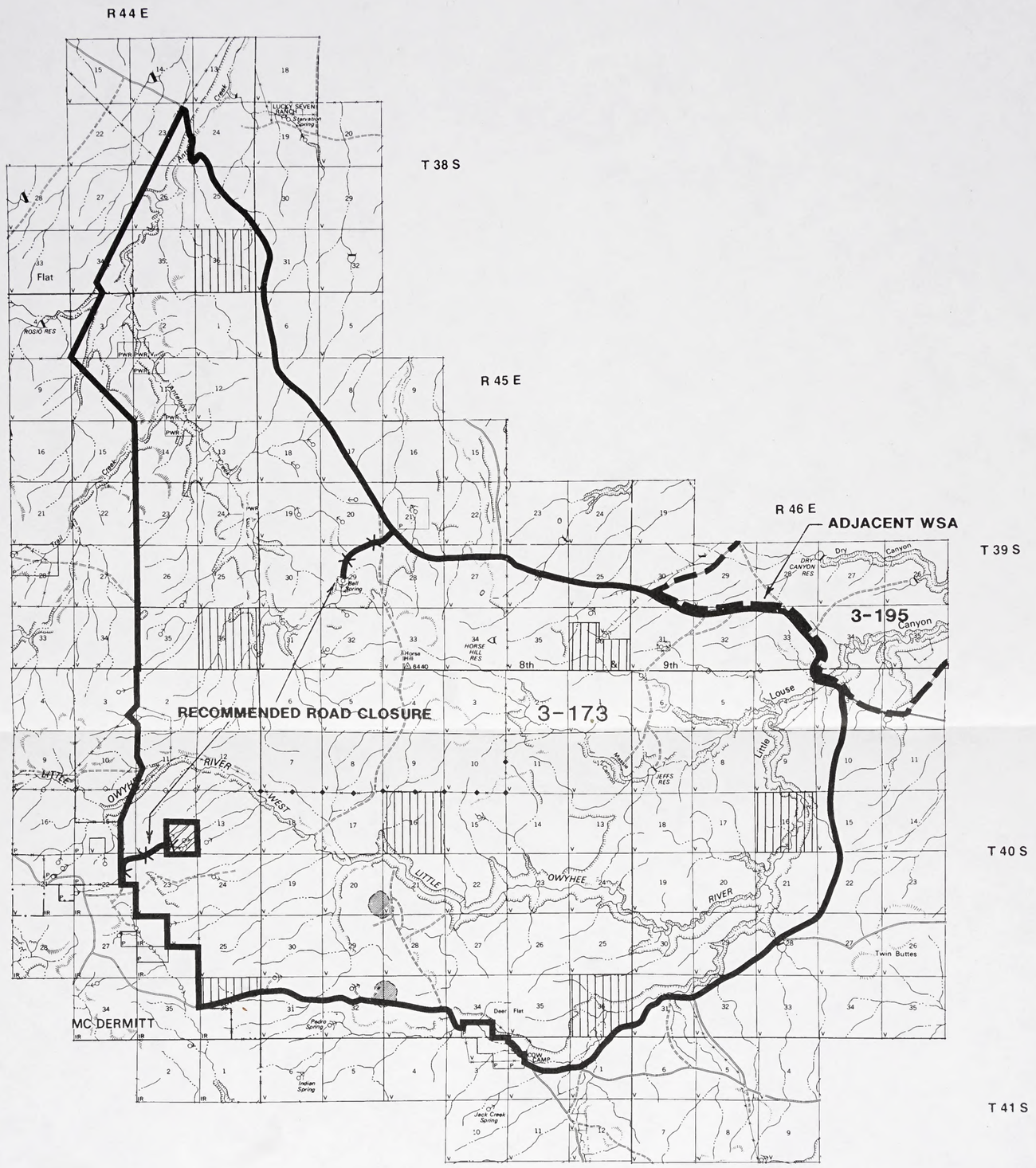


RECOMMENDED FOR WILDERNESS

RECOMMENDED FOR NONWILDERNESS (None)

LAND OUTSIDE WSA RECOMMENDED FOR WILDERNESS (None)

SPLIT ESTATE

STATE (None)

PRIVATE

N

Upper West Little Owyhee Proposal

MAP-1

0 1 2 3

MILES

OR-3-173

January, 1991

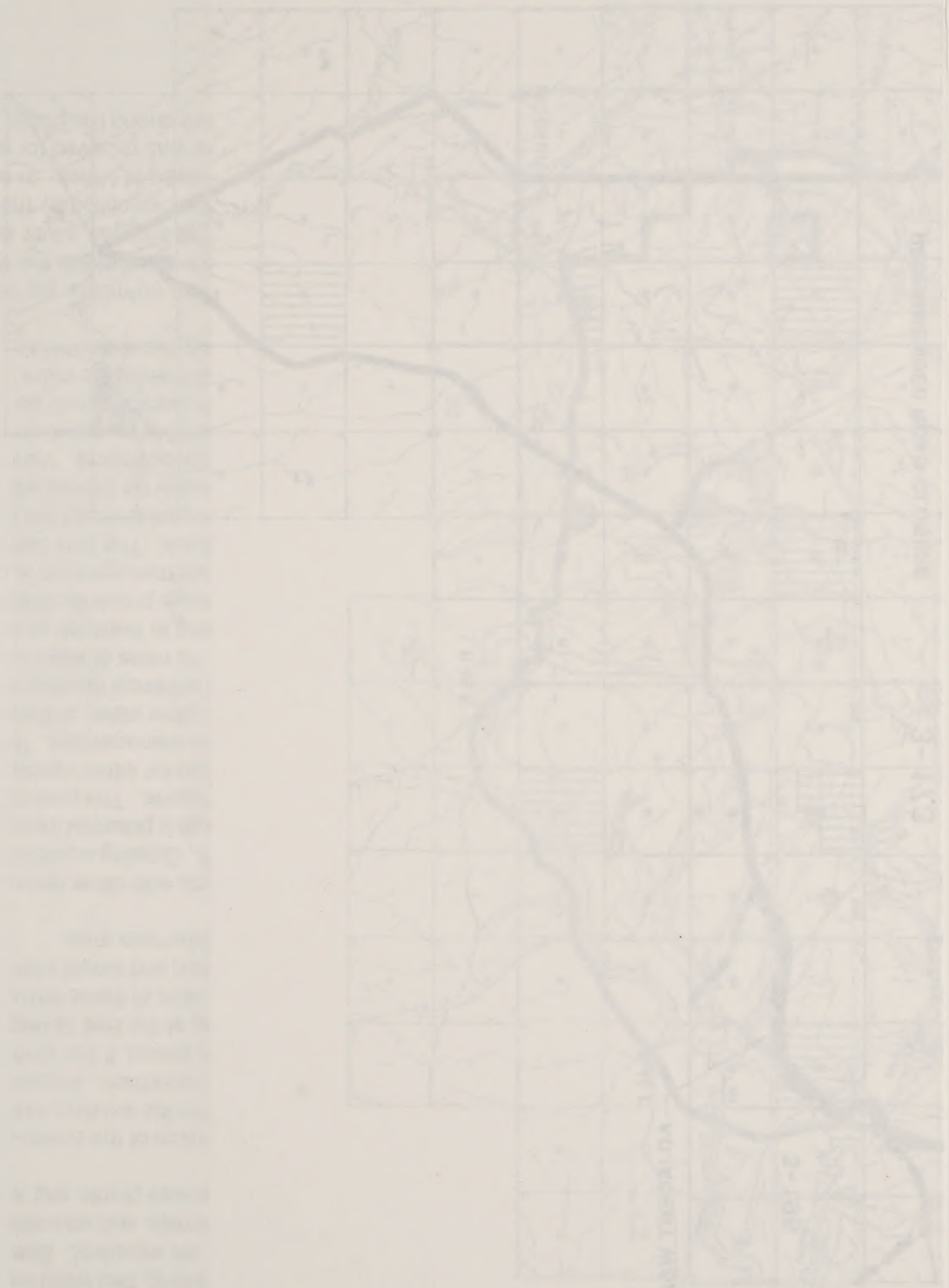


Table 1. Land Status and Acreage Summary of the Study Area

	Acres
Within Wilderness Study Area	
BLM (Surface and subsurface)	58,660
Split-Estate (BLM surface only)	3,840
Inholdings (Private)[1]	160
Total	62,660
Within the Recommended Wilderness Boundary	
BLM (within WSA)	58,660
BLM (outside WSA)	0
Split-Estate (within WSA)[1]	3,840
Split-Estate (outside WSA)[1]	0
Total BLM Land Recommended for Wilderness	62,500
Inholdings (State, Private)	160
Within the Area Not Recommended for Wilderness	
BLM	0
Split-Estate[1]	0
Total BLM land not recommended for Wilderness	0
Inholdings (State, Private)	0

[1]Appendix 1 is a detailed description of inholdings and split-estate tracts included within the study. For purposes of this report, split-estate lands are defined only as those lands with Federal surface and non-Federal subsurface (minerals).

3. Criteria Considered in Developing the Wilderness Recommendations

Wilderness Characteristics

A. Naturalness: The Upper West Little Owyhee WSA is generally natural with minimal human imprints. Approximately 94 percent of the WSA is uninfluenced by unnatural features. The area's vast plateaus of sagelands are deeply cut by two major drainages, the West Little Owyhee River and Antelope Creek. The canyons associated with these drainages are characterized by vertical cliffs, prominent rimrock and steep slopes which rise to several hundred feet above the canyon bottoms and in places channel the stream through very narrow gaps. Massie Canyon, a tributary to the West Little Owyhee River, is similar to the lower portion of the West Little Owyhee Canyon with stretches of narrow vertical canyon walls.

Although scattered groves of aspen, mahogany and willow are found in the major canyons, sagebrush and grasses are the dominant plants in the WSA.

Most wildlife habitat in the WSA is in excellent condition. The high sage-covered plateaus contained preferred summer habitat for the largest concentration of sage grouse in Malheur County. Approximately 350 pronghorn antelope and 150 mule deer occur within the WSA. The rugged canyons provide habitat for a wide variety of nongame wildlife species including marmots, badgers and coyotes. The canyons also have a high density of nesting sites for golden eagles, prairie falcons, kestrels and red-tailed hawks.

The majority of human imprints within the WSA are associated with livestock management activities and include fences, three small reservoirs, seven developed springs, two short sections of pipeline, a corral,

a hunter's outhouse and 16 miles of ways. With the exception of one fence crossing the WSA, Jeffs Reservoir and the way just west of Horse Hill, these features are all within 2 miles of the WSA boundary. The overall influence of human imprints on the naturalness of the area as perceived by the average visitor is minimal.

B. Solitude: The Upper West Little Owyhee WSA offers outstanding opportunities for solitude. The uniform shape and large size of the WSA substantially enhances a visitor's ability to experience solitude. The many miles of winding canyons with scattered patches of aspen, mahogany and willow provide both topographic and vegetative screening. Much of the topography surrounding the canyons is undulating plateau with shallow draws, low rolling hills and scattered rims that provide a considerable amount of screening. The WSA's diversity encourages a freedom of movement within its boundaries.

Outside sights and sounds affecting the WSA's opportunity for solitude are minor. They are associated with grazing management activities, traffic on boundary roads and occasional low-level aircraft flights.

C. Primitive and Unconfined Recreation: The Upper West Little Owyhee WSA with its relatively large size, diversity, outstanding scenery and presence of water and shade in a desert setting contains outstanding opportunities for a primitive and unconfined type of recreation.

Most recreation use would be associated with the main canyons, which provide quality opportunities for day hiking, backpacking, photography, sightseeing, wildlife viewing and hunting. Fishing is available in Jeffs Reservoir and in deep pools of the West Little Owyhee River.

D. Special Features: Eighteen miles of the West Little Owyhee River within the WSA boundary were given Wild River status by Congress in October, 1988. In the section designated as a Wild River, the river canyon is deeply incised, with interesting erosional patterns and varied rock formations. The scenic quality of the WSA is outstanding primarily due to the deep, winding and narrow canyons, variety of colors (reds, browns, tans and greens), rugged rock outcroppings and clear, cool pools of water in the canyon bottoms.

The area supports the largest summer concentration of pronghorn antelope, sage grouse and white-tailed jackrabbits in Malheur County. The sage grouse is a candidate species for Federal listing as Threatened or Endangered in Oregon under the Endangered Species Act, as it has been impacted by loss of habitat.

The vegetation in portions of the West Little Owyhee canyon is virtually pristine because the rugged canyon walls prevent livestock grazing. The ungrazed riparian zones exemplify the natural, tall, lush growth of grass, reeds and sedges.

Two plants of limited distribution occur within the WSA or in the near vicinity. The Oregon Natural Heritage Data Base has listed Owyhee sagebrush *(Artemesia papposa)* as threatened in Oregon, but more common or stable elsewhere. Davis' peppergrass *(Lepidium davisii)* is a Federal Candidate for listing as a threatened species. It is only known from sites near Palamino Lake, located 2 miles south of the WSA.

Seven cultural sites have been identified in the WSA, including two undisturbed petroglyphs. One petroglyph site is associated with hunting blinds constructed from rock and the other was an intensively used aboriginal campsite where a wide range of tools and materials have been found. The remaining sites consist of four temporary prehistoric camp areas where stone tools appear to have been manufactured.

Diversity in the National Wilderness Preservation System

A. Expanding the diversity of natural systems and features as represented by ecosystems: Wilderness designation of this WSA would add an ecosystem not presently represented in Oregon, and represented in the National Wilderness Preservation System (NWPS) by only three areas. There are 66 other BLM areas in the State under study with this ecosystem. The information is summarized in Table 2.

Based on the Bailey-Kuchler method of classifying ecosystems, the WSA is in the Intermountain Sagebrush Province and the potential natural vegetation is sagebrush-steppe. Of the plant communities listed in the Owyhee Uplands section of the Oregon Natural Heritage Plan, the WSA contains the low sagebrush/bluebunch wheatgrass, low sagebrush/Sandberg's bluegrass and low sagebrush/Idaho fescue communities.

B. Assessing the opportunities for solitude or primitive recreation within a day's driving time (five hours) of major population centers: The

WSA is within a five hour drive of one major population center: Boise, Idaho. Table 3 summarizes the number and acreage of designated areas and other BLM study areas within five hours drive of the population centers.

C. Balancing the geographic distribution of wilderness areas: The Upper West Little Owyhee WSA would contribute to balancing the geographic distribution of areas within the National Wilderness Preservation System. There is only one designated area within 100 miles of this WSA.

Manageability

(The area must be capable of being effectively managed to preserve its wilderness character.)

The WSA can reasonably be managed as wilderness to preserve values now present in the area. Manageability would be further enhanced if the private inholding and mineral estate of the split estate lands were acquired and two miles of dead-end roads were closed and rehabilitated as proposed in the recommendation. Acquisition of the split estate and private property would prevent surface disturbance from any unforeseen future mineral exploration and development. Presently, there is a 1-mile road that provides access to the private parcel from the western boundary of the WSA and a one-mile road from the northern boundary to a cow camp. The roads would only be closed if the 160-acre private parcel is acquired and the cow camp can be moved. The acquisitions would allow restoration of these sites, prevent vehicle disturbances and would prevent future potential adverse surface disturbing activities on these parcels. If the BLM is able to acquire the private property and close the road, wilderness values would be enhanced through rehabilitation of existing imprints on approximately 400 acres.

Impacts on Resources

The following comparative impact table summarizes the effects on pertinent resources for all of the alternatives considered, including designation or non-designation of the entire area as wilderness.

Table 2. Ecosystem Representation

Bailey-Kuchler Classification	NWPS Areas areas	NWPS Areas acres	Other BLM Studies areas	Other BLM Studies acres
Province/Potential Natural Vegetation				
		NATIONWIDE		
Intermountain Sagebrush Province/ Sagebrush-Steppe	3	76,699	136	4,307,840
		OREGON		
	0	0	66	1,920,574

Table 3. Wilderness Opportunities for Residents of Major Population Centers

Population Centers	NWPS Areas areas	NWPS Areas acres	Other BLM Studies areas	Other BLM Studies acres
Boise, Idaho	16	4,741,570	126	5,060,460

Table 4. Comparative Summary of Impacts by Alternatives

Issue Topics	Recommendation (All Wilderness with Acquisitions and Road Closures Alternative)
Impacts on Wilderness Values	Wilderness designation of 62,660 acres (assuming acquisition of 160 acres of private property) would protect and enhance existing wilderness values. The acquisition of 3,840 acres of mineral estate would further preserve wilderness values
Impacts on Energy and Mineral Development	No impact to energy or mineral development is expected.
Impacts on Vegetation	Riparian vegetation would be improved on 5 miles of the West Little Owyhee River by fencing out livestock. The 16 miles of ways and 2 miles of dead-end roads would revegetate. Little or no change would occur to vegetation on the rest of the area.
Impacts on Wildlife	Wildlife habitat and populations would be maintained on 62,660 acres.
Impacts on Watershed	Water quality would improve on 5 miles of stream inside the riparian exclosure, be little changed on 6 miles of stream in narrow canyons and would continue to decline in more open streamside areas.
Impacts on Livestock Grazing	Existing livestock use would remain at approximately 3,266 AUMs. A potential allocation of 5,770 AUMs (1,796 AUMs within the WSA) would be foregone. Vehicle use of 16 miles of ways and 2 miles of roads would be precluded.
Impacts on Recreation Use	Overall recreation use would increase by approximately 150 visitor days per year to a level of 450 VUDs.
Impacts on Local Personal Income	Annual local personal income would increase by approximately $2,000.

All Wilderness Alternative	No Wilderness/No Action Alternative
Wilderness designation of 62,500 acres would result in protection and enhancement of existing wilderness values.	In the absence of wilderness designation, projected activities would both directly and indirectly impair wilderness values over approximately 2,100 acres of the WSA with further declines from other potential uses over the long term.
No impact to energy or mineral development is expected.	There would be no impact to energy or mineral development.
Riparian vegetation would be improved on 5 miles of the West Little Owyhee River by fencing out livestock. The 16 miles of ways would revegetate. Little or no change would occur to vegetation on the rest of the area.	An increase in forage allocation would result in an increased utilization of key forage species with a corresponding decrease in ground cover. Riparian vegetation would be enhanced on 5 miles of stream, further degraded on 20 miles and little changed on 6 miles.
Wildlife habitat and populations would be maintained on 62,500 acres.	Nesting and escape cover for sage grouse, chukars and other wildlife species would be reduced as a result of the additional allocation of livestock forage. Wildlife habitat and populations of deer, trout and nongame birds would be enhanced in the 5-mile fenced riparian area, and degraded in the 20-mile unprotected riparian area due to the additional allocation of 5,770 AUMs.
Water quality would improve on 5 miles of stream inside the riparian exclosure, be little changed on 6 miles of stream in narrow canyons and would continue to decline in more open streamside areas.	Water quality would improve on 5 miles of stream inside the riparian exclosure, be little changed on 6 miles of stream in narrow canyons and the present decline would accelerate on 20 miles of stream in more open areas.
Existing livestock use would remain at approximately 3,266 AUMs. A potential allocation of 5,770 AUMs (1,796 AUMs within the WSA) would be foregone. Vehicle use of 16 miles of ways would be precluded.	An additional 5,770 AUMs (1,796 AUMs within the WSA) would be allocated.
Overall recreation use would increase by approximately 150 visitor days per year to a level of 450 VUDs.	Overall recreation use would remain at the current level of approximately 300 visitor days per year.
Annual local personal income would increase by approximately $2,000.	Annual local personal income would increase by approximately $69,000.

Energy and Mineral Resource Values

The U.S. Geological Survey (USGS) and Bureau of Mines prepared a mineral assessment for the Upper West Little Owyhee WSA in I988. Their report was entitled "Mineral Resources of the Upper West Little Owyhee WSA, Malheur County, Oregon," USGS Bulletin 1719. According to the report, there was a low potential for the occurrence of mercury and silver, and no potential for geothermal resources.

The energy and mineral resources of the WSA were also evaluated by the Oregon Department of Geology and Mineral Industries (DOGAMI) under BLM contract in 1984. The DOGAMI report was entitled "Geology and Mineral Resources of 18 BLM Wilderness Study Areas, Harney and Malheur Counties, Oregon." Using the DOGAMI report and a heavy mineral analysis conducted by Barringer Resources, Inc., the study area was reevaluated by BLM geologists. According to these sources, the WSA was believed to have a moderate potential for the occurrence of oil, gas and geothermal energy, and mercury and manganese.

The evaluation performed by the USGS and Bureau of Mines gave uniformly lower potentials for the occurrence of energy and minerals than did the DOGAMI report.

As of May 1991, there were no mining claims within this WSA.

Local Social and Economic Considerations

Livestock use at the current level of 3,266 AUMs and recreation use totaling 300 visitor days per year are the primary resource outputs that generate economic activity in the WSA. Local personal income generated annually from these existing use levels amounts to approximately $39,192 for livestock grazing and $3,600 related to recreation use in the WSA, for an overall total of $42,792.

Under the recommendation, livestock grazing would remain at 3,266 AUMs and overall recreation use would increase by approximately 150 visitor days per year. Annual local personal income generated from resource outputs in the WSA would increase by approximately $1,800 to a total of $44,592. There were no social issues identified with the study of the Upper West Little Owyhee Wilderness Study Area.

Summary of WSA-Specific Public Comments

Public involvement has occurred throughout the wilderness review process. Certain comments received during the inventory process and early stages of the EIS preparation were used to develop significant study issues and various alternatives for the ultimate management of those lands found to have wilderness values.

During formal public review of the Draft EIS and its Supplement, a total of 29 comments specifically addressing this WSA were received. Of these, 18 were written statements and 11 were given in public testimony. All but one of the letters supported wilderness designation for this WSA and all 11 citizens who mentioned this specific WSA spoke in support of wilderness designation.

Those favoring wilderness designation commented on the outstanding scenery and naturalness of the area. Several of these opinions favored making the WSA part of a much larger wilderness area known as the Owyhee Canyonlands. This proposal calls for protection of the river corridor and adjacent areas from the WSA to the Owyhee Reservoir located 158 river miles downstream. One letter emphasized the importance of protecting unusual plants and pristine vegetation.

The single comment opposing wilderness designation stated that National Park status would be more appropriate.

Two State agencies made WSA-specific comments. The Oregon Department of Fish & Game stated that their agency was in agreement with our recommendation. The Idaho Air National Guard expressed concern over "the possible conflict between low altitude overflights and the feeling of solitude sought by the wilderness area users." No comments were received from any Federal or local agencies.

No WSA-specific comments were received on the Final EIS.

Appendix 1 - Estimated Costs of Acquisition of Non-Federal Holdings Within Areas Recommended for Designation [1]

	Legal Description (Prior to any Subdivision	Total Acreage	Number of Owners	Type of Ownership by Estate (Federal, State Private, other)		Presently Proposed for Acquisition (Yes, No)	Preferred Method of Acquisition (Purchase, Exchange, Other)	Estimated Cost of Acquisition[2]	
				Surface Estate	Subsurface Estate			Land Costs	Processing Costs
Parcel No. 1,	T. 38 S., R. 44 E., Sec. 36	640	1	Federal	State	Yes	Exchange	N/A	$1,000[3]
Parcel No. 2,	T. 39 S., R. 44 E., Sec. 36	640	1	Federal	State	Yes	Exchange	N/A	$1,000[3]
Parcel No. 3,	T. 39 S., R. 45 E., Sec. 36, S1/2, S1/2NW1/4	400	1	Federal	State	Yes	Exchange	N/A	$1,000[3]
Parcel No. 4	T. 40 S., R. 44 E., Sec. 14 SE 1/4	160	1	Private	Private	Yes	Purchase	$12,000	$8,000
Parcel No. 5	T. 40 S., R. 45 E., Sec. 16	640	1	Federal	State	Yes	Exchange	N/A	$1,000[3]
Parcel No. 6	T. 40 S., R. 46 E., Sec. 16	640	1	Federal	State	Yes	Exchange	N/A	$1,000[3]
Parcel No. 7	T. 40 S., R. 44 E., Sec. 46 N1/2, SE1/4	280	1	Federal	State	Yes	Exchange	N/A	$1,000[3]
Parcel No. 8	T. 40 S., R. 45 E., Sec. 36	600	1	Federal	State	Yes	Exchange	N/A	$1,000[3]

[1] The estimated costs listed in this appendix in no way represent a formal appraised value of the land or mineral estate, but are rough estimates based on sales or exchanges of lands or mineral estates with similar characteristics to those included in the WSA. The estimates for purposes of establishing a range of potential costs to the government of acquiring non-Federal holdings and in no way represent an offer to purchase or exchange at the cost estimate included in this appendix. Processing costs are all miscellaneous expenses other than land costs. These include work month costs, appraisals, title work, escrow costs, etc. All lands identified in this table are in Oregon.

[2] Where exchange is the proposed acquisition method, only administrative costs of processing the exchange are shown. Land costs are not applicable. Where direct purchase is proposed, estimate of both the land costs and the processing costs are provided.

[3] Part of a large State exchange to acquire minerals in WSAs.

Appendix 1 - Estimated Cost to Acquisition of Non-Federal Holdings within Areas Recommended for Designation *

Legal Description (Price to any Subdivision	Tract	Acreage	Number of Owners	Type of Ownership (e.g. Fee, Life Estate)	Privileged Reserved Rights (Term of Reservation)	Appraised Cost of Acquisition	
						Owner	Processing
Parcel No. 1	T. 36 S., R. 4 E., Sec. 36	640	Federal	Federal		Exempt	Exempt
Parcel No. 2	T. 36 S., R. 5 E., Sec. 36	640	Federal	Federal		Exempt	Exempt
Parcel No. 3	T. 36 S., R. 6 E., Sec. 36	640	Federal	Federal		Exempt	Exempt
Parcel No. 4	T. 36 S., R. 4 E., Sec. 16	640	Federal	Federal		Exempt	Exempt
Parcel No. 5	T. 36 S., R. 5 E., Sec. 16	640	Federal	Federal		Exempt	Exempt
Parcel No. 6	T. 36 S., R. 6 E., Sec. 16	640	Federal	Federal		Exempt	Exempt
Parcel No. 7	T. 36 S., R. 4 E., Sec. 2	640	Federal	Federal		Exempt	Exempt
Parcel No. 8	T. 36 S., R. 5 E., Sec. 2	640	Federal	Federal		Exempt	Exempt
Parcel No. 9	T. 36 S., R. 6 E., Sec. 2	640	Federal	Federal		Exempt	Exempt

* Use a map (See example on page 3-10 of the BLM Manual)

Lookout Butte Wilderness Study Area

1. The Study Area —65,200 acres

The Lookout Butte WSA (OR-3-194/ID-16-48B) is located in the southeast corner of Malheur County, Oregon, and the southwest corner of Owyhee County, Idaho. It lies approximately 50 miles south of Jordan Valley, Oregon, and 25 miles east of McDermitt, Nevada. It is approximately 15 miles long and 10 miles wide. The boundary of the WSA consists of both high and low standard dirt roads, a way in the southeastern portion of the WSA, and one adjacent parcel of State land. There are no dead-end roads that enter the WSA.

The study area contains 99,600 acres of public land including 65,200 acres in Oregon and 24,400 acres in Idaho; this total includes 3,950 acres of split-estate land (see Table 1). In addition, within the boundary of the WSA are two 640-acre parcels of land owned by the state of Idaho. The Idaho portion is studied in the Idaho Wilderness Study Report.

The WSA is a large, flat-to-gently rolling area containing several playas and four, gently-sloping buttes. Defeat Butte (5,710 feet) in Oregon is located near the center of the study area. Lookout Butte (5,640 feet) is 2 miles west of Defeat Butte. South of Lookout Butte is Lookout Lake, the largest playa in the WSA, which is more than 2 miles long and 1 mile wide. An unnamed butte lies 1 mile southwest of Lookout Butte. Spring Butte (5,515 feet) is located in the northeast corner of the portion of the study area in Idaho. Spring Creek crosses the eastern boundary through a shallow draw, about 3 miles south of Spring Butte. In the southwest corner of the WSA, Tent Creek forms a small canyon which disappears and then reappears in a twisting configuration in the southeast corner of the study area. Midway along the eastern boundary, a low rim extends east from Stoney Corral. It is located along the headwaters of Toppin Creek.

Except for the buttes and a portion of Tent Creek canyon, none of the features are pronounced. Vegetation consists primarily of sagebrush, grasses and scattered herbaceous perennials.

The WSA was studied under Section 603 of the Federal Land Policy and Management Act (FLPMA), and was included in the Final Oregon Wilderness Environmental Impact Statement (EIS) filed in February 1990.

There were three alternatives analyzed in the EIS: an all wilderness alternative; an all wilderness with acquisitions alternative, in which the mineral estate of 3,950 acres of split-estate land in Oregon and the 1,280 acres of state inholdings in Idaho would be acquired through purchase or exchange, if the owners are willing (This alternative was called the Enhanced Wilderness Alternative in the Final Oregon Wilderness EIS.); and a no wilderness/no action alternative (the recommendation in this report). These lands are shown on Map 1.

Within the WSA are 34,400 acres of BLM land located in Idaho. The recommendation for the Idaho portion of the WSA is included in the Idaho Wilderness Study Report. The recommendation for the 65,200 acres of the WSA's BLM land located in Oregon is included in this report.

2. Recommendation and Rationale

—0 acres recommended for wilderness
99,600 acres recommended for nonwilderness (Oregon - 65,200 acres, Idaho - 34,400 acres)

The recommendation for this WSA is to designate 0 acres as wilderness and to release the entire area for uses other than wilderness.

The all wilderness, with acquisitions, alternative is considered to be the environmentally preferable alternative since it would result in the least change from the natural environment over the long term. However, the no wilderness alternative would be implemented in a manner which would use all practical means to avoid or minimize environmental impacts.

Wilderness characteristics are limited in the Lookout Butte WSA while opportunities to enhance livestock grazing by construction of new range projects and allocation of additional AUMs exist.

The WSA's wilderness characteristics are considered relatively low and are limited primarily to solitude. Except for the buttes and a portion of Tent Creek canyon, the WSA lacks scenic quality and a diversity of landforms. A lack of challenging terrain contributes to low recreation use in the WSA, which is less than 100 visitor days per year. Brush that is too tall and a lack of topographic features prevents a favorable habitat for big game species within the WSA. The WSA also is not a favorable habitat for sage grouse, a candidate for Federal listing as a threatened or endangered species, because it lacks the grass/sedge meadows and the low sagebrush component that sage grouse prefer.

Resource values other than wilderness used in making the recommendation include: A potential increase in livestock grazing use and a brush control project that would allocate additional AUMs, construction of proposed range projects, and continued vehicle access on existing ways for the maintenance of numerous livestock facilities.

Currently, all public land in the WSA is leased for livestock grazing. The livestock current use level is approximately 2,626 AUMs within portions of the three allotments in the WSA. An increased allocation of 816 AUMs of livestock forage within affected pastures that is currently available, but unallocated, would be realized under no wilderness. Approximately 360 of the AUMs are within the WSA. In a proposed range project, brush on 10,800 acres would be removed by burning; 880 acres are within the WSA. This brush control project would produce enough livestock forage to support an additional 31 AUMs in the WSA. It also would improve habitat variety for wildlife, but sagebrush-dependent species such as the limited populations of sage grouse would be displaced to adjoining habitats with brush cover.

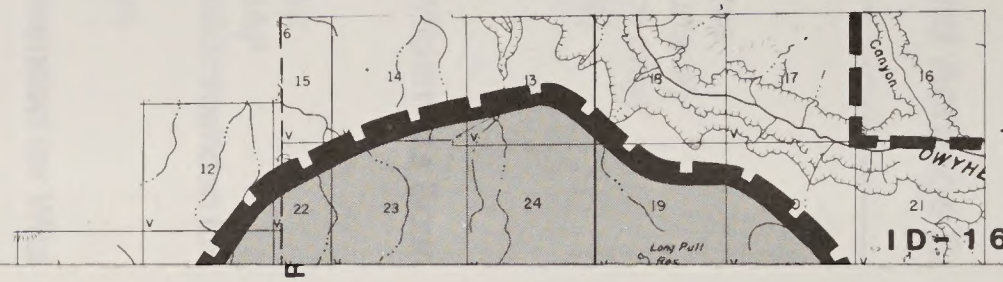
Range projects proposed for construction that would improve livestock distribution and management include 1 mile of fence and two reservoirs. Two additional reservoirs would be built to replace two windmills in order to reduce maintenance costs.

3. Criteria Considered in Developing the Wilderness Recommendations

Wilderness Characteristics

A. Naturalness: The WSA appears to be generally natural with 86 percent of the WSA being pristine (not influenced by unnatural features). The large, flat-to-gently rolling area contains several playas and four low, gently-sloped buttes, each of which is over 5,500 feet in elevation.

There are 50 interior unnatural features that influence 14 percent of the WSA. These features are scattered throughout the study area and consist of



RECOMMENDED FOR WILDERNESS (None)

RECOMMENDED FOR NONWILDERNESS

LAND OUTSIDE WSA RECOMMENDED FOR WILDERNESS (None)

SPLIT ESTATE

STATE

PRIVATE (None)

- N -

Lookout Butte Proposal

MAP-1

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OR-3-194
January, 1991

There were three alternatives analyzed in the EIS: an all wilderness alternative; an all wilderness with acquisitions alternative, in which the mineral estate of 3,950 acres of split-estate land in Oregon and the 1,280 acres of state inholdings in Idaho would be acquired through purchase or exchange, if the owners are willing (This alternative was called the Enhanced Wilderness Alternative in the Final Oregon Wilderness EIS.); and a no wilderness/no action alternative (the recommendation in this report). These lands are shown on Map 1.

Within the WSA are 34,400 acres of BLM land located in Idaho. The recommendation for the Idaho portion of the WSA is included in the Idaho Wilderness Study Report. The recommendation for the 65,200 acres of the WSA's BLM land located in Oregon is included in this report.

2. Recommendation and Rationale

—0 acres recommended for wilderness
99,600 acres recommended for nonwilderness (Oregon - 65,200 acres, Idaho - 34,400 acres)

The recommendation for this WSA is to designate 0 acres as wilderness and to release the entire area for uses other than wilderness.

The all wilderness, with acquisitions, alternative is considered to be the environmentally preferable alternative since it would result in the least change from the natural environment over the long term. However, the no wilderness alternative would be implemented in a manner which would use all practical means to avoid or minimize environmental impacts.

Wilderness characteristics are limited in the Lookout Butte WSA while opportunities to enhance livestock grazing by construction of new range projects and allocation of additional AUMs exist.

The WSA's wilderness characteristics are considered relatively low and are limited primarily to solitude. Except for the buttes and a portion of Tent Creek canyon, the WSA lacks scenic quality and a diversity of landforms. A lack of challenging terrain contributes to low recreation use in the WSA, which is less than 100 visitor days per year. Brush that is too tall and a lack of topographic features prevents a favorable habitat for big game species within the WSA. The WSA also is not a favorable habitat for sage grouse, a candidate for Federal listing as a threatened or endangered species, because it lacks the grass/sedge meadows and the low sagebrush component that sage grouse prefer.

Resource values other than wilderness used in making the recommendation include: A potential increase in livestock grazing use and a brush control project that would allocate additional AUMs, construction of proposed range projects, and continued vehicle access on existing ways for the maintenance of numerous livestock facilities.

Currently, all public land in the WSA is leased for livestock grazing. The livestock current use level is approximately 2,626 AUMs within portions of the three allotments in the WSA. An increased allocation of 816 AUMs of livestock forage within affected pastures that is currently available, but unallocated, would be realized under no wilderness. Approximately 360 of the AUMs are within the WSA. In a proposed range project, brush on 10,800 acres would be removed by burning; 880 acres are within the WSA. This brush control project would produce enough livestock forage to support an additional 31 AUMs in the WSA. It also would improve habitat variety for wildlife, but sagebrush-dependent species such as the limited populations of sage grouse would be displaced to adjoining habitats with brush cover.

Range projects proposed for construction that would improve livestock distribution and management include 1 mile of fence and two reservoirs. Two additional reservoirs would be built to replace two windmills in order to reduce maintenance costs.

3. Criteria Considered in Developing the Wilderness Recommendations

Wilderness Characteristics

A. Naturalness: The WSA appears to be generally natural with 86 percent of the WSA being pristine (not influenced by unnatural features). The large, flat-to-gently rolling area contains several playas and four low, gently-sloped buttes, each of which is over 5,500 feet in elevation.

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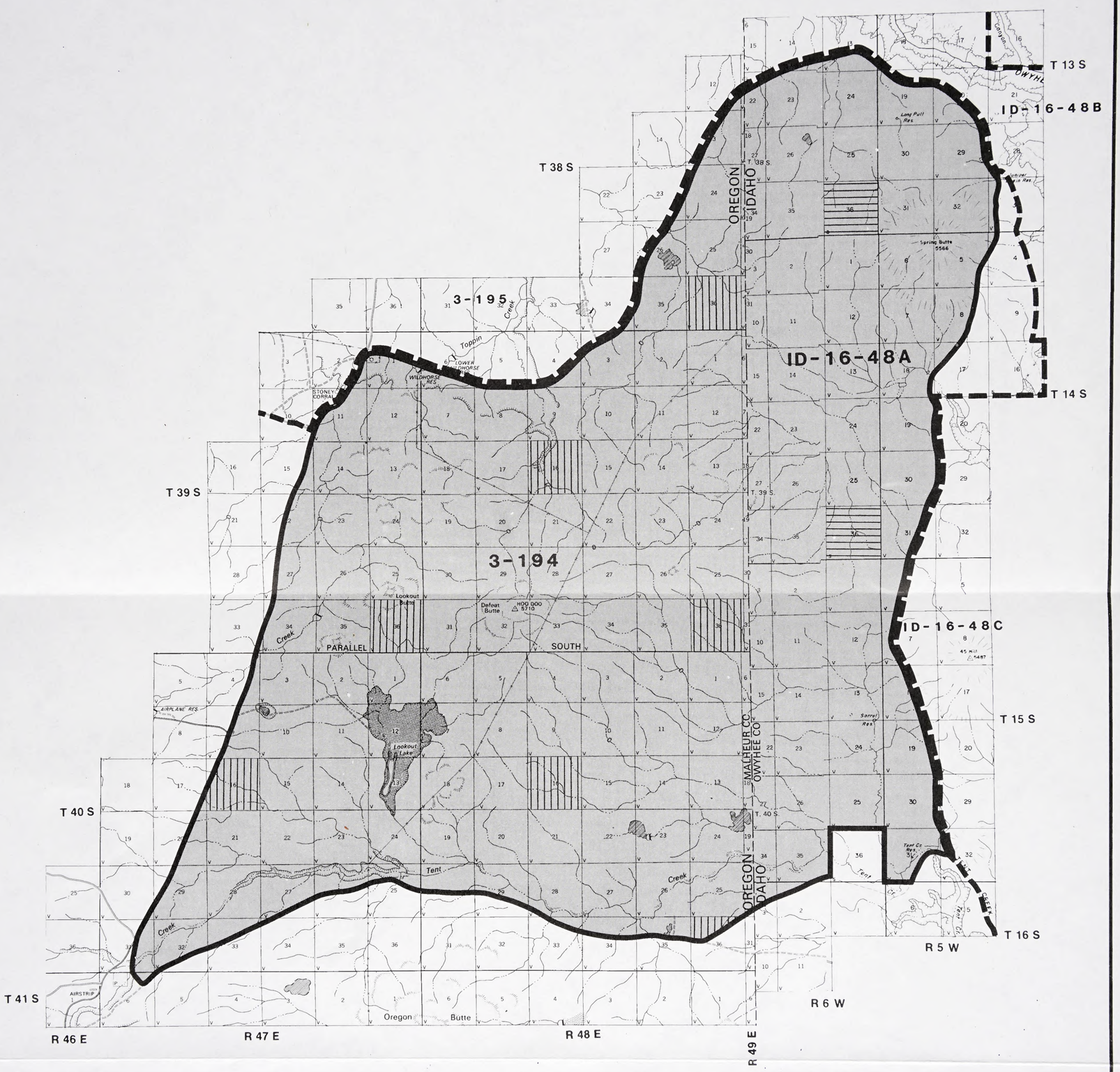

RECOMMENDED FOR WILDERNESS (None)

RECOMMENDED FOR NONWILDERNESS

LAND OUTSIDE WSA RECOMMENDED FOR WILDERNESS (None)

SPLIT ESTATE

STATE

PRIVATE (None)

N

Lookout Butte Proposal
MAP-1

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OR-3-194
January, 1991

Table 1. Land Status and Acreage Summary of the Study Area

	ACRES		
Within Wilderness Study Area	**OREGON**	**IDAHO**	**TOTAL**
BLM (surface and subsurface)	61,250	34,400	95,650
Split-Estate (BLM surface only)[1]	3,950	0	3,950
Inholdings (State, Private)	0	1,280	1,280
Total	65,200	35,680	100,880
Within the Recommended Wilderness Boundary			
BLM (within WSA)	0	0	0
BLM (outside WSA)	0	0	0
Split-Estate (within WSA)[1]	0	0	0
Split-Estate (outside WSA)[1]	0	0	0
Total BLM Land Recommended for Wilderness	0	0	0
Inholdings (State, Private)	0	0	0
Within the Area Not Recommended for Wilderness			
BLM	61,250	34,400	95,650
Split Estate[1]	3,950	0	3,950
Total BLM Land not Recommended for Wilderness	65,200	34,400	99,600
Inholdings (State, Private)	0	1,280	1,280

[1]For purposes of this report, split-estate lands are defined only as those lands with Federal surface and non-Federal subsurface (minerals).

28 reservoirs, three windmills, a dirt airstrip, a bladed State line (15 miles), two fences (17 miles bladed and 5 miles unbladed) and 14 ways (totaling 48 miles).

Unnatural features outside of the WSA that affect the naturalness of the area consist of boundary roads, a large metal water storage tank and several reservoirs. However, these features do not substantially affect the area's naturalness qualities.

Approximately 100 mule deer and 50 pronghorn antelope make limited use of the WSA. Pronghorn use is restricted from the late spring to autumn because of severe winter conditions. Mule deer inhabit many of the canyons in adjacent areas; however, the WSA is not a favorable habitat for either big game species because of a lack of topographic features and the nearly homogeneous stands of Wyoming big sagebrush, which are predominant in the WSA. Raptorial birds inhabit the deep canyons to the west, north and east of the WSA. Incidental excursions by raptors searching for prey are made into the study area, but very little nesting occurs because of the absence of suitable topography.

B. Solitude: The vast proportions of the WSA, combined with the slightly rolling terrain and the waist-high vegetation which covers it, provides sufficient screening to result in an outstanding opportunity to experience solitude. The uniform shape and large size of the study area substantially enhances a visitor's ability to experience solitude.

Outside sights and sounds affecting the WSA's opportunity for solitude are minor and are associated with grazing management activities, traffic on boundary roads and low-level aircraft flights.

C. Primitive and Unconfined Recreation: Opportunities for primitive and unconfined types of recreation are available in the WSA. However, opportunities for activities such as hiking, backpacking, camping, hunting, photography and horseback riding are not outstanding because the study area lacks scenic quality, diversity of landforms and challenging

terrain. Occasional hunting for deer and antelope occurs in the study area, but game populations are small compared with nearby areas, and hunting pressure is light. Vehicle use is also light because of a lack of either attractive features or activities. Total recreation use is less than 100 visitor days per year.

D. Special Features: Sage grouse, a candidate for Federal listing as a threatened or endangered species, occur infrequently in the WSA. The northeastern portion of the study area near Spring Butte contains some of the better habitat. Sage grouse prefer habitat that is a mosaic of low and tall sagebrush, especially where grass/sedge meadows also are present. The Lookout Butte WSA lacks the meadows, and, for the most part, the low sagebrush component.

Diversity in the National Wilderness Preservation System

A. Expanding the diversity of natural systems and features as represented by ecosystems: Wilderness designation of the Lookout Butte WSA would add an ecosystem not presently represented in Oregon and Idaho, and represented in the National Wilderness Preservation System (NWPS) by only three areas. There are 66 other BLM areas in Oregon and Idaho under study with this ecosystem. This information is summarized in Table 2.

Of the plant communities listed in the Owyhee Uplands section of the Oregon Natural Heritage Plan, the WSA contains the big sagebrush-bluebunch wheatgrass community.

B. Assessing the opportunities for solitude or primitive recreation within a day's driving time (five hours) of major population centers: The Lookout Butte WSA is within a five hour drive of one major population center (over 100,000). Table 3 summarizes the number and acreage of designated areas and other BLM study areas within a five hour drive of the population center.

C. Balancing the geographic distribution of wilderness areas: The Lookout Butte WSA would contribute to balancing the geographic distribution of areas within the National Wilderness Preservation System. There are only two designated wilderness area within 100 miles of the WSA.

Manageability

(The area must be capable of being effectively managed to preserve its wilderness character.)

The WSA could be managed as wilderness. The area is relatively large, is mostly public land, and possesses a large degree of naturalness. Manageability would be improved if the two parcels of State land and the mineral estate of the split estate lands were acquired. Potential adverse impacts from access to and incompatible surface disturbing activities on these parcels could make management of the area difficult if these lands were not acquired. Casual mineral exploration that is not projected to lead to development would cause short-term and localized impacts to the area's naturalness.

Table 2. Ecosystem Representation

Bailey-Kuchler Classification	NWPS Areas areas	NWPS Areas acres	Other BLM Studies areas	Other BLM Studies acres
Province/Potential Natural Vegetation				
NATIONWIDE				
Intermountain Sagebrush Province/Sagebrush-Steppe	3	76,699	136	4,270,740
OREGON				
	0	0	66	1,883,474

Table 3. Wilderness Opportunities for Residents of a Major Population Center

Population Center	NWPS Areas areas	NWPS Areas acres	Other BLM Studies areas	Other BLM Studies acres
Boise, ID	16	4,741,570	126	5,060,460

Energy and Mineral Resource Values

The geology, energy and mineral resources of the Lookout Butte WSA were evaluated by interpreting existing literature, reviewing mining and mineral leasing records, and by a reconnaissance geochemical survey. Technical details of the geochemical evaluation are given in a BLM mineral resource assessment report for the Lookout Butte WSA entitled "Sediment and Rock Chip Geochemical Analytical Data for Part of the Alvord Desert and Lookout Butte Wilderness Study Areas, Harney and Malheur Counties, Oregon and Owyhee County, Idaho," which was published in 1986.

Based upon indirect evidence, the WSA is considered to have a moderate potential for the occurrence of oil and gas. Also based on indirect evidence, the study area is considered to have a moderate potential for the occurrence of geothermal resources. Indirect evidence obtained during a reconnaissance geochemical assessment of the WSA indicates a moderate potential for the occurrence of uranium on approximately 1,780 acres in the northwestern portion of the study area.

Based upon direct geologic evidence, the WSA is considered to have a high potential for the occurrence of basalt aggregate material. However, because of the lack of demand, which reflects the low level of economic development and remoteness of the area, no community pits and/or material sites have been designated.

Based upon indirect evidence (i.e. a reconnaissance geochemical assessment of the WSA), approximately 1,400 acres in the central portion of the study area are considered to have a moderate potential for the occurrence of beryllium, and approximately 1,480 acres also in the central portion of the WSA) are considered to have a moderate potential for the occurrence of silver.

As of May 1991, there were no mining claims within this WSA.

Local Social and Economic Considerations

Livestock use at the current level of 2,626 AUMs and recreation use totaling less than 100 visitor days per year are the primary resource outputs that generate economic activity in the WSA. Local personal income generated annually from these existing use levels amounts to approximately $31,512 for livestock grazing and $1,200 related to recreation use of the WSA for an overall total of $32,712.

Under the recommendation, livestock grazing would increase by 1,177 AUMs. Overall recreation use would remain at less than 100 visitor days per year. Annual local personal income generated from resource outputs in the WSA would increase by approximately $14,000. There were no social issues identified with the study of the Lookout Butte WSA.

Impacts on Resources

The following comparative impact table summarizes the effects on pertinent resources for all of the alternatives considered including designation or nondesignation of the entire area as wilderness.

Summary of WSA-Specific Public Comments

Public involvement has occurred throughout the wilderness review process. Certain comments received during the inventory process and early stages of the EIS preparation were used to develop significant study issues and various alternatives for the ultimate management of those lands found to have wilderness values.

During formal review of the Draft EIS and its Supplement, a total of 17 comments specifically addressing the Lookout Butte WSA were received. Of those, six were written and 11 were oral statements received at

Table 4. Comparative Summary of Impacts by Alternatives

Issue Topics	Recommendation (No Wilderness/No Action)
Impacts on Wilderness Values	In the absence of wilderness designation, projected activities would impair wilderness values on approximately 3,680 acres, with further declines from other potential uses over the long term.
Impacts on Energy and Mineral Development	No impact to energy or mineral development is expected.
Impacts to Vegetation	Brush would be removed from 880 acres. Utilization of key forage species would increase overall from 35 percent to 50 percent. The bunchgrass component would be reduced on 40 to 80 acres.
Impacts on Wildlife	Wildlife populations of game and nongame species would sustain minor and temporary levels of harassment. Proposed actions would benefit wildlife by providing new water sources and adding habitat variety.
Impacts on Livestock Grazing	An additional allocation of 816 AUMs of forage would be realized. An additional 361 AUMs would be allocated to livestock from projects. Construction of four reservoirs and 1 mile of fence would facilitate live- stock management.
Impacts on Recreation Use	There would be little or no change to the recreation use level of less than 100 visitor days per year.
Impacts on Local Personal Income	Annual local personal income would increase by approximately $14,000.

All Wilderness Alternative	All Wilderness with Acquisitions Alternative
Wilderness designation of 99,600 acres and the closure of 48 miles of ways would result in protection and enhancement of of existing wilderness values.	Wilderness designation of 100,880 acres and the closure of 48 miles of ways would protect and enhance wilderness values.
No impact to energy or mineral development is expected.	No impact to energy or mineral development is expected.
There would be 48 miles of ways revegetate. Little or no change would occur to vegetation on on the remainder of the area.	There would be 48 miles of ways revegetate. Little or no change would occur to vegetation on the remainder of the area.
Wildlife habitat and populations populations would be maintained on 99,600 acres designated wilderness.	Wildlife habitat and populations would be maintained on 100,800 acres designated wilderness.
Closure of 48 miles of ways would cause inconvenience and a slight increase in costs to livestock of 8 operators. An increased allocation of 816 AUMs of forage and an additional allocation of 361 AUMs from projects would be foregone.	Closure of 48 miles of ways would cause inconvenience and a slight increase in costs to livestock operators. An increased allocation of 816 AUMs of forage and an additional allocation of 361 AUMs from projects would be foregone.
There would be little or no change to the recreation use level of less than 100 visitor days per year.	There would be little or no change to the recreation use level of less than 100 visitor days per year.
Annual local personal income would remain at approximately $33,000.	Annual local personal income would remain at approximately $33,000.

the 24 public hearings held on the Draft and Supplement. All of the commenters supported wilderness designation. Three commenters proposed combining the Lookout Butte Wilderness Study Area with adjacent WSAs to make it part of the Owyhee Canyonlands Wilderness. One commenter mentioned the high quality of the grasslands in the WSA and the number of natural communities present on Lookout Lake playa.

One state agency made a specific comment on the Lookout Butte WSA. The Idaho Air National Guard expressed concern over "the possible conflict between low altitude overflights and the feeling of solitude sought by the wilderness area users." No WSA-specific comments were received from any other Federal or local agencies.

Two WSA-specific comment letters were received on the final EIS.

Owyhee River Canyon Wilderness Study Area

1. The Study Area —190,700 acres

The Owyhee River Canyon WSA (ID-16-48B/OR-3-195) is located in Owyhee County, Idaho, and Malheur County, Oregon, about 90 miles southwest of Boise, Idaho. The WSA includes 34,980 acres of BLM land in Idaho and 190,700 acres of BLM land in Oregon (see Table 1). The BLM acreage includes 10,380 acres of split-estate lands (federal surface and state subsurface) in Oregon and 1,280 acres acquired from the State of Idaho in 1987 after the area was designated as a WSA. There are 120 acres of private inholdings in Oregon.

Within Idaho, 82 percent of the WSA's 41-mile circumference is bounded by primitive dirt roads and fence lines, while the remainder is along nonfederal property lines. Within Oregon, 74 percent of the 178-mile circumference is bounded mostly by primitive dirt roads, gravel roads and water pipelines with service roads while the remainder is along nonfederal property lines. Five cherry-stem roads (20.3 miles) enter the WSA. The southeastern part of the WSA adjoins WSAs ID-16-49A, ID-16-48C and ID-16-53/NV-010-103A. The southern part adjoins WSAs R-3-173 and OR-3-194.

The WSA consists of a flat-to-gently rolling sagebrush, bittebrush and bunchgrass-covered plateau dissected by 126 miles of canyons including 74 miles of the Owyhee River, ten miles of the South Fork Owyhee River and 37 miles of the West Little Owyhee River. The canyons are 500 to 1,000 feet deep, narrow and meandering. Portions of the canyons that are not sheer-walled are covered with sagebrush and bunchgrasses while the riparian areas consist of narrow bands of lush grasses, rushes and sedges.

The WSA was studied under Section 603 of the Federal Land Policy and Management Act (FLPMA) and was included in the Owyhee Canyonlands Wilderness Environmental Impact Statement filed in October 1989. This report was prepared by Idaho BLM and included in the Idaho Wilderness Study Report. Two 640-acre inholdings acquired from the State of Idaho, 640 acres of recently acquired BLM land adjacent to the WSA, and 10,380 acres of split-estate land in Oregon were included in the study process under the authority granted in Section 202 of FLPMA.

Five alternatives were analyzed in the EIS for the WSA: a partial wilderness alternative where 152,040 acres of BLM and split-estate land (10,360 acres in

in Oregon and 35,620 acres of BLM land in Idaho) would be designated as wilderness and 38,660 acres (including 1,940 acres of split-estate land in Oregon) would be released for nonwilderness uses, which is the recommendation of this report; two additional partial wilderness alternatives where 47,540 and 148,990 acres would be designated as wilderness and 178,140 and 77,330 acres, respectively, would be released for nonwilderness uses; an all wilderness alternative; and a no wilderness/no action alternative where about 2,880 acres in Idaho would be added to the 20,800 acres of the Owyhee River Canyon in Oregon designated as a national wild river.

2. Recommendation and Rationale

—187,660 acres recommended for wilderness
(Idaho - 35,620 acres; Oregon - 152,040 acres)
38,660 acres recommended for nonwilderness
(Idaho - 0; Oregon - 38,660)

The recommendation for this WSA is to designate 152,040 acres of BLM and split-estate land in Oregon and 35,620 ares in Idaho as wilderness and release the 38,660 acres of BLM and split-estate land in Oregon for uses other than wilderness. The environmentally preferable alternative is the all wilderness alternative. It would cause the least change from the natural environment in the long term. The recommendation would use all practical means to avoid or minimize adverse environmental impacts.

The 187,660 acres recommended for wilderness are shown as the nonshaded area on the Owyhee River Canyon Proposal map. This acreage includes 8,440 acres of split-estate lands (federal surface and state subsurface) in Oregon. This recommendation would further apply to 2,640 acres of state and 920 acres of private land adjacent to the WSA in Oregon if acquired through purchase of exchange with willing owners. Appendix I lists the non federal land within the area recommended for wilderness and provides additional information on the acquisition of these lands.

The 187,660 acres recommended for wilderness designation would enhance the National Wilderness Preservation System through the addition of 126 miles of spectacularly scenic canyon and 140,120 acres of surrounding plateau. The area is natural in appearance, has outstanding opportunities for solitude and for primitive and unconfined recreation, and offers significant special features. The area is manageable to protect wilderness characteristics over the long term with a minimum of resource conflicts. The 187,660 acres recommended for designation are a portion of a proposed 385,080-acre Owyhee Canyonlands Wilderness which would include about 270 miles of desert canyon, 164 miles of whitewater boating opportunities and 292,640 acres of plateau.

The 640 acres of BLM land adjacent to the WSA acquired from the State of Idaho in 1987 contain high quality wilderness values and were included within the area recommended for designation to provide a more definable and manageable wilderness boundary.

The 38,660 acres of BLM land in Oregon, in six separate tracts, were not recommended for wilderness designation because of potential conflicts with other resource uses of the area and to exclude land that would detract from the management of the area. The six tracts includes:

AREA A: Toppin Creek - 32,040 acres in the south-central portion of the WSA contains a plateau area lacking in diversity, quantity and quality of wilderness values. It is nearly separated from the rest of the WSA by an interior cherry-stem road important for livestock management. Numerous impacts on natural quality occur in the area, including: 24 miles of ways, six miles of fence, 12 reservoirs and a cabin. It has proposals for brush control projects and nine additional miles of fence. Livestock utilization of existing forage is relative low and increases in use are proposed. The area is judged to be extremely important for livestock grazing and for more intensive livestock management than would be allowed in wilderness.

AREA B: Anderson Crossing - 4,420 acres in the southwest tip of the WSA contains a plateau with relatively low wilderness values in comparison to its value for livestock forage production. The area contains two miles of water pipeline, two reservoirs and five miles of ways. The pipeline has a road along it and a large water tank which is visible over the entire Area B. There are three 40-acre private inholdings within the area.

AREA C: Antelope Creek - 1,030 acres of plateau in the west-central portion of the WSA is manageable as wilderness, yet has relatively low wilderness values in a narrow land configuration. Adjusting the boundary would improve the management configuration of the wilderness proposal by placing

R.42 E. | R.43 E. | R.44 E. | R.45 E. | R.46 E. | R.6 W. | R.5 W. | R.4 W.

T. 31 S.

T. 32 S.

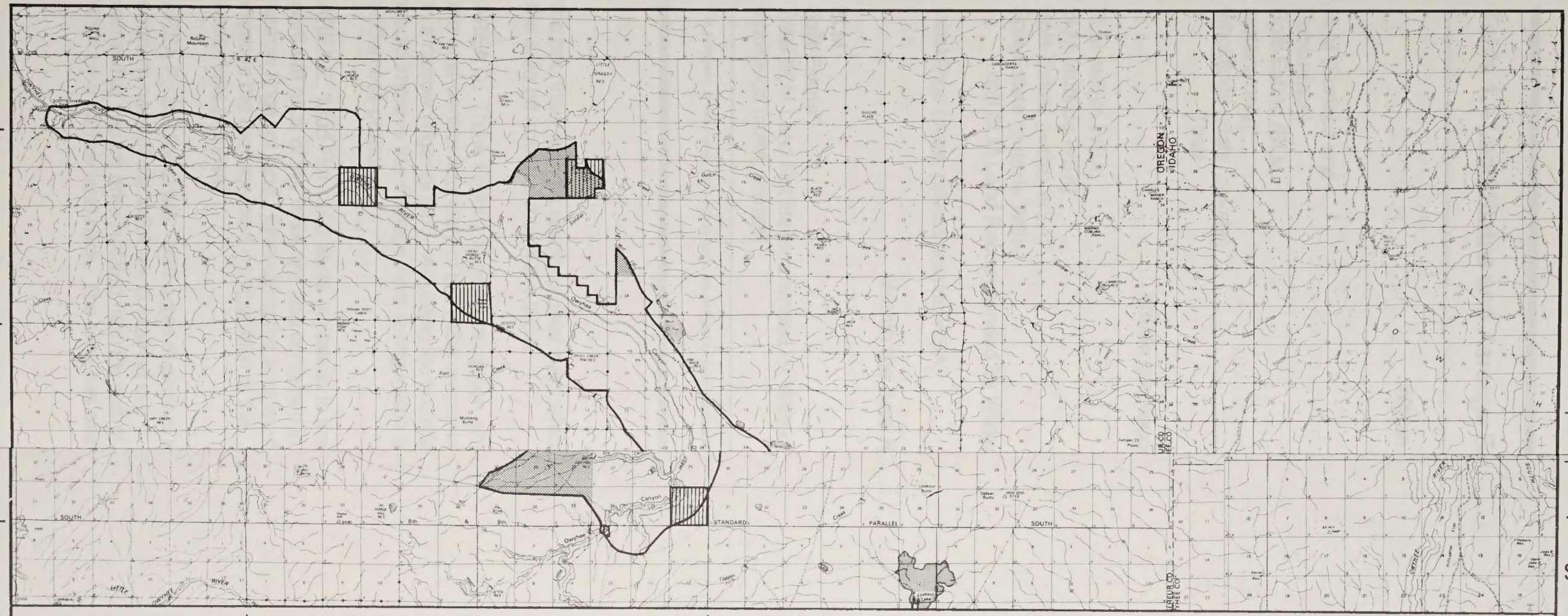
T. 33

T. 40 S.

T. 7 S.

T. 8 S.

T. 15 S.



R.44 E. | R. 45 E. | R.46 E. | R.47 E. | R.48 E. | R.6 W. | R.5 W. | R.4 W

RECOMMENDED FOR WILDERNESS

RECOMMENDED FOR NONWILDERNESS

LAND OUTSIDE WSA RECOMMENDED FOR WILDERNESS

SPLIT ESTATE

STATE

PRIVATE

N

0 1 2 3 4 5

Scale in Miles

OWYHEE RIVER CANYON

PROPOSAL

OR-3-195
January, 1991

in Oregon and 35,620 acres of BLM land in Idaho) would be designated as wilderness and 38,660 acres (including 1,940 acres of split-estate land in Oregon) would be released for nonwilderness uses, which is the recommendation of this report; two additional partial wilderness alternatives where 47,540 and 148,990 acres would be designated as wilderness and 178,140 and 77,330 acres, respectively, would be released for nonwilderness uses; an all wilderness alternative; and a no wilderness/no action alternative where about 2,880 acres in Idaho would be added to the 20,800 acres of the Owyhee River Canyon in Oregon designated as a national wild river.

2. Recommendation and Rationale

—187,660 acres recommended for wilderness
(Idaho - 35,620 acres; Oregon - 152,040 acres)
38,660 acres recommended for nonwilderness
(Idaho - 0; Oregon - 38,660)

The recommendation for this WSA is to designate 152,040 acres of BLM and split-estate land in Oregon and 35,620 ares in Idaho as wilderness and release the 38,660 acres of BLM and split-estate land in Oregon for uses other than wilderness. The environmentally preferable alternative is the all wilderness alternative. It would cause the least change from the natural environment in the long term. The recommendation would use all practical means to avoid or minimize adverse environmental impacts.

The 187,660 acres recommended for wilderness are shown as the nonshaded area on the Owyhee River Canyon Proposal map. This acreage includes 8,440 acres of split-estate lands (federal surface and state subsurface) in Oregon. This recommendation would further apply to 2,640 acres of state and 920 acres of private land adjacent to the WSA in Oregon if acquired through purchase of exchange with willing owners. Appendix I lists the non federal land within the area recommended for wilderness and provides additional information on the acquisition of these lands.

The 187,660 acres recommended for wilderness designation would enhance the National Wilderness Preservation System through the addition of 126 miles of spectacularly scenic canyon and 140,120 acres of surrounding plateau. The area is natural in appearance, has outstanding opportunities for solitude and for primitive and unconfined recreation, and offers significant special features. The area is manageable to protect wilderness characteristics over the long term with a minimum of resource conflicts. The 187,660 acres recommended for designation are a portion of a proposed 385,080-acre Owyhee Canyonlands Wilderness which would include about 270 miles of desert canyon, 164 miles of whitewater boating opportunities and 292,640 acres of plateau.

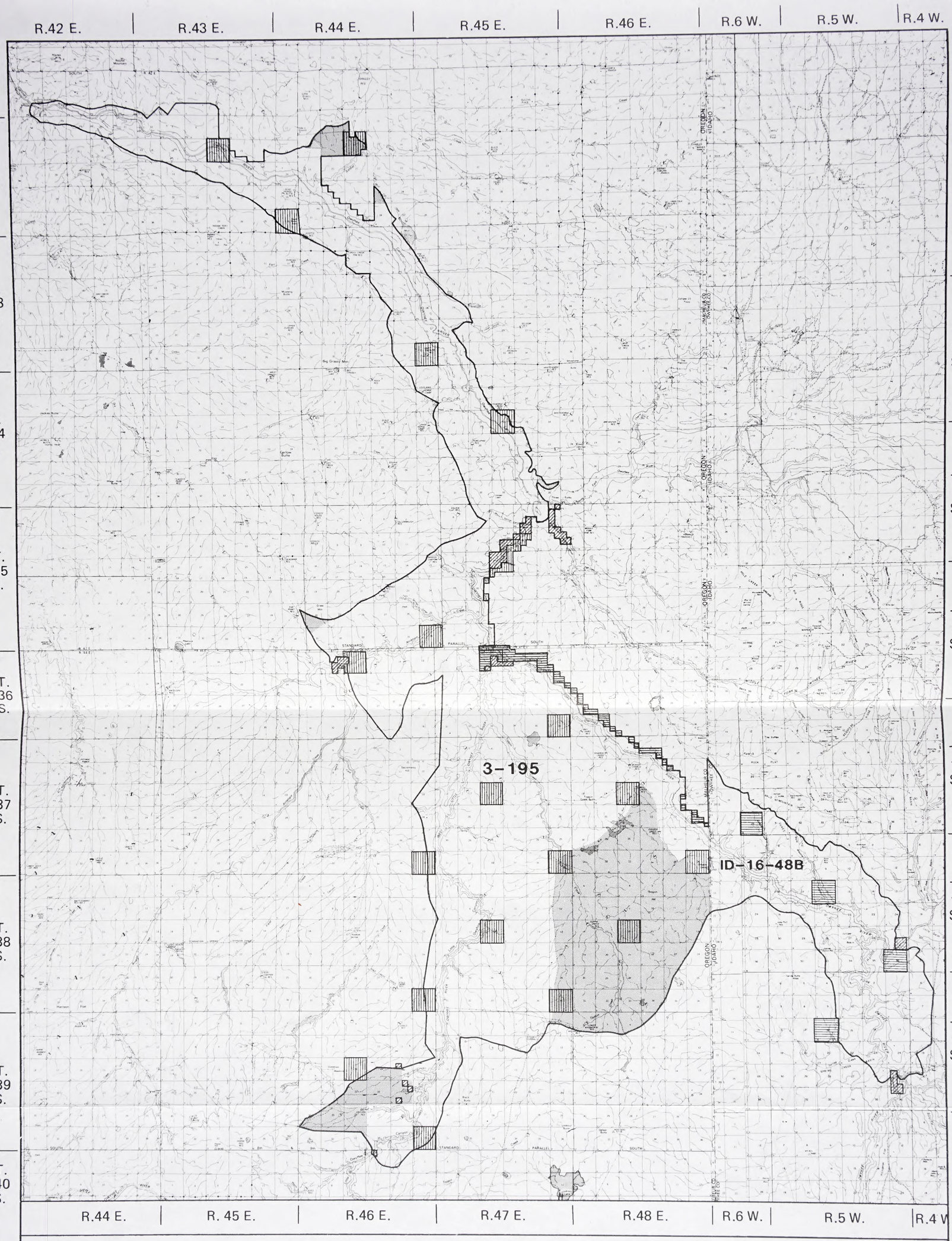
The 640 acres of BLM land adjacent to the WSA acquired from the State of Idaho in 1987 contain high quality wilderness values and were included within the area recommended for designation to provide a more definable and manageable wilderness boundary.

The 38,660 acres of BLM land in Oregon, in six separate tracts, were not recommended for wilderness designation because of potential conflicts with other resource uses of the area and to exclude land that would detract from the management of the area. The six tracts includes:

AREA A: Toppin Creek - 32,040 acres in the south-central portion of the WSA contains a plateau area lacking in diversity, quantity and quality of wilderness values. It is nearly separated from the rest of the WSA by an interior cherry-stem road important for livestock management. Numerous impacts on natural quality occur in the area, including: 24 miles of ways, six miles of fence, 12 reservoirs and a cabin. It has proposals for brush control projects and nine additional miles of fence. Livestock utilization of existing forage is relative low and increases in use are proposed. The area is judged to be extremely important for livestock grazing and for more intensive livestock management than would be allowed in wilderness.

AREA B: Anderson Crossing - 4,420 acres in the southwest tip of the WSA contains a plateau with relatively low wilderness values in comparison to its value for livestock forage production. The area contains two miles of water pipeline, two reservoirs and five miles of ways. The pipeline has a road along it and a large water tank which is visible over the entire Area B. There are three 40-acre private inholdings within the area.

AREA C: Antelope Creek - 1,030 acres of plateau in the west-central portion of the WSA is manageable as wilderness, yet has relatively low wilderness values in a narrow land configuration. Adjusting the boundary would improve the management configuration of the wilderness proposal by placing



RECOMMENDED FOR WILDERNESS

RECOMMENDED FOR NONWILDERNESS

LAND OUTSIDE WSA RECOMMENDED FOR WILDERNESS

SPLIT ESTATE

STATE

PRIVATE

Scale in Miles

OWYHEE RIVER CANYON

PROPOSAL

OR-3-195
January, 1991

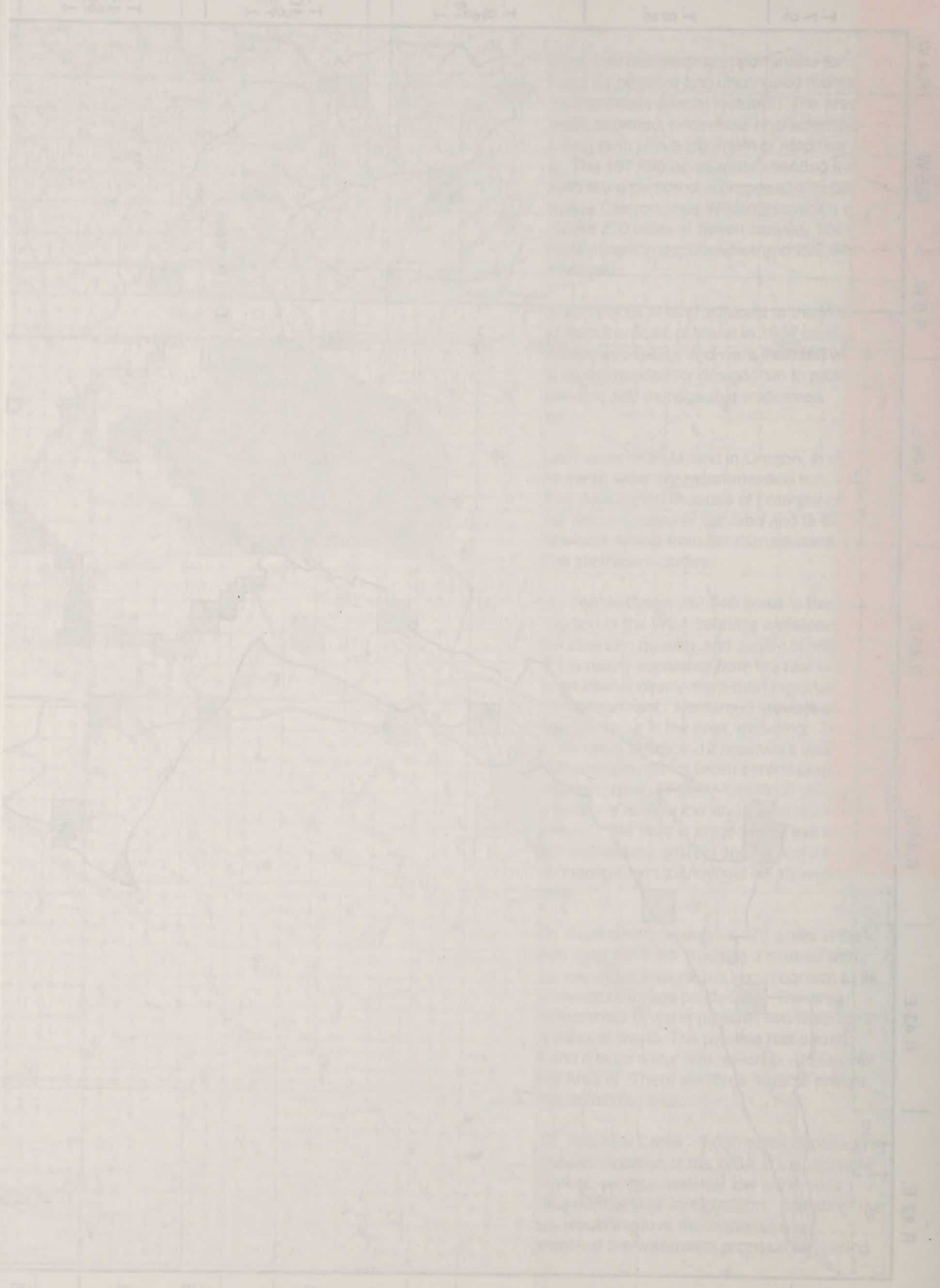


Table 1. - Land Status and Acreage Summary of the Study Area

	Idaho	Oregon	Total
Within Wilderness Study Area			
BLM (Surface and Subsurface)	34,980	180,320	215,300
Split-Estate (BLM surface only)[1]	0	10,380	10,380
Inholdings (state, private)	0	120	120
Total	34,980	190,820	225,800
Within the Recommended Wilderness Boundary			
BLM (within WSA)	34,980	143,600	175,580
BLM (outside WSA)	640	0	640
Split-Estate (within WSA)[1]	0	8,440	8,440
Split-Estate (outside WSA)	0	0	0
Total BLM Land Recommended for Wilderness	35,620	152,040	187,660
Inholdings (state, private outside WSA)[1]	0	3,560	3,560
Within the Area Not Recommended for Wilderness			
BLM	0	36,720	36,720
Split-Estate[1]	0	1,940	1,940
Total BLM Land Not Recommended for Wilderness	0	38,660	38,660
Inholdings (state, private)	0	120	120

[1]For purposes of this report, split-estate lands are defined as those lands with federal surface and nonfederal subsurface (minerals).

the boundary along a regularly used ways which sets the area off from the rest of the WSA.

AREA D: Three Forks - 90 acres of canyon along the east-central boundary of the WSA are contained in a narrow finger of land. Adjusting the boundary would improve the management configuration of the wilderness proposal.

AREA E: Mud Flat - 100 acres of plateau in the northern neck of the WSA are also contained in a narrow finger of land. Eliminating the area would improve the management configuration of the wilderness proposal.

AREA F: Soldier Creek - 980 acres of plateau in the northern neck of the WSA are contained in a somewhat square area isolated from the rest of the WSA by a narrow land neck. The area has one mile of fence and one reservoir proposed for livestock management. The area has lower opportunities for solitude and for primitive recreation than the recommended wilderness. Release of the area for nonwilderness uses would allow for more intensive livestock management and would improve the management configuration of the wilderness.

3. Criteria Considered in Developing the Wilderness Recommendations

Wilderness Characteristics

A. Naturalness: The Owyhee River Canyon WSA consists of a plateau dissected by 126 miles of deep

canyons. The dramatic diversity in landforms create spectacular scenery. The subdued green and yellow sagebrush and grass covered plateau gives way to sheer cliffs of reddish brown or steep grass covered talus slopes. Trickling streams and rushing rivers snake through the canyons.

An abundance of wildlife is found within the WSA including California bighorn sheep, mule deer, pronghorn, mountain lion, bobcat, coyote, river otter, raptors, waterfowl and chukkars. Trout and largemouth bass are found in the Owyhee River.

The WSA is predominantly natural with the forces of nature provided a striking effect. Less than eight percent of the WSA contains human imprints. Most imprints are widely dispersed across the plateau and include 82.5 miles of vehicle tracks (ways), fences, four developed springs and 65 small livestock water ponds. In the canyons, imprints are lacking except for some historic structures. WSA boundary roads can be seen from small areas of the canyon.

B. Solitude: The WSA's outstanding opportunities for solitude are attributed to the isolated, intimate seclusion of canyonlands and the vastness of seemingly undisturbed desert plateau lands and distant mountain ranges.

The meandering character of the canyons and water courses provides excellent topographic screening between visitor groups traveling close together. The depth of the canyons combined with limited viewing distances created a tremendous sense of seclusion or separation. The length of canyons allows visitor groups to easily find campsites which are out of sight and sound of other groups and to adjust their rates of travel to avoid other groups while floating or hiking.

From high points on the plateau hundreds to thousands of square miles of open spaces can be seen stretching from Steens Mountain in Oregon to Juniper Mountain in Idaho and southward to the Bull Run Mountains of Nevada.

Solitude is sometimes disrupted by miliary aircraft. The southwest corner of Idaho is a military operations area (MOA) for training pilots in low elevation, subsonic flight in mostly fighter-bomber type aircraft. Flights occur at elevations as low as 100 feet above the plateau. Daily low elevation flights by B-52 bombers also occur over WSA lands in Oregon. Due to the variation in flight patterns and schedules over this large area, impacts upon the solitude of visitors vary greatly. At times, jets can be seen and/or heard flying all day. Other times, one can travel for several days and not see or hear aircraft.

C. Primitive and Unconfined Recreation: The scenic natural features and diversity of rugged landforms attract people interested in hunting, backpacking and river running and secondary activities of sight-seeing, outdoor photography, wildlife viewing, botanical studies and fishing. River running opportunities are of exceptionally high quality and considered nationally significant. Within the portion of the WSA in Oregon, the Owyhee River and the West Little Owyhee River have been included within the National Wild and Scenic Rivers System.

The miles of canyons, their diversely and severely eroded rock landscapes and their steep slopes create a sense of isolation or solitude, thereby enhancing the primitive recreation experience. Visitors traveling in or near the canyons are constantly aware of the forces of nature.

The challenge and excitement of whitewater rapids add significantly to the boating experience. Hiking the rugged canyons and plateau without the aid of established trails provides a natural and arduous recreational challenge which heightens the primitive experience.

Talus slopes of the canyons encourage travel both near the river and on the plateau. Recreational use of the plateau would concentrate near the canyon rims. These rimrock areas often offer less arduous hiking conditions than those in the canyons and provide opportunities for spectacular vistas of the canyons below. Hiking on the plateau also provides an opportunity to experience vast, open spaces.

D. Special Features: The WSA is rich in features including scenic, scientific, wildlife and cultural values. The special features contribute to the overall quality of the wilderness.

The canyons of the Owyhee River system are of exceptionally high scenic quality. The combination of moving water, colorful sheer cliffs, grass-covered talus slopes and blue sky creates a dramatic, stark beauty. In places, reddish brown cliffs drop hundreds of feet to the water. These fractured, blocky rock monoliths are tinted with brilliant green, yellow and orange microflora. Near the base of the cliffs, water sometimes seeps from the fractures to nourish small, lush, clinging, deep green plant communities. The monoliths are frequently topped with a multitude of diversely eroded spires. The sheer rock walls often give way to steep slopes

covered with a mosaic of red rock rubble and subdued green and yellow sagebrush and grasses.

Sensitive wildlife species found in the WSA include California bighorn sheep, bobcat, river otter and redband trout. Of particular concern is the population of bighorn sheep, a species dependent upon wildlands habitat for survival. Sensitive plant species include Pediocactus simpsonii var. robustior, Hackelia ophiobia and Lupinus uncialis.

The WSA contains both historic and prehistoric archaeological sites. Prehistoric sites include petroglyphs along the shoreline of the Owyhee River below Three Forks, the Dirty Shame Rockshelter at Antelope Creek Canyon, scattered sites along the rim of the canyons, and caves and rock shelters in the canyons. Historical sites include a stone building along the Owyhee River near the Idaho-Oregon stateline, a log cabin in the outer canyon of the South Fork Owyhee River and an old military road near Three Forks. Significant historic resources are also located on adjoining or intermixed private properties.

Diversity in the National Wilderness Preservation System.

A. Assessing the Diversity of Natural Systems and Features as Represented by Ecosystems: Wilderness designation of this WSA would not add a new ecosystem to the National Wilderness Preservation System (NWPS), however, it would add a landform not presently represented in the Sagebrush Steppe Ecosystem. The landform is dominated by rhyolite uplands cut by deep canyons. This ecosystem is represented by three designated areas with 76,699 acres. There are 66 other BLM study areas in Oregon under study with this ecosystem. This information is summarized on Table 2.

B. Expanding the Opportunities for Solitude or Primitive Recreation Within a Day's Driving Time (Five Hours) of Major Population Centers: This WSA is within a five-hour drive from Boise. Table 3 summarizes the number and acreage of designated areas and other BLM study areas within a five-hour drive of the population center.

C. Balancing the Geographic Distribution of Wilderness Areas: The Owyhee River Canyon WSA would contribute to balancing the geographic distribution of areas within the NWPS. Regionally, the WSA would add a desert canyon system not found in designated wilderness and would help to balance opportunities to attain diverse wilderness experiences.

Manageability

Much of the WSA is manageable in the long term to protect wilderness characteristics. Within the 187,660 acres recommended for designation, there are no resource uses which could not be adequately controlled or would affect the manageability of the wilderness. Except for the northern tip of the WSA, which is within five miles of Highway 95, the boundary of the WSA is over 20 miles from a paved highway. Vehicle access to the WSA's boundaries is via some gravel roads but mostly along dirt roads which have receive minimal construction and little or no maintenance. Much of the plateau within the WSA is relative flat, but many areas (particularly those close to the canyons) are strewn with rock rubble and impassable to vehicles. The livestock improvements (small water ponds) are widely scattered over the plateau and their maintenance would have little impact. Management will be enhanced by excluding the units recommended as nonsuitable due to the numerous imprints and low wilderness values found in these areas.

Energy and Minerals Resource Values

The U.S. Geological Survey (USGS) and the Bureau of Mines (BM) prepared a mineral assessment for 185,740 acres of the WSA in 1987. The assessment found that, in Oregon, two areas have low potential for silver, lead and tin, and one area has low potential for tin. Trace amounts of gold found at Five Bars in Oregon indicate that the Owyhee River gravels have unknown potential for gold. The portion of the WSA in Idaho exhibits no evidence of metallic or nonmetallic mineral resources.

The WSA contains no mines. A prospect for lapidary jasper, chalcedony and common opal is located along the eastern boundary of the WSA. The prospect yields materials mostly of interest to hobbyists.

Oil and gas leasing has occurred on parts of the area but no drilling has taken place. The potential for oil and gas in the Oregon part of the area is unknown. The Idaho portion is considered to have no resource potential for oil and gas.

Warm springs exist in Oregon just south of Three Forks, but they were determined to be low potential for geothermal resource development.

Sources of building stone, sand and gravel exist but better supplies are available in more accessible areas.

Table 2. - Ecosystem Representation

Bailey—Kuchler Classification	NWPS Areas areas	NWPS Areas acres	Other BLM Studies areas	Other BLM Studies acres
Dry Domain/Intermountain Sagebrush province				
		NATIONWIDE		
Sagebrush Steppe Ecosystem	3	76,699	136	4,359,340
		IDAHO		
Sagebrush Steppe Ecosystem	1	12,997	35	949,916
		NEVADA		
Sagebrush Steppe Ecosystem	1	32,407	29	1,273,919
		CALIFORNIA		
Sagebrush Steppe Ecosystem	0	0	5	152,431
		OREGON		
Sagebrush Steppe Ecosystem	0	0	66	1,792,374

Table 3. - Wilderness Opportunities for Residents of Major Population Centers

Population Centers	NWPS Areas areas	NWPS Areas acres	Other BLM Studies areas	Other BLM Studies acres
Boise	16	4,741,570	126	5,060,460

In 1989, a 60-day public review of the USGS/BM mineral survey report for the WSA was conducted. During the review, comments were submitted which resulted in follow-up consideration by the USGS. Based on this reevaluation, the USGS upgraded the mineral potential rating from low to moderate for undiscovered resources of low-grade, epithermal hotspring gold and silver deposits in the WSA.

As of May 1991, there were no mining claims within this WSA.

Local Social and Economic Considerations

Designation of 187,660 acres as wilderness would have no significant social or economic impacts on the local communities of Owyhee and Malheur

Counties. The impact to local income and jobs analyzed in the study of the WSA.

Summary of WSA-Specific Public Comments

Public involvement has occurred throughout the wilderness review process. Certain comments received during the inventory process were considered in developing issues and various management alternatives. During the wilderness inventory for the Owyhee River Canyon roadless unit, 23 public comments supported the establishment of a WSA and nine opposed it. Supportive comments stated the area possessed the minimum characteristics necessary (size, naturalness, solitude and primitive recreation opportunities) to be considered for wilderness as well as supplemental values such as wildlife, scenic, vegetation and cultural resources. Those opposed to the WSA felt that the area did not have significant wilderness characteristics and that "multiple use" would be better served if the area was released from further wilderness review.

During the public review of the Owyhee and Bureau Management Framework Plans, 51 out of 55 comments supported wilderness designation for the Owyhee Canyonlands WSA complex with no specific comments on the Owyhee River Canyon WSA. During public review on the Southern Malheur Management Framework Plan, 94 comments supported wilderness while nine opposed wilderness for WSA OR-3-195. Comments in support of wilderness stressed the need for long-term protection of the high quality wilderness characteristics and special features of both the canyons and the plateau. Comments opposed to the wilderness designation addressed a perception that "multiple use" would provide greater public benefit, that wilderness was not multiple use, and that public benefits could be optimized more effectively through a wild river designation in the Owyhee River Canyon and with the further development of livestock and potential mineral/energy resources on the plateau and in the river's tributary canyons.

During the public comment period on the Draft Owyhee Canyonlands Wilderness EIS, 448 written or oral comments supported all WSAs or portions of all WSAs in the Owyhee Canyonlands complex as wilderness, 46 comments opposed any wilderness in the WSA complex and 23 comments had no position. Those in support of wilderness for the Owyhee River Canyon WSA were mostly in favor of designating the entire WSA as wilderness. The public was particularly concerned with BLM's recommendation to eliminate the Toppin Creek area (Area A), Anderson Crossing area (Area B) and Antelope Creek area (Area C) from wilderness designation. Support for the entire WSA as wilderness was based upon a desire to see wildlife, vegetation and other natural resources protected. Opposition to any of the WSA becoming wilderness was based upon a desire for improved livestock management opportunities, the need for continued use of the area for motorized recreation and the need to have further opportunities for the exploration and possible development of mineral and energy resources.

Government agency comments on the EIS took the following positions: The U.S. Fish and Wildlife Service supported wilderness designation; the Bonneville Power Administration did not object to wilderness designation in the Owyhee Canyonlands as long as adequate consideration was given to utility corridors; the U.S. Air Force supported wilderness designation if no significant restrictions were placed on military overflights; the Bureau of Reclamation had no objection to wilderness; the Idaho Department of Fish and Game supported the wilderness recommendation; the Oregon Department of Fish and Wildlife supported wilderness designation of only the canyons; the Idaho Air National Guard opposed wilderness; the Oregon Parks and Recreation Division stated that wilderness designation is compatible with the Owyhee River State Scenic Waterway; the Oregon Department of Agriculture did not oppose wilderness as long as stockmen were allowed to continue managing livestock in an efficient manner; and the local governments of Owyhee and Malheur Counties opposed wilderness but supported national wild river designation.

Subsequent to the May 31, 1984, conclusion of the public comment period for the Draft Owyhee Canyonlands Wilderness EIS, but prior to the completion of the Final EIS, 78 written comments were received. One of the comments opposed any wilderness designation in the WSA complex, one took no position, and 76 supported wilderness designation. Of the wilderness advocates, 61 supported designating the entire Owyhee River Canyon WSA as wilderness. Most of this wilderness support was in response to a "flyer" sent out the Committee for Idaho's High Desert and to an "alert" in the Sierra Club magazine.

Impacts on Resources

The following comparative impact table summarizes the effects on pertinent resources for all the alternatives considered including designation or nondesignation of the entire area as wilderness.

Table 4 - Comparative Summary of the Impacts by Alternative

Issue Topics	Proposed Action	No Action Alternative (No Wilderness)
Impact on wilderness Values	Wilderness (187,660 acres). No significant change in naturalness of solitude/primitive recreation opportunities on 187,530 acres from management actions, slight enhancement in naturalness and primitive recreation opportunities on plateau from improved grazing management. Additional localized improvement in naturalness and primitive recreation due to higher visual quality standards during rangeland facility maintenance or reconstruction and closure of 62 miles of roads/ways to recreation use. Localized reductions in naturalness due to trampling of river campsite vegetation and the construction of new reservoir/ fences (130 acres). Vehicle access for rangeland facility maintenance prevents rehabilitation of all roads closed to recreation use. Recreation use per annum to reach 7,850 user days for boating, 800 user days for backpacking and 6760 user days for other activities. This use not to affect solitude/primitive recreation opportunities overall nor naturalness away from river shoreline. Nonwilderness (38,600 acres). No significant change in naturalness or solitude/primitive recreation opportunities on 36,575 acres. Localized reduction in naturalness and primitive recreation opportunities on 185 acres from construction of new reservoir/fences on 1,900 acres from drill seeding land treatments and oil/gas exploration activities and on an additional 1,300 acres from oil/gas activities only (short term). Solitude opportunities also reduced by oil /gas exploration activities (short term). Some reduction in naturalness of plateau because of increased forage utilization (more grazed appearances). Recreation use of 253 user days per annum in 20 years not to affect naturalness of solitude/primitive recreation opportunities.	Nonwilderness (225,680 acres). No significant change in naturalness or solitude/primitive recreation opportunities on 212,465 acres from management actions. Loss of naturalness and primitive reaction on 2,900 acres from drill seeding land treatments and oil/gas exploration activities. Short-term loss of naturalness and primitive recreation opportunities on an additional 1,300 acres from oil/gas exploration activities only. Localized reduction in naturalness and primitive recreation opportunities on 314 acres due to reservoir/ fence construction. Mining/ geothermal activities cause a loss of naturalness and primitive recreation opportunities on 10,000 acres. Solitude opportunities also reduced by oil/gas exploration and mining/geothermal activities. Recreation use per annum in 20 years to reach 7,850 user days for boating, 550 user days for backpacking and 1,230 user days for other activities. This level of use not to affect naturalness or solitude/primitive recreation opportunities except for localized campsite trampling along river. Slight reduction in naturalness of plateau because of increased grazing.

Canyonlands Wilderness Alternative	Wildlife Wilderness Alternative	All wilderness Alternative
Wilderness (47,540 acres). No significant change in naturalness or solitude/primitive recreation opportunities on 47,540 acres from management actions. Localized reduction in naturalness due to trampling of river campsites by recreation users. Recreation user per annum to reach 7,950 user days for boating and 550 user days for backpacking. Other uses to reach 515 user days. This use not to affect solitude/primitive recreation opportunities. Localized improvement in naturalness by closer of 4 miles of roads to recreation use.	Wilderness (148,990 acres). No significant change in naturalness or solitude/primitive recreation opportunities on 148,990 acres from management actions. Slight enhancement in naturalness and primitive recreation on plateau from improved grazing management. Additional localized improvement in naturalness and primitive recreation due to higher visual quality standards during rangeland facility maintenance or reconstruction and the closure of 40 miles of roads/ways to recreation use. Localized reduction in naturalness due to trampling of river campsite vegetation and the construction of new reservoirs/fences (130 acres). Vehicle access to rangeland facilities for maintenance prevents rehabilitation of all roads closed to recreation use. Recreation use per annum to reach 7,850 user days for boating and 800 user days for backpacking in 20 years. This use not to affect solitude or primitive recreation. Other recreation uses (1,000 user days) also not to affect these opportunities. Nonwilderness (77,330 Acres). No significant change in naturalness or solitude/primitive recreation opportunities on 72,705 acres. Localized reduction in naturalness and primitive recreation opportunities on 185 acres from construction of new reservoirs/fences, on 2,500 acres from drill seeding land treatments and oil/gas exploration activities, and on an additional 1,300 acres from oil/gas activities only (short term). Solitude opportunities also lost by oil/gas exploration activities (short term). Some reduction in naturalness of plateau because of increased grazing. Recreation use of 425 user days per annum in 20 years not to affect naturalness or solitude/primitive recreation opportunities.	Wilderness (226,320 acres). No significant change in naturalness or solitude/primitive recreation opportunities on 224,210 acres from management actions. Slight enhancement in naturalness and primitive recreation on plateau from improved grazing management. Localized improvement in naturalness and primitive recreation due to higher visual quality standards during rangeland facility maintenance or reconstruction and closure of 103 miles of roads/ways to recreation use. Localized reduction in naturalness due to trampling of river campsite vegetation and the construction of new reservoirs/fences (190 acres). Vehicle access for rangeland facilities maintenance prevents rehabilitation of all roads/ways closed to recreation use. In 20 years, recreation use per annum to reach 7,850 user days for boating, 800 user days for backpacking and 1,095 user days for other uses. This use not to affect solitude or primitive recreation opportunities.

Table 4 - Comparative Summary of the Impacts by Alternative (continued)

Issue Topics	Proposed Action	No Action Alternative (No Wilderness)
Impact to the Condition and Amount of Native Vegetation	Wilderness - Ecological condition of native plant communities improved on 116,022 acres and maintained in good condition on 71,630 acres from grazing practices. Reservoir construction to displace 8 acres of native vegetation. Nonwilderness - Ecological condition of native plant communities improved on 33,450 acres and retained in good condition on 4,250 acres. Native plants displaced by seeding on 950 acres. Reservoir construction to displace 10 acres of native vegetation. Temporary loss of vegetation from oil/gas exploration activities on 10 acres.	Nonwilderness - Ecological condition of native plant communities improved on 148,304 acres and retained in good condition on 75,880 acres by grazing practices. native plant displaced on 1,450 acres by seeding. Reservoir construction to displace 18 acres of native vegetation. Mining and geothermal exploration activities would displace vegetation temporarily on 28 acres. Oil/gas exploration activities to temporarily displace additional 10 acres of vegetation.
Impacts to the Levels of Selected Wildlife Populations (Bighorn sheep, mule deer, antelope and sage grouse)	Wilderness - Increased recreation use to have minimal impact to wildlife populations. Only localized, temporary wildlife displacement expected during periods of activity. Road/way closures would reduce potential for wildlife disturbance from recreational vehicle use. Increased forage availability and enhanced overall habitat condition resulting from improved grazing practices, reservoir construction/ maintenance and seeding on plateau would increase wildlife populations. Nonwilderness - However, increased livestock numbers would compete with and reduce potential wildlife populations on nonsuitable lands. Oil/gas exploration would cause only temporary displacement of wildlife populations on nonsuitable hands.	Nonwilderness - Increased recreation use to have minimal impact to wildlife populations. Only localized temporary wildlife displacement expected during periods of recreation activity. Increased forage availability and enhanced overall habitat condition resulting from improved grazing practices. Reservoir construction/maintenance and seeding on plateau would increase wildlife populations. However, increased livestock numbers would compete with and reduce potential wildlife populations. Oil/gas and mineral exploration would cause only temporary displacement of wildlife populations.

Canyonlands Wilderness Alternative	Wildlife Wilderness Alternative	All wilderness Alternative
Wilderness - Ecological condition of native plant communities improved on 3,960 acres and retained in good condition on 43,580 acres by grazing practices. Nonwilderness - Ecological condition of native plant communities improved on 144,350 acres and retained in good condition on 32,300 acres by grazing practices. Native plants displaced on 1,450 acres by seeding. Vegetation displaced on 18 acres by reservoir construction and on 14 acres by mining activity.	Wilderness - Ecological condition of native plant communities improved on 77,660 acres and retained in good condition on 71,330 acres by grazing practices. Nonwilderness - Ecological condition of native plant communities improved on 71,518 acres and retained in good condition on 4,550 acres by grazing practices. Native plant displaced by seeding on 1,250 acres. Vegetation displaced on 10 acres by reservoir construction and on 2 acres by mining activity. Temporary displacement of vegetation on 10 acres by oil/gas exploration activity.	Wilderness - Ecological condition of native plant communities improved on 150,440 acres and retained in good condition on 75,880 acres by grazing practice.
Wilderness/Nonwilderness - Impacts the same as those of the No Action Alternative.	Wilderness/Nonwilderness - Impacts the same as those of the Proposed Action.	Wilderness - Increased recreation use to have minimal impact to wildlife populations. Only localized temporary wildlife displacement expected during periods of recreation activity. Road/way closures would reduce potential for wildlife disturbance from recreational vehicle use. Increased forage availability and enhanced overall habitat condition resulting from improved grazing practices. Reservoir construction/maintenance would increase wildlife populations.

Table 4 - Comparative Summary of the Impacts by Alternative (continued)

Issue Topics	Proposed Action	No Action Alternative (No Wilderness)
Impacts to the Level of Semi-Primitive Recreation Use	Wilderness/Nonwilderness - 62 miles of interior roads/ways closed to recreational vehicle use within wilderness. Semi-primitive motorized recreation use to reach 913 user days annually in 20 years for hunting, sightseeing, rockhounding or camping in association with WSA boundary roads. Nonsuitable lands left open for vehicle access.	Nonwilderness - All roads/ways to remain open for semi-primitive motorized recreation use. Use to reach 1,230 user days annually in 20 years for hunting, sightseeing, rockhounding or camping.
Impacts to the Level of Livestock Use	Wilderness/Nonwilderness - Annual livestock use to increase from 12,565 AUMs to 12,665 AUMs within 20 years of WSA lands. Nine reservoirs and 9 miles of fence will be built within wilderness and nonwilderness to help distribute livestock use.	Nonwilderness - Annual livestock use to increase from 12,565 AUMs to 22,535 AUMs within 20 years on WSA lands. Nine reservoirs and nine miles of fence will be built to help distribute livestock use.
Impacts on the Level of Soil Erosion	Wilderness - Road/way closures to reduce associated soil erosion by 94 tons per year within wilderness/ Nonwilderness- Seeding on 1,900 nonwilderness acres to reduce soil erosion by 5-15%. Oil/gas exploration to produce short-term erosion problems on 10 acres. Projected small increase in livestock use combined with improved grazing practices to result in no measurable change in soil erosion rates overall.	Nonwilderness - Seeding on 2,900 acres to reduce erosion rate on affected lands by 5-15%. Oil/gas and mineral geothermal exploration activities to produce short-term erosion problems on 38 acres. Projected large increase in livestock use to cause 10-25% increase in soil erosion on WSA lands overall despite improved grazing practices.
Impacts to Water Quality	Wilderness/Nonwilderness - Suspended sediment loads in WSA tributary streams remain about the same. Owyhee River and West Little Owyhee sediment loads not measurably affected.	Nonwilderness - Suspended sediment loads in WSA tributary streams increased by 10-20%. Owyhee River and West Little Owyhee sediment loads not measurably affected. Remote possibility of toxic materials in West Little Owyhee from mining activity.

Canyonlands Wilderness Alternative	Wildlife Wilderness Alternative	All wilderness Alternative
Wilderness - Four miles of roads/ ways within canyon wilderness closed to semi-primitive motorized recreation use. Annual use in 20 years to reach 1,515 user days for hunting, sightseeing, rockhounding or camping along plateau roads/ ways.	Wilderness - Forty miles of interior roads/ways closed to recreational vehicle use within wilderness. Use to reach 1,425 user days per annum in 20 years for hunting, sightseeing, rockhounding or camping in association with WSA boundary roads. Nonwilderness - Nonsuitable lands left open for vehicle access.	Wilderness - 103 miles of interior roads/ways closed to recreational vehicle use within wilderness. Semi-primitive motorized recreation use associated with WSA boundary roads to reach 1,095 user days annually in 20 years for hunting, sightseeing, rockhounding or camping.
Wilderness - Annual livestock use to increase from 12,565 AUMs to 19,995 AUMs within 20 years on WSA lands. Nonwilderness - Nine reservoirs and nine miles of fence will be built within nonwilderness to help distribute livestock use.	Wilderness - Annual livestock use to increase from 12,565 AUMs to 12,665 AUMs within 20 years on WSA lands. Nonwilderness - Nine reservoirs and nine miles of fence will be built within wilderness and nonwilderness to help distribute livestock use.	Wilderness - Annual livestock use to remain as 12,565 AUMs over next 20 years on WSA lands. Four reservoirs and nine miles of fence to be built to help distribute livestock use.
Wilderness/Nonwilderness - Impacts the same as the No Action Alternative.	Wilderness - Road/way closures within wilderness to reduce associated soil erosion by 76 tons per year. Seeding on 2,500 acres to reduce erosion rate by 5-15%. Oil/ gas and mineral exploration activity to produce short-term erosion problems on 12 acres. Nonwilderness - Projected large increase in livestock use to cause 10-25% increase in soil erosion on nonsuitable lands.	Wilderness - Road/way closure to reduce associated soil erosion by 237 tons per year. Improved grazing practices combined with no increase in livestock use levels to reduce soil erosion by 5% on plateau overall.
Wilderness/Nonwilderness - Impacts the same as the No Action Alternative.	Wilderness/Nonwilderness - Impacts the same as the No Action Alternative except less possibility of toxic materials in West Little Owyhee.	Wilderness - Suspended sediment loads in WSA tributary streams reduced by 5%. Owyhee River and West Little Owyhee sediment loads not measurably affected.

Table 4 - Comparative Summary of the Impacts by Alternative (continued)

Issue Topics	Proposed Action	No Action Alternative (No Wilderness)
Impacts on Local Income and Jobs	Wilderness/Nonwilderness - Income and employment data by individual WSA is not available. For Owyhee Canyonlands WSA complex as a whole, the Proposed Action would contribute to a .3% increase in income and a .3% increase in employment over the next 20 years from livestock and recreational use of the WSAs in the 3-county area (Owyhee, Malheur and Elko Counties).	Nonwilderness - Both income and employment from WSA complex up .4%in 20 years.

Canyonlands Wilderness Alternative	Wildlife Wilderness Alternative	All wilderness Alternative
Wilderness/Nonwilderness - Both income and employment from WSA complex up .4% in 20 years.	Wilderness/Nonwilderness - Both income and employment from WSA complex up .3% in 20 years.	Wilderness - From WSA complex, increase up .2% and employment up .3%.

Appendix 1 - Estimated Costs of Acquisition of Non Federal Holdings Within Areas Recommended for Designation[1]

Legal Description	Total Acreage	Number of Owners	Type of Ownership		Presently Proposeed for Acquisition	Preferred Method of Acquisition	Estimated Costs of Acquisition	
			Surface Estate	Subsurface Estate			Land	Processing
STATE LANDS								
T. 35 S., R. 45 E.,								
Sec. 9, SE1/4SE1/4	40	1	State	State	Yes	Exchange		$400
Sec. 10, SE1/4SE1/4, N1/2SW1/4NE1/4, W1/2SW1/4								
N1/2NE1/4SW1/4	160	1	State	State	Yes	Exchange		$1,600
Sec. 16, SE1/4 E1/2NE1/4, S1/2W1/4	320	1	State'	State	Yes	Exchange		$3,200
Sec. 20, NE1/4NE1/4, SE1/4SE1/4	80	1	State	State	Yes	Exchange		8$00
T. 36 S., R. 47 E.								
Sec. 9	60	1	State	State	Yes	Exchange		$600
Sec. 10	20	1	State	State	Yes	Exchange		$200
Sec. 13, SW1/4SW1/4	40	1	State	State	Yes	Exchange		$400
Sec. 14, SE1/4,S1/2NE1/4, S1/2NW1/4	320	1	State	State	Yes	Exchange		$3,200
Sec. 15, NW1/4, S1/2NE1/4	240	1	State	State	Yes	Exchange		$2,400
Sec. 16, N1/2NE1/4, SE1/4NE1/4	120	1	State	State	Yes	Exchange		$1,200
Sec. 24, W1/2NW1/4, SE1/4,NE1/4, NE1/4SE1/4	160	1	State	State	Yes	Exchange		$1,600
T. 36 S., R. 48 E.								
Sec. 19, SW1/4SW1/4	40	1	State	State	Yes	Exchange		$400
Sec. 29, SW1/4SW1/4	40	1	State	State	Yes	Exchange		$400
Sec. 30, E1/2NW1/4, W1/2SE1/4, SE1/4SE1/4	200	1	State	State	Yes	Exchange		$2,000
Sec. 32, NE1/4NW1/4, W1/2NE1/4, NE1/4SE1/4	160	1	State	State	Yes	Exchange		$1,600
Sec. 33, SW1/4SW1/4	40	1	State	State	Yes	Exchange		$400

Appendix 1 - Estimated Costs of Acquisition of Non Federal Holdings Within Areas Recommended for Designation[1]

Legal Description	Total Acreage	Number of Owners	Type of Ownership		Presently Proposeed for Acquisition	Preferred Method of Acquisition	Estimated Costs of Acquisition	
			Surface Estate	Subsurface Estate			Land	Processing
T. 37 S., R. 48 E.								
Sec. 3, N1/2SE1/4, SE1/4SE1/4, N1/2SW1/4	200	1	State	State	Yes	Exchange		$2,000
Sec. 4., SE1/4NE1/4, NW1/4NE1/4	80	1	State	State	Yes	Exchange		$800
Sec. 11, NW1/4W1/4, SE1/4NW1/4	80	1	State	State	Yes	Exchange		$800
Sec. 14, NE1/4SE1q/4	40	1	State	State	Yes	Exchange		$400
Sec. 13, NE1/4NE1/4	40	1	State	State	Yes	Exchange		$400
Sec. 24, SE1/4NW1/4, NW1/4SW1/4, NW1/4SE1/4, SE1/4SE1/4	160	1	State	State	Yes	Exchange		$1,600
SPLIT ESTATE								
T. 32 S., R. 43 E.								
SEC. 16	640	2	Federal	State	Yes	Exchange		$6,400
Sec. 36	640[2]	2	Federal	State	Yes	Exchange		$6,400
T. 33 S., R. 44 E.								
Sec. 36	640	2	Federal	State	Yes	Exchange		$6,400
T. 34 S., R. 45 E.								
Sec. 16	640[2]	2	Federal	State	Yes	Exchange		$6,400
T. 35 S., R. 44 E.								
Sec. 36	640	2	Federal	State	Yes	Exchange		$6,400
T. 36 S., R. 46 E.								
Sec. 16	600[2]	2	Federal	State	Yes	Exchange		$6,400
T. 36 S., R. 47 E.								
Sec. 16	280	2	Federal	State	Yes	Exchange		$2,800
Sec. 36	640	2	Federal	State	Yes	Exchange		$6,400

Appendix 1 - Estimated Costs of Acquisition of Non Federal Holdings Within Areas Recommended for Designation[1]

Legal Description	Total Acreage	Number of Owners	Type of Ownership: Surface Estate	Type of Ownership: Subsurface Estate	Presently Proposeed for Acquisition	Preferred Method of Acquisition	Estimated Costs of Acquisition: Land	Estimated Costs of Acquisition: Processing
T. 37 S., R. 47 E.								
Sec.. 16	640	2	Federal	State	Yes	Exchange		$6,400
Sec. 36	640[2]	2	Federal	State	Yes	Exchange		$6,400
T. 37 S., R. 46 E.								
Sec. 36	640[2]	2	Federal	State	Yes	Exchange		$6,400
T. 37 S., R. 48 E.								
Sec. 16	640[2]	2	Federal	State	Yes	Exchange		$6,400
Sec.. 36	640	2	Federal	State	Yes	Exchange		$6,400
T. 38 S., R. 47 E.								
Sec. 16	640	2	Federal	State	Yes	Exchange		$6.,400
Sec. 36	640[2]	2	Federal	State	Yes	Exchange		$6,400
T. 38 S., R. 46 E.								
Sec. 36	640[2]	2	Federal	State	Yes	Exchange		$6,400
T. 39 S., R. 46 E.								
Sec. 36	640[2]	2	Federal	State	Yes	Exchange		$6,400
PRIVATE LAND								
T. 35 S., R. 45 E.								
Sec. 3, W1/2SE1/4, SE1/4SW1/4	120	1	Private	Private	Yes	:	$80,000	$1,200
Sec. 9, N1/2SE1/4, SW1/4SE1/4	120	1	Private	Private	Yes	?	$80,000	$1,200
Sec. 10, NW1/4NE1/4, NE1/4NW1/4, SW1/4NW1/4	120	1	Private	Private	Yes	?	$80,000	$1,200
Sec. 16, W1/2NE1/4, NS1/4, N1/4SW1/4	320	1	Private	Private	Yes	?	$240,000	$3,200
T. 36 S., R. 47 E.								
Sec. 15, N1/2SW1/4	80	1	Private	Private	Yes	?	$80,000	$800
Sec. 16, SW1/4NE1/4, N1/2SE1/4, SE1/4SW1/4	160	1	Private	Private	Yes	?	$160,000	$1,600

[1]The estimated costs listed in this appendix in no way represent a formal appraised value of the land or mineral estate but are rough estimates based on sales or exchanges of lands or mineral estates with similar characteristics to those included in the WSA. The estimates are for purposes of establishing a range of potential costs to the government of acquiring nonfederal holdings and in no way represent an offer to purchase or exchange at the cost estimate included in this appendix.
[2]Portion of this acreage within area recommended for designation. Acquisition through exchange would necessitate acquisition of entire parcel.

Thirtymile/Lower John Day Wilderness Study Areas

1. The Study Area —27,125 acres

The Thirtymile Wilderness Study Area (WSA) (OR5-1) is located along approximately 8.5 miles of the John Day River, approximately 20 miles northwest of Fossil, Oregon, and 110 miles southeast of Portland, Oregon, and 40 miles southeast of The Dalles, Oregon. The Lower John Day WSA (OR5-6) borders the Thirtymile WSA on the north and extends northward for approximately 29 river miles of the John Day River. The river forms the boundary between Sherman and Gilliam Counties within both WSAs.

Both WSAs encompass the John Day River and are basically oblong in shape and lie in a northwest-southeast direction. The Thirtymile WSA ranges 2 to 5 miles in width east to west, and is 5 miles long. The Lower John Day WSA is approximately the same width and is almost 8 miles long.

There are 7,538 acres of BLM land within the Thirtymile WSA (see Table 1). Additionally, a 40-acre parcel of private land is located at the end of a dead-end road, adjacent to, but excluded from the WSA.

There are 19,467 acres of BLM land within the Lower John Day WSA and 2,433 acres of newly acquired land outside of the WSA. In addition, there are 120 acres of split estate land and 160 acres of private inholdings. There are also 160 acres of private land located at the end of a dead-end road, adjacent to, but excluded from the WSA.

Two parcels of private land totaling 320 acres separate the two WSAs. These two parcels of private land form a portion of the northern boundary of the Thirtymile WSA and the southern boundary of the Lower John Day WSA. Private lands surround most of both WSAs, and private land and a road separate them.

The eastern and western boundaries of both WSAs are formed by several primitive roads and adjacent private and public lands. Private, public and State lands border the Lower John Day WSA on the north. The southern boundary of the Thirtymile WSA is formed by a legal section line. A dead-end road 1.6 miles long enters the Lower John Day WSA forming part of the boundary.

The only legal public access to either WSA is by floating the John Day River. A put-in point is located at Clarno where State Highway 218 crosses the

John Day River and a take-out point is at Cottonwood Bridge where State Highway 206 crosses the river.

Cutting a dramatic cross section through one of the largest continental basalt flow formations in the world, the John Day River flows northward to the Columbia River. Nearly 40 miles of the John Day River are within the two WSAs. The lush riparian vegetation along this river canyon provides excellent wildlife habitat and contrasts against an otherwise dry landscape. Both WSAs contain numerous side canyons and perennial springs. Side canyons with springs have small riparian zones containing thickets of chokecherry, red osier dogwood, mock orange, poison ivy and water birch. Vegetation in both WSAs is a big sagebrush/bunchgrass community with scattered juniper trees.

The WSAs were studied under Section 603 of the Federal Land Policy and Management Act and were included in the Final Oregon Wilderness Environmental Impact Statement (EIS) filed in February 1990. There were four alternatives analyzed in the EIS; 1) an all wilderness alternative, where the Lower John Day WSA plus 2,433 acres of newly acquired land would be combined with the Thirtymile WSA to form a single wilderness area; 2) a partial wilderness alternative (where 5,686 acres in Thirtymile WSA and 12,767 acres in the Lower John Day WSA would be recommended suitable for wilderness and managed as separate areas and a total of 1,852 acres in Thirtymile and 6,820 acres in the Lower John Day WSAs would be released for other uses).; 3) a partial wilderness alternative with acquisitions and road closures (which is the recommendation of this report) recommends a total of 28,556 acres as suitable for wilderness including combining the 7,332 acres within the Thirtymile WSA with the 21,224 acres within the Lower John Day WSA (including inholdings). A total of 206 acres in Thirtymile and 1,636 acres in the Lower John Day WSAs would be recommended for uses other than wilderness; and 4). the final alternative is the no wilderness/no action alternative. These lands are shown on Map 1.

2. Recommendation and Rationale

—27,716 acres recommended for wilderness
1,842 acres recommended for nonwilderness.

The recommendation for these WSAs is to designate 27,716 acres are wilderness involving some adjacent non-WSA lands, and to release 1,842 acres for uses other than wilderness. This alternative is considered to be the environmentally preferable alternative as it would result in the least change from the natural environment over the long term. Under the recommendation, preservation of the extremely high wilderness values would outweigh the benefits of allowing the lands to remain open for such activities as oil and gas exploration, mineral development, and more intensive livestock operations.

Combining the Thirtymile WSA with the Lower John Day WSA by closing the dirt road separating the two areas and adding 2,433 acres of newly-acquired non-WSA public land would enhance the wilderness values found by better blocking the area and providing very high wilderness values as well. The roads separating the two areas were not public roads and therefore public access would not be affected by their closure.

The suitable recommendation would preserve the rare opportunity to float or hike 45.5 miles through the John Day River Canyon up to 1,600 feet deep in a nearly natural condition. Characterized by steep, reddish-brown rocky bluffs and numerous side canyons this area offers the wilderness visitor outstanding opportunities for solitude and a wide range of primitive and unconfined types of recreation. The reddish brown Columbia River basalt canyons range in depth from 800 to 1,600 feet and totally engulf the visitor, giving one a complete feeling of being alone. The Lower John Day WSA contains numerous secluded spots within its 23 side canyons, which total over 40 miles. Most of these isolated side canyons are rocky, relatively long and steep.

Special features such as high densities of prehistoric and historic sites, anadromous fish populations and pristine vegetative communities were also some of the high wilderness values which lead to a suitable recommendation.

The recommendation would provide for the addition of a unique combination of ecosystems (Palouse grassland province with potential natural vegetation types of sagebrush-steppe and wheatgrass/bluegrass) to the National Wilderness Preservation System (NWPS). At present, there are no similar wilderness areas containing both of these ecosystems. Biological diversity would be added to the NWPS under the recommendation.

There are few conflicts with other resources should this area be designated as wilderness. Several oil and gas exploration wells would be foregone as

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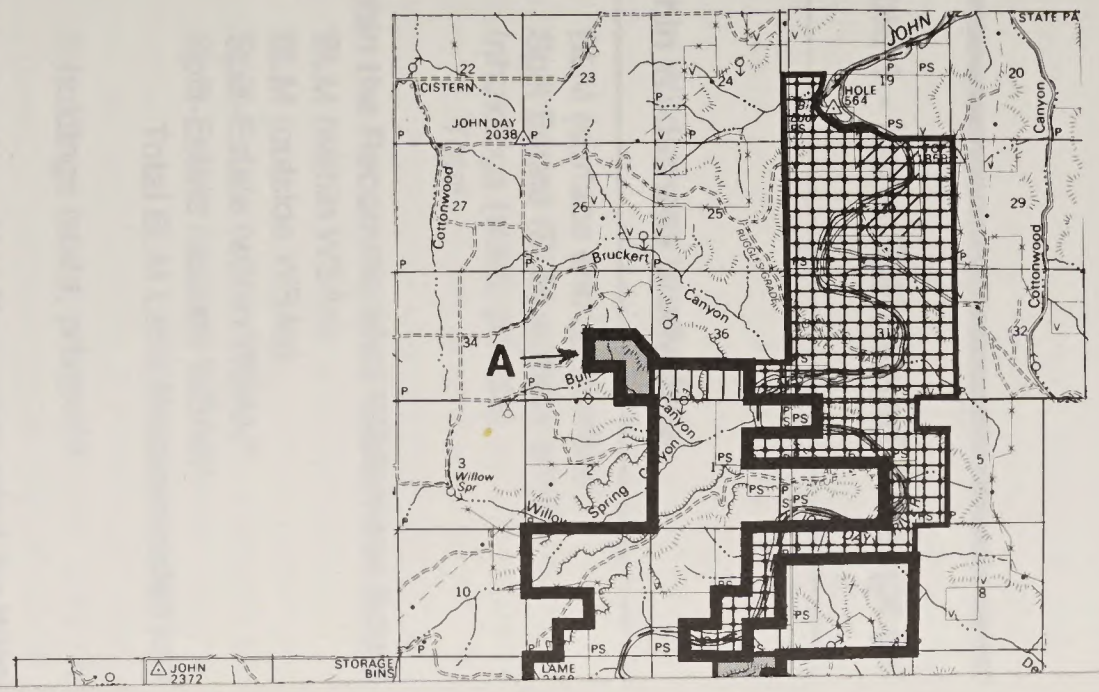

RECOMMENDED FOR WILDERNESS

RECOMMENDED FOR NONWILDERNESS

LAND OUTSIDE WSA RECOMMENDED FOR WILDERNESS

SPLIT ESTATE

STATE (None)

PRIVATE

- N -

Thirtymile and Lower John Day Proposal

MAP-1

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OR-5-1,6
January, 1991

John Day River and a take-out point is at Cottonwood Bridge where State Highway 206 crosses the river.

Cutting a dramatic cross section through one of the largest continental basalt flow formations in the world, the John Day River flows northward to the Columbia River. Nearly 40 miles of the John Day River are within the two WSAs. The lush riparian vegetation along this river canyon provides excellent wildlife habitat and contrasts against an otherwise dry landscape. Both WSAs contain numerous side canyons and perennial springs. Side canyons with springs have small riparian zones containing thickets of chokecherry, red osier dogwood, mock orange, poison ivy and water birch. Vegetation in both WSAs is a big sagebrush/bunchgrass community with scattered juniper trees.

The WSAs were studied under Section 603 of the Federal Land Policy and Management Act and were included in the Final Oregon Wilderness Environmental Impact Statement (EIS) filed in February 1990. There were four alternatives analyzed in the EIS; 1) an all wilderness alternative, where the Lower John Day WSA plus 2,433 acres of newly acquired land would be combined with the Thirtymile WSA to form a single wilderness area; 2) a partial wilderness alternative (where 5,686 acres in Thirtymile WSA and 12,767 acres in the Lower John Day WSA would be recommended suitable for wilderness and managed as separate areas and a total of 1,852 acres in Thirtymile and 6,820 acres in the Lower John Day WSAs would be released for other uses).; 3) a partial wilderness alternative with acquisitions and road closures (which is the recommendation of this report) recommends a total of 28,556 acres as suitable for wilderness including combining the 7,332 acres within the Thirtymile WSA with the 21,224 acres within the Lower John Day WSA (including inholdings). A total of 206 acres in Thirtymile and 1,636 acres in the Lower John Day WSAs would be recommended for uses other than wilderness; and 4). the final alternative is the no wilderness/no action alternative. These lands are shown on Map 1.

2. Recommendation and Rationale

—27,716 acres recommended for wilderness
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The recommendation for these WSAs is to designate 27,716 acres are wilderness involving some adjacent non-WSA lands, and to release 1,842 acres for uses other than wilderness. This alternative is considered to be the environmentally preferable alternative as it would result in the least change from the natural environment over the long term. Under the recommendation, preservation of the extremely high wilderness values would outweigh the benefits of allowing the lands to remain open for such activities as oil and gas exploration, mineral development, and more intensive livestock operations.

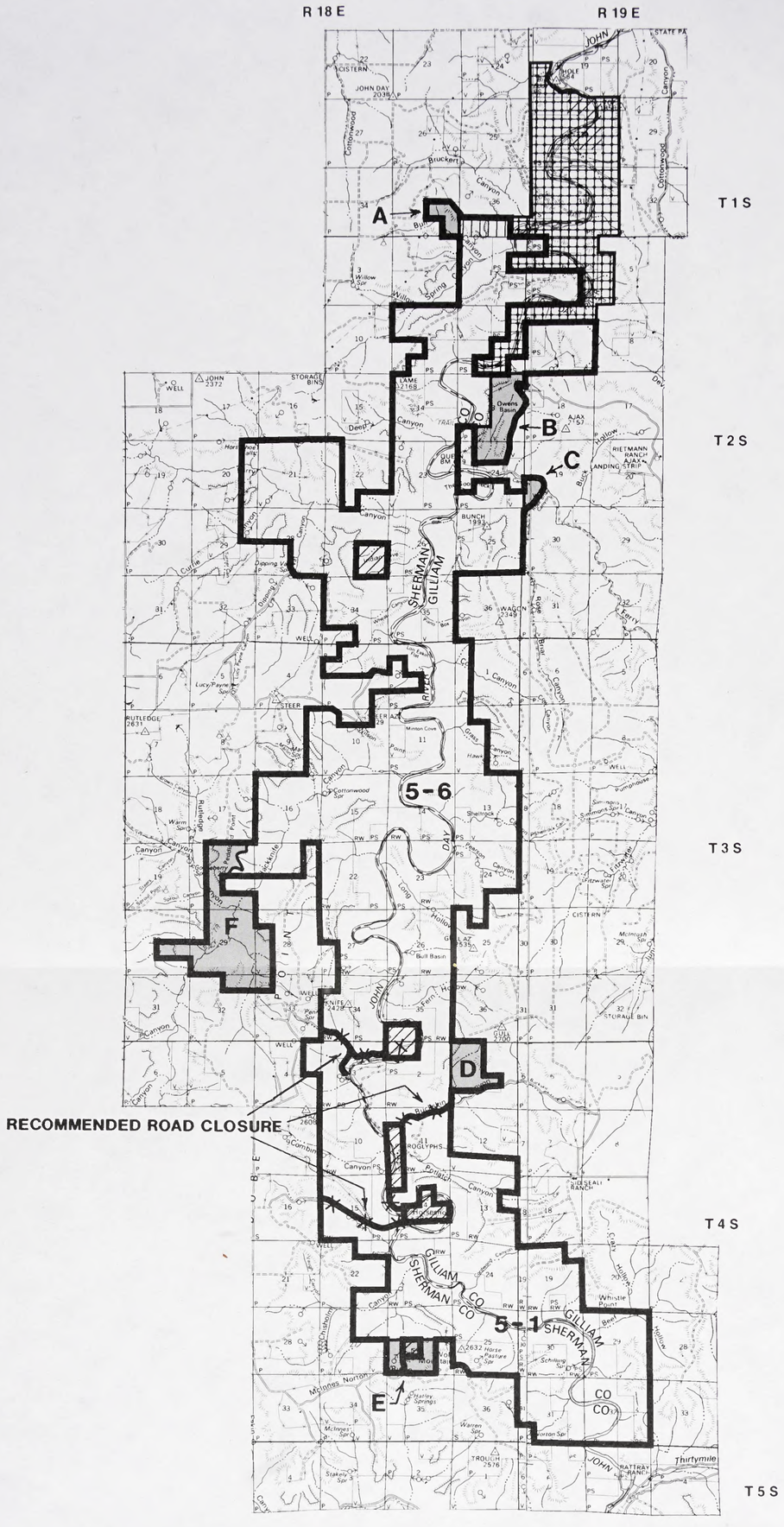
Combining the Thirtymile WSA with the Lower John Day WSA by closing the dirt road separating the two areas and adding 2,433 acres of newly-acquired non-WSA public land would enhance the wilderness values found by better blocking the area and providing very high wilderness values as well. The roads separating the two areas were not public roads and therefore public access would not be affected by their closure.

The suitable recommendation would preserve the rare opportunity to float or hike 45.5 miles through the John Day River Canyon up to 1,600 feet deep in a nearly natural condition. Characterized by steep, reddish-brown rocky bluffs and numerous side canyons this area offers the wilderness visitor outstanding opportunities for solitude and a wide range of primitive and unconfined types of recreation. The reddish brown Columbia River basalt canyons range in depth from 800 to 1,600 feet and totally engulf the visitor, giving one a complete feeling of being alone. The Lower John Day WSA contains numerous secluded spots within its 23 side canyons, which total over 40 miles. Most of these isolated side canyons are rocky, relatively long and steep.

Special features such as high densities of prehistoric and historic sites, anadromous fish populations and pristine vegetative communities were also some of the high wilderness values which lead to a suitable recommendation.

The recommendation would provide for the addition of a unique combination of ecosystems (Palouse grassland province with potential natural vegetation types of sagebrush-steppe and wheatgrass/bluegrass) to the National Wilderness Preservation System (NWPS). At present, there are no similar wilderness areas containing both of these ecosystems. Biological diversity would be added to the NWPS under the recommendation.

There are few conflicts with other resources should this area be designated as wilderness. Several oil and gas exploration wells would be foregone as



RECOMMENDED FOR WILDERNESS

RECOMMENDED FOR NONWILDERNESS

LAND OUTSIDE WSA RECOMMENDED FOR WILDERNESS

SPLIT ESTATE

STATE (None)

PRIVATE

N

Thirtymile and Lower John Day Proposal

MAP-1

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January, 1991

analyzed in the EIS. More recent information provided by the USGS/BM report indicates a low potential for oil and gas resources.

A total of 1,842 acres in the two WSAs would be recommended as nonsuitable for wilderness (206 acres in Thirtymile WSA and 1,636 acres in Lower John Day WSA) under the recommendation due to intervening private land and limited wilderness values (Areas A, B, C, D, E and F on Map 1). The benefits of preserving the limited wilderness values on those lands would be outweighed by the benefits of retaining options for development of energy and other resources. More specifically, in Area A the visual resources are impacted by developed wheatfields and a major transmission line adjacent to this finger of land.

In Area B wilderness values were considered limited due to the very open nature of the topography and the lack of any vegetative screening. Private parcels of land along the west side of Area B make for an awkward configuration. Areas C and D and E were recommended nonsuitable because of their shape and negative impacts on the configuration of the unit. Area E is an open rolling area with limited opportunities for solitude and recreation. A 40-acre private parcel with a road leading to it bisects this small piece of the WSA. Area F is a larger portion of public land effectively separated from the remainder of the WSA by topography. There is no legal public access to this portion and private land in Jackknife Canyon prohibits public access along the canyon.

None of these small nonsuitable tracts have river frontage and all have limited wilderness values.

Table 1 - Land Status and Acreage Summary of the Study Area

Within Wilderness Study Area	Thirtymile (OR-5-1) Acres	Lower John Day (OR-5-6) Acres	Total Acres
BLM (surface and subsurface)	7,538	19,467	27,005
Split Estate (BLM surface only)[1]	0	120	120
Inholdings (state, private)	0	160	160
Total	7,538	19,747	27,285
Within the Recommended Wilderness Boundary			
BLM (within WSAs)	7,332	17,831	25,163
BLM (outside WSAs)	0	2,433	2,433
Split-Estate (within WSAs)[1]	0	120	120
Split-Estate (outside WSAs)[1]	0	0	0
Total BLM Land Recommended for Wilderness	7,332	20,384	27,716
Inholdings (state, private)[1,2]	320	160	480
Within the Area Not Recommended for Wilderness			
BLM	206	1,636	1,842
Split Estate[1]	0	0	0
Total BLM not recommended for Wilderness	206	1,636	1,842
Inholdings (state, private)1	0	0	0

[1] For purposes of this report, split-estate lands and defined only as those lands with Federal surface and non Federal subsurface (minerals).

[2] For Thirtymile WSA, the 320 acres are located ajacent and betwen the two WSAs.

3. Criteria Considered in Developing the Wilderness Recommendation

Wilderness Characteristics

A. Naturalness: Almost all portions of the Thirtymile and Lower John Day WSAs appear to be in a natural condition and primarily affected by the forces of nature. Lower John Day and Thirtymile WSAs are two of the most pristine WSAs in the district. The beautiful free flowing John Day River bisects each WSA. There are 500 to 1000 foot multi-colored steep cliffs which border the river. The basalt cliffs are layered with many different interesting formations and provide habitat to many types of bird life from cliff swallows to golden eagles. The riparian zone hosts many types of vegetation providing excellent habitat to the numerous waterfowl and river mammals. Interesting natural side canyons with springs have additional riparian areas to explore. These riparian areas provide hiding and feeding areas for large mammals such as the California bighorn sheep and mule deer. The California bighorn sheep is a candidate species for Federal listing under the Endangered Species Act. There are many types grasses, forbs and wildflowers to enjoy on the upland cliffs in the spring and early summer months.

A representative sampling of wildlife species inhabiting the WSAs include; mule deer, chukar, golden eagles, prairie falcons,bobcats, tree cliff swallows, long-earred owls, Canada geese, mallard ducks, redwinged blackbirds, beaver and mink. The bald eagle (a Federal listed endangered species in Oregon) is a winter resident. Fisheries in this portion of the John Day River are significant with smallmouth bass, rainbow trout, steelhead and chinook salmon being the primary species and northern squawfish, brown bullheads and suckers the most common nongame species. Spawning and rearing habitat for smallmouth bass, rainbow trout and steelhead occur in the Lower John Day WSA.

While most of the area within the WSAs is very pristine there are some unnatural features. These include 15 in the Thirtymile WSA and 33 in the Lower John Day WSA influence approximately 17 percent of these two WSAs. The area of influence is an estimate of the acreage where these features can be seen.

Unnatural features in the Thirtymile WSA include 3 miles of fence, one spring development, and old wood cabin with a deteriorating corral and 2.5 miles of ways. In the Lower John Day WSA these features include 12.8 miles of fence, four spring developments, 1.6 miles of dead-end road and 7.3 miles of ways. In both areas these features are dispersed along the ridgetops, side canyons and isolated locations along the John Day River. These features generally do not dominate the landscape due to their type and size, topographic screening, the size and shape of these WSAs and the dispersal of these developments throughout the WSAs.

Occasional motorized boat use on the John Day River detracts from the naturalness as well as solitude within the WSAs. The noise of a boat motor can be heard for miles in the otherwise quiet canyon.

Unnatural features outside both WSAs that detract from naturalness include the sounds of the Kent natural gas booster station approximately 4 miles west of the Thirtymile WSA, periodic low elevation military jet flights in the canyon, occasional aircraft landings on a primitive private airstrip north of Horseshoe Bend and vehicle travel into two parcels of private land between these two WSAs. These sights and sounds are either temporary or not significant enough to seriously affect naturalness qualities of the WSAs.

There are few unnatural features in the nonsuitable areas (A-F on Map 1).

B. Solitude: Outstanding opportunities for solitude exist in most portions of the WSAs, particularly within the main canyon of the John Day River. There are also outstanding opportunities for solitude in most isolated side canyons within the boundaries of both WSAs. A unique type of solitude can be experienced by floating or hiking within this study area. The reddish brown Columbia River basalt canyons range in depth from 800 to 1,600 feet and totally engulf the visitor, giving one a complete feeling of being alone. Secluded spots outside the main canyon in the Thirtymile WSA are located in portions of Chisholm, Cordwood, Beef Hollow, Potlatch and two other unnamed canyons.

The Lower John Day WSA contains numerous secluded spots within its 23 side canyons, which total over 40 miles. Most of these isolated side canyons are rocky, relatively long and steep.

Opportunities for solitude are somewhat limited in the nonsuitable portions (Areas A-F shown on Map 1). Due to their configuration, most of them are sur-

rounded by or adjacent to roads, powerlines, farming activities all of which lessen opportunities for solitude while in their vicinity.

C. Primitive and Unconfined Recreation: Outstanding opportunities for primitive recreation in both WSAs include whitewater boating on the John Day River by raft, drift boat, canoe, or kayak during the late spring and early summer months (a period of three to four months depending on river levels). This opportunity is outstanding because of a variety of fast to slow moving water, intermixed with a few moderately challenging rapids within the WSAs, outstanding scenic quality of the John Day River Canyon; opportunities to fish, camp, and view wildlife and historic, geologic and archeological sites and the opportunity to see an area that is predominantly unimpaired in its natural beauty and character. The John Day is one of the longest free flowing river systems in Oregon.

In addition, opportunities exist to experience a two-to-four-day river trip, or longer if desired, from Clarno to Cottonwood Bridge. While one can float through the study area in a day or two, limited access to the river require a longer trip.

Fishing opportunities for smallmouth bass, squawfish, bullhead, channel catfish, carp, chinook salmon and steelhead are available along the river within the WSAs. Outstanding day hiking opportunities exist in all six side canyons on the John Day River within the Thirtymile WSA and in 15 of the 23 side canyons within the Lower John Day WSA. Opportunities for sightseeing and photography are also outstanding in both WSAs. Both WSAs offer opportunities for backpacking, camping, wildlife observation, and hunting. Panoramic views of the river canyons can be had to those visitors hiking up the side canyons or to some of the caves found in the area.

D. Special Features: The Thirtymile and Lower John Day WSAs contain significant special wilderness features. Both WSAs contain outstanding scenic qualities because of the cliffs, columns and pillars in the John Day River Canyon. The WSAs lie within one of the largest continental basalt flow formations in the world, the Columbia River Basalt Formation. The John Day River cut a dramatic cross section through this plateau as it formed the John Day Canyon. The Thirtymile WSA contains 8.5 miles and the Lower John Day WSA contains 29 miles of the John Day River with scattered wet areas of lush vegetation which contrast against an otherwise dry landscape.

The John Day River provides aquatic habitat for steelhead, trout and chinook salmon (some of Oregon's last remaining native salmonoid runs). Both WSAs contain prehistoric and historic sites which offer special opportunities for cultural resource studies. Some sites within the Lower John Day WSA are so significant that they are potentially eligible for designation as a district on the National Register of Historic Places.

Both WSAs contain vegetation representative of a potential natural community (PNC) bluebunch wheatgrass ecosystem and three plant species which are Federal candidates for listing under the Endangered Species Act. There are opportunities to study native range sites which could be useful for vegetative comparison and as pristine plant reserves. This could be beneficial for future genetic experiments.

Diversity in the National Wilderness Preservation System

A. Expanding the Diversity of Natural Systems and Features as Represented by Ecosystems: Wilderness designation of the Thirtymile and Lower John Day WSAs would add a combination of ecosystems not presently represented in the entire National Wilderness Preservation System. According to the Bailey-Kuchler system of classifying ecosystems, the Thirtymile and Lower John Day WSAs are located in the Palouse Grassland Province and contain the unusual combination of sagebrush steppe and wheatgrass bluegrass ecosystems. There are only two other BLM areas under study containing both of these ecosystems. Both of these areas are also located on the John Day River.

Of the ecosystems listed in the High Lava Plains and Columbia Basin section of the Oregon Natural Heritage Plan, the following occur in the WSAs: big sagebrush/bluebunch wheatgrass; big sagebrush/Idaho fescue; rigid sagebrush/Sandberg's bluegrass; bluebunch wheatgrass/Sandberg's bluegrass; and Idaho fescue/bluebunch wheatgrass. This information is summarized in Table 2.

B. Assessing Opportunities for Solitude or Primitive Recreation Within a Day's Driving Time (5 hours) of Major Population Centers: There are six standard metropolitan statistical areas within five hours' driving time of these WSAs: Eugene/Springfield, Portland and Salem, Oregon; and Richland/Kennewick/Pasco, Seattle/Tacoma/Everett, and Yakima, Washington. Table 3 summarizes the number and acreage of designated areas and other BLM study areas within five hours' drive of population centers.

Table 2 - Ecosystem Representation

Bailey-Kuchler Classification	NWPS Areas areas	NWPS Areas acres	Other BLM Studies areas	Other BLM Studies acres
Provinde/Potential Natural Vegetation				
NATIONWIDE				
Palouse Grassland/ Sagebrush steppe and Wheatgrass/bluegrass	0	0	2	12,351
OREGON				
	0	0	2	12,351

Table 3 - Wilderness Opportunities for Residents of Major Population Centers

Population Centers	NWPS Areas Area	NWPS Areas Acres	Other BLM Studies Area	Other BLM Studies Acres
Eugene/Springfield, OR	42	2,859,994	43	770,436
Portland, OR	48	4,537,392	16	91,762
Salem, OR	45	2,888,764	18	210,085
Richland/Kennewick/ Pasco, WA	45	5,816,707	8	67,186
Seattle/Tacoma/ Everett, WA	35	4,300,167	4	43,494
Yakima, WA	48	5,447,447	8	67,186

C. Balancing the Geographic Distribution of Wilderness Areas: The study area would not contribute to balancing the geographic distribution of areas within the National Wilderness Preservation System. There are 16 designated wilderness areas within 100 miles of the WSA.

Manageability

(The area must be capable of being effectively managed to preserve their wilderness characteristics.)

Both WSAs would be manageable as wilderness under this recommendation. The areas could be more difficult to manage in the all wilderness alternative because the wilderness areas would include narrow extensions bounded by private lands, and there would be the possibility that private inholdings could be developed or used in ways that would not be compatible with the wilderness management of the public lands.

Manageability of the 120-acre parcel of split estate could be affected if mineral development were to occur. The area recommended suitable would be more manageable as wilderness because the inholdings would be acquired. Under this recommendation, the addition of 2,433 acres of newly-acquired non-WSA public land within the John Day

River canyon would improve manageability as wilderness by improving the configuration of the WSA and increasing the amount of John Day River within the area recommended for wilderness designation.

The two private inholdings and a 200-acre finger of private land in the Lower John Day WSA and two private parcels between the two WSAs are located on the river. These lands are presently used for livestock grazing, fishing or camping; however, this could change at the discretion of the landowner. There has been no indication that present use of the land would change in the foreseeable future.

Energy and Mineral Resource Values

The US Geologic Survey (USGS) and the Bureau of Mines (USBM) prepared a mineral assessment report for the Spring Basin WSA in 1988, (USGS Bulletin 1743-A). Fieldwork for this report was carried out in 1985 and 1986. The report states that no mines or mining districts are located inside the study areas: however, both areas are under lease for oil and gas. The Thirtymile WSA has 790,000 cubic yards of subeconomic gold resources averaging 0.003 troy ounces per cubic yard in two river bars along the John Day River. The Lower John Day WSA has five bars with gold occurrences. Both WSAs have a low mineral potential for placer gold in the canyon of the John Day River. In addition, part of the Thirtymile WSA has a low potential for gold and (or) mercury in hydrothermal deposits.

Both study areas have a low resource potential for oil and gas and no potential for geothermal energy resources.

These findings are consistent with data gathered in the 1983 GEM report contracted by the BLM.

As of May 1991, there were no mining claims within these WSAs.

Local Social and Economic Considerations

Livestock use at the current level of 1,210 AUMs and recreation use totalling 15,000 visitor days per year are the primary resource outputs that generate economic activity in the WSAs. Local personal income level generated annually from these existing use levels amounts to approximately $15,000 for livestock grazing and $180,000 related to recreation use of the WSAs, for an overall total of $195,000. Under the recommendation, these use levels and income generated are expected to remain about the same.

There were no social impacts identified with the studies of these WSAs.

Summary of WSA - Specific Public Comments

Public involvement has occurred throughout the wilderness review process. Certain comments received during the inventory process and early stages of the EIS preparation were used to develop significant study issue and various alternatives for the ultimate management of those lands found to have wilderness value.

During formal public review of the Draft and Supplement to the Draft EIS, a total of 22 comments specifically addressing the WSAs were received. In general, 12 commenters supported all wilderness for the WSAs, and 10 commenters supported no wilderness for the WSAs.

Those favoring all wilderness felt that Thirtymile WSA (OR-5-1) and Lower John Day WSA (OR-5-6) should be combined and the important fisheries, riparian, rare plants, wildlife and scenic values of the WSAs would be protected with the all wilderness designation. In addition, one commenter felt that an all wilderness designation would protect the John Day River from future hydroelectric development and another commentor felt that several extremely important archeological sites would be protected with the all wilderness designation.

Those opposing designation were concerned that wilderness would negatively affect the rights and travel of private land owners, whose property is adjacent to the recommended wilderness study area. Also, some felt that the minerals industry would be adversely affected by not allowing oil and gas exploration in the WSAs. Others expressed concern that (ORV) recreation would be severely restricted and 2 comments were received stating they felt that wilderness designation would seriously impair management of the area.

No WSA-specific comments were received from other agencies or local governments regarding wilderness designation of the Thirtymile and Lower John Day WSAs.

There was one comment letter for this WSA.

Impacts on Resources

The following comparative impact table summarizes the effects on pertinent resources for all the alternatives considered including designation or non designation of the entire area as wilderness.

Table 4 - Comparative Summary of the Impacts by Alternatives

Issue Topics	Recommendation (Partial Wilderness with Acquisitions and Road Closures Alternative)	All Wilderness Alternative
Impacts on Wilderness Values	Wilderness designation of 7,332 acresof public land and acquisition of 320 acres of private land in the Thirtymile WSA, plus 20,384 acres of public land in the Lower John Day WSA, along with acquisition of 120 acres of mineral estate, 160 acres of private land and closure of 6.2 miles of boundary and interior road would protect and enhance wilderness values on 27,716 acres. Wilderness values on the 1,742 acres recommended nonsuitable would be vulnerable to oil, gas and mineral exploration.	Wilderness designation of 7,538 acres of the Thirtymile WSA and 19,587 acres of the Lower John Day WSA would protect and enhance existing wilderness values.
Impacts on Energy and Mineral Development	Projected production from three oil and gas wells would be foregone.	Projected production from three oil and gas wells would be foregone.
Impacts on Vegetation	The 2,700 burned acres would change to or be maintained in late seral status in the long term. Riparian vegetation along 11.0 miles of stream would change toward late seral status. There would be 15.8 miles of ways and 6.2 miles of road that would revegetate.	The 2,500 burned acres would change to or be maintained in late seral status in the long term. Riparian vegetation along 9.2 miles of stream would change toward late seral status. There would be 9.8 miles of ways that would revegetate.
Impacts on Wildlife	Wildlife habitat and populations would be maintained. Riparian habitat would be improved along 11.0 miles of stream.	Wildlife habitat and populations would be maintained. Riparian habitat would be improved along 9.2 miles of stream.
Impacts on Watershed	Improvement of water-related conditions along 11 miles of the John Day River and Little Ferry and Jackknife canyons would occur.	Improvement of water-related conditions along 9.2 miles of the John Day River and Little Ferry and Jackknife canyons would occur.
Impacts on Livestock Grazing	No impact to levels of livestock grazing. Vehicle use precluded on 15.8 miles of ways and 6.2 miles of road.	No impact to levels of livestock grazing. Vehicle use precluded on 9.8 miles of ways.

Partial Wilderness Alternative	No Wilderness/No Action Alternative
Wilderness designation of 5,686 acres in the Thirtymile WSA and 12,767 acres in the Lower John Day WSA would protect and enhance existing wilderness values. Wilderness values on 8,672 acres recommended nonsuitable would be reduced on approximately 2,200 acres with further declines from other potential uses over the long term.	Projected management actions would impair the area's naturalness, solitude and primitive and unconfined recreation opportunities on approximately 4,900 acres with further declines from other potential uses over the long term.
Projected production from three oil and gas wells would occur.	Projected production from three oil and gas wells would occur.
The 2,500 burned acres would change to or be maintained in late seral status in the long term. Riparian vegetation along 9.2 miles of stream would change toward late seral status. Three miles of ways would revegetate. There would be 10.5 acres that would be disturbed through projected energy development.	The 11,300 burned acres would change to or be maintained in late seral status or change toward PNC in the long term. Two thousand acres would change to mid-seral status through improved livestock management. Riparian vegetation along 9.2 miles of stream would change toward late seral status through management/exclusion of livestock. There would be 18.5 acres that would be disturbed by projected management activities.
Wildlife habitat and populations would be maintained. Riparian habitat would be improved along 9.2 miles of stream.	Habitat diversity would increase on 9,800 acres and populations would be maintained. Riparian habitat would be improved along 9.2 miles of stream. Minor disturbance is expected from projected management activities.
Improvement of water-related conditions along 9.2 miles of the John Day River and Little Ferry and Jackknife canyons would occur.	Improvement of waters-related conditions along 9.2 miles of the John Day River and Little Ferry and Jackknife canyons would occur.
No impact to levels of livestock grazing. Vehicle use precluded on 3 miles of ways.	No impact to levels of livestock grazing. Development of seven springs and 7.75 miles of management fence would improve livestock distribution and management.

Table 4 - Comparative Summary of the Impacts by Alternatives

Issue Topics	Recommendation (Partial Wilderness with Acquisitions and Road Closures Alternative)	All Wilderness Alternative
Impacts on Recreation Use	A short-term decrease of 300 visitor days per year. No impact to use in the long term.	A short-term decrease of 200 visitor days per year. No impact to use in the long term.
Impacts on Local Personal Income	Annual local personal income would remain at approximately $195,000.	Annual local personal income would remain at approximately $195,000.

Partial Wilderness Alternative	No Wilderness/No Action Alternative
A short-term decrease of 200 visitor days per year. No impact to use in the long term.	No change in recreation use levels or types of activities.
Annual local personal income would remain at approximately $195,000 with an unknown level of increase from projected energy and mineral development.	Annual local personal income would remain at approximately $195,000 with an unknown level of increase from projected energy and mineral development.

Appendix 1 - Estimated Costs of Acquisition of Non-Federal Holdings Within Areas Recommended for Designation [1]

Legal Description (Prior to any Subdivision	Total Acreage	Number of Owners	Type of Ownership by Estate (Federal, State Private, other)		Presently Proposed for Acquisition (Yes, No)	Preferred Method of Acquisition (Purchase, Exchange, Other)	Estimated Cost of Acquisition[2]	
			Surface Estate	Subsurface Estate			Land Costs	Processing Costs
Parcell #1 T. 2 S., R. 18 E. SE1/4 of Sec. 27	160	1	Private	Private	Yes	Exchange	8,000	3,000
Parcel #2 T. 3 S., R. 18 E. SW1/4SW1/4; SE1/4SW1/4 of Sec. 35 NW1/4NW1/4; NE1/4NW1/4 of Sec. 2	160	1	Private	Private	Yes	Exchange	32,000	3,000
Parcel #3 T. 4 S., R. 18 E.,	120	1	Private	Private	Yes	Exchange	24,000	3,000
Parcel #4 T. 4 S., R. 18 W., SW1/4SE1/4; NE1/4SE1/4 NW1/4SE1/4; NE1/4SW1/5 NW1/4SW1/4 of Sec. 14	160	1	Private	Private	Yes	Purchase	24,000	3,000

[1] The estimated costs listed in this appendix in no way represent a formal appraised value of the land or mineral estate, but are rough estimates based on sales or exchanges of lands or mineral estates with similar characteristics to those included in the WSA. The estimates for purposes of establishing a range of potential costs to the government of acquiring non-Federal holdings and in no way represent an offer to purchase or exchange at the cost estimate included in this appendix. Processing costs are all miscellaneous expenses other than land costs. These include work month costs, appraisals, title work, escrow costs, etc.
[2] Total District processing costs approximately $1,000.00 for each parcel as identified, since they would be acquired under one action in an exchange.

North Pole Ridge Wilderness Study Area

1. The Study Area —6,369 acres

The North Pole Ridge Wilderness Study Area (WSA) (OR-5-8) is located along approximately six river miles of the John Day River, about 15 miles northwest of Fossil, Oregon, and 65 miles northeast of Madras, Oregon. It is about 120 miles southeast of Portland, Oregon and U.S. Highway 97 is ten miles west of the area. Within the WSA, the John Day River forms the boundary between Sherman and Gilliam Counties.

Except for projections on the north and south, North Pole Ridge WSA is basically a rectangular area, extending three miles north to south and four miles east to west. There are 6,249 acres of BLM land, 120 acres of split-estate and 240 acres of private inholdings within the North Pole Ridge WSA (see Table 1).

The western, southern, and eastern boundaries of the study area are formed by the borders between private, state, and public lands. The northern boundary is formed by the border between public and private lands and a utility gas pipeline and maintenance road.

Private land surrounding the WSA prevents legal public access by road. Public access to the WSA is possible only by floating the John Day River. The main launch point is located at Clarno where State Highway 218 crosses the John Day River. The main landing point is at Cottonwood Bridge where State Highway 206 crosses the John Day River.

The North Pole Ridge WSA lies within one of the largest continental basalt flow formations in the world, the Columbia River Basalt Formation. Here, the 6.2 miles of John Day River cut a dramatic cross section through this plateau with 800 to 1,600 foot deep canyons. This is especially evident at the red wall, a highly scenic section of the John Day Canyon within the WSA. Designated a National Wild and Scenic River in October 1988, the John Day River flows north into the Columbia River.

Additionally, 14 side canyons enter the WSA and drain into John Day River. Escarpments along the canyons are interspersed with talus slopes and steep bunchgrass covered slopes. Wet areas of lush vegetation along the river contrast against an otherwise dry landscape. Side canyons, dotted with springs offer small riparian zones. The John Day River provides aquatic habitat for steelhead, trout and chinook salmon (some of Oregon's few remain-

ing native salmonoid runs). Predominant vegetation in the WSA is a big sagebrush/bunchgrass community with scattered juniper trees.

The WSA was studied under Section 603 of the Federal Land Policy and Management Act and was included in the Final Oregon Wilderness Environmental Impact Statement (EIS) filed in February of 1990. There were four alternatives analyzed in the EIS; an all wilderness alternative, a partial wilderness with acquisitions alternative which is the recommendation of this report (5,830 acres recommended for wilderness and 539 acres released for other uses), a partial wilderness alternative (5,332 acres recommended for wilderness and 1,037 acres released for other uses), and a no wilderness/no action alternative.

2. Recommendation and Rationale

5,830 acres recommended for wilderness
539 acres recommended for nonwilderness.

The recommendation for this WSA is to designate 5,830 acres as wilderness and to release 539 acres for uses other than wilderness, and to attempt to acquire the 120 acres of mineral estate, the 240 acres of private inholdings and an additional 40-acre parcel adjacent to the WSA if the owners are willing. The all wilderness alternative would be the environmentally preferable alternative as it would result in the least change to the natural environment over the long term. The recommendation, however, would be implemented in a manner which would use all practical means to avoid or minimize environmental impacts.

The recommendation would preserve the high wilderness values on the majority of the WSA while releasing from wilderness consideration the portion with the lowest wilderness values and allowing the projected development of one oil and gas well.

The area recommended suitable provides a wilderness experience unique in this region. Floating or hiking through a major river canyon up to 1,600 feet deep, in near natural condition, is a rare opportunity. The area is characterized by steep rocky bluffs and numerous side canyons which offer outstanding opportunities for solitude and a wide range of primitive types of recreation. These qualities, coupled with special wilderness features such as a high density of cultural sites, anadromous and warm water fish populations, and unique vegetation communities, make the John Day River Canyon an area of outstanding natural qualities.

The recommendation would provide for the addition of a unique combination of ecosystems (Palouse Grassland Province/sagebrush steppe and wheatgrass-bluegrass to the National Wilderness Preservation System (NWPS). At present there are no similar wilderness areas containing both of these ecosystems. Biological diversity would be added to the NWPS under the recommendation.

The area designated wilderness under this alternative would include all of the John Day River Canyon in the WSA, as well as most side canyons; it would also include the identified cultural resource sites and nearly all areas having outstanding wilderness qualities.

The 539 acres that would be recommended nonsuitable under the proposed action have limited wilderness values. This area has no river frontage and is predominantly a north facing slope overlooking Pine Hollow Canyon where a buried gas pipeline utility corridor is located. The gas line cannot be seen but the maintenance road and periodic vehicle travel on it reduce the naturalness of the area. Exploration and development for oil and gas would be permitted on 539 acres and projected exploration and development would involve seismic surveys, drilling one well and construction of approximately 0.3 mile of access road and pipeline. Total surface disturbance would be five acres in the nonsuitable portion of the WSA.

3. Criteria Considered in Developing the Wilderness Recommendation

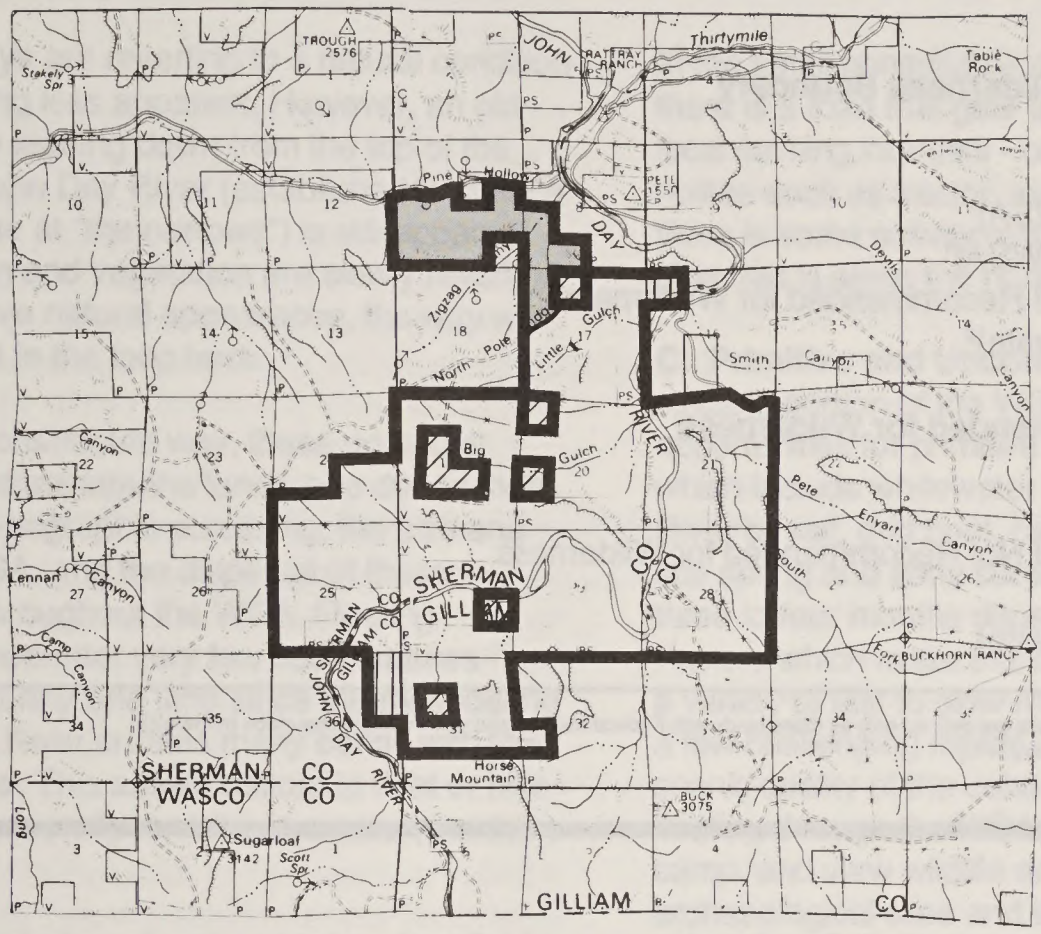
Wilderness Characteristics

A. Naturalness: This WSA has outstanding natural features which include up to 1,000 foot sheer red basalt walls along 6.2 miles of the John Day River. Above the cliffs are broad rolling vistas with excellent views of the John Day Canyon below.

The rolling hills and plateaus above the drainages are usually dominated by big sagebrush on deeper soils with low and/or stiff (rigid) sagebrush on shallower soils. Associated understory species include bluebunch wheatgrass, Thurber's

R 18 E

R 19 E



T5S

T6S

RECOMMENDED FOR WILDERNESS

RECOMMENDED FOR NONWILDERNESS

LAND OUTSIDE WSA RECOMMENDED FOR WILDERNESS (None)

SPLIT ESTATE

STATE (None)

PRIVATE

N

North Pole Ridge Proposal

MAP-1

0 1 2 3

MILES

OR-5-8

January, 1991

Table 1. Land Status and Acreage Summary of the Study Area

Within Wilderness Study Area	Acres
BLM (surface and subsurface)	6,249
Split-Estate (BLM surface only)[1]	120
Inholdings (state, private)	240
Total	6,609
Within Recommended Wilderness Boundary	
BLM (within WSA)	5,710
BLM (outside WSA)	0
Split-Estate (within WSA)[1]	120
Split-Estate (outside WSA)[1]	0
Total BLM Land Recommended for Wilderness	5,830
Inholdings (state, private)[2]	280
Within Area Not Recommended for Wilderness	
BLM	539
Split-Estate[1]	0
Total BLM Land Not Recommended for Wilderness	539
Inholdings (state, private)	0

[1]For purposes of this report, split-estate lands are defined only as those lands with Federal surface and non-Federal subsurface (minerals).
[2]Includes 40 acres adjacent to WSA boundary.

needlegrass, Idaho fescue, squirreltail, Sandberg's bluegrass, cheatgrass, phlox, biscuitroot, buckwheat and aster. Bunchgrass communities are found on the steep slopes and some of the plateaus in the canyons. These communities consist mainly of bluebunch wheatgrass and big sagebrush with Idaho fescue on some of the north slopes. Riparian vegetation along the John Day River includes sedges, rushes, willow, mock orange, red osier dogwood, wild rose and blackberry.

The ephemeral drainages not supporting riparian vegetation are dominated by big sagebrush/bunchgrass communities with some juniper/big sagebrush/bunchgrass areas along the John Day River.

Extensive diversity of wildlife habitat is provided by the mixed sagebrush/grass sidehills and rock outcrops of the canyon walls. Mule deer, chukar, golden eagles, prairie falcons, bobcats, tree and cliff swallows, long eared owls, Canada geese, mallard ducks, redwinged blackbirds, beaver and mink are just some of the wildlife found in the WSA. The bald eagle (a federal listed threatened species in Oregon) is a winter resident. Fisheries in this WSA are significant with smallmouth bass, rainbow trout, steelhead and chinook salmon being the primary game species and northern squawfish, brown bullheads and suckers the most common nongame species.

In the northern end of the WSA, near Thirtymile Canyon, 14 California bighorn sheep were reintroduced into the John Day River Canyon in February 1989. These sheep appear to be doing very well in their new environment. (California bighorn sheep are native to eastern Oregon and are a federal candidate species for listing under the Endangered Species Act.)

The John Day River has an average flow fluctuating from 10,000 cubic feet per second (CFS) in early spring to less than 100 cubic feet per second in late summer, due to natural seasonal variation and irrigation use during the growing season. Water quality of the John Day River meets state quality standards. Several springs provide additional water sources within the WSA.

Unnatural interior features influence approximately 26 percent of the WSA. These include 1.8 miles of fence, one reservoir, and 2.9 miles of ways. These

developments are dispersed mainly along the ridgetops, in side canyons and at isolated locations along the John Day River.

Naturalness in the northern portions of the WSA is also reduced by a buried gas line utility corridor located along the north boundary of the WSA in Pine Hollow Canyon. The adjacent maintenance road is readily visible from approximately 550 acres.

Most vehicle ways are reverting to a natural condition and are becoming less apparent. However, an old constructed way leading down from the top of the canyon to the John Day River (established to study a potential dam site at "the narrows") is still apparent. Although erosion and vegetation are slowly reverting this way to a more natural appearance, the way will remain apparent in the long term.

Except for the constructed way, these unnatural features do not dominate the landscape due to their size and type, topographic screening, the size and shape of the WSA, and the dispersal of these developments throughout the WSA. Floating recreationists encounter very few such features along the river at any one time since the meandering of the John Day River creates many bends with few straight stretches. This allows visitors to float or hike in an area that generally remains in a natural condition.

Unnatural features outside of the WSA that slightly affect its naturalness include the sounds of the Kent natural gas booster station located approximately five miles west of the WSA, associated maintenance activities on the natural gas pipeline along the northern boundary of the WSA, sights and sounds of ranching activities on Thirtymile Creek north of the WSA, and periodic low elevation military jet flights in the canyon. The northern part of the WSA is the area predominantly affected by these features. The jet flights affect the entire WSA but are temporary in nature.

B. Solitude: In the suitable portion of the WSA, outstanding opportunities for solitude exist in most of the WSA, particularly within the main canyon of the John Day River. There are also outstanding opportunities for solitude in most of the isolated side canyons and on some plateaus within the study area.

A unique type of solitude can be obtained by floating or hiking within the study area. The reddish brown basalt canyons range in depth from 800 to 1,600 feet and totally engulf the individual, giving one a complete feeling of being alone. Excellent opportunities for solitude can also be found along the south fork of Pete Enyart, Big Gulch, Little Gulch and Zig Zag Canyons, a ravine near the southern boundary, and a high plateau over 1,800 feet above the John Day River along the southern boundary.

Occasional motorized watercraft use on the John Day River adversely affects solitude within the WSA. The noise of a boat motor can be heard for miles in the otherwise quiet canyon.

In the small nonsuitable north portion of the WSA, there is a road that gets a fair amount of activity from local farming interests - outside farm equipment noises such as tractor, water pump noises. Also there is some activity in the maintenance of the gas pipe that is along the north edge of the WSA.

C. Primitive and Unconfined Recreation: The suitable portion of the WSA provides outstanding opportunities for primitive and unconfined recreation which include whitewater boating on the John Day River by raft, drift boat, canoe, or kayak during the late spring and early summer months (a period of three to four months depending on river levels). Factors which make this opportunity outstanding are: a variety of fast to slow moving water intermixed with a few challenging rapids within the WSA; outstanding scenic quality of the John Day River Canyon while floating through the WSA; opportunities to fish, camp, and view wildlife and historic, geologic, and archaeological sites and the opportunity to see an area that is predominantly unimpaired in its natural beauty and character.

In addition, opportunities exist to experience a two to four-day river trip or longer, if desired. While one can float through the study area in two to three days, limitations on access to the river require a much longer trip.

There are fishing opportunities for smallmouth bass, bullhead, channel catfish, chinook salmon, and steelhead along the river within the WSA. Many side canyons on the John Day River within the study area offer outstanding day hikes. Opportunities for sightseeing and photography of the features mentioned above are also outstanding. This area also offers opportunities for backpacking, camping, wildlife observation, hunting, and horseback riding. There are many side canyons to explore that provide solitude and great hiking, and also many primitive campsites along the John Day River and up some of the canyons.

The nonsuitable portion of the WSA does not provide much solitude due to a gas pipeline and its associated activities with maintenance. There is also a road

that provides a fair amount of activity with associated noises.

D. Special Features: There are several special wilderness features in the WSA. The North Pole Ridge WSA lies within one of the largest continental basalt flow formations in the world, the Columbia River Basalt Formation. The John Day River cuts a dramatic cross section through this plateau as it formed the John Day Canyon. This is especially evident at the red wall, a highly scenic section of the John Day Canyon within the WSA.

The WSA contains 6.2 miles of the John Day River with scattered wet areas of lush vegetation which contrast against an otherwise dry landscape. The John Day River provides aquatic habitat for steelhead, trout and chinook salmon (some of Oregon's few remaining native salmonoid runs).

Prehistoric sites which offer special opportunities for cultural resource studies have been found within the WSA. Some sites are so significant that they have been proposed for a National Register District.

The WSA contains vegetation representative of a Potential Natural Community, (PNC is the relatively stable, final stage in the succession of vegetation types, generally equated with pristine.) bluebunch wheatgrass ecosystem. There are opportunities to study native range sites which could be useful for vegetative comparison and could be maintained as pristine plant reserves.

Bald eagles (a federally listed threatened species in Oregon) and California Bighorn Sheep (a federal candidate for listing under the Endangered Species Act), inhabit the area.

Several plant species of special interest are suspected of occurring or known to occur in the WSA: *Castilleja xanthotricha* (yellow-hairy Indian paintbrush) is known to occur, and *Collomia macrocaly* (bristle-flowered collomia) and *Rorippa columbiae* (Columbia cress) are suspected of occurring. All are candidates for Federal listing as threatened or endangered. In addition, *Pediocactus simpsonii* var. *robustior* (hedge-hog cactus) and *Claytonia umbellate* (umbellate spring beauty) are two plant species of special interest which are known to occur in the WSA.

Diversity in the National Wilderness Preservation System

A. Expanding the Diversity of Natural Systems and Features as Represented by Ecosystems: According to the Bailey-Kuchler system of classifying ecosystems, the North Pole Ridge WSA is located in the Palouse Grassland Province and the potential natural vegetation is sagebrush steppe and wheatgrass/bluegrass. This is a rare combination of ecosystems as there are no areas within the National Wilderness Preservation System (NWPS) containing this combination. Only two other BLM areas in the nation are under study containing these ecosystem combinations. Both of these areas are also located along the John Day River.

Of the vegetative communities listed in the High Lava Plains and Columbia Basin section of the Oregon Natural Heritage Plan, the WSA contains the big sagebrush/bluebunch wheatgrass, big sagebrush/Idaho fescue, rigid sagebrush/Sandberg's bluegrass, bluebunch wheatgrass/Sandberg's bluegrass, and Idaho fescue/bluebunch wheatgrass ecosystems. This information is summarized in Table 2.

B. Assessing Opportunities for Solitude or Primitive Recreation Within a Day's Driving Time (5 hours) of Major Population Centers: There are six standard metropolitan statistical areas over 100,000 population within five hours' driving time of the North Pole Ridge WSA: Eugene/Springfield, Portland and Salem, Oregon; and Richland/Kennewick/Pasco, Seattle/Tacoma/Everett, and Yakima, Washington. Table 3 summarizes the number and acreage of designated areas and other BLM study areas within five hours' drive of major population centers.

C. Balancing the Geographic Distribution of Wilderness Areas: The North Pole Ridge WSA would not contribute to balancing the geographic distribution of areas within the National Wilderness Preservation System. There are 16 designated wilderness areas within a hundred miles of the WSA.

Manageability

(The area must be capable of being effectively managed to preserve its wilderness character)

The area would be manageable as wilderness under the all wilderness, the recommendation and partial alternatives. However, projected energy exploration on split-estate lands under the all wilderness alternative would create manageability problems, including impacts to the naturalness and solitude of the WSA within sight and sound of the activity.

Another factor complicating wilderness manageability is the existence of four private inholdings which are used for livestock grazing. This use could change in the future at the discretion of the landowner; how-

Table 2. Ecosystem Representation

Bailey-Kuchler Classification	NWPS Areas		Other BLM Studies	
	Areas	Acres	Areas	Acres
Province/Potential Natural Vegetation				
NATIONWIDE				
Palouse Grassland Province/Sagebrush Steppe and Wheatgrass/bluegrass	0	0	2	33,107
OREGON				
	0	0	2	33,107

Table 3. Wilderness Opportunities for Residents of Major Population Centers

Population Centers	NWPS Areas		Other BLM Studies	
	Area	Acres	Area	Acres
Eugene/Springfield, OR	42	2,859,994	43	770,436
Portland, OR	48	4,537,392	16	91,762
Salem, OR	45	2,888,764	18	210,085
Richland/Kennewick/ Pasco, WA	45	5,816,707	8	67,186
Seattle/Tacoma/ Everett, WA	35	4,300,167	4	43,494
Yakima, WA	48	5,447,447	8	67,186

ever, there has been no indication that present use would change.

Under the recommendation, acquisition could occur if the owners are willing which would resolve any unforeseen problems. It is proposed to eliminate motorized boat use in this segment of river and this would enhance the manageability of the area.

Energy and Mineral Resource Values

The U.S. Geological Survey (USGS)and the Bureau of Mines (USBM) prepared a mineral assessment report for the North Pole Ridge WSA in 1988, (USGS Bulletin 1743-B). Fieldwork for this report was carried out from 1985 through 1987. No mines or mining districts are located inside the study area; however, the study area is under lease for oil and gas. The study area has no identified mineral resources. The eastern part of the study area has moderate potential and the rest of the area has low potential for gold resources in small epithermal deposits. Along the John Day River there is low potential for gold resources in small placer deposits. The entire study area has low potential for oil and gas and no potential for geothermal energy resources.

As of May, 1991, there were no mining claims located in the WSA.

Impacts on Resources

The following comparative impact table summarizes the effects on pertinent resources for all the alternatives considered including designation and nondesignation of the entire area as wilderness.

Table 4. Comparative Summary of the Impacts by Alternatives

Issue Topics	Recommendation (Partial Wilderness with Acquisitions Alternative)	All Wilderness Alternative
Impacts on Wilderness Values	Wilderness designation of 6,110 acres (with the acquisition of 120 acres of mineral estate and 280 acres of private land) would protect and enhance wilderness values. Wilderness values on approximately 200 acres of 539 acres recommended nonsuitable would be impaired by projected management actions, with further declines from other potential uses over the long term.	Wilderness designation of 6,369 acres would protect and enhance existing wilderness values.
Impacts on Energy and Mineral Development	Production from one projected oil and gas well would occur.	Production from one projected oil and gas well would be foregone.
Impacts on Vegetation	The sagebrush-bunchgrass community on 500 acres burned would change to a primarily bunchgrass community. Riparian vegetation along 0.75 mile of John Day River would improve. About 2.4 miles of ways would revegetate. Little or no change would occur to vegetation on the rest of the area.	The sagebrush-bunchgrass community on 500 acres burned would change to a primarily bunchgrass community. Riparian vegetation along 0.75 mile of John Day River would improve. About 2.9 miles of ways would revegetate. Little or no change would occur to vegetation on the rest of the area.
Impacts on Wildlife	Habitat and populations maintained. Riparian habitat improved along 0.75 mile of stream and 500 acres of upland habitat would be maintained.	Habitat and populations maintained. Riparian habitat improved along 0.75 mile of stream and 500 acres of upland habitat would be maintained.
Impacts on Watershed	No impact.	No impact.
Impacts on Livestock Grazing	Vehicle use precluded on 2.4 miles of ways.	Vehicle use precluded on 2.9 miles of ways.
Impacts on Recreation Use	No impact.	No impact.
Impacts on Local Personal Income	Annual local personal income would remain at approximately $124,000 with an unknown level of increase from projected energy and imineral development.	Annual local personal income would remain at approximately $124,000 with an unknown level of increase from projected energy and mineral development.

Partial Wilderness Alternative	No Wilderness Alternative
Wilderness designation of 5,332 acres with the acquisition of 120 acres of mineral estate would protect and enhance existing wilderness values. Wilderness values on approximately 200 acres of the 1,037 recommended nonsuitable would be impaired by projected management actions, with further declines from other potential uses over the long term.	Projected management actions would impair wilderness values on approximately 500 acres, with further declines from potential uses over the long term.
Production from one projected oil and gas well would occur.	Production from one projected oil and gas well would occur.
The sagebrush-bunchgrass community on 500 acres burned would change to a primarily bunchgrass community. Riparian vegetation along 0.75 mile of John Day River would improve. About 2 miles of ways would revegetate. Little or no change would occur to vegetation on the rest of the area.	The sagebrush-bunchgrass community on 2,300 acres burned would change to a primarily bunchgrass community. Two thousand acres would change to mid-seral status through improved livestock management. Riparian vegetation along 0.75 mile of John Day River would improve. Little or no change would occur to vegetation on the rest of the area.
Habitat and populations maintained. Riparian habitat improved along 0.75 mile of stream and 500 acres of upland habitat would be maintained.	Habitat and populations maintained. Riparian habitat improved along 0.75 mile of stream and 2,300 acres of upland habitat would be maintained.
No impact.	Upland watershed improvement realized on 2,000 acres.
Vehicle use precluded on 2 miles of ways.	Livestock distribution and management would improve.
No impact.	No impact.
Annual local personal income would remain at approximately $124,000 with an unknown level of increase from projected energy and mineral development.	Annual local personal income would remain at approximately $124,000 with an unknown level of increase from projected energy and mineral development.

Energy and mineral resources were evaluated from available geological data supplemented by a limited amount of reconnaissance geochemical rock chip sampling by geologists with Terradata, a consulting firm under contract with BLM. Technical details of the evaluation are found in a Terradata report titled "Assessment of Geology, Energy, and Minerals (GEM) Resources, Lower John Day River Geologic Resource Area". Their 1983 report is supplemented by a BLM evaluation of the same area. Their findings are similar to the USGS/BM report although the 1983 report suggests a moderate potential for oil and gas.

Local Social and Economic Considerations

Under the recommendations, livestock grazing would remain at 337 AUMs which includes 27 AUMs in the nonsuitable portion (539 acres). Projected energy development would amount to one oil and gas production well. Overall recreation use would remain at 10,000 visitor days per year. Annual local personal income generated from resource outputs in the WSA would remain at approximately $124,000.

There were no social issues identified with the study of this WSA.

Summary of WSA-Specific Public Comments

Public involvement has occurred throughout the wilderness review process. Certain comments received during the inventory process and early stages of the EIS preparation were used to develop significant study issues and various alternatives for the ultimate management of those lands found to have wilderness value.

During formal public review of the draft and supplement to the draft EIS, a total of seven comments specifically addressing this WSA were received. In general, five commenters supported all wilderness for the WSA. Two commenters supported no wilderness/no action for the WSA.

Those favoring wilderness felt that the designation would protect valuable natural resources, that it would protect the John Day River Canyon from hydroelectric consideration, and that generally, the WSA had excellent wilderness value.

Those opposing designation were concerned that wilderness would adversely affect the minerals industry by not allowing oil and gas exploration to occur in the WSA. In addition, it was felt that the area was too small to be considered, that the only access to get to the WSA was by water, thereby, being too restrictive, and that the WSA was already wild and a restrictive designation was not needed.

No specific comments were received from other agencies or local governments regarding wilderness designation of the North Pole Ridge WSA.

There were no comment letters received on the final EIS for this WSA.

Spring Basin Wilderness Study Area

1. The Study Area —5,982 acres

The Spring Basin Wilderness Study Area (WSA) (OR-5-9) is located between 0.25 mile and one mile east of the John Day River which meanders through the Clarno Valley in Wheeler County.

The Spring Basin WSA is basically square in shape with small extensions at three corners. It is approximately 4.5 miles long, north to south, and five miles wide. There are 5,982 acres of BLM land within the Spring Basin WSA. One 40-acre private inholding is located near the southwest boundary (see Table 1). The land surrounding the WSA is privately owned.

The western and southern boundaries of the WSA are a combination of high standard gravel county roads, bladed and low standard dirt private roads and adjacent private land. Private land and a low standard dirt private road form the northern and eastern boundaries.

Steep rolling topography with sagebrush, western juniper and bunchgrass cover the WSA's slopes. Isolated springs are the only source of perennial water. Three main drainages divide the study area creating rugged side slopes. These flow intermittently toward the John Day River in a southerly and southwesterly direction. Near the river, basalt cliffs and escarpments rise abruptly. Exceptional panoramic views of the John Day River Canyon, which was designated a National Wild and Scenic River in October 1988, can be had from the western portion of the WSA. Horse Mountain, the highest point in the WSA also offers spectacular vistas to the wilderness visitor.

The WSA was studied under Section 603 of the Federal Land Policy and Management Act and was included in the Final Oregon Wilderness Environmental Impact Statement filed in February of 1990. There were three alternatives analyzed in the EIS: an all wilderness alternative which is the recommendation in this repor; a partial wilderness (5,299 acres recommended for wilderness and 683 acres recommended for uses other than wilderness); and a no wilderness/no action alternative. These lands are shown on Map 1.

2. Recommendation and Rationale

5,982 acres recommended for wilderness,
0 acres recommended for nonwilderness.

The recommendation for this WSA is to designate the entire area as wilderness. This is considered to be the environmentally preferable alternative as it will result in the least change from the natural environment over the long term.

The all wilderness alternative is the recommendation because of the significant wilderness values of the area, changes in conditions which have occurred since publication of the draft EIS, and strong public support for designation. This WSA was originally recommended as nonsuitable in the draft EIS; however, several changes after publication of the document caused a reversal in the recommendation. Until recently this area was the only large accessible tract of public land in the locale which was available for vehicle-oriented recreation. The road which provided vehicle access to the WSA has been determined by the Wheeler County Court to not be a public road. As a result, vehicle access has been denied to the public. Additionally, the outside sights and sounds from nearby Rajneeshpuram, which had significantly reduced opportunities for solitude in much of the WSA, are not a factor since the commune is no longer operational.

The high wilderness values leading to the suitable recommendation include the colorful geologic features and rugged cliffs which give this WSA a unique beauty. Numerous vista points give the visitor a sweeping view of the John Day River valley and solitude is provided by the remote canyons and vegetativve diversity. These highly scenic settings set the stage for the outstanding opportunities for recreation activities such as photography, hiking and nature study.

The recommendation would provide for the addition of a unique combination of ecosystems (Palouse grassland province/wheatgrass, bluegrass and sagebrush steppe) to the National Wilderness Preservation System. At present, there are no similar wilderness areas containing both of these ecosystems. Biological diversity would be added to the NWPS under the recommendation.

Other wilderness values of the WSA include several wildlife species and four plant species of special interest (described further in the Special Festures section). There is also a prehistoric cultural site within the WSA that is studied by many in the scientific community.

Finally, during formal public review of the Draft EIS and Supplement to the Draft EIS, strong public support for wilderness designation was expressed by a wide range of groups and individuals.

Wilderness designation would preclude a potential increase of 200 AUMs of livestock forage. Also precluded would be three oil and gas wells as analyzed in the final EIS. The USGS/BM final report, however, found the WSA to have a low potential for oil and gas resources.

When the above factors were coupled with the wilderness values which exist in the area, it was determined that the value of the area for wilderness outweighed the value of the area for other uses.

3. Criteria Considered in Developing the Wilderness Recommendation

Wilderness Characteristics

A. Naturalness: Colorful geologic features and rugged cliffs give this WSA a unique beauty. Numerous vista points give the visitor a sweeping view of the John Day River valley. Solitude is provided by the remote canyons and vegetative diversity. The predominant vegetation in the Spring Basin WSA is big sagebrush/bunchgrass and to a lesser extent, juniper/bunchgrass. There is a scattering of rabbitbrush and low sagebrush communities; associated grasses include bluebunch wheatgrass, needlegrass, Idaho fescue, Sandberg's bluegrass, sand dropseed and cheatgrass. There are numerous other plants including several listed below under special features.

Wildlife species occurring in this WSA include mule deer, chukar, golden eagles, prairie falcons, bobcats, California quail, meadowlarks and mountain bluebirds. The northern bald eagle, listed as threatened in Oregon, is an occasional winter resident.

Most portions of the Spring Basin WSA appear to be in a natural condition and are primarily affected by the forces of nature. Thirteen unnatural features within the WSA influence approximately 38 percent

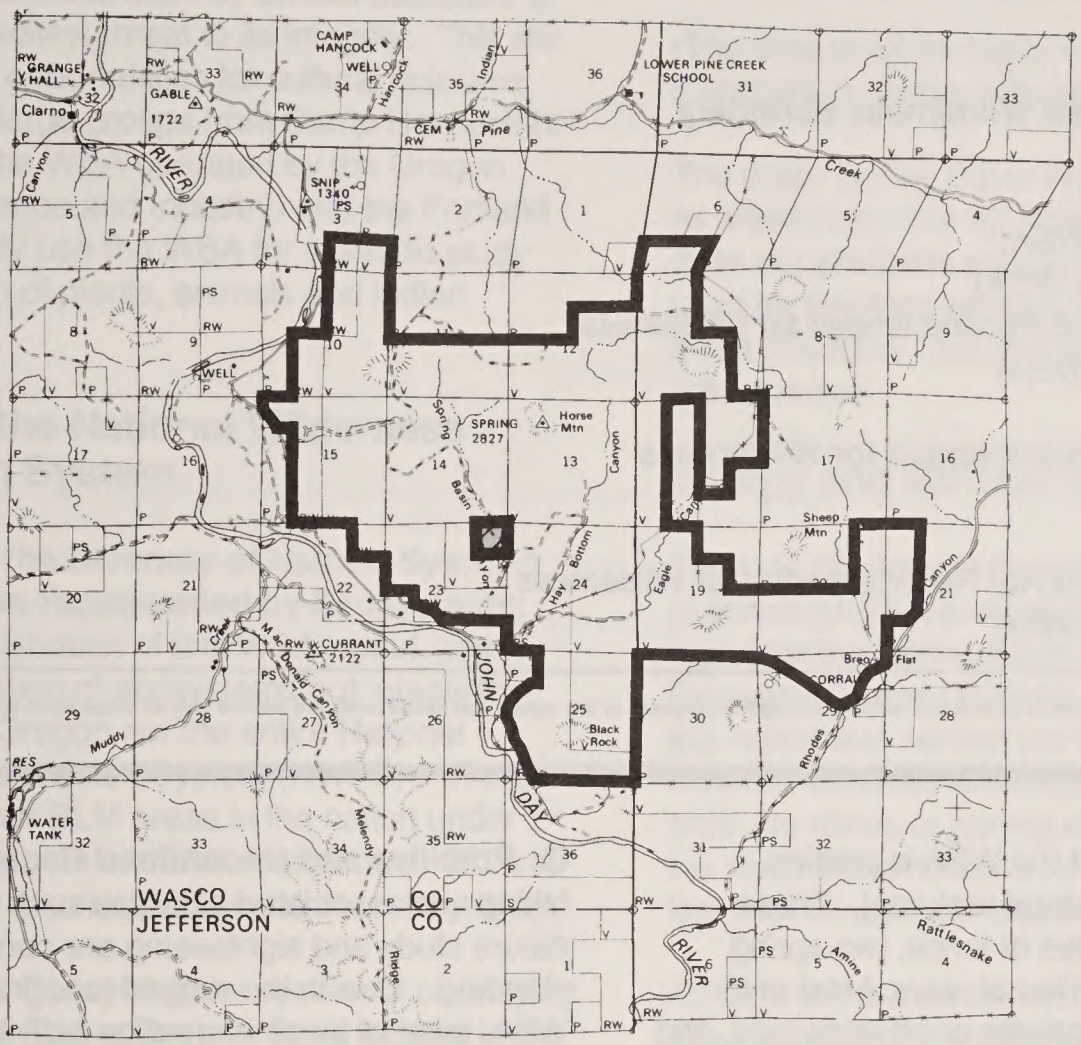
R 19 E

R 20 E

T7S

T8S

T9S



RECOMMENDED FOR WILDERNESS

RECOMMENDED FOR NONWILDERNESS

LAND OUTSIDE WSA RECOMMENDED FOR WILDERNESS (None)

SPLIT ESTATE (None)

STATE (None)

PRIVATE

-N-

Spring Basin Proposal

MAP-1

0 1 2 3

MILES

OR-5-9

January, 1991

Table 1 - Land Status and Acreage Summary of the Study Area

	Area
Within Wilderness Study	
BLM (surface and subsurface)	5,982
Split-Estate (BLM surface only)[1]	0
Inholdings (state, private)	40
Total	6,022
Within the Recommended Wilderness Boundary	
BLM (within WSA)	5,982
BLM (outside WSA)	0
Split-Estate (within WSA)[1]	0
Split-Estate (outside WSA)[1]	0
Total BLM Land Recommended for Wilderness	5,982
Inholdings (state, private)	40
Within the Area Not Recommended for Wilderness	
BLM	0
Split-Estate[1]	0
Total BLM Land Not Recommended for Wilderness	0
Inholdings (state, private)	40

[1]Appendix 1 is a detailed description of inholdings included within the study.For purposes of this report, split-estate lands are defined only as those lands with Federal surface and non-Federal subsurface (minerals).

of the WSA (62 percent of the WSA is pristine, uninfluenced by any unnatural features). These features consist of 3.1 miles of fence, two spring developments and nine miles of ways. Most of the ways are in the canyon bottoms or on ridge tops, and are screened from view except in their immediate vicinity. These features do not dominate the landscape due to topographic and vegetative screening, the size and shape of the WSA, and their dispersal throughout the study area.

B. Solitude: Outstanding opportunities for solitude can be found in the numerous side canyons. Topographic and vegetative screening within the Spring Basin WSA enhance these solitude opportunities. Hay Bottom Canyon and Eagle Canyon offer some of the best solitude. There are also numerous other areas offering the visitor secluded spots. Some of these locations may be small and are located on steep canyon slopes. Solitude is limited adjacent to the western and eastern boundary roads of the WSA.

Outside sights and sounds affecting the WSA's ability to provide solitude are evident from a portion of the WSA between the western boundary road and the prominent canyon rim above this road. These sights and sounds include vehicle traffic and farming activities on adjacent lands.

C. Primitive and Unconfined Recreation: Day hiking and associated activities such as photography, nature study and sightseeing are considered outstanding. Due to the rugged topography of the WSA, most of these recreation activities are confined to the canyon bottoms. The canyons provide opportunities to view unique and colorful geologic formations. Hiking in the uplands provides opportunities to view a variety of plants including a rare cactus to the area. Excellent viewing points of broad vistas provide good photo opportunities of the John Day River Canyon.

D. Special Features: Eagle Canyon contains a portion of the scenic Clarno Formation which offers colorful clay soils with rugged shapes. These highly scenic formations are considered a special feature. The WSA is also part of a winter habitat area for the Northern Bald Eagle which is Federally listed as threatened in Oregon under the Endangered Species Act.

Four plant species of special interest have been found within the WSA. Two species *Castilleja xanthotricha* (yellow-hairy indian paint brush) and *Astragalus diaphanus* var. *diaphanus* (transparent milkvetch) are Federal candidates for listing under the Endangered Species Act. The other two, *Penste-*

mon eriantherus var. *argillosus* (fuzzytongue penstemon) and *Pediocactus simpsoni* var. *robustior* (Hedgehog cactus) are of limited concern within Oregon, according to the Oregon Natural Heritage Data Base.

One prehistoric cultural site, a pithouse village with associated pictographs, has been discovered within the WSA. Illegal excavation by artifact collectors is probably the greatest threat to its integrity. This site offers excellent opportunities for cultural resource studies. Many large groups from Camp Hancock (a camp north of the WSA operated by the Oregon Museum of Science and Industry) and the Portland Audubon Society use the WSA for scientific study and observation of plants, animals and Indian culture.

Diversity in the National Wilderness Preservation System

A. Expanding the Diversity of Natural Systems and Features as Represented by Ecosystems: Wilderness designation of this WSA would add a unique combination of ecosystems not presently represented in Oregon nor the entire National Wilderness Preservation System (NWPS) . There are only two other BLM areas in the nation under study containing both of these ecosystems. Both of these areas are also located on the John Day River.

According to the Bailey-Kuchler system of classifying ecosystems, the Spring Basin WSA is located in the Palouse Grassland Province and the potential natural vegetation is a combination of wheatgrass/bluegrass and sagebrush steppe. This information is summarized in Table 2.

Of the vegetative communities listed in the High Lava Plains and Columbia Basin section of the Oregon Natural Heritage Plan, the WSA contains the western juniper/big sagebrush/bluebunch wheatgrass, big sagebrush/bluebunch wheatgrass, and bluebunch wheatgrass/Sandberg's bluegrass communities.

B. Assessing Opportunities for Solitude or Primitive Recreation Within a Day's Driving Time (5 hours) of Major Population Centers: There are six standard metropolitan statistical areas with a population of over 100,000 within five hours' driving time of the Spring Basin WSA: Eugene/Springfield, Portland and Salem, Oregon; and Richland/Kennewick/Pasco, Seattle/Tacoma/Everett and Yakima, Washington. Table 3 summarizes the number and acreage of designated areas and other BLM study areas within five hours' drive of population centers.

C. Balancing the Geographic Distribution of Wilderness Areas: The Spring Basin WSA would not contribute to balancing the geographic distribution of areas within the National Wilderness Preservation System. There are 16 designated wilderness areas within 100 miles of this WSA.

Manageability

(The area must be capable of being effectively managed to preserve its wilderness character.)

The entire Spring Basin WSA would be manageable as wilderness. The 40-acre inholding of private land does not affect the area's manageability since it is used for livestock grazing, and mineral development is not projected. No changes in the use of the land are expected.

Energy and Mineral Resource Values

The U.S. Geological Survey (USGS) and the Bureau of Mines (USBM) prepared a mineral assessment report for the Spring Basin WSA in 1989, (US Geological Survey Bulletin 1743-C). Fieldwork for this report was carried out in 1987. No identified mineral resources are known to exist within the study area. No mines or mining districts are located inside the study area; however, a part of the area is under lease for oil and gas exploration.

An area in the easternmost part of the study area has low mineral resource potential for silver, gold and mercury. A small area in the central part of the study area has low mineral resource potential for mercury. The WSA has a low resource potential for oil and gas, and no resource potential for uranium or for geothermal energy.

Terradata, a consulting firm under contract with BLM, evaluated energy and mineral resources from available geological data supplemented by a limited amount of geochemical rock chip and stream sediment sampling their geologists. Technical details of the evaluation are found in a Terradata report titled "Assessment of Geology, Energy and Minerals (GEM) Resources, Spring Basin WSA". Their 1983 report is supplemented by a BLM evaluation of the same area.

Oil and gas have a moderate potential for occurrence based on several positive factors. Several oil and gas exploration wells have been drilled near the WSA, and gas was recovered from one of them. In the same area there are three reported occurrences of asphalt. Further north of the WSA, near Condon, a

Table 2. Ecosystem Representation

Bailey-Kuchler Classification	NWPS Areas areas	NWPS Areas acres	Other BLM Studies areas	Other BLM Studies acres
Province/Potential Natural Vegetation				
NATIONWIDE				
Palouse Grassland Province/ Wheatgrass/Bluegrass and Sagebrush Steppe	0	0	2	33,494
OREGON				
	0	0	2	33,494

Table 3. Wilderness Opportunities for Residents of Major Population Centers

Population Centers	NWPS Areas Area	NWPS Areas Acres	Other BLM Studies Area	Other BLM Studies Acres
Eugene/Springfield, OR	42	2,859,994	43	770,436
Portland, OR	48	4,537,392	16	91,762
Salem, OR	45	2,888,764	18	210,085
Richland/Kennewick/ Pasco, WA	45	5,816,707	8	67,186
Seattle/Tacoma/ Everett, WA	35	4,300,167	4	43,494
Yakima, WA	48	5,447,447	8	67,186

deep well had a slight oil show. The combination of surface and subsurface hydrocarbon shows, surface and subsurface geology, and history of oil and gas leasing, all indicate a moderate potential for oil and gas in the entire WSA.

Geochemical analyses of stream sediment and rock chip samples show anomalous concentrations of zinc, lithium, mercury and molybdenum. This analyses indicates a favorable geologic setting may exist for gold mineralization on 2,315 acres within the WSA. No deposits of strategic and critical minerals are known to exist in the WSA.

As of May 1991, there was one mining claim within the WSA.

Local, Social and Economic Considerations

Livestock use at the current level of 89 AUMs and recreation use totalling 8,000 visitor days per year are the primary resource outputs that generate economic activity in the WSA. Local personal income generated annually from these existing use levels amounts to approximately $1,100 for livestock grazing and $96,000 related to recreation use of the WSA for an overall total of $97,100.

Under the recommendation, livestock grazing would remain at 89 AUMs. Overall recreation use would decrease by 100 visitor days per year. Annual local

personal income generated from resource outputs in the WSA would decrease by approximately $1,200.

There were no social issues identified with the study of this WSA.

Summary of WSA-Specific Public Comments

Public involvement has occurred throughout the wilderness review process. Certain comments received during the inventory process and early stages of the EIS preparation were used to develop significant study issue and various alternatives for the ultimate management of those lands found to have wilderness value.

During formal public review of the draft EIS and Supplement to the draft EIS, a total of 10 comments specifically addressing this WSA were received. Comments were made both in writing and as oral testimony at public hearings. In general, seven commenters supported all wilderness for the WSA. Three commenters supported no wilderness for the WSA. Those favoring wilderness, felt Spring Basin WSA's rare plants, wildlife, and scenic values would be protected with wilderness designation. In addition, all felt that there was a great need for more wilderness areas to be designated. Some felt that analysis of outside sights and sounds was inappropriate and that there was a great deal of solitude, especially in the canyons.

Those opposing wilderness designation were concerned that wilderness would adversely affect the minerals industry by not allowing oil and gas exploration to occur in the WSA. They also were against restricting the use of motorized vehicles and precluding future livestock forage allocations.

There were three comment letters received on the final EIS for this WSA

Impacts on Resources

The following comparative impact table summarizes the effects on pertinent resources for all the alternatives considered including designation and nondesignation of the entire area as wilderness.

Table 4. Comparative Summary of the Impacts by Alternatives

Issue Topics	Recommendation (All Wilderness Alternative)
Impacts on Wilderness Values	Wilderness designation of 5,982 acres would protect and enhance existing wilderness values.
Impacts on Energy and Mineral Development	Projected production from three oil and gas wells would be foregone.
Impacts on Vegetation	Seral status would move toward Potential Natural Climax (PNC) on 1,000 acres. Nine miles (five acres) of ways would revegetate.
Impacts on Wildlife	Wildlife habitat would be maintained. ODFW management objectives for mule deer would be met.
Impacts on Livestock Grazing	Two hundred AUMs of currently available but unallocated forage would be foregone. Vehicle use on nine miles of ways would be precluded resulting in slight inconvenience and cost to the livestock operators.
Impacts on Recreation Use	Motorized recreation would be eliminated. The area's overall recreation use would slightly decrease in the short term. No change in long term.
Impacts on Local Personal Income	Annual local personal income would decrease by approximately $1,200.

Partial Wilderness Alternative	No Wilderness/No Action Alternative
Wilderness designation of 5,299 acres would protect and enhance existing wilderness values. Wilderness values on 683 acres recommended nonsuitable would be impaired as a result of projected management actions.	Projected management actions would impair wilderness values on 2,045 acres with further declines from other potential uses over the long term.
Projected production from three oil and gas wells would be foregone.	Projected production from three oil and gas wells would occur.
Seral status would move toward PNC on 1,000 acres. There would be 8.2 miles (four acres) of ways would revegetate. One acre of vegetation would be disturbed by projected management actions.	Seral status would move toward PNC on 3,300 acres. Projected management actions would disturb 14 acres.
Wildlife habitat would be slightly improved. ODFW management objectives for mule deer would be met.	Wildlife habitat would be moderately improved. ODFW management objectives for mule deer would be exceeded. Minor disturbance to wildlife would continue.
Two hundred AUMs of currently available but unallocated forage would be foregone. Vehicle use on 8.2 miles of ways would be precluded resulting in slight inconvenience and cost to the livestock operators. Management would improve through one spring development.	Two hundred AUMs of currently available but unallocated forage would be allocated. Management would improve through fence and spring developments.
Motorized recreation use would be eliminated from most of the WSA. The area's overall recreation use would slightly decrease in the short term. No change in long term.	There would be no change in the level or type of existing use.
Annual local personal income would decrease by approximately $1,200.	Annual local personal income would increase by approximately $2,400 with an unknown level of increase from projected energy and mineral development.

Appendix 1 - Estimated Costs of Acquisition of Non-Federal Holdings Within Areas Recommended for Designation [1]

Legal Description (Prior to any Subdivision[1]	Total Acreage	Number of Owners	Type of Ownership by Estate (Federal, State Private, other)		Presently Proposed for Acquisition (Yes, No)	Preferred Method of Acquisition (Purchase, Exchange, Other)	Estimated Cost of Acquisition	
			Surface Estate	Subsurface Estate			Land Costs	Processing Costs
Parcel No. 1, T. 8 S., R. 19 E. NE 1/4,NE1/4,Sec. 23	40	1	Private	Private	Yes	Purchase	4,000	3,000

[1] The estimated costs listed in this appendix in no way represent a formal appraised value of the land or mineral estate, but are rough estimates based on sales or exchanges of lands or mineral estates with similar characteristics to those included in the WSA. The estimates for purposes of establishing a range of potential costs to the government of acquiring non-Federal holdings and in no way represent an offer to purchase or exchange at the cost estimate included in this appendix. Processing costs are all miscellaneous expenses other than land costs. These include work month costs, appraisals, title work, escrow costs, etc. All lands identified in this table are in Oregon.

Deschutes Canyon -Steelhead Falls Wilderness Study Area

1. The Study Area —3,240 acres

The Deschutes Canyon-Steelhead Falls Wilderness Study Area (WSA)(OR-5-14) is part of a larger study area that includes U.S. Forest Service lands (USFS RARE II Planning Area #6321) (see Map 1). This WSA is located in a triangle formed by the towns of Madras, Redmond and Sisters, in Central Oregon. The Steelhead Falls study area is a long narrow area located along the upper Deschutes River, within and adjacent to the U.S. Forest Service-administered Crooked River National Grasslands.

This study area actually consists of two subunits separated by a 40-acre parcel of Forest Service land and a 40-acre parcel of private land. For purposes of this report these two subunits will be discussed as one area. Its length is approximately 10 miles, and its width varies from 0.25 mile to 2 miles. (The joint U.S. Forest Service/Bureau of Land Management Deschutes Canyon-Steelhead Falls study area is triangular in shape, up to 7 miles wide and approximately 11 miles long.) (See map 1).

The study area boundary is a combination of property lines and roads. The WSA is accessible from all directions: Crooked River Ranch on the east, Road 63 through Cove Palisades State Park to the north, USFS Road #6300 on the west, and Lower Bridge Road to the south. There is no public vehicle access to the river from within the WSA. Year-round hiking access is available to Steelhead Falls from a Crooked River Ranch road east of the Deschutes River.

The BLM inventoried the Steelhead Falls area (WSA OR 5-14) during the wilderness inventory in 1978. In 1982, a decision was made that the Deschutes Canyon area would be jointly studied by the USFS and BLM with the Forest Service being the lead agency.

The resulting information is the combined efforts of both agencies, focusing on the wilderness characteristics and potentials for wilderness manageability. Total area included in this further planning area is 18,402 acres. (BLM - 3,240 acres, State of Oregon - 40 acres, private lands - 4,891, and FS - 10,231.)

For purposes of this report, only the BLM portion of the area is described. The recommendation for the BLM portion was developed after consultation with the U.S. Forest Service. The Deschutes River within this study area has been designated as a National

Wild and Scenic River by the Omnibus Oregon Wild and Scenic Rivers Act of 1988 and is classified as "scenic".

The beauty and wildness of the Deschutes River canyon increases with the change in elevation of the steep-sloped canyons as one proceeds north toward Lake Billy Chinook. Once within the Deschutes or Squaw Creek canyons, one's attention becomes very focused and constantly shifts from the roar and rapid movement of the Deschutes River or Squaw Creek in the canyon bottoms, to the vibrant green and red hues of riparian vegetation along the river bank and also to the highly scenic canyon walls towering above this river environment.

The geology of the Deschutes Canyon is characterized by Intra- canyon Basalt and sedimentary layered rock formations of varying thicknesses, colors and textures. Truly interesting combinations of reddish brown, light tan, white, light and dark grey multicolored basalt and sedimentary textured formations captures ones attention. They leave the visitor with a lasting impression that these formations were bisected by the Deschutes River over several thousand years. The Deschutes River and its tributary Squaw Creek meander in the canyon bottoms.

The area is surrounded by the Crooked River Ranch (a private subdivision) to the east, Lake Billy Chinook to the north, by low- density rural populations to the south and farmlands to the west.

The BLM lands were studied under Section 202 of the Federal Land Policy and Management Act as they have wilderness values only in conjunction with an adjoining agency's roadless area. They were included in the 1990 U.S. Forest Service Final Environmental Impact Statement/Land and Resource Management Plan for the Ochoco National Forest and Crooked River National Grassland.

There were four alternatives analyzed in that EIS: all wilderness, wilderness designation for the modified area, special management area to maintain roadless character for semi-primitive nonmotorized recreation, and the no wilderness/no action alternatives.

2. Recommendation and Rationale

0 acres recommended for wilderness
3,240 acres recommended for nonwilderness.

The recommendation for the WSA is to release the entire area for uses other than wilderness. The All Wilderness alternative is considered to be the environmentally preferable alternative as it would result in the least change to the natural environment over the long term. The recommendation, however, would be implemented in a manner which would use all practical means to avoid or minimize environmental impacts.

The area was recommended nonsuitable due to its small size, shape, limited wilderness opportunities, and manageability concerns. The steep confining nature of the river canyons would concentrate use primarily within the canyon bottom. In addition, limited opportunities for solitude within the study area also had a significant influence on the development of the U.S. Forest Service/BLM recommendation.

The narrow, irregular shape of this study area, even when combined with U.S. Forest Service lands would create management concerns. Other management concerns are private lands such as the Crooked River Ranch subdivision bordering the eastern boundary of the study area and two large farms bordering BLM lands along the western boundary. Subdivision homes immediately adjacent to BLM lands adversely effect wilderness values in some areas of this canyon, particularly north (downriver) of Steelhead Falls, where homes are located over the canyon rim.

Outside influences also impact the WSA. The large irrigation pump located downriver from Steelhead Falls on private land used for farming practices has an adverse effect on potential wilderness manageability and outstanding solitude, due to its nearby location and frequent operation. The farm adjacent to the southwestern portion of the study area dominates that area due to its cultivated fields, irrigation systems, roads and primitive vehicle routes. Human activities on lands surrounding the northern portion of the study area also have an adverse effect on solitude and wilderness manageability. The Cove Palisades State Park is a popular water recreation area where jetboats travel up the Deschutes River arm of Lake Billy Chinook. These jetboats can be heard for several miles, depending on wind and atmospheric conditions.

R 11 E

R 12 E

R 13 E

T 12 S

T 13 S

T 14 S

5-14

5-1

USFS PORTION OF WSA

BLM PORTION OF WSA

RECOMMENDED FOR WILDERNESS (None)

RECOMMENDED FOR NONWILDERNESS

LAND OUTSIDE WSA RECOMMENDED FOR WILDERNESS (None)

SPLIT ESTATE (None)

STATE

PRIVATE

-N-

0 1 2 3

MILES

Steelhead Falls Proposal

MAP-1

OR-5-14

January, 1991

Those wilderness values that exist in the WSA are not expected to be adversely impacted even with the nonsuitable recommendation.

3. Criteria Considered in Developing the Wilderness Recommendation

Wilderness Characteristics

A. Naturalness: The majority of this study area generally remains in a natural condition and is particularly enhanced by the beauty of the Deschutes River as it meanders through a canyon bisected over time by this highly scenic river. These canyons begin at the southern portion of the study area as small narrow canyons with an elevation of 2,338 feet in the southern portion.

The Deschutes canyon becomes progressively deep and wide in the northern portion of the study area downriver (north), toward Lake Billy Chinook where its elevation is 1,981 feet. The elevation at the crest of the canyon throughout most portions of the study area is 2,700 feet, resulting in a canyon that is almost 1,000 feet deep.

A variety of wildlife species can be found within the upland range and riparian habitat types within this study area. Mule deer, coyote, cottontail and jack rabbits, marmot and porcupine are commonly seen in the upland area. Beaver, river otter, badgers, owls and numerous song birds can be found along the Deschutes and Squaw Creek tributary. Eagles and hawks also inhabit this canyon area, particularly along the canyon cliff edges.

The riparian vegetation along the Deschutes River includes red alder, redosier dogwood, wax current, spirea, wildrose, penstemon, sedges, and other associated riparian plant species. The vegetation found on the sidehills of this study area includes juniper, bitterbrush, big sagebrush, bluebunch wheatgrass, Idaho fescue, green rabbitbrush, buckwheat, wild rye, milkvetch, yarrow and an occasional pine tree. A variety of colors resulting from different species of riparian habitat also enhance the naturalness and scenic beauty of this river canyon area.

The average river flow of the Deschutes over the past 30 years is 905 cubic feet/second or 655,700 acre feet/year. The Deschutes River and Squaw Creek contain at least four species of game fish including bull (Candidate 2 species), brown, and rainbow trout, and kokanee. Nongame species include squawfish and suckers.

Human imprints such as homes overlooking the eastern canyon rim influence small areas due to excellent topographic and vegetative screening qualities within this canyon area.

There are several areas that no longer retain their natural character. The largest area is a user-developed primitive campground area with numerous vehicle routes upriver from Steelhead Falls on the east side of the Deschutes River that encompasses approximately 123 acres. A U.S. Geological Survey river gauging station located at the extreme northwestern portion of this study area also is unnatural.

A road and vehicle way that protrude into the canyon area on the east bank of the Deschutes River downriver from Steelhead Falls were also determined to be unnatural during the joint wilderness inventory of this study area. An old gold flotation mill located upriver from Steelhead Falls on the west bank of the Deschutes is also unnatural, but it does have historical value.

B. Solitude: The joint USFS/BLM wilderness inventory concluded that outstanding opportunities for solitude are present, but due to the small size and narrow confining shape of the BLM lands, these opportunities are only outstanding when the adjacent Forest Service roadless area are considered.

Even though opportunities for solitude are less than outstanding when considered on their own, the BLM lands within this study area do have some excellent solitude opportunities. As soon as one travels from the high plateaus and into the interior canyons, the feeling of being alone in a rugged environment is dramatic and is a completely different feeling than being on the surrounding desert plateau.

Once within the Deschutes or Squaw Creek Canyons, one's attention becomes very focused and constantly shifts from the roar and rapid movement of the Deschutes River or Squaw Creek in the canyon bottoms, to the vibrant green and red hues of riparian vegetation along the river bank and also to the highly scenic canyon walls towering above this river environment.

The canyons do provide some topographic screening but tend to concentrate use. Topographic screening also exists on a few plateaus surrounding these

Table 1. Land Status and Acreage Summary of the Study Area

	Acres
Within Wilderness Study Area	
BLM (surface and subsurface	3,240
Split-Estate (BLM surface only)[1]	0
Inholdings (State, Private)	0
Total	3,240
Within the Recommended Wilderness Boundary	
BLM (within WSA)	0
BLM (outside WSA)	0
Split-Estate (within WSA)[1]	0
Split-Estate (outside WSA)[1]	0
Total BLM Land Recommended for Wilderness	0
Inholdings (state, private)	0
Within Area Not Recommended for Wilderness	
BLM	3,240
Split-Estate[1]	0
Total BLM Land Not Recommended for Wilderness	3,240
Inholdings (State, Private)	0

[1]For purposes of this report, split-estate lands are defined only as those lands with Federal surface and non Federal subsurface (minerals).

canyon areas. Juniper trees offer the best vegetative screening qualities within the study area and are scattered throughout most of the canyon slopes and plateaus, helping to screen visitors from each other and human imprints.

There are three or four primary access points with unmaintained trails into established dispersed campsites. Encounters with other hikers and backpackers would occur in the Deschutes and Squaw Creek Canyons because there is simply no way visitors could avoid each other once they begin hiking along either the Deschutes River or Squaw Creek canyon bottoms due to their confining nature.

The Deschutes River, Squaw Creek, and their tributary side canyons, offer the best opportunities to be alone. It is difficult to follow the river or creek far because many portions of the canyon immediately adjacent to the Deschutes River are narrow, steep, and rocky. Access into these canyons is also very limited due to the rugged topography in this area. For these reasons visitors searching for solitude would have to travel into more difficult areas in the side canyons, away from trails and traditionally used camp spots. These side canyons offer the best opportunities to find a secluded spot. Some of the plateaus west of Deschutes Canyon are also good places to find secluded spots because they are outside major travel corridors and high use areas.

C. Primitive and Unconfined Recreation: Four primitive and unconfined recreational activities are outstanding within the BLM portion of the study area. Two of these activities are fishing and hiking in a rugged environment. A remote fishing experience would require hiking into this canyon country so these two different types of recreational activities are directly related.

There are several fish species that make this river outstanding for a remote river fishing experience. Rainbow trout, brown, bull and kokanee can be occasionally caught along the portion of the Deschutes River from Lake Billy Chinook to Steelhead Falls. The brown trout is the dominant trout species upriver From Steelhead Falls.

The rugged nature of this steep canyon limits many fishing enthusiasts resulting in a remote quality fishing experience for those visitors who are willing to pursue fishing opportunities in this canyon. A moder-

ate amount of physical effort is required to hike relatively steep slopes and climb over or around basalt landslides, steep cliffs and/or dense riparian vegetation while pursuing these fishing opportunities. The presence of rattlesnakes in these canyons, reported to be in high densities along the heavily vegetated riverbanks and steep rocky sidehills also discourages visitors and limit fishing pressure.

This diverse fishery is maintained by water flow levels on the Deschutes River, excellent riparian habitat and numerous springs and seeps in this canyon as well as Squaw Creek canyon. The rushing sounds of river rapids and the natural beauty of riparian vegetation also enhance the fishing and hiking experience.

Bird watching and opportunities for photography are also considered outstanding. More than 200 species of birds have been identified in and around the study area. The river canyons, riparian areas, cliffs, plateaus, and grasslands within the study area provide a wide variety of habitat for many different wildlife species. Among these are owls, bald and golden eagles, ospreys, hawks, swallows, waterfowl and numerous song birds. Bald eagles are the only known threatened and endangered species found in the area.

Opportunities to photograph these species are outstanding especially when combined with highly scenic vistas of the river canyons and the Cascade Range.

D. Special Features: Several special features exist within the study area. The variety of wildlife species and habitat occurring in the study area and the dependency which wildlife have for portions of this area is an important special feature. For example, the Deschutes and Squaw Creek canyons and plateaus form an important portion of the Metolius deer winter range, for approximately 5,600 animals.

The bald eagle and peregrine falcon also inhabit these canyons during the winter months. The Bald eagle is the only known threatened and endangered species. Upland birds include populations of chukar, quail, Hungarian partridge and dove. The *Hypsiglema torquata* (desert night snake) an animal on the review list has also been reported near the study area.

Several species of fish are also found in this portion of the Deschutes River which provide an outstanding river fishing experience within a remote river canyon environment. Bull trout (Category 2 species), rainbow, brown trout and kokanee can be caught along the portion of the Deschutes River from Lake Billy Chinook to Steelhead Falls. The brown trout is the predominant trout species upriver from Steelhead Falls. The basic reason that this portion of the Deschutes River is not fished very often is due to its limited access into this remote rocky landscape and reported abundance of rattlesnakes.

Based on current information and plant lists, only one special status plant is known to exist on BLM land in the Steelhead Falls WSA. *Artemisia ludoviciana* ssp. *estesii* (Estes' wormwood) is known from the riparian vegetation along the Deschutes River, from Dillon Falls in the south to Lake Billy Chinook in the north. It is a Category 2 Candidate for Federal listing as endangered/threatened.

One plant species of special interest, *Astragalus peckii* (Peck's milkvetch) is suspected of being within the study area. This plant is known from about 7 miles southwest of the Steelhead Falls area and would be expected in generally flat, sandy soils dominated by juniper. It is a Category 2 Candidate for Federal listing as endangered/threatened.

The following educational, historical and scientific opportunities exist for a number of disciplines:

- Geology: The study area is in a zone where a number of geologic strata merge.

- Archaeology: Several major archaeological surveys have been conducted in the Deschutes River canyon. These surveys have documented numerous native American and historical sites.

- Terrestrial and Aquatic Biology: The interface between Cascade and Desert-Canyon ecosystems provides an unusually rich array of wildlife. Many species are dependent on the availability of caves, rock shelves, or talus, such as many raptor species which inhabit the area.

- Botany: The springs, seeps, and shelter provided by these canyons and river riparian areas support an interesting diversity of plants. Currently the Audubon Society of Portland, the Native Plant Society and other naturalists use this area for study of native Central Oregon vegetation in a primarily undisturbed ecosystem. Due to warmer sheltered conditions of the canyons in the spring, many plants are blooming up to a month earlier than the more exposed desert ecosystem plant species found on the desert plateaus.

Diversity in the National Wilderness Preservation System

A. Expanding the Diversity of Natural Systems and Features as Represented by Ecosystems: According to the Bailey-Kuchler system of classifying ecosystems, the Deschutes Canyon-Steelhead Falls WSA is located in the Intermountain Sagebrush province and the Potential Natural Vegetation is Sagebrush steppe. The study area contains scattered juniper of varying sizes and ages, sagebrush and bitterbrush. Rabbitbrush, Idaho fescue, and tall pines in the canyon bottoms make for interesting contrast in the ecosystem.

Wilderness designation of this WSA would add an ecosystem not presently represented in Oregon and represented in the National Wilderness Preservation System by only three areas. There are 66 other BLM areas in the state under study with this ecosystem. This information is summarized in Table 2.

B. Assessing Opportunities for Solitude or Primitive Recreation Within a Day's Driving Time (5 hours) of Major Population Centers: There are six major population centers within five hours' driving time of the Deschutes Canyon-Steelhead Falls WSA: Eugene/Springfield, Portland and Salem, Oregon, and Richland/Kennewick/Pasco, Tacoma, and Yakima, Washington. Table 3 summarizes the number and acreage of designated areas and other BLM study areas within five hours' drive of major population centers.

C. Balancing the Geographic Distribution of Wilderness Areas: The Deschutes Canyon-Steelhead Falls WSA would not contribute to balancing the geographic distribution of areas within the National Wilderness Preservation System. There are fourteen designated wilderness areas within 100 miles of the WSA.

Manageability

(The area must be capable of being effectively managed to preserve its wilderness character.)

Manageability of this study area as wilderness would only be possible when combined with adjacent U.S. Forest service lands having wilderness values. Wilderness manageability of this study area would not be possible by itself for several reasons. The narrow, irregular shape and limited size of the area and rugged canyons which confine visitor use to canyon bottoms restrict opportunities for outstanding solitude.

Activities on adjacent private lands also influence and detract from wilderness manageability. There are two areas where outside sights and sounds limit naturalness, solitude and primitive types of recreation. These two areas are north of Steelhead Falls. The Crooked River Ranch property extends across the Deschutes River to its west bank. A subdivision with homes extend over the eastern canyon rim and intrude upon the natural character of this canyon. Opportunities for solitude and primitive recreation are also limited in this area for the same reason.

Outside sites and sounds would adversely affect wilderness values adjacent to these activities. These include a tract of private land adjacent to the WSA where a large water pump, powerline and road dominate the landscape in this location and limit naturalness, solitude and primitive recreation opportunities.

Additional sights and sounds are generally limited to the north end where water ski boats can be seen and heard from Lake Billy Chinook. Although these activities do not totally dominate the northern portion of the study area, they do have an adverse effect on the naturalness, solitude and primitive types of recreation in that portion of the study area. A water gauging station is also located along the Deschutes in this portion of the study area and detracts from the overall naturalness of this portion of the study area.

Public lands adjacent to the west and southwestern boundaries of the study area are also influenced by farm and ranch activities, reducing naturalness, solitude and primitive unconfined recreation opportunities in these areas.

Energy and Mineral Resource Values

The 1983 U.S. Geological Survey/U.S. Bureau of Mines summary report titled Mineral Resource Potential of the Deschutes Canyon Roadless Area, Jefferson and Deschutes Counties (Open-File Report 83-376) concluded that there were no producing or developing mines, or active mining claims in the Deschutes Canyon USFS/BLM study area. Two prospects were found during the preparation of this report, but no potential for mineral resources was found. In addition, this report also concluded that development of sand and gravel deposits in the area could not favorably compete with similar deposits in the surrounding area which are closer to points of use.

According to the most current information available, no geothermal resources are known to exist within the Study Area.

Table 2 - Ecosystem Representation

Bailey-Kuchler Classification	NWPS Area		Other BLM Studies	
	Area	Acres	Area	Acres
Province/Potential Natural Vegetation				
		NATIONWIDE		
Intermountain Sagebrush/ Sagebrush Steppe	3	79,699	136	4,359,990
		OREGON		
	0	0	66	1,972,724

Table 3. Wilderness Opportunities for Residents of Major Population Centers

Population Centers	NWPS Areas		Other BLM Studies	
	Area	Acres	Area	Acres
Eugene/Springfield, OR	42	2,859,994	43	770,436
Portland, OR	48	4,537,392	16	91,762
Salem, OR	45	2,888,764	18	210,085
Richland/Kennewick/ Pasco, WA	45	5,816,707	8	67,186
Yakima, WA	48	5,447,447	8	67,186
Tacoma, WA	35	4,300,167	4	43,494

As of May, 1991, there were no mining claims within the WSA.

Local Social and Economic Considerations

Existing social and economic conditions would not change under the No Wilderness/No Action Alternative. If the area were designated wilderness it is estimated that there would be a significant loss of revenue resulting from a decrease of 1,000 AUM/ year. The impact due to the loss of grazing could result in 3-4 ranching operations going out of business. Extensive tracts of private lands exchanged into public ownership would no longer be included in the county tax base. The loss of motorized access on the plateaus would also shift demand for this type of recreation to other areas.

Summary of WSA-Specific Public Comments

Several opportunities were given to the public to comment on the Deschutes Canyon-Steelhead Falls joint agency study area. The Bureau of Land Management conducted public meetings and gathered public comments for wilderness studies to determine potential for wilderness. The USFS also conducted public meetings and gathered comments for the RARE II Analysis and the Crooked River National Grassland Unit Plan which included the Deschutes Canyon Area.

During the most recent planning efforts for Forest Planning, the USFS and BLM public lands were combined into one study area. A Memorandum of

Understanding between these two agencies was developed and the Forest Service was identified as the lead agency due to a larger percentage of public land within the joint agency study area.

Public comments obtained prior to this joint agency wilderness study effort were considered with other public comments obtained during the Forest planning and joint agency Wilderness evaluation of this area. These public comments are on file at the Forest Service and BLM Offices.

When the BLM requested public input for the Steelhead Falls Study Area in 1980, they received letters from 62 individuals. Sixty expressed support of the proposal to designate the Deschutes Canyon/ Steelhead Falls area as a wilderness study area. Many preferred the BLM canyon area to be managed as wilderness, even though it was less than 5,000 acres in size. Two comments were against the designation of wilderness for the Deschutes Canyon. One expressed concern that wilderness would limit fish management activities.

The WSA was also supported for wilderness designation by a number of organizations. These organizations had different degrees of involvement, ranging from very active support specifically for the Deschutes Canyon, to general support for a number of wilderness study areas, including the Deschutes Canyon/Steelhead Falls WSA.

The Jefferson County Comprehensive Plan recommended against any additional wilderness within the county.

During the public review period for the Draft U.S. Forest Service Resource Management Plan/EIS, 135 letters were received concerning the Deschutes Canyon/Steelhead Falls WSA.

The majority of these public comments favored wilderness designation for the river corridor, and many proposed enlarging the wilderness acreage to include all or part of the Deschutes River and Squaw Creek canyons.

Most respondents felt that the proposed 2,500 acres was too small, and recommended increasing acreage up to 20,000 for the wilderness area.

Some public comments did not favor wilderness designation believing that semi-primitive nonmotorized recreation management was more appropriate.

Some individuals also opposed any development in the area and urged protection for the area's wildlife, scenic, and recreation values. They generally opposed livestock grazing and timber harvest in the area.

The Oregon Department of Fish and Wildlife supported 5,200 acres of wilderness classification proposed in the Modified Wilderness Alternative which included wilderness designation of the canyon rim.

The Oregon Parks and Recreation Division supported the USFS/BLM requirement to maintain wilderness values until the area was designated wilderness or released from consideration by Congress.

In summary, the Deschutes Canyon/Steelhead Falls study area received support for wilderness recommendation. Others felt the wilderness character was limited. Most public commenters valued the scenic and primitive recreational qualities of what they considered to be a beautiful canyon area.

Impacts on Resources

Table 4 summarizes the effects on pertinent resources for all the alternatives considered including designation or non designation of the entire area as wilderness.

The 1990 U.S. Forest Service Final Environmental Impact Statement/Land and Resource Management Plan for the Ochoco National Forest and Crooked River National Grassland analyzed four different land management alternatives which included both USFS and BLM public lands for possible wilderness designation. For this reason, these four alternatives are summarized below.(More detailed information can be found in the U.S. Forest Service EIS). These four alternatives are:

1) All Wilderness Alternative: wilderness designation of the total U.S. Forest Service RARE II further planning study Area (# 6321).,

2) Modified Wilderness Alternative: wilderness designation of the suitable portion of U.S. Forest Service/BLM study area having wilderness values,

3) Special Management Area Alternative: A special management area which includes both U.S. Forest Service/BLM study area for uses other than wilderness designation. The intent of this alternative is to enlarge the study area to make it more manageable for more primitive backcountry recreation opportunities, wildlife/range management and Wild and Scenic river management., and

4) No Wilderness/No Action Alternative: The entire USFS/BLM public land study area would be managed for uses other than wilderness.

The impacts of these four different land management alternatives on different resource values will be summarized in the order listed above.

Table 4. Comparative Summary of the Impacts by Alternatives

Issue Topics	Recommendation (No Wilderness/No Action Alternative)	All Wilderness Alternative
Impacts on Wilderness Values	The existing wilderness values would be protected. Non conforming features and uses would be protected. Non-conforming features and uses would continue at current levels and no new land management actions would be made that would adversely affect future designation as wilderness.	Wilderness designation of the entire study area would result in motorized vehicle routes closed and rehabilitated. The area would be similar to the existing condition with many non conforming features and private lands included within the designated wilderness boundary. The plateaus would not offer a challenging, remote natural wilderness experience, but wilderness values within the central portion of this area would be preserved. There would be limited opportunities for solitude away from the influence of the sounds and sights of human activity on private lands adjacent and within the entire study area.
Impacts on Recreation	Motorized vehicles would be restricted in the canyon areas which are managed for semi-primitive, nonmotorized recreational opportunities. Limited motorized use of the plateau areas would also continue.	The entire study area would be managed for semi-primitive recreation opportunities consistent with wilderness designation. These objectives would be accomplished in the canyon areas but not on the plateaus. Current motorized use of some plateau areas would need to be eliminated and this would create a difficult law enforcement problem.
Impacts on Livestock Grazing	Grazing would continue at current levels. Water would be hauled into the area on a daily basis.	Livestock grazing would be eliminated unless water hauling on a daily basis by vehicle could be approved. Current management guidelines could allow occasional use of vehicles for established grazing needs on a case by case basis. Stock watering on the allotments within the study area would require water hauling on a daily basis. An estimated 900 to 1,000 AUM/year would be forgone under this alternative.

Modified Wilderness Alternative	Special Management Area Alternative
Under this alternative, approximately 5,200 acres is recommended as wilderness. Approximately 2,500 acres is public lands managed by the USFS; 2,660 acres is managed by the BLM; and 40 acres is managed by the state of Oregon. Wilderness values within the modified boundary area would be preserved.	The area within the WSA that is included in the Deschutes and Squaw Creek Canyons would also be protected under the Wild and Scenic river corridors and the backcountry recreation emphasis. The area outside these corridors would be managed for wintering deer herds. Wilderness values on these plateaus was determined to be limited and would be further reduced if vegetative manipulation occurred to improve wildlife/range habitat.
Primitive recreation values such as naturalness, solitude and primitive unconfined recreation would be available on a long term basis within the 5,200 acre wilderness area under this alternative. The plateau areas outside the 5,200 acre wilderness area would be managed primarily for wildlife and range resource management. Vehicle routes remaining open on the plateau areas would provide opportunities for semi-primitive, motorized recreation. Hunting opportunities would increase due to more public access to these areas but the quality of hunting would be reduced due to easier public access.	The Squaw Creek management area would emphasize backcountry semi-primitive nonmotorized recreation opportunities. Trails would be developed to offer challenging primitive recreation opportunities and easier access to the Wild and Scenic River corridors. Existing off-highway motorized recreation activities would be eliminated.
Grazing would continue at current levels and may be increased as range improvements in the plateau areas increase available forage for wildlife and livestock. Water hauling to maintain grazing would continue on access routes outside the wilderness area.	Grazing would continue at the current level unless conflicts with wintering deer herds begin to occur. Water hauling to maintain grazing would also continue as needed.

Table 4. Comparative Summary of the Impacts by Alternatives (continued)

Issue Topics	Recommendation (No Wilderness/No Action Alternative)	All Wilderness Alternative
Impacts on Land Use	Non-conforming features and uses would continue.	Non-conforming features such as roads and wood pole power lines would need to be removed and rehabilitated. Power line rerouting is expected to be very expensive. Private lands that become public land would require extensive work and costs to remove non-conforming features. Even after rehabilitation, most of these lands would still have very limited wilderness values due to their relatively flat, open nature from past farming practices.
Impacts on Land Ownership	Existing situation of ownership would continue.	It is not realistic to assume that all private lands could be exchanged into public ownership. Most of these lands have features that do not conform to wilderness standards and are important to local ranch operations.

Modified Wilderness Alternative	Special Management Area Alternative
All non-conforming land uses, including access roads and powerlines would be located outside the wilderness area.	
All non-conforming uses, including access roads and powerlines, are outside the wilderness.	Private lands within the Squaw Creek management area should be acquired as they become available.

Badlands Wilderness Study Area

1. The Study Area ---32,221 acres

The Badlands Wilderness Study Area (WSA) (OR-5-21) is located in Deschutes and Crook Counties, approximately 25 miles east of Bend, Oregon, and about 150 miles southeast of Portland, Oregon. The nearest highway is U.S. Highway 20 which forms the southern and southwestern boundary of the WSA.

The WSA contains 32,221 acres of BLM land. There is a 40-acre inholding of private land located near the northeastern boundary. (See Table 1). The Badlands WSA is relatively rectangular in shape. It is characterized by rolling hills and basalt escarpments with jagged outcroppings. Adjacent land is mostly public, except for private land to the north and the south.

The western and southern boundaries are formed by a combination of private property, U.S. Highway 20 and a BLM-maintained low standard bladed dirt road. The northern boundary is formed by a canal and private land. Powerline maintenance dirt roads form the eastern boundary.

There is a wide diversity of basalt flow formations within the study area. Sand blown into the area covers many small, irregularly shaped volcanic basins and valleys. Much of the area is covered by western juniper with an understory composed of bitterbrush and bunchgrass.

Reynolds and Zell ponds in the northwest portion of the WSA are the only surface water. Reynolds Pond is part of the Central Oregon Irrigation Canal System. Both ponds are fed by the irrigation canal forming the northwestern boundary of the WSA. Water levels in the ponds are dependent on flows in the canal and consequently fluctuate widely. When full, Reynolds Pond covers eight surface acres and Zell pond encompasses less than one acre.

The WSA was studied under Section 603 of the Federal Land Policy and Management Act and was included in the Final Oregon Wilderness Environmental Impact Statement (EIS) filed February, 1990.

There were four alternatives analyzed: an all wilderness alternative; a partial wilderness alternative (where 20,727 acres would be recommended suitable and 11,494 acres would be released for other uses); a partial wilderness alternative (where 32,030 acres would be recommended as suitable

and 191 acres would be released for other uses) which is the recommendation of the report; and the no wilderness/no action alternative. The lands of this WSA are shown on Map 1.

2. Recommendations and Rationale

32,030 acres recommended for wilderness
191 acres recommended for nonwilderness.

The recommendation for this WSA is to designate 32,030 acres of public land in the WSA as wilderness and to release 191 acres for uses other than wilderness. In addition, the area recommended suitable would include the 40-acre private inholding. For purposes of analysis, it is assumed this parcel would be acquired through purchase or exchange with willing landowners. The area totals 32,070 acres.

The all wilderness alternative is the environmentally preferable alternative as it would result in the least change to the natural environment over the long term. The recommendation, however, would be implemented in a manner that would use all practical means to avoid or minimize environmental impacts.

Wilderness values leading to the suitable recommendation include the highly scenic vistas of the Cascade Mountain Range, Smith Rocks State Park, West Butte and Horse Ridge which are from the elevated basalt pressure ridges within this WSA. It generally takes just a few minutes for a visitor to feel all alone when hiking into this area. The dense forest of Western juniper trees provide excellent vegetative screening due to their abundance and thick canopy. The small, sheltered sandy basalt rimmed basins scattered throughout this area also provide excellent places where visitors can be alone and experience solitude.

The recommendation would provide ecological diversity to the National Wilderness Preservation System (NWPS). It would add an ecosystem not presently represented in Oregon, and represented in the NWPS by only three areas.

The suitable portion is generally in a natural state and it is manageable due to its configuration which allows essentially unrestricted movement throughout the area. The area is easily accessed by Highway 20 (a major travel route), is located very near a population center (Bend) and is usable on a year-round basis.

The suitable recommendation was also based on the strong local public support for the area as wilderness.

The major manageability concern with the suitable portion is the residence of a private landowner on the 40-acre private parcel in the northeastern portion of the WSA. The area of influence resulting from this activity is very limited, however, due to the size and shape of the WSA and its excellent topographic and vegetative screening qualities surrounding this private land. Part of the recommendation includes attempts to acquire this parcel to eliminate future manageability concerns.

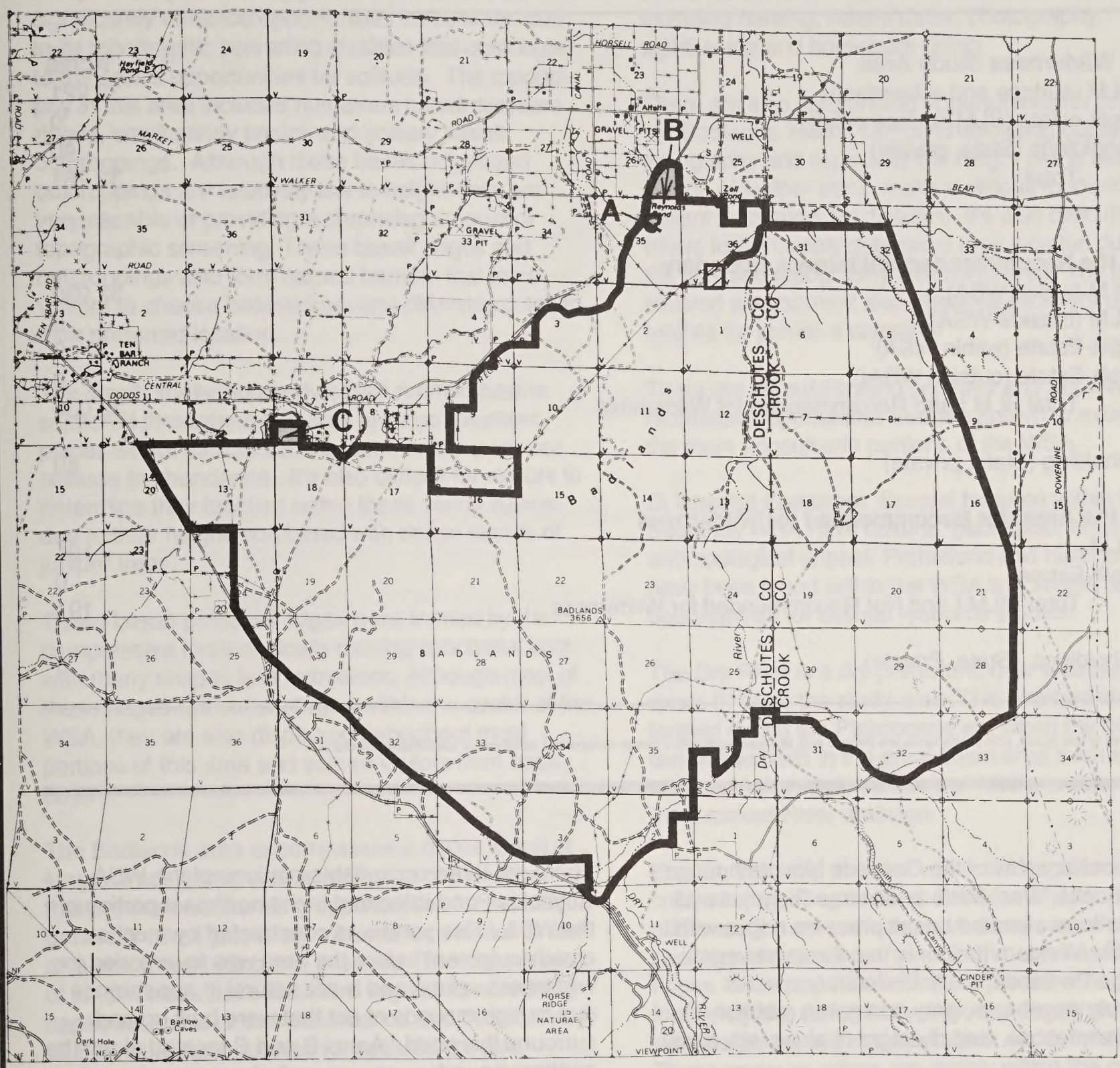
Three separate portions of the study area totaling 191 acres would be recommended as nonsuitable for wilderness designation. A small area (Area A) around and including Reynolds Pond would be recommended nonsuitable for wilderness due to the reduced naturalness of the area. This pond was constructed by mechanized equipment before the area was inventoried for wilderness values and is not natural in appearance due to high mounds of dirt that were built up and surround this pond. The Central Oregon Irrigation District uses the pond as an irrigation waste water dump. Also, the pond is used heavily for fishing, boating and water recreation activities.

Two narrow tracts of public land protruding from the northern boundary of the WSA (Areas B and C) would be recommended nonsuitable because they are surrounded on three sides by private land used for residential and agricultural purposes. These areas offer limited opportunities for solitude and primitive recreation based on their size and shape. Additionally, Area B is separated from the main WSA by a vehicle route.

3. Criteria Considered in Developing the Wilderness Recommendations

Wilderness Characteristics

A. Naturalness: Most portions of the Badlands WSA appear to be in a natural condition and primarily affected by the forces of nature, due to its large size, dense canopy of juniper trees and particularly its overall primeval character of numerous basalt outcroppings clustered predominately within the central regions of this WSA.



RECOMMENDED FOR WILDERNESS

RECOMMENDED FOR NONWILDERNESS

LAND OUTSIDE WSA RECOMMENDED FOR WILDERNESS (None)

SPLIT ESTATE (None)

STATE (None)

PRIVATE

-N-

Badlands Proposal
MAP-1

0 1 2 3
MILES

OR-5-21
January, 1991

Table 1. - Land Status and Acreage Summary of the Study Area

	Acres
Within Wilderness Study Area	
BLM (surface and subsurface)	32,221
Split-estate (BLM surface only)[1]	0
Inholdings (State, private)	40
Total	32,261
Within the Recommended Wilderness Boundary	
BLM (within WSA)	32,030
BLM (outside WSA)	0
Split-Estate (within WSA)[1]	0
Split-Estate (outside WSA)[1]	0
Total BLM Land Recommended for Wilderness	32,030
Inholding (State, private)	40
Within the Area Not Recommended for Wilderness	
BLM	191
Split-Estate[1]	0
Total BLM Land Not Recommended for Wilderness	191
Inholdings (State, Private)	0

[1] For purposes of this report, split-estate lands are defined only as those lands with Federal surface and non-Federal subsurface (minerals).

Highly scenic vistas of the Cascade Mountain range, (Smith Rocks, West Butte and Horse Ridge) are all available from elevated basalt pressure ridges within this WSA. Western juniper is the dominant vegetation in the Badlands WSA. Understory species include big sagebrush, gray and green rabbitbrush, bitterbrush, fescue, and cheatgrass along with many forbs.

The overall natural appearance of this area is a major reason why the adverse effects of over 29 unnatural interior features that influence approximately 26 percent of this WSA are actually very limited. These unnatural features are dispersed throughout the WSA and include 23.6 miles of fence, two reservoirs, two wildlife guzzlers, 3,160 acres of an old firewood cutting area and 58.1 miles of ways. The old woodcutting area is less natural in character than the remainder of the WSA. If old stumps were cut to ground level the remaining junipers scattered throughout the landscape would appear natural. Most vehicle ways are reverting to a natural appearance and are becoming less apparent primarily due to the sandy, rocky terrain and infrequent use.

There are three nonsuitable portions of the WSA. Reynolds Pond is located in the northeast portion of the WSA. This pond was constructed by mechanized equipment before the area was inventoried for wilderness values and is not natural in appearance due to high mounds of dirt that were built up and surround this pond. Areas B and C located along the northern boundary are generally in a natural condition.

Unnatural features outside of the WSA that slightly affect its naturalness include sights and sounds from U.S. Highway 20, a crested wheatgrass seeding south of the WSA and farm buildings north of the WSA near the community of Alfalfa. The canal on the north boundary is also an unnatural feature. These features do not have a significant effect on the naturalness of the WSA since they are generally screened from view by topography and/or vegetation. In addition, the large size and overall naturalness of the WSA further reduce any intrusive influences these features might have.

B. Solitude: The Badlands WSA has outstanding opportunities for solitude due to its large size and compact shape. The rugged terrain within this WSA significantly enhance opportunities for solitude, due to its topographic screening qualities that contribute to the area's opportunities for solitude. The topography in this area includes numerous basalt pressure ridges, small sandy basins and solitary basalt outcroppings. Although these basalt ridges and outcroppings are relatively low in height, they are very capable of providing a surprising amount of topographic screening. These basalt ridges and outcroppings also form natural barriers that force visitors to choose between several different routes to their preferred location.

The small, sheltered sandy basalt rimmed basins scattered throughout this area are also excellent places where visitors can be alone and experience solitude in abundance. It's also difficult for visitors to determine their location within these sandy basins due to their height, combined with dense stands of juniper trees.

These basalt pressure ridges were formed by the compressive force of slowly moving subcrustal lava with many shapes and formations. Although most of these ridges are concentrated within the center of the WSA, they are also dispersed throughout most portions of this area and screen visitors from each other.

The Badlands area encompasses a dense forest of juniper trees that create a very secluded environment that provides outstanding opportunities for solitude. It generally takes just a few minutes for a visitor to feel all alone when hiking into this area. The dense forest of juniper trees have excellent vegetative screening capabilities due to their abundance and thick canopy. Outstanding opportunities for solitude are also enhanced by observing and hearing different species of wildlife in the area. These sounds amplify the feeling that this area is dominated by the forces of nature.

The junipers are not as dense in the northeastern portion of the WSA and the basalt ridges are less pronounced in that area. As a result, there are fewer opportunities for solitude and primitive recreation in these areas. Opportunities for solitude are limited at Reynolds Pond, due to the lack of topographic and vegetative screening qualities and high public use for fishing and boating. The remaining nonsuitable portions (Areas B and C) are narrow, isolated fingers of public land which have limited opportunities for solitude, due to their shape, size and limited topographic screening qualities.

C. Primitive and Unconfined Recreation: Outstanding opportunities for several different types of primitive recreation are available in the study area, including hunting, nature study, photography, sightseeing and horseback riding.

There are also outstanding opportunities for hiking in the Badlands. Hiking can be challenging because the topography and especially the height of the dense stands of juniper trees make it difficult to identify distant landmarks for direction. It's also difficult for hikers to accurately determine their location due to the size and topography within this area. The rugged, isolated environment also provides excellent opportunities for primitive camping.

There are no outstanding primitive and unconfined recreation opportunities that are known to exist within the three nonsuitable portions of the WSA.

D. Special Features: Special features within the Badlands WSA have cultural, geological, botanical and zoological appeal. Prehistoric and historic sites have been found within the WSA which offer special opportunities for cultural resource studies.

The Dry River is a dry prehistoric river channel that winds through the study area. This riverbed was formed during the Pleistocene era when the high desert lakebeds in the great basin area such as Millican Valley, drained into the Alfalfa area and into the Crooked River drainage.

Erosion from this massive water drainage has created interesting features in the southeast portion of the study area such as carved and smoothed boulders and small narrow cuts through basalt ridges. There are also countless pressure ridges formed by the compressive force of slowly moving subcrustal lava with many shapes and formations. These pressure ridges are mainly within the center of the WSA.

A variety of wildlife species can be found within the WSA, such as bobcats, golden eagles, robins and flickers. Approximately 65 mule deer and 10 antelope inhabit the WSA on a year-round basis. The southern portions of the WSA are also considered crucial winter range for mule deer. Wildlife habitat is generally in fair condition, being significantly influenced by the forest of dominant old-growth juniper.

Cryptogams (mosses, lichens, etc.) grow on the basalt formations throughout the area and are a special attraction for some visitors. Crucial mule deer winter range covers the southern portions of the study area.

Table 2 - Ecosystem Representation

Bailey-Kuchler Classification	NWPS Areas areas	NWPS Areas acres	Other BLM Studies areas	Other BLM Studies acres
Province/Potential Natural Vegetation				
NATIONWIDE				
Intermountain Sagebrush/ Sagebrush steppe	3	76,699	136	4,338,119
OREGON				
	0	0	66	1,950,853

Table 3. Wilderness Opportunities for Residents of Major Population Centers

Population Centers	NWPS Areas Area	NWPS Areas Acres	Other BLM Studies Area	Other BLM Studies Acres
Medford, OR	31	2,440,081	21	730,038
Eugene/Springfield, OR	42	2,859,994	43	770,436
Portland, OR	48	4,537,392	16	91,762
Salem, OR	45	2,888,764	18	210,085
Richland/Kennewick/ Pasco, WA	45	5,816,707	8	67,186
Yakima, WA	48	5,447,447	8	67,186

Diversity in the National Wilderness Preservation System

A. Expanding the Diversity of Natural Systems and Features as Represented by Ecosystems: According to the Bailey-Kuchler system of classifying ecosystems, the Badlands WSA is located in the (Intermountain Sagebrush Province and has sagebrush steppe as its potential natural vegetation). Of the vegetative communities listed in the High Lava Plains section of the Oregon Natural Heritage Plan, the WSA has western juniper/Idaho fescue ecosystems.

Wilderness designation of this WSA would add an ecosystem not presently represented in Oregon, and represented in the National Wilderness Preservation System in only three other areas. There are sixty-six other BLM areas in the state currently under study with the same ecosystem This information is summarized in Table 2.

B. Assessing Opportunities for Solitude or Primitive Recreation Within a Day's Driving Time (5 hours) of Major Population Centers: Six standard metropolitan statistical areas with populations over 100,000 are within five hours' driving time of the Badlands WSA: Medford, Eugene/Springfield, Portland and Salem, Oregon, and Richland/ Kennewick/Pasco, and Yakima, Washington. Table 3 summarizes the number and acreage of designated areas and other BLM study areas within five hours' drive of major population centers.

C. Balancing the Geographic Distribution of Wilderness Areas: The Badlands WSA would not contribute to balancing the geographic distribution of areas within the National Wilderness Preservation System. There are 14 designated wilderness areas within 100 miles of this WSA.

Manageability

(The area must be capable of being effectively managed to preserve its wilderness character.)

With the exception of Reynolds Pond, the Badlands WSA is capable of being managed as wilderness. There are factors, however, which could affect manageability of the area to a limited degree in the future. The major manageability concern with the suitable portion is the residence of a private landowner on the 40-acre private parcel in the northeastern portion of the WSA. The area of influence resulting from this activity is very limited, however, due to the size, and shape of the WSA and its excellent topographic and vegetative screening qualities surrounding this private land. As part of the recommendation, attempts would be made to acquire this parcel to eliminate future manageability concerns. The future maintenance and redevelopment of fences and wildlife guzzlers could become a concern.

A small area (Area A) around and including Reynolds Pond is not considered manageable. This pond was constructed by mechanized equipment before the area was inventoried for wilderness values and is not natural in appearance due to high mounds of dirt that were built up and surround this pond. The Central Oregon Irrigation District uses the pond as an irrigation waste water dump. Also, the pond is used heavily for fishing, boating and water recreation activities.

Reynolds Pond, a manmade pond that lacks naturalness and outstanding solitude and is heavily used for fishing, is not considered manageable for wilderness.

Energy and Mineral Resource Values

The U.S. Geological Survey (USGS) and the Bureau of Mines (USBM) prepared a mineral assessment report for the Badlands WSA in 1990, (U.S. Geological Survey Bulletin 1744-B). Fieldwork for this report was carried out from 1986 through 1988. The report states that there are no identified resources in the study area, and no areas of mineralized or altered rock were found. Sand and gravel occur in the area, but other sources are closer to existing markets. Basalt is abundant in the area and has a number of uses. However, basalt is widespread in the region and the basalt found in the study area has no characteristics that make it more useful than basalt found elsewhere. There is a low potential for geothermal resources and for oil and gas in the study area.

Energy and mineral resources were also evaluated from available geologic data supplemented by a limited amount of geochemical rock chip sampling by Terradata, a company under contract in the 1980's by BLM for energy and mineral resource evaluation. Technical details of the evaluation are found in a BLM report titled "Assessment of Geology, Energy, and Minerals (GEM) Resources, Badlands WSA". These findings are consistent with the USGS/USBM report.

As of May 1991, there were no mining claims within this WSA.

Local Social and Economic Considerations

Under the recommendation, livestock use at the current level of 1,100 AUMS and recreation use totaling 10,000 visitor days per year are the primary resource outputs that generate economic activity in the WSA. Local personal income generated annually from these existing use levels amounts to approximately $13,200 for livestock grazing and $120,000 related to recreation use of the WSA, for an overall total of $133,200.

Under this recommendation livestock grazing would remain at 1,100 AUMs. Overall recreation use would decrease by 3,000 visitor days per year in the long term. The total effect on local personal income would be a net decrease of $36,000 per year in local personal income.

There were no social issues identified in the study of this WSA

Impacts on Resources

The following comparative impact table summarizes the effects on pertinent resources for all the alternatives considered including designation or nondesignation of the entire area as wilderness.

Summary of WSA-Specific Public Comments

Public involvement has occurred throughout the wilderness review process. Public comments received during the inventory process and early stages of the EIS preparation were used to develop

Table 4. - Comparative Summary of the Impacts by Alternatives

Issue Topics	Recommendation (Partial Wilderness with Acquisitions Alternative)	All Wilderness
Impacts on Wilderness Values	Wilderness designation of 32,070 acres, which includes acquisition of 40 acres of private land, would protect and enhance existing wilderness values. Limited wilderness values on 191 acres recommended nonsuitable would continue to be impaired by motor vehicle use.	Wilderness designation of 32,221 acres would protect and enhance existing wilderness values.
Impacts on Energy and Mineral Development	Projected production from one sand and gravel operation would be foregone.	Projected production from one sand and gravel operation would be foregone.
Impacts on Vegetation	Revegetation would occur on 41 acres.	Revegetation would occur on 42 acres.
Impacts on Wildlife	Habitat slightly improved, resulting in a 20 to 25 percent increase in mule deer populations.	Habitat slightly improved, resulting in a 20 to 25 percent increase in mule deer populations.
Impacts on Livestock Grazing	Vehicle use precluded on 42.7 miles of ways. There would be 200 AUMs foregone.	Vehicle use precluded on 43.1 miles of ways. There would be 200 AUMs foregone.
Impacts on Wood Products Harvest	There would be 13,500 cords of firewood foregone.	There would be 13,500 cords of firewood foregone.
Impacts on Recreation Use	Visitor use would be decreased 60 percent in the short term and 30 percent in the long term.	Visitor use decreased 60 percent in the short term and 30 percent in the long term.
Impacts on Local Personal Income	Annual local personal income would decrease by approximately $36,000.	Annual local personal income would decrease by approximately $36,000.

Partial Wilderness	No Wilderness/No Action
Wilderness designation of 20,767 acres, which includes acquisition of 40 acres of private land, would protect and enhance existing wilderness values. Wilderness values on 11,494 acres recommended nonsuitable would be impacted by projected management actions that would both directly and indirectly impair 8,377 acres.	Projected management actions would impair the area's naturalness, solitude and primitive and unconfined recreation opportunities on more than 15,000 acres in the short term and 11,000 acres in the long term.
Projected production from one sand and gravel operation would be foregone.	Projected production from one sand and gravel operation would occur.
Revegetation would occur on 18 acres. Seral status of 9,680 acres changed from early toward late seral stage through juniper thinning, woodcutting and livestock management. Crested wheatgrass established on 130 acres. Vegetation disturbed on six acres through other projected management actions.	Seral status of 17,660 acres changed from early toward the late seral stage through juniper thinning, woodcutting and management. Crested wheatgrass established on 730 acres. Vegetation disturbed on 28 acres through other projected management actions.
Habitat slightly improved, resulting in a 10 percent increase in mule deer populations.	Habitat moderately improved, resulting in a 35 percent increase in mule deer populations.
Vehicle use precluded on 16.6 miles of ways. There would be 56 additional AUMs realized; 144 AUMs foregone. Livestock distribution and management would be improved.	There would be 200 AUMs realized. Livestock distribution and management would be improved.
There would be 12,000 cords of firewood realized and 1,500 cords of firewood foregone.	There would be 13,500 cords of firewood realized.
Visitor use maintained in the long term.	No impact.
Annual local personal income would increase by approximately $700.	Annual local personal income would increase by approximately $2,400 with an unknown level of increase from projected energy and mineral development.

significant study issues and various alternatives for the ultimate management of those lands found to have wilderness value.

During formal public review of the Draft and the Supplement to the Draft EIS, a total of 28 written and 9 oral comments were received regarding this WSA, for a total of 37 comment letters. Ten of these comments had specific concerns. Eight commenters supported wilderness for WSA and two commenters supported no wilderness for the WSA.

Those favoring wilderness designation felt that the Badlands WSA wildlife populations, specifically the sage grouse and winter deer range, would be protected. Others stated that plant life and geological formations were worthy of wilderness protection. And still others felt that the area was excellent for recreation experience in a wilderness area.

Those opposing wilderness designation were concerned that the WSA was too close to Highway 20 and the BLM Millican Valley Off Highway Vehicle Recreation Area. One other commenter stated there were too many intrusions (ways and fences) in the WSA, that the area could not be managed successfully as a wilderness area and that people would not or could not use the wilderness (especially the desert) without motor vehicles.

No specific comments were received from other agencies or local governments regarding wilderness designation of the Badlands WSA.

There were no comment letters received on the final EIS for this WSA.

Appendix 1 - Estimated Costs of Acquisition of Non-Federal Holdings Within Areas Recommended for Designation [1]

Legal Description (Prior to any Subdivision	Total Acreage	Number of Owners	Type of Ownership by Estate (Federal, State Private, other)		Presently Proposed for Acquisition (Yes, No)	Preferred Method of Acquisition (Purchase, Exchange, Other)	Estimated Cost of Acquisition	
			Surface Estate	Subsurface Estate			Land Costs	Processing Costs
Parcel No. 1, T. 17 S., R. 14 E. SE 1/4,SW1/4,Sec. 3640	1	Private	Private	Yes	EPurchase	8,000	$4,000	

[1] The estimated costs listed in this appendix in no way represent a formal appraised value of the land or mineral estate, but are rough estimates based on sales or exchanges of lands or mineral estates with similar characteristics to those included in the WSA. The estimates for purposes of establishing a range of potential costs to the government of acquiring non-Federal holdings and in no way represent an offer to purchase or exchange at the cost estimate included in this appendix. Processing costs are all miscellaneous expenses other than land costs. These include work month costs, appraisals, title work, escrow costs, etc.

North Fork Wilderness Study Area

1. The Study Area —11,225 acres

The North Fork Wilderness Study Area (WSA) (OR-5-31) is located in Crook County, approximately 70 miles northeast of Bend, Oregon. It is about 200 miles southeast of Portland, Oregon and five miles north of the Prineville-Paulina Highway. The WSA is irregularly-shaped, curving along 12.5 miles of the North Fork of the Crooked River. It contains 10,985 acres of BLM land, 1,125 acres of US Forest Service (USFS) land, and 240 acres of split-estate land on the BLM portion for a total of 12,350 acres. There are 480 acres of private inholdings located near the northern boundary on the BLM portion (see Table 1). The WSA is surrounded by public, private, and USFS land.

The western boundary of the WSA is formed by high standard gravel and bladed BLM and USFS maintained roads. The northern and eastern boundaries are formed by low standard or bladed dirt roads and private property. The southern boundary is formed by a road and private property. Two dead-end roads totaling one mile in length enter the study area, forming part of the boundary.

Basalt canyons walls in the WSA drop off the grassy plateaus into the river canyon below. Ponderosa pines and Douglas fir line the canyon bottoms. The North Fork of the Crooked River meanders for about 7 miles through the heart of this WSA and rainbow trout are found along its pools and riffles. Two small waterfalls are located along this stretch of the river. The upper plateaus are rolling and have scattered trees and large open areas. Vegetative communities range from ponderosa pine and grass in the drainages to low sagebrush and bunchgrass on the rockier areas. Numerous side canyons cut into the main canyon including Fox Canyon Creek and Committee Creek. Other water sources within the WSA include springs, seeps and smaller perennial streams.

The North Fork is a tributary of the Crooked River and has an average annual flow of 123 cubic feet per second and an average annual yield of 90,000 acre-feet. Overall water quality meets State water quality standards. Designated as a National Wild and Scenic River in October 1988, an 11.1-mile river segment in the WSA is classified as wild and 1.4 miles are classified as scenic.

The WSA was studied under Section 603 of the Federal Land Policy and Management Act and was

included in the Final Oregon Wilderness Environmental Impact Statement (EIS) filed in February of 1990. There were three alternatives analyzed in the EIS: 1) an all wilderness alternative; 2) an all wilderness alternative with acquisitions where attempts would be made to acquire and designate 480 acres of private inholdings and the 240 acres of mineral estate, and 3) a no wilderness/no action alternative which is the recommendation in this report. The initial study boundaries and the alternatives for management were developed with the USFS in several field reviews and formal meetings. It was determined that the BLM would take the lead in developing an EIS for this area since BLM had a large roadless area between the agency boundaries and they had the larger portion of the WSA. These lands are shown on Map 1.

2. Recommendation and Rationale

0 acres recommended for wilderness
11,225 acres recommended for nonwilderness.

The recommendation for this WSA is to release the entire 11,225 acres of BLM land (and 1,125 acres of USFS land) for uses other than wilderness. The all wilderness alternative with acquisitions would be the environmentally preferable alternative as it would result in the least change from the natural environment over the long term. The recommendation would, however, be implemented in a manner which would use all practical means to avoid or minimize environmental impacts.

The area is being recommended nonsuitable because the benefits of maintaining options for leaving vehicle routes open for use by hunters and anglers, oil and gas exploration and development, timber harvest and livestock grazing increases was determined to outweigh the wilderness values. The Forest Service concurs with this recommendation for the lands they administer (1,125 acres) within the WSA on the north end.

Mineral reports indicate that the WSA has a high potential for oil and gas based on the combination of surface structure, subsurface geology, hydrocarbon shows and persistent exploration. Initially, seismic surveys would be likely with further exploration projected to involve drilling one test exploration well which would require construction of a drill pad, mud pits and 0.5 mile of access road. Hydrocarbon reserves, most likely natural gas, would be expected to be discovered. Three additional wells would be anticipated which would require two miles of access roads. Approximately three miles of pipeline would be constructed in the WSA to market the gas. Total surface disturbance would be 15 acres in the WSA.

The values of the area for salvage and overstory timber harvest also lead to the nonsuitable recommendation. Construction of livestock developments would increase the authorized AUMs by 76, from 535 AUMs to 611 AUMs as a result of more forage availability.

The area's limited wilderness values also led to the nonsuitable recommendation. Evidence of past logging activities inside the WSA and by logging and ranching activities outside the area can be seen and heard from within the area detracts from the area's wilderness value. Additionally, there is a major road that follows along the entire northwest boundary of the WSA which provides easy access for fishing and many hunting camps.

There are very few areas where true solitude can be found since the WSA is narrow in size. Additionally, there are two private inholdings along the North Fork of the Crooked River which if not acquired, could adversely affect the natural character of the canyon.

The study area's highest wilderness values are found in the deep canyon of the North Fork of the Crooked River. Even without wilderness designation these values would likely remain. Currently, a total of 3,552 acres are withdrawn due to designation of the area as a National Wild and Scenic River and 11.1 miles of the river being classified as "wild."

3. Criteria Considered in Developing the Wilderness Recommendations

Wilderness Characteristics

A. Naturalness: The North Fork River Canyon is quite natural in appearance with steep rock walls, beautiful riffles and pools and two small waterfalls. A great diversity of vegetation exists from Douglas fir and ponderosa pines to a variety of vegetation associated with riparian zones. The WSA is primarily a transition zone between drier, lower elevation grasslands and the wetter, higher elevation

R 21 E

R 22 E

T 15 S

T 16 S

RECOMMENDED FOR WILDERNESS (None)

RECOMMENDED FOR NONWILDERNESS

LAND OUTSIDE WSA RECOMMENDED FOR WILDERNESS (None)

SPLIT ESTATE

STATE (None)

PRIVATE

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MILES

North Fork Proposal

MAP-1

OR-5-31

January, 1991

Table 1. Land Status and Acreage Summary of the Study Area

Within Wilderness Study Area	Acres
BLM (surface and subsurface)	10,985
National Forest	1,125
Split-Estate (BLM surface only)[1]	240
Inholdings (state, private)	480
Total	12,830
Within the Recommended Wilderness Boundary	
BLM (within WSA)	0
BLM (outside WSA)	0
Split-Estate (within WSA)	0
Split-Estate (outside WSA)	0
Total BLM Land Recommended for Wilderness	0
Inholdings (private)	0
Within the Area Not Recommended for Wilderness	
BLM	10,985
National Forest	1,125
Split-Estate	240
Total BLM Land Not Recommended for Wilderness	11,225
Inholdings (state, private)	480

[1]For purposes of this report, split-estate lands are defined only as those lands with Federal surface and non-Federal subsurface (minerals).

coniferous forest, and as such exhibits significant diversity of vegetation. In the western part of the WSA rocky fields along the ridgetops are covered with low sagebrush and Sandberg's bluegrass, and are separated by steep drainages leading to the river canyon. The north slopes of these drainages consist of ponderosa pine/Douglas fir/pinegrass with the south slopes dominated by western juniper/ bluebunch wheatgrass. The North Fork of the Crooked River and other riparian areas consist of grasses, rushes, dogwood and willow. The area east of the North Fork rim is primarily an open, rocky table with low sagebrush/Idaho fescue communities and islands of western juniper.

A representative sampling of wildlife species occurring in this WSA includes Rocky Mountain elk, mule deer, antelope, golden eagles, prairie falcons, Canada geese, bobcat, Lewis' woodpecker, California quail, chukar and the western rattlesnake. Mule deer and elk occupy the WSA in the winter months while deer, elk and antelope are summer residents. The WSA is considered crucial winter range for deer and elk. Bald eagles, goshawks and other raptors are found in the WSA. Rainbow trout are found in all perennial streams while brown bullhead and smallmouth bass are found only in a portion of the North Fork of the Crooked River.

Although the canyon portion of the WSA appears to be in a natural condition, there are a significant number of unnatural features scattered throughout most portions of the area. Twenty-six unnatural interior features influence approximately 1,200 acres (ten percent of the WSA). The majority of these features are located on the eastern and western plateaus of the North Fork of the Crooked River Canyon and within some of the tributary side canyons.

Unnatural features in the North Fork WSA include 9.5 miles of fence, three reservoirs, two spring developments, a 113-acre seeding (orchard grass and crested wheatgrass), 120 acres of precommercially-thinned timber, 66 acres of a 15-year-old timber harvest area, 22 miles of ways and

one mile of dead-end road. Continued vehicle use on these ways and roads are causing them to remain in an unnatural appearance. While some ways are reverting to a natural appearance, others extend down steep slopes which have caused erosion channels to form. Some of these have been closed with signing and cable. This has adversely affected the scenic qualities of some areas by creating visual contrasts not in harmony with the natural setting, especially in the Lower Falls area.

B. Solitude: The North Fork WSA has outstanding opportunities for solitude due to vegetative screening and excellent topographic screening. These opportunities are located primarily in the main river canyon and its tributaries. Deep cut canyon walls provide excellent screening from the outside world. The forested areas in the canyons help to enhance this solitude.

Some solitude is offered on the plateau above but is much more limited. Large open areas are cut by ways and other unnatural features which tend to limit the feelings of solitude. Solitude is especially affected along the northwest boundary road which receives heavy traffic.

C. Primitive and Unconfined Recreation: The forested areas and steep canyon lands of the WSA provide outstanding opportunities for several different types of primitive recreation. These include hiking, camping, sightseeing and fishing and available within portions of the North Fork WSA. Floating the river is becoming an increasingly popular, although still limited, form of primitive recreation during the spring when the water levels are adequate. There are also opportunities for hunting, photography and observing wildlife. During the winter months, snowshoeing and cross-country skiing are also available, depending on snow conditions. The ruggedness and physical challenge of terrain and the geology of the narrow, deep Crooked River Canyon twisting through approximately 12.5 miles of the WSA (1.75 miles of this total is on private land) enhances the quality of these recreational activities.

These opportunities are limited by two private inholdings in the Crooked River Canyon. The inholdings are located in the canyon. They restrict freedom of movement because the canyon is the main area of use and primary travel corridor for the WSA. The rugged terrain of the Crooked River Canyon, along with the size and shape of the WSA, make it highly unlikely that the average visitor would hike around these private inholdings.

D. Special Features: The area's special wilderness features include scenic and zoological values. Although not unique geologically, the North Fork of the Crooked River Canyon is very scenic. Winding about 12.5 miles through the middle of this WSA, it was created by the erosive action of the North Fork of the Crooked River. The depth of this vertical-walled canyon varies, with some portions being exposed to a depth of 800 to 900 feet. It generally ranges from 300 to 500 feet. The canyon of the North Fork is an excellent example of how the forces of nature have cut a narrow, winding, secluded canyon with steep sideslopes and cliffs in a high desert plateau. A waterfall on private land, Upper Falls, and Lower Falls located on public land adds to the scenic qualities of the area. Most of the river has been classified as Wild under the National Wild and Scenic Rivers Act.

Areas in the southern and western parts of the WSA have been geologically mapped as John Day Formation, which is famous for its significant vertebrate and plant fossils. No localities have been recorded in the WSA.

A trail of prehistoric or early historic age has been reported in the northern portion of the WSA.

In addition to the more common wildlife species such as mule deer and antelope, Rocky Mountain elk and various raptors also inhabit the WSA. The WSA contains crucial winter range for deer and elk. The northern bald eagle, Federally-listed as threatened in Oregon under the Endangered Species Act, is a winter resident of the area and a roost site has been documented. Populations of rainbow trout, smallmouth bass, brown bullhead, leopard and speckled dace, sculpin and other fish species are also present.

Portions of Rough Canyon and Fox Canyon Creeks contain riparian vegetation in potential natural condition. In addition, a plant species of special interest, *Calochortus longebarbatus* var. *peckii,* is suspected to occur in the WSA.

Diversity in the National Wilderness Preservation System

A. Expanding the Diversity of Natural Systems and Features as Represented by Ecosystems: Wilderness designation of this WSA would add a combination of ecoystems not presently represented in Oregon nor in the enitre National Wilderness Preservation System (NWPS). There are no other areas in the Nation under study containing the combination of these two ecosystems.

According to the Bailey-Kuchler system of classifying ecosystems, the North Fork WSA is located in the Rocky Mountain forest and Intermountain Sagebrush Provinces and the potential natural vegetation is the western ponderosa forest and sagebrush steppe. This information is summarized in Table 2.

Of the vegetative communities listed in the Ochoco-Blue-Wallowa Mountain section of the Oregon Natural Heritage Plan, the WSA contains western juniper/bluebunch wheatgrass, western juniper/rigid sagebrush/Sandberg's bluegrass, ponderosa pine/bunchgrass, rigid sagebrush scabland and rigid sagebrush/bunchgrass.

B. Assessing Opportunities for Solitude or Primitive Recreation Within a Day's Driving Time (5 hours) of Major Population Centers: There are seven standard metropolitan statistical areas with populations of over 100,000 within five hours' driving time of the North Fork WSA: Medford, Eugene/Springfield, Portland, and Salem, Oregon; Richland/Kennewick/Pasco and Yakima, Washington; and Boise, Idaho.

C. Balancing the Geographic Distribution of Wilderness Areas: The North Fork WSA would not contribute to balancing the geographic distribution of areas within the National Wilderness Preservation System. There are 10 designated wilderness areas within 100 miles of this WSA.

Table 2. Ecosystem Representation

Bailey-Kuchler Classification	NWPS Areas		Other BLM Studies	
	Areas	Acres	Areas	Acres
Province/Potential Natural Vegetation				
NATIONWIDE				
Rocky Mtn. Forest/and Intermountain Sagebrush Provinces/ Western Ponderosa Forest	0	0	0	0
OREGON				
	0	0	0	0

Table 3. Wilderness Opportunities for Residents of Major Population Centers

Population Centers	NWPS Areas		Other BLM Studies	
	Area	Acres	Area	Acres
Medford, OR	31	2,440,081	21	730,038
Eugene/Springfield, OR	42	2,859,994	43	770,436
Portland, OR	48	4,537,392	16	91,762
Salem, OR	45	2,888,764	18	210,085
Richland/Kennewick/ Pasco, WA	45	5,816,707	8	67,186
Yakima, WA	48	5,447,447	8	67,186
Boise, ID	16	4,741,570	126	5,060,460

Manageability

(The area must be capable of being effectively managed to preserve its wilderness character.)

The North Fork WSA would be manageable as wilderness under both the all wilderness and all wilderness with acquisition alternatives; however, there are factors which cause some manageability concerns.

The two separate private inholdings within the WSA would legally restrict movement through the WSA. Currently the private land is used for livestock grazing and does not affect the manageability of the WSA. While there are no indications that use of the private land would change, acquisition of these inholdings could alleviate many of the manageability concerns. The large number of vehicle ways originating from the boundary roads and along the ridges could create a substantial problem in enforcing vehicle closures in the area in both the all wilderness and all wilderness with acquisitions alternatives.

Although none is projected, potential mineral development of split- estate lands could reduce naturalness and opportunities for solitude. The two dead-end roads within the WSA detract from the naturalness of the area and vehicle traffic on the roads reduces solitude.

Energy and Mineral Resource Values

Energy and mineral resources were evaluated from available geologic data supplemented by a limited amount of geochemical stream sediment sampling by geologists with TERRADATA, a consulting firm under contract with BLM since 1983. Technical details of the findings of the evaluation are found in a TERRADATA report titled "Assessment of Geology, Energy, and Minerals (GEM) Resources, North Fork Crooked River Geologic Resource Area." The Terradata information was supplemented by a BLM evaluation of the same area.

A total of 3,552 acres within 0.25 mile of the North Fork of the Crooked River were withdrawn from mineral entry with the designation of the North Fork as a wild component of the National Wild and Scenic Rivers System.

The WSA is within an area of critical mineral potential (ACMP) for oil and gas.

Oil and gas has a high potential for occurrence in the entire WSA based on several positive factors. Several deep exploratory wells have been drilled near the WSA and all had oil and gas shows, indicating that marine clastic sediments are probably present beneath the WSA. The combination of surface structure, subsurface geology, hydrocarbon shows and persistent exploration all lead to a high potential rating for oil and gas in the WSA.

Bentonite and zeolites are suspected of occurring in the southwestern portion of the WSA; however, the actual extent of these deposits are not known. The area has a moderate rating for these industrial minerals.

As of May, 1991, there were no mining claims within this WSA.

Local Social and Economic Considerations

Livestock use at the current level of 535 AUMs, salvage timber harvest of an average annual volume of 70 Mbf and recreation use totaling 3,000 visitor days per year are the primary resource outputs that generate economic activity in the WSA. Local personal income generated annually from these existing use levels amounts to approximately $6,400 for livestock grazing, $18,900 for timber production and $36,000 related to recreation use of the WSA, for an overall total of $61,300.

Under the recommendations, livestock grazing would increase by 76 AUMs while average annual timber production would remain at 70 Mbf. Projected energy and mineral development would amount to four oil and gas production wells. Overall recreation use would remain at 3,000 visitor days per year. Annual local personal income generated from resource outputs would increase by approximately $900. There were no social issues identified by the study of this WSA.

Impacts on Resources

Table 4 summarizes the effects on peritinent resources for all the alternatives considered including designation or nondesignation of the entire area as wilderness.

Summary of WSA-Specific Public Comments

Public comment has occurred throughout the wilderness review process. Certain comments received during the inventory process and early stages of the EIS preparation were used to develop significant study issues and various alternatives for the ultimate management of those lands found to have wilderness values.

Table 4. Comparative Summary of the Impacts by Alternatives

Issue Topics	Recommendation (No Wilderness Alternative)
Impacts on Wilderness Values	Projected management actions would impair wilderness values on approximately 2,600 acres, with further declines from other potential uses over the long term.
Impacts on Energy and Mineral Development	Projected production from four oil and gas wells would occur.
Impacts on Vegetation	Seral status of 4,000 acres would change to late seral and 66 acres changed toward early seral. Vegetation disturbed on 55 acres through projected management actions.
Impacts on Wildlife	Wildlife habitat would be maintained.
Impacts on Watershed	Upland watershed conditions would be improved on 4,000 acres. There would be a short-term decrease in condition on 71 acres.
Impacts on Livestock Grazing	Livestock use would increase to 611 AUMs with an additional 76 AUMs allocated.
Impacts on Wood Products Harvest	An average annual harvest of 70 Mbf of timber would be available.
Impacts on Recreation Use	No impact.
Impacts on Local Personal Income	Annual local personal income would increase by approximately $900 with an unknown level of increase from projected energy and mineral development.

All Wilderness Alternative	Enhanced Wilderness Alternative
Wilderness designation of 12,110 acres would protect and enhance existing wilderness values.	Wilderness designation of 12,590 acres, including acquisition of 480 acres of private land and 240 acres of mineral estate, would protect and enhance existing wilderness values.
Projected production from four oil and gas wells would be foregone.	Projected production from four oil and gas wells would be foregone.
Seral status of 1,000 acres would change to late seral and 15 acres (22 miles of ways) would revegetate.	Seral status of 1,000 acres would change to late seral and 18 acres (23 miles of ways and roads) would revegetate.
Wildlife habitat quality and diversity would be improved.	Wildlife habitat quality and diversity would be improved.
Upland watershed conditions would be improved on 1,000 acres.	Upland watershed conditionswould be improved on 1,000 acres.
Livestock use would continue at current levels of 535 AUMs. Potential allocation of 76 AUMs foregone. Some inconvenience and expense to livestock operators through closure of 22 miles of ways.	Livestock use would remain at current levels of 535 AUMs. Potential allocation of 76 AUMs foregone. Some inconvenience and expense to livestock operators through closure of 22 miles of ways and one mile of deadend roads.
An average annual harvest of 70 Mbf of timber would be foregone.	An average annual harvest of 70 Mbf of timber would be foregone.
No impact is expected in total use, but there would be a change from motorized to nonmotorized recreation.	No impact is expected in total use, but there would be a change from motorized to nonmotorized recreation.
Annual local personal income would decrease by approximately $19,200.	Annual local personal income would decrease by approximately 19,200.

During formal public review of the Draft EIS and Supplement to the Draft EIS, eight comments addressing issues specific to this WSA were received. Comments were made both in writing and as oral testimony at the 24 public hearings held on the EIS. Two commenters felt that the diversity of plants or plant associations were not properly addressed and another said the DEIS did not address the impact of timber harvest adequately.

Two commenters pointed out a lack of data input in the special features section in regard to geologic features, wildlife, cultural and botanical features. One commenter felt that the bald eagle roosting area was not properly addressed. One commenter asked for future clarification on the status of the North Fork of the Crooked River as a National Wild and Scenic River. One commenter pointed out a river mileage error in the DEIS. Each concern was responded to and these issues were addressed in the final EIS.

No public agencies or local governments stated opposition or support for designations of the North Fork WSA.

There were no comment letters received on the final EIS for this WSA.

South Fork/Sand Hollow Wilderness Study Area

1. The Study Area —28,422 acres

The South Fork/Sand Hollow Wilderness Study Areas (WSAs) (OR-5-33 and OR-5-34 respectively) are in Crook County, approximately 60 miles east of Bend, Oregon, and 170 miles southeast of Portland. U.S. Highway 20 passes 20 miles to the south of the WSA.

There are 27,482 acres of BLM land within the South Fork/Sand Hollow WSA. In addition, there are 940 acres of split-estate lands in this WSA totalling 28,422 acres. The South Fork/Sand Hollow WSA also has 440 acres of private inholdings consisting of a 320-acre, 80-acre and 40-acre tract. Table 1 summarizes land ownership within the WSAs.

The west and southwest boundaries are located along a well maintained county gravel road. The north boundary follows a dirt road until it enters private land where it follows the boundary of the private land. On the east side of WSA the boundary follows a primitive dirt road. Along the southeast corner the boundary follows private land until it intersects a county gravel road.

Geology of the WSAs in characterized by rugged dark brown Columbia River Basalt escarpments encompassing the rolling hill and desert plateaus. Over thousands of years, the Crooked River has eroded through approximately 7-8,000 feet of basalt exposing numerous combinations of reddish-tan, dark brown, and black columns along with gigantic irregular blocks of this basaltic material. These formations greatly add to the scenic beauty and diversity for anyone hiking through this canyon. The river is pristine and free flowing through a diverse riparian zone has a rainbow trout fishery. The canyons provide nesting for songbirds and numerous types of raptors.

Juniper-dominated rolling hills in the west, with patches of sagebrush and grass extend to the western rim of the South Fork of the Crooked River canyon. The rim overlooks a riparian zone of sedges, rushes and bluegrass that grades into juniper and sagebrush communities on the canyon slopes. Beyond the eastern rim is Twelvemile Table which supports a low sagebrush/Idaho fescue community.

The WSA was studied under Section 603 of the Federal Land Policy and Management Act and was included in the Final Oregon Wilderness Environmental Impact Statement (EIS) filed in February of 1990. There were three alternatives analyzed in the

EIS; an all wilderness alternative; partial wilderness with acquisitions and road closures alternative which is the recommendation of this report; and a no wilderness/no action alternative.

2. Recommendation and Rationale:

25,392 acres recommended for wilderness
3,030 acres recommended for nonwilderness

The recommendation would combine 17,001 acres of the South Fork WSA with 8,391 acres in the adjacent Sand Hollow WSA and designate it as a single wilderness area. The dirt road separating the two WSAs would be closed. A total of 2,630 acres would be recommended as nonsuitable (Area B) and released for uses other than wilderness in the South Fork area and 400 acres (Area A) would be released in the Sand Hollow area for a total of 3,030 nonsuitable acres. These lands are shown on Map 1.

The two WSAs would be combined by closing a 6.4 mile-bladed road which separates the WSAs. A dead-end reservoir access road in Sand Hollow WSA (0.6 mile) and 6.5 miles of ways in the South Fork WSA and 4 miles of ways in Sand Hollow WSA would also be closed. The private inholdings in the South Fork WSA totaling 400 acres (two tracts) and the mineral estate of the 240 acres and 640 acres of split estate in the South Fork and Sand Hollow WSAs, respectively would be acquired through purchase or exchange with willing landowners.

The all wilderness alternative is the environmentally preferable alternative as it would result in the least change to the natural environment over the long term. The recommendation, however, would be implemented in a manner which would use all practical means to avoid or minimize environmental impacts.

Wilderness values would be significantly enhanced by combining the South Fork WSA and the Sand Hollow WSAs and closing approximately 6.4 miles of boundary road between them. This larger wilderness area would enhance the naturalness of the area and increase opportunities for solitude and primitive recreation. The road closure will also provide less opportunities for impacts from outside sights and sounds and ORV activities. The resulting area would provide a unique wilderness opportunity encompassing a variety of landscapes that include a dry, wind-swept plateau, rolling, juniper-covered hills and a rugged basalt canyon accented by the South Fork of the Crooked River.

Recommending the suitable portion would help protect the high wilderness values found which include unique physical and botanical features. The fragile high desert environment with the riparian zones of the South Fork of the Crooked River and its associated tributaries and river canyons environment would be preserved for future generations to use. Wilderness designation would also help preserve and enhance the naturalness of the area as well as the outstanding opportunities for hiking, backpacking, and fishing for rainbow trout along the river canyons.

Additionally, wilderness designation of these WSAs would add an ecosystem (Intermountain sagebrush, sagebrush-steppe) not presently represented in Oregon and represented in the National Wilderness Preservation System by only three areas.

In summary, the suitable recommendation would preserve the area's significant wilderness values while providing for mineral development in Areas A and B which are recommended nonsuitable.

Opportunities for future bentonite and zeolite mineral development would be provided by recommending the 400 acres (Area A) on the west side of the Sand Hollow WSA as nonsuitable. This area is already impacted visually from old mining activities.

Area B, the 2,630-acre northern portion of the South Fork WSA is recommended nonsuitable because of the energy and mineral potential and the manageability problems associated with the projected development of 20 existing mining claims. This area is used heavily by rockhounding individuals, clubs and miners searching for semi-precious agate-type material and is fairly disturbed with numerous small pits. Grazing use of much of the area would be allowed to continue and an increase of 24 AUMs of available but unallocated livestock forage would be realized. Projected production from one oil and gas well and two gemstone mines would occur.

Wilderness designation could cause some concerns. As stated above, the dirt road between the two WSAs would be closed, combining the areas into a single wilderness. The closure of the road between the two WSAs will make it more difficult for some local ranchers to access their leased lands and maintain their developments, but overall the closure will provide a larger area for increased wilderness values.

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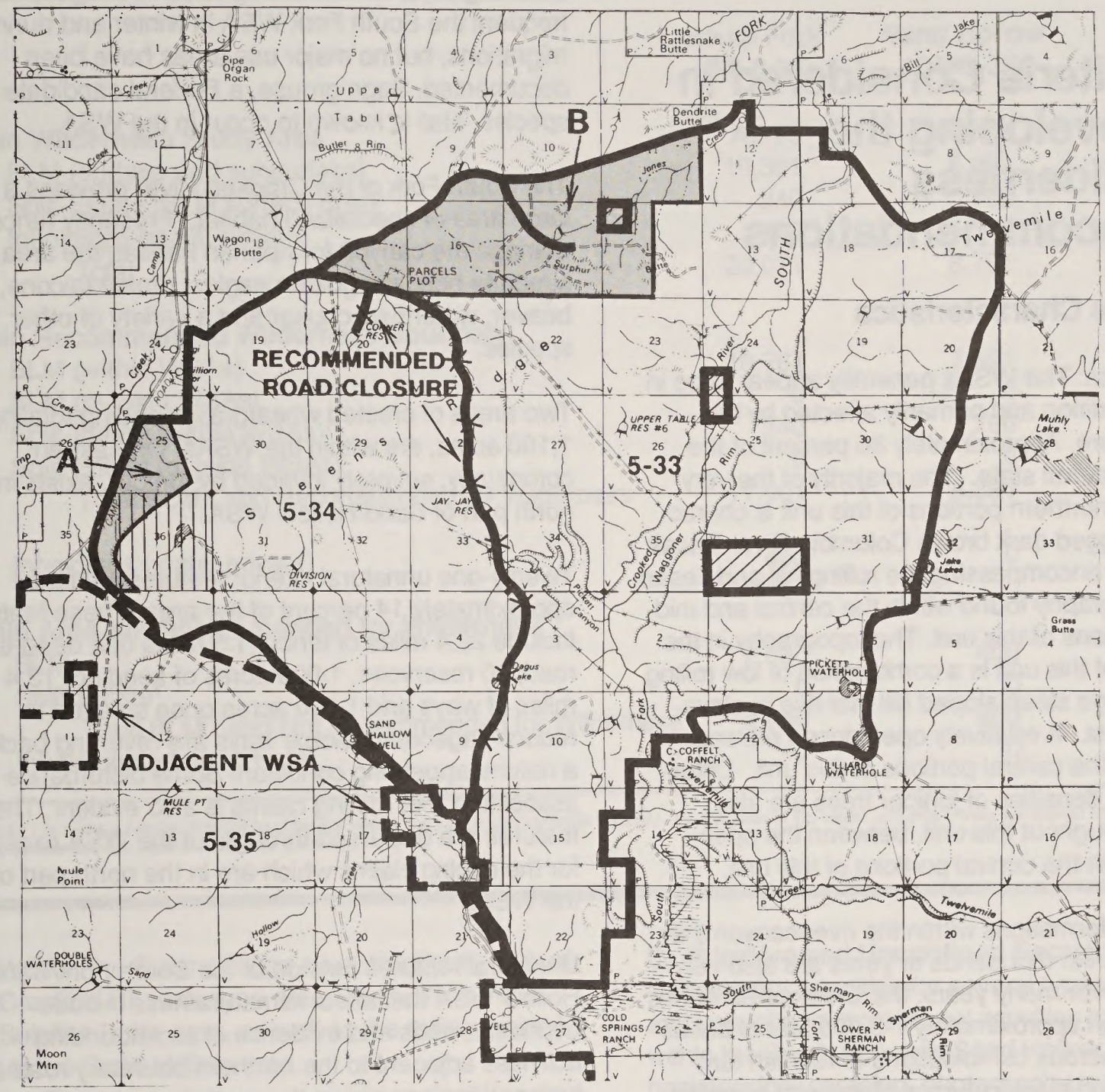


RECOMMENDED FOR WILDERNESS

RECOMMENDED FOR NONWILDERNESS

LAND OUTSIDE WSA RECOMMENDED FOR WILDERNESS (None)

SPLIT ESTATE

STATE (None)

PRIVATE

- N -

South Fork and Sand Hollow Proposal

MAP-1

0 1 2 3

MILES

OR-5-33,34
January, 1991

If these areas do not become wilderness, there would be a potential for the loss of scenic and solitude values, therefore degrading the exceptional recreation values of the area.

3. Criteria Considered in Developing the Wilderness Recommendations

Wilderness Characteristics

A. Naturalness: The WSAs generally appear to be in a natural condition and primarily affected by the forces of nature. Approximately 86 percent of the area is in a natural state. The majority of the very western and northern portions of this unit is characterized by rugged dark brown Columbia River Basalt escarpments encompassing the rolling hill and desert plateau topography found within the central and mid-northern portions of this unit. The topography in the eastern half of this unit is a combination of low rolling hills and a large steep sloped hill that rise in elevation to the west. A relatively open desert plateau was found in the central portions of this unit. Different sizes and densities of juniper trees are also scattered throughout this unit, between the open desert plains in the central portions of this unit.

The geologic formations within the river canyon that were formed over thousands of years are also very impressive. Over many years, the Crooked River has eroded through approximately 7-8,000 feet of basalt exposing numerous combinations of reddish-tan, dark brown, and black columns along with gigantic irregular blocks of this basaltic material. These formations greatly add to the scenic beauty and diversity for anyone hiking through this canyon. The stream is pristine and free flowing through a diverse riparian zone.

The river has a rainbow trout fishery and the canyons provide nesting for songbirds and numerous types of raptors. In Sand Hollow WSA, the topography within this unit is a combination of low rolling hills interlaced with higher rolling hills that extend in an east-west direction, forming part of the Steens Ridge.

Both WSAs provide habitat for mule deer, antelope and elk. Low to moderate levels of waterfowl and shorebird nesting habitat are provided by intermittent lakes and reservoirs. Ferruginous hawks and Swainson's hawks, both Federal candidate species, are known to occur in the WSAs with use mainly in areas where tree canopy cover is low.

Bald eagles, a threatened species in Oregon, frequent the South Fork WSA in winter and during migrations, but no major use areas have been documented. Sage grouse, a Federal candidate species, also is known to occur in the WSA.

The South Fork of the Crooked River provides a large area of specialized habitat. Presently fenced to manage the canyon for riparian habitat, the area also supports bobcats, golden eagles, prairie falcons, beaver, waterfowl, chukar and a variety of other species.

Two areas of crested wheatgrass seeding totaling 1,100 acres, are within the WSAs. One aspen community, severely invaded by juniper, exists in the north part of Sand Hollow WSA.

Twenty-one unnatural interior features influence approximately 14 percent of the area. These features include 22.4 miles of fence, 1.5 miles of a dead-end road, 20 reservoirs, 1,000 acres of seeding, 13.4 miles of ways and 1,000 acres once sprayed to reduce sagebrush. Some ways are reverting back to a natural appearing condition. Some disturbance associated with mining claims is also evident. These features are dispersed throughout the WSA except for the mining claims which are in the north part of the WSA.

Unnatural features outside of the South Fork/Sand Hollow WSA that affect its naturalness include boundary roads and evidence of rockhounding activities adjacent to the northern boundary road and juniper thinnings above the north boundary. These features outside the WSA do not have a significant adverse effect on the naturalness of the WSA because they are generally screened from view by topography and/or vegetation.

B. Solitude: In the South Fork WSA, outstanding opportunities for solitude are available. Visitors could avoid the sights, sounds and evidence of other visitors within this unit, due to the size, shape, topographic and vegetative screening potential this unit possesses. The size and shape of the WSA, and the winding canyon of the South Fork and its tributaries along with dense clusters of juniper trees provide both outstanding topographic and vegetative screening. Once a visitor is down by this river, the feeling of being very much alone and becoming engulfed by the overall vastness of this canyon is a strong and dominant feeling. Opportunities to find a secluded spot are available in numerous portions of

Table 1. Land Status and Acreage Summary of the Study Area

	South Fork (OR-5-33)	Sand Hollow (OR-5-34)	Total
Within Wilderness Study Area	**Acres**	**Acres**	**Acres**
BLM (surface and subsurface)	19,391	8,091	27,482
Split-Estate (BLM surface only)[1]	240	700	940
Inholdings (state, private)	440	0	440
Total	20,071	8,791	28,862
Within Recommended Wilderness Boundary			
BLM (within WSAs)	16,761	7,691	24,452
BLM (outside WSAs)	0	0	0
Split-Estate (within WSAs)[1]	240	700	940
Split-Estate (outside WSAs)[1]	0	0	0
Total BLM Land Recommended for Wilderness	17,001	8,391	25,392
Inholdings (state, private)	400	0	400
Within Area Not Recommended for Wilderness			
BLM	2,630	400	3,030
Split-Estate[1]	0	0	0
Total BLM Land Not Recommended for Wilderness	2,630	400	3,030
Inholdings (state, private)	40	0	40

[1]Appendix 1 provides a detailed description of the split-estate and inholdings included in the study. For purposes of this report, split-estate lands are defined only as those lands with Federal surface and non Federal subsurface (minerals).

the WSAs: the Steens Ridge area, the South Fork of the Crooked River canyon area, Twelvemile Table, the Sulphur Butte area, as well as the rolling juniper hills of the Sand Hollow area.

In the Sand Hollow WSA, outstanding opportunities for solitude are available within this unit for the following reasons: the topographic relief within this unit, combined with the vegetative screening capabilities of the juniper trees, provides an environment where a visitor could avoid the sights, sounds and evidence of other visitors within this same area. In addition, the evidence of man's work within this unit does not dominate the landscape within the boundaries of this unit.

Rockhounding activities adjacent to the South Fork WSA affect the area's ability to provide solitude in the area north and west of Sulphur Butte, which is the portion recommended nonsuitable for wilderness designation. Mining activities occur in and close to the area recommended nonsuitable in the Sand Hollow WSA.

C. Primitive and Unconfined Recreation: Outstanding opportunities for several types of primitive and unconfined recreational activities are available within the South Fork and Sand Hollow WSAs: backpacking, camping, photography, nature study, hunting, fishing and horseback riding. An outstanding recreational activity is a hike along the meandering bottom of the South Fork of the Crooked River Canyon where the feeling of solitude is strong.

The canyon's impressive geologic formations add to the scenic beauty and diversity of the study area. Several side canyons such as Pickett Canyon also enhance the opportunity to hike and explore.

D. Special Features: While not geologically unique, the canyon of the South Fork of the Crooked River, including Pickett Canyon, contains outstanding scenery due to the canyon depth, jagged outcroppings of basalt and a variety of colors including lush green riparian vegetation along shallow pools of water in the canyon bottom. The Steens Ridge in the Sand Hollow area also has unique small canyon and basalt rock outcroppings. Both WSAs

contain crucial mule deer winter range. There is also a small herd of wild horses that roams through much of the South Fork WSA.

Diversity in the National Wilderness Preservation System

A. Expanding the Diversity of Natural Systems and Features as Represented by Ecosystems: According to the Bailey/Kuchler system of classifying ecosystems, the WSA is located in the Intermountain Sagebrush Province and the potential natural vegetation is sagebrush steppe.

Wilderness designation of these WSAs would add an ecosystem not presently represented in Oregon and represented in the National Wilderness Preservation System by only three areas. There are 66 other BLM areas under study with this ecosystem in the state. Table 2 summarizes this information.

Of the vegetative communities listed in the High Lava Plains and Columbia Basin section of the Oregon Natural Heritage Plan, the following occur in the WSA: western juniper/big sagebrush/bluebunch wheatgrass; big sagebrush/bluebunch wheatgrass; low sagebrush/Idaho fescue; and western juniper/ bluebunch wheatgrass.

B. Assessing the Opportunities for Solitude or Primitive Recreation within a Day's Driving Time (five hours) of Major Population Centers: There are seven standard metropolitan statistical areas with populations of over 100,000 within five hours' driving time of the WSA: Eugene/Springfield, Medford, Portland and Salem, Oregon; Richland/Kennewick/ Pasco and Yakima, Washington; and Boise, Idaho. Table 3 summarizes the number and acreage of designated areas and other BLM study areas within five hours' drive of major population centers.

C. Balancing the Geographic Distribution of Wilderness: The South Fork and sand Hollow WSAs would not contribute to balancing the geographic distribution of areas within the National Wilderness Preservation System. There are ten designated wilderness areas within 100 miles of these WSAs.

Manageability

(The area must be capable of being managed to preserve the wilderness characteristics.)

Both WSAs are capable of being managed to preserve the wilderness characteristics. Manageability would be enhanced if 440 acres of private inholdings and the 880 acres of mineral estate was acquired as is proposed in the recommendation. Currently, private inholdings do not affect the areas' manageability. Three separate private inholdings in the South Fork WSA, totaling 440 acres, are used for livestock grazing. Landowners have not expressed interest in changing the use of the land, and it does not appear likely that land use will change in the foreseeable future; however, this could change at the discretion of the owners. The acquisition of these parcels would prevent potential adverse effects from incompatible surface disturbing activities. Manageability would also be enhanced by the closure of 6.4 miles of boundary road which separate South Fork and Sand Hollow WSAs and 2.1 miles of interior deadend roads as proposed in the recommendation. By closing the road between the WSAs, the area could more easily be managed for solitude and naturalness. There would be less impact from ORV use and associated activities such as unauthorized woodcutting.

There are active mining claims located in Area B in the northern portion of the South Fork WSA. The extraction of semi-precious stones, primarily limb casts, has caused some surface disturbance. No structures or other developments are present. A minimal amount of mining activity has occurred. These claims create a manageability problem, if included in the suitable area, in that up to 20 acres could be disturbed in the long term with associated disturbance to wilderness values caused by vehicle traffic and mining activity. Solitude and naturalness would especially be affected.

Energy and Mineral Resource Values

The US Geologic Survey and the Bureau of Mines prepared a mineral assessment report for the Spring Basin WSA in 1988, (US Geological Survey Bulletin 1744-A). Fieldwork for this report was carried out in 1985 and 1986. No mines or significant prospects are located inside the study areas, and no identified resources were found; however, both areas are under lease for oil and gas. The west-central part of the South Fork Wilderness Study Area has a low mineral resource potential for mercury. The northwestern and southwestern parts of the Sand Hollow Wilderness Study Area also have a low mineral resource potential for mercury.

Both study areas have a low potential for oil and gas resources and for geothermal energy resources.

Energy and mineral resources were also evaluated from available geologic data supplemented by a

Table 2. Ecosystem Representation

Bailey-Kuchler Classification	NWPS Areas		Other BLM Study	
	Areas	Acres	Areas	Acres
Province/Potential Natural Vegetation				
NATIONWIDE				
Intermountain Sagebrush/ Sagebrush Steppe	3	76,699	136	4,341,918
OREGON				
Intermountain Sagebrush	0	0	66	1,954,652

Table 3. Wilderness Opportunities for Residents of Major Population Centers

Population Centers	NWPS Areas		Other BLM Studies	
	Area	Acres	Area	Acres
Eugene/Springfield, OR	42	2,859,994	43	770,436
Portland, OR	48	4,537,392	16	91,762
Salem, OR	45	2,888,764	18	210,085
Richland/Kennewick/ Pasco, WA	45	5,816,707	8	67,186
Boise, ID	16	4,741,570	126	5,060,460
Yakima, WA	48	5,447,447	8	67,186
Medford, OR	31	2,440,081	21	730,038

limited amount of geochemical stream sediment sampling by geologists with TERRADATA in 1983, a consulting firm under contract with BLM. Technical details of the evaluation are found in a TERRADATA report titled "Assessment of Geology, Energy and Minerals (GEM) Resources, Gerry Mountain Geologic Resource Area. Their report is supplemented by a BLM evaluation of the same area and the findings are consistent with USGS/BM report.

The WSA is within the Gerry Mountain geologic resource area and has been designated as an area of critical mineral potential (ACMP) for oil and gas.

Known deposits of semi-precious gemstones (limb casts) occur within the South Fork WSA. The northern portion of the WSA has a high potential for the occurrence of semi-precious stones.

As of May 1991, there were seven mining claims within these WSAs.

Impacts on Resources

The following comparative impact table summarizes t he effects on pertinent resources for all the alternatives considered including designation or nondesignation of the entire area as wilderness.

Table 4. Comparative Summary of the Impacts by Alternatives

Issue Topics	Recommendation (Partial Wilderness with Acquisitions and Road Closures Alternative)
Impacts on Wilderness Values	Wilderness designation of 17,401 acres of the South Fork WSA (assuming acquisition of private inholdings) and 8,391 acres of the Sand Hollow WSA, along with the acquisition of 880 acres of mineral estate and closure of seven miles of boundary and interior roads would protect and enhance existing wilderness values on 25,792 acres. Wilderness values on 3,030 acres recommended nonsuitable would be impaired as a result of projected management actions.
Impacts on Energy and Mineral Development	Projected production from six oil and gas wells and one small deposit of semi-precious stones would be foregone. Projected production from one oil and gas well and two semi-precious gemstone mines would occur.
Impacts on Vegetation	In the short term, vegetation preserved in present state except for 2,470 acres where ecological succession would be accelerated. In the long term, 16,000 acres of untreated vegetation would move toward early seral stage. Riparian vegetation along the South Fork Crooked River and Sulphur Creek would improve. Seven miles of roads and 10.5 miles of ways would revegetate. Thirty acres would be disturbed by energy and mineral development.
Impacts on Wildlife	Habitat and populations would be maintained and enhanced through prescribed burning, and closure of seven miles of roads and 10.5 miles of ways.
Impacts on Watershed	Water quality and quantity and streambank stabilization would improve in the South Fork Crooked River and in Sulphur Creek. Upland watershed stability would improve on 2,470 acres. Watershed conditions would be less stable in the long term on 16,000 acres.
Impacts on Livestock Grazing	A projected 1,473 AUMs of currently available but unallocated forage and potentially-available forage through reservoir construction would be foregone. There would be 24 AUMs allocated in the nonsuitable portion of Sand Hollow WSA. Vehicle use of 10.5 miles of ways and seven miles of roads would be precluded resulting in some inconvenience and additional expense to livestock operators.

All Wilderness Alternative	No Wilderness/No Action Alternative
Wilderness designation of 19,631 acres of the South Fork WSA and 8,791 acres of the Sand Hollow WSA would protect and enhance existing wilderness values.	Projected management actions would impair the area's wilderness values on approximately 4,000 acres with further declines from other potential uses over the long term.
Projected production from seven oil and gas wells and three small deposits of semi-precious stones would be foregone.	Projected production from seven oil and gas wells and three projected semi-precious gemstone mines would occur.
In the short term, vegetation preserved in present state except for 1,080 acres where ecological succession would be accelerated. In the long term, 17,000 acres of untreated vegetation would move toward early seral stage. Riparian vegetation along the South Fork Crooked River would continue to improve. About 13.4 miles of ways would revegetate.	In the short term, vegetation preserved in present state except for 13,770 acres where ecological succession would be accelerated. In the long term, 3,000 acres of untreated vegetation would move toward early seral stage. Riparian vegetation along the South Fork Crooked River and Sulphur Creek would improve. Utilization of livestock forage would increase and residual cover would decrease in untreated areas. Other livestock, wildlife, mineral and energy developments would disturb 55 acres.
Habitat and populations would be maintained through prescribed burning and closure of 13.4 miles of ways. Habitat quality would be reduced in the long term.	Habitat and populations would be maintained with an increase in habitat diversity and some disturbance to populations from energy and mineral activities. Big-game populations would increase.
Water quality and quantity and streambank stabilization would continue to improve along the South Fork Crooked River. Upland watershed conditions would improve on 1,080 acres. Watershed conditions would be less stable in the long term on 17,000 acres.	Improved water quality, quantity and watershed stability along the South Fork Crooked River and Sulphur Creek. Upland watershed stability would improve on 13,770 acres and in the long term would be less stable on 3,000 acres.
A projected 1,497 AUMs of currently available but unallocated forage and potentially-available forage through reservoir construction would be foregone. Vehicle use of 13.4 miles of ways would be precluded with some inconvenience and a slight increase in cost to the livestock operators.	An additional 1,497 AUMs of currently available but unallocated forage and forage made available through reservoir construction would be allocated.

Table 4. Comparative Summary of the Impacts by Alternatives (continued)

Issue Topics	Recommendation (Partial Wilderness with Acquisitions and Road Closures Alternative)
Impacts on Recreation Use	There would be a net decrease of 500 visitor days per year in the recreation use level and a change to primitive, nonmotorized types of recreation use.
Impacts on Local Personal Income	Annual local personal income would decrease by approximately $6,000 with an unknown level of increase from projected energy and mineral development.

All Wilderness Alternative	No Wilderness/No Action Alternative
The recreation use level would suffer a slight decrease of 150 visitor use days per year. There would be a change to primitive, nonmotorized types of recreation use.	The recreation use level would not change.
Annual local personal income would decrease by approximately $1,800.	Annual local personal income would increase by approximately $18,000 with an unknown level of increase from projected energy and mineral development.

Local Social and Economic Considerations

Livestock use at the current level of 1,648 AUMs and recreation use totaling 4,500 visitor days per year are the primary resource outputs that generate economic activity in the WSA. Local personal income generated annually from these existing use levels amounts to approximately $20,000 for livestock grazing and $54,000 related to recreation use of the WSA, for an overall total of $74,000.

Under the recommendation, livestock grazing would increase by 24 AUMs. Overall recreation use would decrease by 500 visitor days per year. Annual local personal income generated from resource outputs in the WSA would decrease by approximately $5,700.

There were no Social Issues identified with the study of this WSA

Summary of WSA-Specific Public Comments

Public involvement has occurred throughout the wilderness review process. Certain comments received during the inventory process and early stages of the EIS preparation were used to develop significant study issues and various alternatives for the ultimate management of those lands found to have wilderness value.

During formal public review of the Draft and Supplement to the Draft EIS, a total of 16 comments specifically addressing this WSA were received at 24 public hearings held on the draft EIS and Supplement. Of the 16 comments, South Fork had one oral and ten written comments and Sand Hollow WSA had one oral and four written comments. In general, 14 commenters supported wilderness designation for the WSAs. Two commenters supported no wilderness for the WSAs.

Those favoring wilderness felt South Fork and Sand Hollow WSAs should be combined and the important fisheries, riparian, rare plants, wildlife and scenic values that would be protected in the South Fork WSA with wilderness designation. Most of those favoring designation recognized the minerals conflict in the northern portion of the WSA and supported deleting that area from designation.

Those opposing designation were concerned that wilderness would adversely affect the minerals industry, by not allowing oil and gas development to occur in the WSA. Other concerns were that designation would restrict the excessive use of motorized vehicles and preclude increases in future livestock forage allocations. Concern was also expressed that the presence of three separate private land inholdings totaling 440 acres should preclude wilderness designation.

No specific comments were received from other agencies of Federal, State or local governments regarding wilderness designation of the South Fork WSA.

There were no comment letters received on the final EIS for this WSA.

Appendix 1 - Estimated Costs of Acquisition of Non-Federal Holdings within the Areas Recommende for Designation[1]

	Legal Description (Prior to any Subdivision)	Total Acreage	Number of Owners (If parcel has been subdivided)	Type of Ownership by Estate (Federal, State, Private, Other)		Presently Proposed for Acquisition (Yes, No)	Preferred Method of Acquisition (Purchase, Exchange Other)	Estimated Cost of Acquisition	
				Surface Estate	Subsurface Estate			Land Costs	Processing Costs
Parcel #1	T. 18 S., R. 22 E. SW1/4,SW1/4, Sec. 24 NW1/4,NW1/4, Sec. 24	80	1	Private	Private	Yes	Exchange	,8,000	3,000
Parcel #2	T. 18 S., R. 22 E. S1/2 of Sec. 36	320	1	Private	Private	Yes	Exchange	16,000	3,000
Parcel #3	T. 19 S., R. 22 E. NW1/4;SE1/4SW1.4;NW1/4SW1/4; SW1/4SW1/1, Sec. 16	300	1	BLM	Private	No	Purchase	3,000	2,000
Parcel #4	T. 18 S., R. 22 E. Sec. 30	640	1	BLM	Private	No	Purchase	6,000	2,000

[1]The estimated costs listed in this appendix in no way represent a formal appraised value of the land or mineral estate, but are rough estimates based on sales or exchanges of lands or mineral estates with similar characteristics to those included in the WSA. The estimates are for purposes of establishing a range of potential costs to the government of acquiring non-Federal holdings and in no way represent an offer to purchase or exchange at the cost estimate included in this appendix. Processing costs are all miscellaneous expenses other than land costs. These would include workmonth costs, appraisals, title work, escrow costs, etc. All lands identified in this table are in Oregon.

Gerry Mountain Wilderness Study Area

1. The Study Area —20,700 acres

The Gerry Mountain Wilderness Study Area (WSA) (OR-5-35) is located in Crook County, approximately 70 miles southeast of Bend, Oregon, and 12 miles north of Hampton, Oregon and U.S. Highway 20. It is about 200 miles southeast of Portland, Oregon.

The Gerry Mountain WSA is somewhat square in shape, tapering to the east and contains Gerry and Moon Mountains and Mule Point. The WSA is approximately seven miles square. The southern and eastern boundaries are a combination of private property and county- maintained high standard gravel road. The northern boundary is a combination of rimrock and private property. The western boundary is a combination of privately-maintained low standard dirt road and private property. There are 19,980 acres of BLM land and 720 acres of split-estate land within the WSA (see Table 1). Private and public lands surround the WSA.

Much of the WSA is covered by juniper with a big sagebrush, rabbitbrush and bunchgrass understory. There are no naturally occurring perennial water sources within the WSA, although there are 11 functional reservoirs. Gerry Mountain, the main feature of the WSA rises 1,100 feet above the surrounding countryside. Low rolling hills and small, shallow basins surround Gerry Mountain, Moon Mountain and Mule Point.

The WSA was studied under Section 603 of the Federal Land Policy and Management Act and was included in the Final Oregon Wilderness Environmental Impact Statement (EIS) filed in February 1990. There were three alternatives analyzed in the EIS: 1) an all wilderness alternative; 2) a partial wilderness alternative where 16,470 acres would be designated as wilderness and 4,230 acres would be released for uses other than wilderness; and 3) a no wilderness/no action alternative which is the recommendation in this report. These lands are shown on Map 1.

2. Recommendation and Rationale

0 acres recommended for wilderness
27,000 acres recommended for nonwilderness

The recommendation for this WSA is to release the

entire area for uses other than wilderness. The all wilderness alternative would be the environmentally preferable alternative as it would result in the least change from the natural environment over the long term. The proposed action will, however, be implemented in a manner which will use all practical means to avoid or minimize environmental impacts.

No special or unique features have been identified within the WSA.

The recommendation recognizes that the benefits derived by retaining the options for oil, gas and mineral development, increased allocation of 327 AUMs of forage and the improvement of watershed conditions outweigh the benefits of preserving the area's moderate wilderness values. It is possible that up to seven oil and gas wells could be developed in the WSA. In addition, nonconforming projects are needed for the improvement of watershed conditions (streambank stabilization) as well as guzzlers and reservoirs for wildlife and livestock and some means of extensive juniper/sagebrush control to maintain the productive capability of the area.

While this area generally remains in a natural condition and offers outstanding opportunities for solitude, opportunities for primitive and unconfined recreation are less than outstanding and there are no special features. The moderate wilderness values do not outweigh the value of the area for potential mineral development or the need for wildlife, watershed, and range developments. Therefore, all of the Gerry Mountain WSA is recommended nonsuitable as wilderness.

3. Criteria Considered in Developing the Wilderness Recommendations

Wilderness Characteristics

A. Naturalness: The WSA generally appears to be in a natural condition and primarily affected by the forces of nature, except the eastern portion which contains a 2,740-acre crested wheatgrass seeding.

Some of the natural features of the area are the broad vistas with western juniper cover and an understory of low and big sagebrush cover. A variety of plants are found within this vegetative complex including bitterbrush, currant, rabbitbrush, bluebunch wheatgrass, Thurber's needlegrass, Idaho fescue, Sandberg's bluegrass, phlox, buckwheat and wild onion.

Approximately 20 antelope use the WSA yearlong. Winter use occurs only during the most snow-free winters. Approximately 75 mule deer use the WSA in summer with 230 using it in spring and winter. Elk use in the WSA is yearlong by approximately ten animals and use is increasing. Three candidate species (the sage grouse, ferruginous hawk and Swainson's hawk) use the WSA to a limited degree.

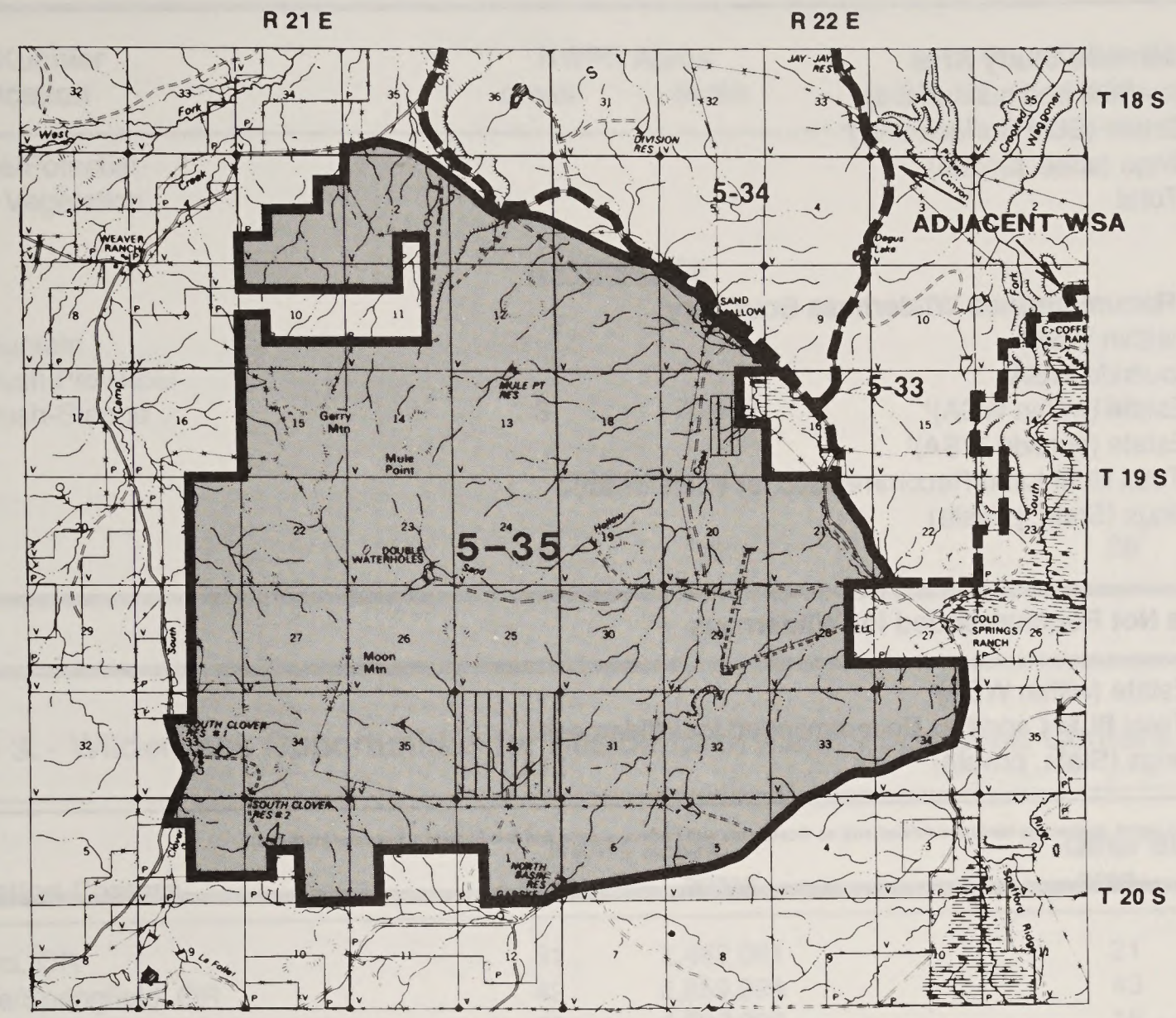
Twenty-five unnatural interior features influence approximately twenty-eight percent of the WSA. These features consist of five fences (23.4 miles), 13 reservoirs, 3.2 miles of buried water pipeline, one water storage tank, three water troughs and 14.7 miles of vehicle ways. The majority of these features are located in the east portion of the WSA within two miles of the boundary.

Unnatural features outside of the Gerry Mountain WSA are visible from portions of the WSA but they do not have a substantial effect on the area's natural qualities. They include boundary roads, fences, powerline, constructed fireline, mining claims, bentonite plant, ranch headquarters, and corral.

B. Solitude: The WSA contains outstanding opportunities for solitude. The relatively square shape and size of the study area enhances a visitor's ability to experience solitude in the central portion of the WSA. Rolling topography and a western juniper forest provide both vegetative and topographic screening. Although recreation use would likely be concentrated in the central portion of the WSA, the topography, size of the WSA and juniper forest provide sufficient space and variety to screen visitors from one another. Much of the topography includes shallow draws, low rolling hills, and scattered rims in the northern portion. Gerry Mountain, Moon Mountain and Mule Point provide limited diversity of topography. The mid-eastern portion of the WSA has less topography and vegetative screening.

Outside sights and sounds affecting the opportunity for solitude in the WSA are primarily associated with vehicle traffic along the boundary roads and activities and buildings associated with nearby ranches.

C. Primitive and Unconfined Recreation: Hiking, hunting, nature study, sightseeing, photography and camping are the primary recreational opportunities available within the WSA. These opportunities are moderate to low due to the limited amount of topography and vegetative diversity and were not considered outstanding.



RECOMMENDED FOR WILDERNESS (None)

RECOMMENDED FOR NONWILDERNESS

LAND OUTSIDE WSA RECOMMENDED FOR WILDERNESS (None)

SPLIT ESTATE

STATE (None)

PRIVATE (None)

- N -

Gerry Mountain Proposal

MAP-1

0 1 2 3

MILES

OR-5-35
January, 1991

Table 1. Land Status and Acreage Summary of the Study Area

Within Wilderness Study Area	Acres
BLM (surface and subsurface)	19,980
Split-Estate (BLM Surface only)[1]	720
Inholdings (state, private)	0
Total	20,700
Within the Recommended Wilderness Boundary	
BLM (within WSA)	0
BLM (outside WSA)	0
Split-Estate (within WSA)[1]	0
Split-Estate (outside WSA)[1]	0
Total BLM Land Recommended for Wilderness	0
Inholdings (State, private)	0
Within Area Not Recommended for Wilderness	
BLM	19,980
Split-Estate (within WSA)[1]	720
Total BLM Land Not Recommended for Wilderness	20,700
Inholdings (State, private)	0

[1]For purposes of this report, split-estate lands are defined only as those lands with Federal surface and non-Federal subsurface (minerals).

D. Special Features: No special or unique features have been identified within the WSA.

Diversity in the National Wilderness Preservation System

A. Expanding the Diversity of Natural Systems and Features as Represented by Ecosystems: Wilderness designation of this WSA would add an ecosystem not presently represented in the National Wilderness Preservation System. There are 66 other BLM areas under study with this ecosystem in the state. This information is summarized in Table 2.

Based on the Bailey-Kuchler method of classifying ecosystems, the Gerry Mountain WSA is in the Intermountain Sagebrush Province and the potential natural vegetation is sagebrush steppe. The WSA contains western juniper/big sagebrush/bluebunch wheatgrass, big sagebrush/bluebunch wheatgrass, and low sagebrush/Idaho fescue plant communities which are identified in the High Lava Plains and Columbia Basin section of the Oregon Natural Heritage Plan.

B. Assessing Opportunities for Solitude or Primitive Recreation Within a Day's Driving Time (5 hours) of Major Population Centers: There are seven standard metropolitan statistical areas with a population of over 100,000 within five hours' driving time of the Gerry Mountain WSA: Medford, Eugene/Springfield, Portland and Salem, Oregon; Richland/Kennewick/Pasco and Yakima, Washington; and Boise, Idaho. Table 3 summarizes the number and acreage of designated areas and other BLM study areas within five hours' drive of population centers.

C. Balancing the Geographic Distribution of Wilderness Areas: The Gerry Mountain WSA would not contribute to balancing the geographic distribution of areas within the National Wilderness Preservation System. There are 10 designated wilderness areas within 100 miles of the WSA.

Manageability

(The area must be capable of being effectively managed to preserve its wilderness character.)

Table 2. Ecosystem Representation

Bailey-Kuchler Classification	NWPS Acres areas	NWPS Acres acres	Other BLM Studies areas	Other BLM Studies acres
Province/Potential Natural Vegetation				
NATIONWIDE				
Intermountain Sagebrush Province/ Sagebrush-Steppe	3	76,699	136	4,349,640
OREGON				
	0	0	66	1,962,374

Table 3. - Wilderness Opportunities for Residents of Major Population Centers

Population Centers	NWPS Areas area	NWPS Areas acres	Other BLM Studies area	Other BLM Studies acres
Medford, OR	31	2,440,081	21	730,038
Eugene/Springfield, OR	42	2,859,994	43	770,436
Portland, OR	48	4,537,392	16	91,762
Salem, OR	45	2,888,764	18	210,085
Richland/Kennewick/ Pasco, WA	45	5,816,707	8	67,186
Yakima, WA	48	5,447,447	8	67,186
Boise, ID	16	4,741,570	126	5,060,460

The area is capable of being managed to preserve its wilderness characteristics. Manageability would be enhanced if the mineral estate of the split-estate parcels were acquired. Acquisition would prevent potential adverse effects from incompatible surface disturbing activities resulting from projected energy and mineral exploration.

Energy and Mineral Resource Values

Energy and mineral resources were evaluated in 1983 from available geological data supplemented by a limited amount of geochemical stream sediment sampling by geologists with Terradata, a consulting firm under contract with BLM. Technical details of the evaluation are found in a Terradata report titled "Assessment of Geology, Energy, and Minerals (GEM) Resources, Gerry Mountain Geologic Resource Area (GRA)". Their report was supplemented by a BLM evaluation of the same area in 1983.

The entire WSA has a high potential for occurrence for oil and gas resources. The WSA is within an area of critical mineral potential (ACMP) for oil and gas.

As of May, 1991, there were no mining claims within these WSAs.

Impacts on Resources

The following comparative impact table summarizes the effects on pertinent resources for all of the alternatives considered including designation and nondesignation of the entire area as wilderness.

Table 4. Comparative Summary of the Impacts by Alternatives

Issue Topics	Recommendation (No Wilderness/No Action Alternative)
Impacts on Wilderness Values	Projected management actions would impair wilderness values on approximately 3,500 acres with further declines from other potential uses over the long term.
Impacts on Energy and Mineral Development	Projected production from seven oil and gas wells and one bentonite/zeolite mine would occur.
Impacts on Vegetation	In the short term, vegetation preserved in present state except for 8,000 acres where ecological succession would be accelerated. In the long term, 6,500 acres of untreated vegetation would move toward early seral stage. Riparian vegetation along Clover and Sand Hollow creeks (total 2.8 miles) would improve. Species composition would change on 2,740 acres seeded to forbs. Utilization of vegetation by livestock would increase in some areas and decrease in other areas. Vegetation on 65 acres would be disturbed as a result of project construction and development.
Impacts on Wildlife	Overall wildlife diversity would be enhanced. Minor disturbance to wildlife would occur.
Impacts on Watershed	Water quality and quantity in Clover and Sand Hollow creeks (total 2.8 miles) would improve. Upland conditions would improve on 8,000 acres but would remain stable or decline on 12,700 acres.
Impacts on Livestock Grazing	There would be 227 AUMs of currently available but unallocated forage allocated. Some inconvenience and a slight increase in costs to livestock operator would result from construction of 1.7 miles of riparian fence. Additional water developments would result in the allocation of an additional 300 AUMs.
Impacts on Recreation Use	There would be no change in the level or type of existing use.
Impacts on Local Personal Income	Annual local personal income would increase by approximately $7,500 with an unknown level of increase from projected energy and mineral development.

All Wilderness Alternative	Partial Wilderness Alternative
Wilderness designation of 20,700 acres would protect and enhance existing wilderness values.	Wilderness designation of 16,470 acres would protect and enhance existing wilderness values. Wilderness values on 4,230 acres recommended nonsuitable would be impaired as a result of projected management actions.
Projected production from seven oil and gas wells and production from one open-pit bentonite/zeolite mine would be foregone.	Projected production from six oil and gas wells would be foregone. Projected production from one oil and gas well and one bentonite/zeolite mine would occur.
In the short term, vegetation preserved in present state except for 1,000 acres where ecological succession would be accelerated. In the long term, 13,500 acres of untreated vegetation would move toward early seral stage. Riparian vegetation along Clover and Sand Hollow creeks (total 2.8 miles) would improve and 14.7 miles of ways would revegetate. Nine acres would be disturbed from wildlife projects and bentonite/zeolite mining.	In the short term, vegetation preserved in present state except for 1,500 acres where ecological succession would be accelerated. In the long term, 13,000 acres would move toward early seral stage. Riparian vegetation along Clover and Sand Hollow creeks (total 2.8 miles) would improve and 6.7 miles of ways would revegetate. Species composition would change on 2,740 acres interseeded to forbs. Energy, mineral and wildlife developments would disturb 21 acres.
Wildlife forage conditions, habitat diversity and species diversity would decline.	Wildlife forage conditions would slightly improve. Habitat diversity and species diversity would slowly decline.
Water quality and quantity in Clover and Sand Hollow creeks (total 2.8 miles) would improve. Upland conditions would decline except for 1,000 acres treated by prescribed fire.	Water quality and quantity in Clover and Sand Hollow creeks (total 2.8 miles) would improve. Upland conditions would improve on 1,500 acres and be less stable in the long term on 13,000 acres.
There would be 227 AUMs of currently available but unallocated forage and 300 AUMs of forage dependent on reservoir development foregone. Vehicle use on 14.7 miles of ways would be precluded and 1.75 miles of riparian fence would be constructed, resulting in some inconvenience and a slight increase in costs to livestock operators.	There would be 96 AUMs of currently available but unallocated forage allocated; 231 AUMs of existing but unallocated forage, and 300 AUMs of forage made available through reservoir development would be foregone. Vehicle access on 6.7 miles of ways would be precluded and 1.7 miles of riparian fence would be constructed, resulting in some inconvenience and a slight increase in costs to livestock operators.
The area's overall recreation use level would decrease. There would be a change to primitive nonmotorized types of recreation use.	The area's overall recreation use level would be slightly reduced. There would be a change from types of recreation requiring a motorized vehicle to primitive nonmotorized types of recreation use.
Annual local personal income would decrease by approximately $600.	Annual local personal income would increase by approximately $800.

A bentonite deposit exists in the northwestern and western parts of the WSA. Zeolite deposits are inferred to occur in this same area. These lands are rated as having a high potential for occurrence of bentonite and a moderate potential for occurrence of zeolite. Bentonite, used as pet waste absorbent, pond sealant, and animal feed binder is currently mined adjacent to the WSA.

Local, Social and Economic Considerations

Livestock use at the current level of 1,565 AUMs and recreation use totaling 150 visitor days per year are the primary resource outputs that generate annually from these existing use levels amounts to approximately $18,800 for livestock grazing and $1,800 related to recreation use of the WSA for an overall total of $20,000. Under the recommendation, livestock grazing would increase by 627 AUMs. Projected energy and mineral development would amount to seven oil and gas production wells and one non-metallic mine. Overall recreation use would remain at 150 visitor days per year. Annual local personal income generated from resource outputs in the WSA would increase by approximately $7,500.

There were no social issues identified in the study of the WSA.

Summary of WSA-Specific Public Comments

Public comment has occurred throughout the wilderness review process. Certain comments received during the inventory process and early stages of the EIS preparation were used to develop significant study issues and various alternatives for the ultimate management of these lands found to have wilderness values.

During the formal public review of the Draft EIS and the Supplement to the Draft EIS, a total of eleven comments specifically addressing this WSA were received. In general, ten commenters supported wilderness designation for all of the area. One commenter supported no wilderness for the WSA.

Those favoring wilderness commented on the outstanding naturalness and solitude of the area, and the importance of wildlife habitat that wilderness designation would protect. Some felt the potential mineral values were over-rated. One commenter suggested that additional special features may be present.

The person opposing wilderness designation was concerned about the effect wilderness would have on mineral resources by precluding possible future development in the area for oil and gas.

There were two comment letters received on the final EIS for this WSA.

Hampton Butte/Cougar Well Wilderness Study Area

1. The Study Area —29,035 acres

The Hampton Butte and Cougar Well Wilderness Study Areas (WSA) are in Crook and Deschutes County, approximately 60 miles southeast of Bend, Oregon, and about 180 miles southeast of Portland, Oregon. U.S. Highway 20 is less than 4 miles south of the study areas.

Hampton Butte

The Hampton Butte WSA (OR-5-42), immediately to the west and separated from the Cougar Well WSA (OR-5-43) by a BLM maintained road, is an irregular shaped unit. There are 10,600 acres of BLM land in the WSA. (See Table 1). There are 160 acres of private land at the end of a dead-end road in the Hampton Butte WSA.

Boundaries on all sides of the Hampton Butte WSA are formed by a combination of BLM-maintained roads and private property. One dead-end road enters the Hampton Butte WSA for 1.4 miles, forming part of the boundary.

Juniper covered buttes are scattered throughout the WSA. The landscape rises gently to the north toward Hampton Buttes located just outside of the WSA. Dense stands of juniper dominate the southern and eastern portions with an understory of sagebrush, rabbitbrush and bitterbrush. Perennial water is provided by several springs in the WSA.

Cougar Well

The Cougar Well WSA is a roughly rectangular shaped unit with 17,315 acres of BLM land. Within the WSA, are an additional 800 acres of private land and 1,120 acres of split-estate inholdings. There are 240 acres of private land at the end of a dead-end road in the WSA. The boundaries of the Cougar Well WSA are a combination of BLM-maintained roads and a major powerline with a bladed maintenance road. The eastern and northern boundaries are a combination of a county-maintained and BLM-maintained roads and adjacent private property. Two dead-end roads totaling 5.2 miles enter the Cougar Well WSA, forming part of the boundary.

The Cougar Well WSA is similar to the Hampton Butte WSA but lower in elevation. It slopes down into the G.I. Basin with large expansive sagebrush

bajadas. A small canyon bisects the southeastern portion of the WSA offering topographic relief. In the western portion, low foothills join a series of minor mountains know as the Hampton Buttes. There is no perennial water within the WSA except for some livestock water impoundments.

The WSAs were studied under Section 603 of the Federal Land Policy and Management Act and were included in the Final Oregon Wilderness Environmental Impact Statement (EIS) filed in February 1990. Three alternatives were analyzed in the EIS: 1) an all wilderness alternative; 2) an all wilderness alternative with acquisitions and road closures, and 3) a no wilderness/no action alternative (which is the recommendation of this report). These lands are shown on Map 1.

2. Recommendation and Rationale

0 acres recommended for wilderness
29,035 acres recommended for nonwilderness.

The recommendation for both WSAs is to release both areas for uses other than wilderness. The all wilderness with acquisitions and road closures alternative would be the environmentally preferable alternative as it would result in the least change from the natural environment over the long term. The proposed action will, however, be implemented in a manner which will use all practical means to avoid or minimize environmental impacts.

The recommendation provides for the development of mineral and rangeland resources, and the enhancement of wildlife habitat and vegetative manipulation in a study area possessing a limited number and spectrum of wilderness values. The development of these resource uses would be incompatible with wilderness preservation. The benefits of preserving the wilderness values would be outweighed by the benefits of retaining the option of developing resources, including oil and gas, which have a high potential for occurrence in the areas, as well as increased levels of livestock grazing.

Projected development that could occur under the recommended action (no wilderness) include 9 miles of road construction, 6 miles of oil and gas pipelines and 10 drill sites. Three developed wildlife projects (guzzlers) and 8,000 acres of brush control for wildlife (which includes prescribed burning) are also projected. Livestock developments include developed structural projects (two reservoirs and 8 miles of water pipeline). Additionally, a 7,420-acre prescribed burn for brush control for improved livestock forage is proposed as is an increase of 702 AUMs. Riparian and watershed enhancement projects include 5 miles of structural watershed projects (rock rip-rap) and 800 acres of juniper control.

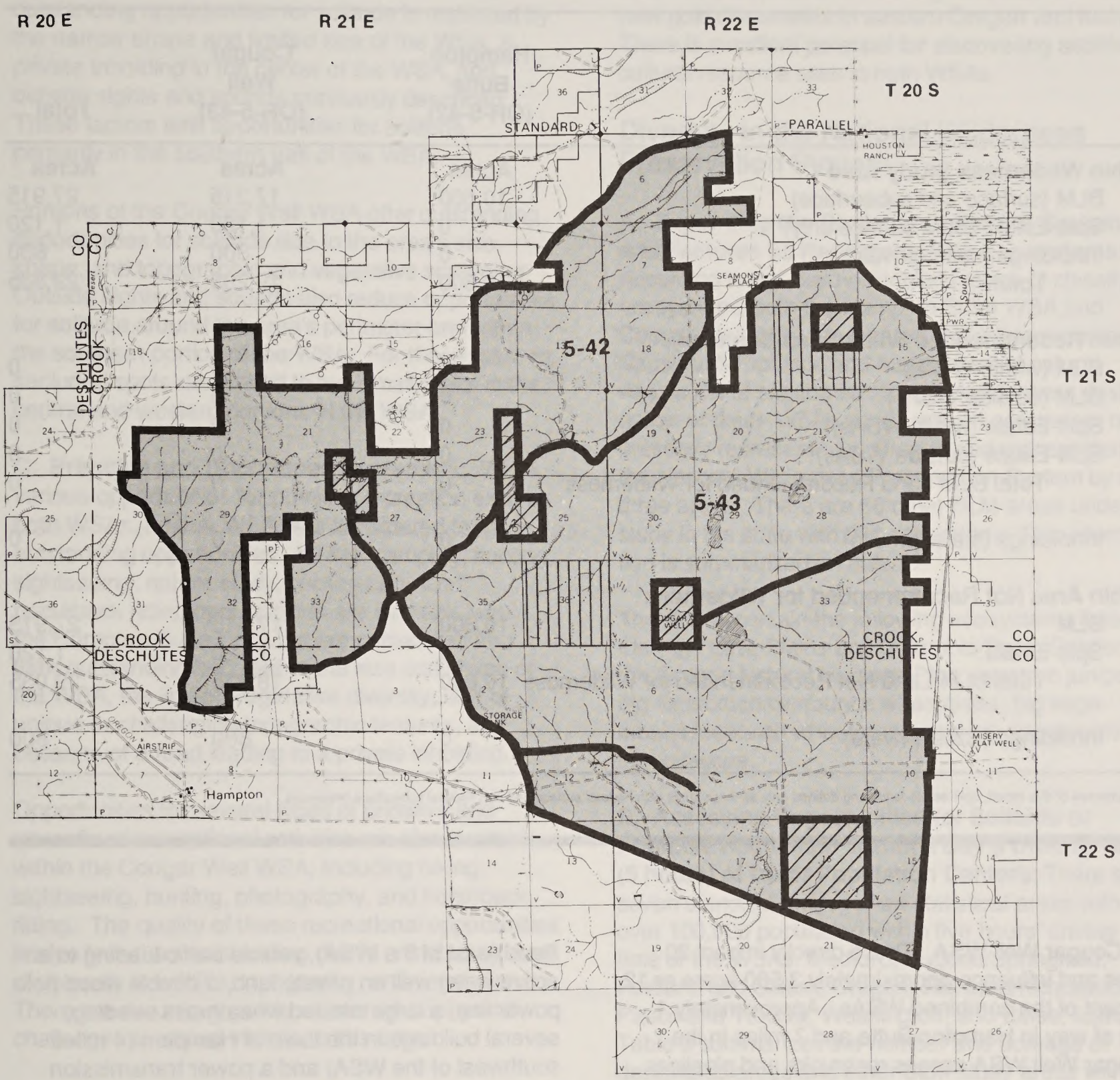
There are many man-made unnatural features in these WSAs which influence 21 percent of Cougar Well and 2 percent of Hampton Butte. These include about 25 miles of ways, pipelines, and range developments A major highway, a small town, crested wheatgrass seedings, and transmission lines can all be seen from parts of the WSAs. There is also an inholding accessed by a road and pipeline. A limited amount of diversity in wildlife, topography and vegetation limits the overall primitive recreation opportunities.

3. Criteria Considered in Developing the Wilderness Recommendation

Wilderness Characteristics

A. Naturalness: Both WSAs generally appear in a natural condition and are primarily affected by the forces of nature. Their rolling hillsides are covered with stands of juniper and sagebrush with Idaho fescue as a major grass component. Basalt rock formations thrust above the vegetation forming interesting breaks in the scenery. As the hillsides slope down to meet the G.I. Valley, junipers give way to expansive sagebrush flats with Thurber's needlegrass and bluebunch wheatgrass. Both WSAs provide good yearlong habitat for approximately 70 mule deer, 60 antelope and 20 elk. An additional 30 mule deer and 240 antelope winter in two areas of crucial antelope winter range located in the Cougar Well WSA. Golden eagles and redtail hawks nest and hunt within the WSAs. Mountain Quail and sage grouse (presently a Federal candidate species) are also found within the WSAs.

Approximately twenty-two unnatural interior features (12 in Hampton Butte WSA and 10 in the Cougar Well WSA) influence approximately 21 percent of the Cougar Well WSA and 2 percent of the Hampton Butte WSA. Unnatural interior features that affect the WSAs include 4.8 miles of ways within the Hampton Butte WSA and 19.5 miles of ways within



RECOMMENDED FOR WILDERNESS (None)

RECOMMENDED FOR NONWILDERNESS

LAND OUTSIDE WSA RECOMMENDED FOR WILDERNESS (None)

SPLIT ESTATE

STATE (None)

PRIVATE

N

Hampton Butte and Cougar Well Proposal

MAP-1

0 1 2 3

MILES

OR-5-42,43
January, 1991

Table 1. Land Status and Acreage Summary of the Study Area

	Hampton Butte (OR-5-42)	Cougar Well (OR-5-43)	Total
Within Wilderness Study Area	**Acres**	**Acres**	**Acres**
BLM (surface and subsurface)	10,600	17,315	27,915
Split-Estate (BLM surface only)[1]	0	1,120	1,120
Inholdings (state, private)	0	800	800
Total	10,600	19,235	29,835
Within Recommended Wilderness Boundary			
BLM (within WSAs)	0	0	0
BLM (outside WSAs)	0	0	0
Split-Estate (within WSAs)[1]	0	0	0
Split-Estate (outside WSAs)[1]	0	0	0
Total BLM Land Recommended for Wilderness	0	0	0
Inholdings (state, private)	0	0	0
Within Area Not Recommended for Wilderness			
BLM	10,600	17,315	27,915
Split-Estate[1]	0	1,120	1,120
Total BLM Land Not Recommended for Wilderness	10,600	18,435	29,035
Inholdings (state, private)	0	800	800

[1]For purposes of this report, split-estate lands and defined only as those lands with Federal surface and non Federal subsurface (minerals).

the Cougar Well WSA. These directly impact 20 acres and influence approximately 3,500 acres or 12 percent of the combined WSAs. Approximately 1 mile of way in Hampton Butte and 7 miles in the Cougar Well WSA access reservoirs and pipelines and would receive periodic use every 10 to 15 years, subject to permit, to provide for maintenance by heavy equipment.

Unnatural features outside of the Hampton Butte WSA that affect its naturalness include boundary roads, a double wood pole powerline, vehicle traffic on Highway 20 (1-2 miles from the WSA), vehicle use on the road leading to Rhubarb Spring, several buildings, and an airstrip in the town of Hampton (1.5 miles south of the WSA).

Unnatural features outside of the Cougar Well WSA include vehicle traffic on Highway 20 (2 to 3 miles from the WSA), vehicle traffic on the G.I. Ranch Road (east of the WSA), vehicle traffic leading to an active water well on private land, a double wood pole power line, a large crested wheatgrass seeding, several buildings in the town of Hampton (4 miles southwest of the WSA) and a power transmission line with a maintenance road extending along the WSA southern boundary.

These features generally have only a slight adverse effect on naturalness due to the topographic and vegetative screening available in the WSAs. Naturalness in the southern portion of both WSAs, however, is significantly reduced by these unnatural features.

B. Solitude: The Hampton Butte WSA offers outstanding opportunities for solitude due to rugged topography and dense vegetative screening from juniper trees. These opportunities are limited, however, to three areas: a basin northeast of

Rhubarb Spring, a small basin one mile north of Rhubarb Spring, and several mile long canyons in the eastern part of the WSA. The area offering outstanding opportunities for solitude is restricted by the narrow shape and limited size of the WSA, a private inholding in the center of the WSA, and outside sights and sounds previously described. These factors limit opportunities for solitude, primarily in the southern half of the WSA.

Portions of the Cougar Well WSA offer outstanding opportunities for solitude due to the area's size, shape, and topographic and vegetative screening. Outside sights and sounds also reduce opportunities for solitude around the area's perimeter and within the southern portion of the WSA. For these reasons, secluded spots are limited to two small areas in the central and western portions of the WSA.

C. Primitive and Unconfined Recreation: While various opportunities for primitive recreation exist in both WSAs, neither WSA was considered to have outstanding opportunities. Hiking, camping, hunting, sightseeing, nature study, photography and horseback riding opportunities are available within the Hampton Butte WSA but are considered less than outstanding because of the size and shape of the WSA, the limited vegetative diversity, lack of unique or challenging topographic features, and because of a road leading to a private inholding.

Opportunities for several types of primitive and unconfined recreational activities are also available within the Cougar Well WSA, including hiking, sightseeing, hunting, photography, and horseback riding. The quality of these recreational opportunities is also less than outstanding due to a limited amount of diversity in wildlife, topography, and vegetation. There are no unique points of interest or physical challenges to attract visitors to this area.

D. Special Features: A special feature of the Cougar Well WSA is crucial winter range habitat for antelope, located in the eastern portions of the area. Geological maps show some potential for paleontological resources in the eastern part of Hampton Butte WSA and in the southern and northwest portions of the Cougar Well WSA for Pleistocene mammalian fossils, as well as remains of birds and fish. No localities are known to be recorded for the areas.

At least one prehistoric campsite, with evidence of obsidian tool manufacture, has been discovered in the Hampton Butte WSA. The Yreka-Canyon City Road which runs through the eastern portion of the Hampton Butte WSA and is located on a portion of the boundary of the Cougar Well WSA, dates from the 1860's. It was a route used by miners leaving northern California and heading northeast for the new gold discoveries in eastern Oregon and Idaho. There is excellent potential for discovering additional cultural resource sites in both WSAs.

Diversity in the National Wilderness Preservation System

A. Expanding the Diversity of Natural Systems and Features as Represented by Ecosystems: According to the Bailey-Kuchler system of classifying ecosystems, both the Hampton Butte WSA and Cougar Well WSA are located in the Intermountain Sagebrush Province and have potential natural vegetation of sagebrush steppe. Wilderness designation of these WSAs would add an ecosystem not presently represented in Oregon and represented in the National Wilderness Preservation System by only three areas. There are 66 other BLM areas under study in the state with this ecosystem. This information is summarized inTable 2.

The WSAs contain the following ecosystems listed in the High Lava Plains and Columbia Basin Section of the Oregon Natural Heritage Plan: western juniper/ big sagebrush/bluebunch wheatgrass, big sagebrush/bluebunch wheatgrass, and big sagebrush/ Idaho fescue.

B. Assessing Opportunities for Solitude or Primitive Recreation Within a Day's Driving Time (5 hours) of Major Population Centers: There are seven standard metropolitan statistical areas with over 100,000 population within five hours' driving time of the WSAs: Medford, Eugene/Springfield, Portland and Salem, Oregon; Richland/Kennewick/ Pasco and Yakima, Washington; and Boise, Idaho. Table 3 summarizes the number and acreage of designated areas and other BLM study areas within five hours' drive of population centers.

C. Balancing the Geographic Distribution of Wilderness Areas: The study areas would not contribute to balancing the geographic distribution of the areas within the National Wilderness Preservation System. There are five designated wilderness areas within 100 miles of these WSAs.

Manageability

(The area must be capable of being effectively managed to preserve its wilderness character.)

Table 2. Ecosystem Representation

Bailey-Kuchler Classification	NWPS Areas	NWPS Acres	Other BLM Studies Areas	Other BLM Studies Acres
Province/Potential Natural Vegetation				
NATIONWIDE				
Intermountain Sagebrush/ Sagebrush Steppe	3	76,699	136	4,341,305
OREGON				
	0	0	4	39,476

Table 3. Wilderness Opportunities for Residents of Major Population Centers

Population Centers	NWPS Area	NWPS Acres	Other BLM Studies Area	Other BLM Studies Acres
Medford, OR	31	2,440,081	21	730,038
Eugene/Springfield, OR	42	2,859,994	43	770,436
Portland, OR	48	4,537,392	16	91,762
Salem, OR	45	2,888,764	18	210,085
Richland/Kennewick/ Pasco, WA	45	5,816,707	8	67,186
Yakima, WA	48	5,447,447	8	67,186
Boise, ID	16	4,741,570	126	5,060,460

While the Hampton Butte and Cougar Well WSAs would be manageable as wilderness, there are several factors which detract from the overall manageability if the areas were recommended suitable. They include 6.6 miles of dead-end roads, parcels of private totaling 1,200 acres, and two parcels of split-estate lands totaling 1,120 acres. The dead-end roads penetrate to the very core of each WSA, and provide access to private lands. Development of these lands, or motorized and mechanized activities on them, have the potential to severely impact wilderness characteristics on adjoining lands.

The other private inholdings are all used for livestock grazing and do not presently affect the manageability of either WSA. The landowners have not expressed interest in changing the use of this private land and it does not appear likely there will be a change in the future; however, land use could change at the discretion of the landowner and because of their strategic location any development of the private lands has the potential to dramatically reduce wilderness values on the surrounding lands. The split-estate lands reserve all minerals to the State of Oregon and could be developed at the state's discretion.

The all wilderness with acquisitions and road closures alternative would resolve the potential manageability problems through acquisition of nonfederal lands and minerals and through road closures.

Energy and Mineral Resource Values

Energy and mineral resources were evaluated from available geological data supplemented by a limited amount of geochemical stream sediment sampling by geologists with Terradata, a consulting firm under contract with BLM. Technical details of the evaluation are found in a Terradata report of 1983 titled "Assessment of Geology, Energy, and Minerals (GEM) Resources, Gerry Mountain Geologic Resource Area (GRA)." This report is supplemented by a BLM evaluation of the same area.

Both WSAs are within an area of critical mineral potential (ACMP) for oil and gas. The exposed rocks in the WSAs are Tertiary and Quaternary volcanics and volcaniclastic sediments. The subsurface rocks are inferred from oil and gas exploration wells to included cretaceous marine clastic sediments and pre-cretaceous marine sediments and metamorphosed sediments. Depth to these sediments varies from 1,500 to 2,500 feet.

Oil and gas have a high potential for occurrence throughout the WSAs based on several positive factors. Two deep exploratory wells have been drilled near the WSAs. Both wells had gas and oil shows, and indications that marine clastic sediments are probably present beneath both of the WSAs. Other exploratory wells have been drilled in central Oregon; all have had hydrocarbon shows, and persistent exploration efforts all lead to a high potential rating for oil and gas in the WSAs.

There are no known mineral deposits within either WSA.

As of May 1991, there was one mining claim in Hampton Butte WSA and 17 claims in Cougar Well WSA.

Local Social and Economic Considerations

Livestock use at the current level of 2,206 AUMs and recreation use totalling 300 visitor days per year are the primary resource outputs that generate economic activity in the WSAs. Local personal income generated annually from these existing use levels amounts to approximately $26,500 for livestock grazing and $3,600 related to recreation use of these WSAs for an overall total of $30,100.

Under the recommendation, livestock grazing would increase by 702 AUMs. Projected energy and mineral development could amount to eight oil and gas production wells. Overall recreation use would remain at 300 visitor days per year. Annual local personal income generated from resource outputs in the WSAs would increase by approximately $8,400.

There were no social issues identified with the study of these WSAs.

Impacts on Resources

The following comparative impact table summarizes the effects on pertinent resources for all the alternatives considered including designation or nondesignation of the entire area as wilderness.

Summary of WSA-Specific Public Comments

Public involvement has occurred throughout the wilderness review process. Certain comments received during the inventory process and the early stages of the EIS preparation were used to develop significant study issues and various alternatives for the ultimate management of those lands found to have wilderness values.

During formal public review of the draft EIS and the Supplement to the EIS, a total of nine comments specifically addressing these WSAs was received. Of those, eight were written and one was an oral statement received at the 24 public hearings held on the EIS. In general six commenters supported wilderness designation for all or part of the WSAs. One commenter supported no wilderness for the WSAs while three commenters addressed the relative merits of the EIS but took no formal position on wilderness designation.

The reasons for commenters favoring wilderness in the Hampton Butte and Cougar Well WSAs are summarized as follows. One commenter felt the overall area meet wilderness criteria, another felt that oil and gas and mineral potential was overemphasized, and one felt that outside sights and sounds was not an appropriate criteria. The comments supporting no wilderness for Cougar Well were based on too many inholdings and a concern that wilderness designation could adversely affect the mineral industry. The comments favoring the combination of Cougar Well and Hampton Butte WSAs as one wilderness area felt that this designation would protect the ecosystems, ecological diversity, gene pools, and nongame species.

Table 4. Comparative Summary of the Impacts by Alternatives

Issue Topics	Recommendation (No Wilderness/No Action Alternative)
Impacts on Wilderness Values	Projected management actions would impair the area's naturalness, solitude, primitive and unconfined recreation opportunities and special features on approximately 12,000 acres with further declines from other potential uses over the long term.
Impacts on Energy and Mineral Development	Production from eight projected oil and gas wells would occur.
Impacts on Vegetation	Seral status of 16,220 acres changed to late seral from mid-seral vegetation disturbed on 49 acres from projected management actions.
Impacts on Wildlife	Wildlife habitat improved. ODFW management goals exceeded. Big game increased by 10 percent.
Impacts on Watershed	Upland watershed stability improved on 16,220 acres. Erosion reduced on five miles of ephemeral drainages.
Impacts on Livestock Grazing	There would be 702 AUMs made available through prescribed burning and water development realized.
Impacts on Recreation Use	The recreation use level would not change.
Impacts on Local Personal Income	Annual local personal income would increase by approximately $8,400 with an unknown level of increae from projected energy and mineral development.

All Wilderness Alternative	All Wilderness with Acquisitions and Road Closures Alternative
Wilderness designation of 10,600 acres of the Hampton Butte WSA and 18,435 acres of the Cougar Well WSA would protect and enhance existing wilderness values.	Wilderness designation of 10,760 acres of the Hampton Butte WSA and 19,475 acres of the Cougar Well WSA (both assuming acquisition of private inholdings), along with the acquisition of 320 acres between the WSAs and 1,120 acres of mineral estate and the closure of 13.6 miles of boundary and interior roads would protect and enhance existing wilderness values on 30,555 acres.
Production from eight projected oil and gas wells would be foregone.	Production from eight projected oil and gas wells would be foregone.
Seral status of 4,000 acres changed to late seral. There would be 20 acres revegetated through closure of 24.3 miles of ways.	Seral status of 4,000 acres changed to late seral from mid-seral. There would be 36 acres revegetated through closure of 24.3 miles of ways and 13.6 miles of roads.
Wildlife habitat maintained. ODFW management objectives met.	Wildlife habitat improved. ODFW management goals exceeded. Big game increased by 5 percent.
Upland watershed stability improved on 4,000 acres.	Upland watershed stability improved on 4,000 acres.
There would be 702 AUMs made available through project development foregone. Vehicle use of 24.3 miles of ways precluded with some inconvenience and additional expense to livestock operators.	There would be 702 AUMs made available through project development foregone. Vehicle use precluded on 24.3 miles of ways and 13.6 miles of road with inconvenience and additional expense to livestock operators.
The recreation use level would not change or would decrease slightly. There would be a general change to primitive, nonmotorized types of recreation use.	The recreation use level would decrease to 100 visitor days per year. There would be a complete change to primitive, nonmotorized types of recreation use.
Annual local personal income would remain at approximately $30,100.	Annual local personal income would decrease by approximately $1,200.

Another felt that this combination would not adversely affect the grazing leases or the existing patented leases for mineral and energy resources.

No public agencies or local governments stated opposition or support for wilderness designation of the Hampton Butte or Cougar Well WSAs.

There were two comment letters received on the final EIS for this WSA.

McGraw Creek Wilderness Study Area

1. The Study Area —497 acres

The McGraw Creek Wilderness Study Area (OR-6-1) is located 80 miles northeast of Baker City, Oregon, and 23 miles northeast of Halfway, Oregon, in Wallowa County. The WSA is approximately 2.5 miles in length and in width varies from 50 feet to 0.75 mile. The area is characterized by steep, deeply-dissected, narrow, rocky canyons. Elevation increases from 1,600 feet at the Hells Canyon Reservoir to 4,960 feet at the WSA's western boundary. The northern forks of Copper Creek are the only perennial streams.

The WSA contains 497 acres of BLM land and lies within the 8,537-acre Homestead Area of Critical Environmental Concern (ACEC). The ACEC was established to protect outstanding scenic, wildlife and vegetation features including bald eagle and sensitive plant habitat. There are no private inholdings, and the subsurface mineral estate is Federally owned (See Table 1). There are no roads or ways in the WSA.

The Hells Canyon Wilderness forms the northern boundary. The Wilderness is within the Hells Canyon National Recreation Area which extends northward approximately 50 miles along the west side of the Snake River in Oregon and on the east side in Idaho. The WSA is part of a chain containing two other WSAs bordering the impounded Snake River along the Oregon/Idaho State line above the Hells Canyon, Oxbow and Brownlee Reservoirs. The three WSAs are not contiguous but do represent the same geographic locale of the Snake River Breaks.

Hells Canyon Reservoir on the Snake River forms the eastern boundary. A trail runs north along the reservoir on the eastern boundary. Private land (patented mining claims) and other BLM lands (which are in an unnatural condition and were eliminated from wilderness consideration during the inventory phase) form the southern and western boundaries, respectively.

Both forest and rangeland plant communities occur in the WSA with forest sections (Douglas fir, white and grand fir, and ponderosa pine) found on the higher, cooler, moister north aspects and in the upper portions of Copper Creek. The upper portion of Copper Creek also supports dense, deciduous riparian vegetation in a mature to climax ecological state. Rangeland plant communities consist primarily of grasses and scattered shrubs.

The WSA was studied under Section 202 of the Federal Land Policy and Management Act (FLPMA), and was included in the Final Oregon Wilderness Environmental Impact Statement (EIS) filed in February 1990.

Two alternatives were analyzed in the EIS: an all wilderness alternative and a no wilderness/no action alternative (the recommendation in this report). These lands are shown on Map 1.

2. Recommendation and Rationale

—0 acres recommended for wilderness
497 acres recommended for nonwilderness

The recommendation for this WSA is to release the entire area for uses other than wilderness.

The all wilderness alternative is considered to be the environmentally preferable alternative since it would result in the least change from the natural environment over the long term. However, the no wilderness alternative would be implemented in a manner which would use all practical means to avoid or minimize environmental impacts.

Wilderness characteristics are limited and the area would not be manageable as wilderness while opportunities exist for mineral exploration and possible development of an open-pit/underground mine complex.

Although McGraw Creek WSA adjoins Hells Canyon Wilderness, it is topographically separated from it by a ridgeline. Because of this separation, the WSA is not enhanced by the adjoining wilderness area's qualities, nor does the WSA add to the adjoining area's wilderness values. This recommendation was determined in coordination with the supervisor's office of the Wallowa Whitman National Forest on May 16, 1979. In addition, wilderness values of solitude and primitive and unconfined recreation are not outstanding in this study area. Areas that have topographic and vegetative screening within the WSA are small, scattered, and too few to be considered outstanding. The WSA contains places where a visitor can achieve a sense of solitude; however, opportunities for solitude are not outstanding because of the area's small size and narrow shape. The restricted area and narrow irregular shape also limits primitive recreational opportunities.

The WSA slopes eastward toward Hells Canyon, and southward toward Copper Creek. Most of the area is influenced by major developments outside the WSA that greatly diminish visitors' perceptions of opportunities for naturalness and solitude, and would make the area unmanageable as wilderness. Although opposite the WSA on its east side, developments such as the Hells Canyon Reservoir and Idaho Power access road have significant influences upon the south and east-facing slopes above Copper Creek. In addition, this slope directly faces mining activities and timber harvest areas with associated access roads, the Klindschmidt Grade and Hess Road. Structures outside of the WSA that affect naturalness include hydroelectric dams, powerlines, roads, major reservoirs (Oxbow and Hells Canyon), power substations, a bridge and highways.

It is projected that exploration for copper, gold and silver could occur throughout the WSA. A known copper occurrence is located at the western end of the WSA. Under the recommendation, discovery of an economic copper, gold and silver deposit is postulated to occur at the eastern end of the WSA in the vicinity of the known copper occurrence, and development of an open-pit/underground mine complex is projected.

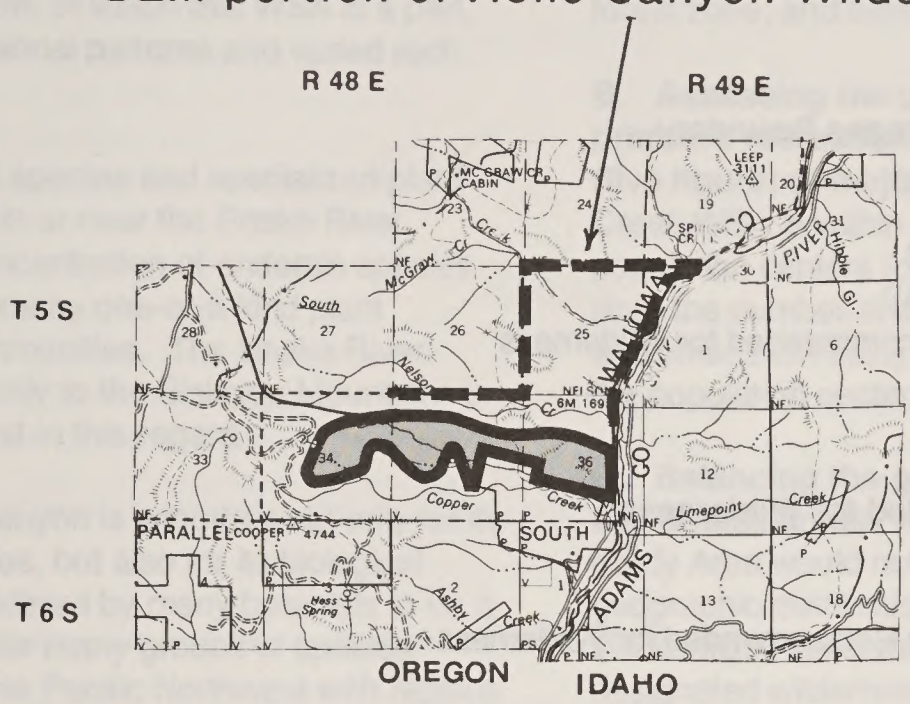
3. Criteria Considered in Developing the Wilderness Recommendations

Wilderness Characteristics

A. Naturalness: The unnatural features within McGraw Creek WSA are substantially unnoticeable. A hiking trail within the area influences a narrow zone and its impacts are minimal.

The greatest impacts are from 15 off-site features that affect 90 percent of the area. The Hells Canyon Reservoir and Idaho Power access road, opposite the WSA on its east side, are the dominant features. Although off-site, these features have significant influences upon the south and east-facing slopes above Copper Creek. This slope directly faces several major intrusions in addition to the road and reservoir. Some of these intrusions include mining activities and timber harvest areas with associated access roads, the Klindschmidt Grade and the Hess

BLM portion of Hells Canyon Wilderness



RECOMMENDED FOR WILDERNESS (None)

RECOMMENDED FOR NONWILDERNESS

LAND OUTSIDE WSA RECOMMENDED FOR WILDERNESS (None)

SPLIT ESTATE (None)

STATE (None)

PRIVATE (None)

-N-

McGraw Creek Proposal

MAP-1

0 1 2 3

MILES

OR-6-1

January, 1991

Table 1. Land Status and Acreage Summary of the Study Area

	Acres
Within Wilderness Study Area	
BLM (surface and subsurface)	497
Split-Estate (BLM surface only)[1]	0
Inholdings (state, private)	0
Total	497
Within Recommended Wilderness Boundary	
BLM (within WSA)	0
BLM (outside WSA)	0
Split-Estate (within WSA)[1]	0
Split-Estate (outside WSA)[1]	0
Total BLM Land Recommended for Wilderness	0
Inholdings (state, private)	0
Within Area Not Recommended for Wilderness	
BLM	497
Split-Estate[1]	0
Total BLM Land Not Recommended for Wilderness	497
Inholdings (state, private)	0

[1] For purposes of this report, split-estate lands are defined only as those lands with Federal surface and non-Federal subsurface (minerals).

Road.

The WSA supports a summer population of 10 to 15 mule deer and a winter population 40 to 50 mule deer. The study area supports about 5 to 10 elk during the winter months, depending on the severity of the winter.

Much of the wildlife habitat in the WSA is in good condition, especially the steep slopes which are covered with bluebunch wheatgrass. Some of the flatter areas are in poor condition, and are dominated by the undesirable exotic annuals of cheatgrass and medusahead wildrye grass. The riparian zone in Copper Creek is generally in good condition with a multi-storied tree-shrub layer. Small stringers of old-growth trees provide a diversity to the area.

The riparian zone and the narrow forested stringers provide habitat, primarily cover, for a small number of wildlife species including black bear, mule deer, elk, song birds, woodpeckers and blue grouse.

The adjacent grasslands provide foraging areas for the above-mentioned species and for chukars, rodents and coyotes.

B. Solitude: McGraw Creek WSA lacks outstanding opportunities for solitude, although it adjoins a designated wilderness area that possesses these wilderness values. The WSA is topographically separated from the designated wilderness area by a ridgeline. A limited amount of topographic and vegetative screening within the WSA provides some opportunities for solitude, but these areas are small, scattered, and too few to be considered outstanding. The WSA's small size and narrow shape also contribute to the lack of solitude.

C. Primitive and Unconfined Recreation: The WSA lacks outstanding opportunities for primitive and unconfined recreation. The small shape and narrow, irregular configuration of the WSA limit

primitive recreational opportunities, and are less than outstanding because of the restricted area. Recreation in the WSA includes hunting of big game (elk, deer, bear) and upland game hunting (chukar). Other activities include backpacking, day hiking, birding, camping, horseback riding, sightseeing and photography.

D. Special Features: The deeply-incised Snake River forms the eastern boundary of the WSA for 0.5 mile. The canyon, of which this WSA is a part, has interesting erosional patterns and varied rock formations.

Many unusual plant species and specialized plant communities occur in or near the Snake River Canyon. A high concentration of endemic species generally results in many one-of-a-kind plant associations or communities. The Snake River Canyon is second only to the Siskiyou Mountains in the Pacific Northwest in this regard.

The Snake River Canyon is important not only for its unusual plant species, but also for its biological diversity. It is considered by many botanists to be a center of evolution for many groups of species, botanically linking the Pacific Northwest with regions far to the south, such as the Mojave Desert.

Bald eagles winter along the Snake River adjacent to the WSA. Northern bald eagles are Federally listed as a threatened species in Oregon under the Endangered Species Act. The reintroduction of Rocky Mountain bighorn sheep in the adjacent area has been proposed by the Oregon Department of Fish and Wildlife. The bighorn sheep would be released off-site, but could be expected to use a portion of the WSA during part of the year.

Although the WSA has not been inventoried for cultural resources, one cultural site has been identified. It is an undisturbed, intensively-used upland aboriginal campsite with a wide range of tools and materials.

Diversity in the National Wilderness Preservation System

A. Expanding the diversity of natural systems and features as represented by ecosystems: Wilderness designation of McGraw Creek WSA would add an ecosystem (using the Bailey-Kuchler system) not presently represented in Oregon, and represented in the National Wilderness Preservation System (NWPS) by only one area. There is only one other BLM area under study with this ecosystem. This information is summarized in Table 2.

Seven plant communities listed in the Ochoco, Blue and Wallowa Mountain section of the Oregon Natural Heritage Plan occur in this WSA. They include: Douglas fir-ponderosa pine/pinegrass; Douglas fir-ponderosa pine/elk sedge; Douglas fir/mallow-pinebark in the Douglas fir zone; bluebunch wheatgrass-Idaho fescue-Sandberg's bluegrass complex; big sagebrush-bunchgrass community inside the forest zone; and bitterbrush/bunchgrass.

B. Assessing the opportunities for solitude or primitive recreation within a day's driving time (five hours) of major population centers: McGraw Creek WSA is within a five-hour drive of two major population centers (over 100,000). Table 3 summarizes the number and acreage of designated areas and other BLM study areas within a five-hour drive of the population centers.

C. Balancing the geographic distribution of wilderness areas: McGraw Creek WSA Wilderness Study Area would not contribute to balancing the geographic distribution of areas within the National Wilderness Preservation System. There are eight designated wilderness areas within 100 miles of the WSA.

Manageability

(The area must be capable of being effectively managed to preserve its wilderness character).

The WSA could not be managed as wilderness. Although it is entirely public land, the study area has a narrow configuration that restricts recreational activities. It lacks outstanding wilderness characteristics of solitude and primitive recreational opportunities. The off-site sights and sounds which intrude upon the area's naturalness also would make manageability difficult.

Energy and Mineral Resource Values

The primary source for evaluation of the geology and energy and mineral potential of McGraw Creek WSA was a report provided by WGM, Inc., a consulting firm under contract with BLM. Using this report, the WSA was reevaluated by BLM geologists during June 1987.

Based on indirect and minimal direct evidence, the entire WSA is considered to have low potential for the occurrence of energy resources. A known copper occurrence is located at the western end of

Table 2. Ecosystem Representation

Bailey-Kuchler Classification	NWPS Areas areas	NWPS Areas acres	Other BLM Studies areas	Other BLM Studies acres
Province/ Potential Natural Vegetation				
NATIONWIDE				
Rocky Mountain Forest Province/ Wheatgrass-bluegrass and Grand fir-Douglas fir forest	1	28,176	0	0
OREGON				
	0	1	1	14,655

Table 3. Wilderness Opportunities for Residents of Major Population Centers

Population Centers	NWPS Areas areas	NWPS Areas acres	Other BLM Studies areas	Other BLM Studies acres
Boise, Idaho	16	4,741,570	126	5,060,460
Richland/Kennewick/Pasco, WA	45	5,816,707	8	67,186

the WSA. Based on indirect and direct evidence, the entire WSA is considered to have moderate potential for the occurrence of copper, gold and silver mineralization.

As of May, 1991, there were no mining claims located in this WSA.

Local Social and Economic Considerations

Livestock use at the current level of 6 AUMs and recreation use totalling 400 visitor days per year are the primary resource outputs that generate economic activity in the WSA. Local personal income generated annually from these existing use levels amounts to approximately $72 for livestock grazing and $4,800 related to recreation use of the WSA, for an overall total of $4,872.

Under the recommendation, livestock grazing would remain at 6 AUMs. Projected mineral development would amount to one metallic mine. Overall recreation use would decrease by 50 visitor days per year. Annual local personal income generated from resource outputs in the WSA would decrease by approximately $600, with an unknown level of increase from projected mineral development. There were no social issues identified with the study of McGraw Creek WSA.

Summary of WSA-Specific Public Comments

Public involvement has occurred throughout the wilderness review process. Certain comments received during the inventory process and early stages of the EIS preparation were used to develop significant study issues and various alternatives for

the ultimate management of those lands found to have wilderness values.

During formal review of the draft EIS, a total of seven comments specifically addressing McGraw Creek WSA were received. Of those, four were written and three were oral statements received at public hearings on the draft and supplement EIS. One commenter supported the recommendation while the rest supported wilderness designation.

The commenter who supported the recommendation said that the geology in the WSA is favorable for mineral development and that the area "has a substantiated base and precious metal resource base."

The other commenters supporting wilderness designation commented on the importance of the WSA for the recreational/wilderness experience, saying that it would complement adjacent "suitable areas" and the Hells Canyon National Recreational Area, and that wilderness status is needed for the protection of the natural diversity that occurs within the WSA and the Hells Canyon National Recreation Area as a whole.

One WSA-specific comment was received from the Department of Geology and Mineral Industries. This agency said that the addition of the WSA to the Hells Canyon National Recreation Area would give needed protection to a number of rare plant sites and would help to round out the NRA with regard to areas that commonly are thought to be in the Hells Canyon Region.

There were two comment letters received on the final EIS.

Impacts on Resources

The following comparative impact table summarizes the effects on pertinent resources for the two alternatives considered: designation or nondesignation of the entire area as wilderness.

Table 4. Comparative Summary of the Impacts by Alternative

Issue Topics	Recommendation (No Wilderness/No Action Alternative)	All Wilderness Alternative
Impacts on Wilderness Values	In the absence of wilderness designation, projected activities would both directly and indirectly impair values over the entire 497-acre WSA, with further declines from other potential uses over the long term.	Wilderness designation of 497 acres would result in protection of the area's existing wilderness values.
Impacts on Energy and Mineral Development	There would be no impact on energy development. Production from a projected copper, gold and silver mine would occur.	No impact to energy development is expected. Production would be foregone from a projected copper, gold and silver mine.
Impacts on Vegetation	Vegetation would be lost on 18 acres and the quality of riparian vegetation along the streams would decrease.	Little or no change would occur to vegetation.
Impacts on Wildlife	Displacement of small numbers of large mammals (deer, elk and black bear) would have a minor impact on overall populations within the vicinity. Wildlife habitat would be removed on 18 acres.	Wildlife habitat and populations would be maintained throughout the WSA.
Impacts on Watershed	Soil stability would be directly impacted by surface disturbance on 30 acres.	Water quality and soil stability would be little changed throughout the WSA.
Impacts on Livestock Grazing	Livestock use would continue at the current use level of 6 AUMs.	Livestock use would continue at the current level of 6 AUMs. There would be no change in livestock grazing use levels or management.
Impacts on Recreation Use	The area's recreation use level of approximately 400 visitor days per year would decrease to approximately 350 visitor days per year.	The area's recreation use level of approximately 400 visitor days per year would not be affected.
Impacts on Local Personal Income	Annual local personal income would decrease by approximately $600, with an unknown level of increase from projected mineral development.	Annual local personal income would remain at approximately $5,000.

Homestead Wilderness Study Area

1. The Study Area —14,655 acres

The Homestead Wilderness Study Area (OR-6-2) is located on the west side of the Snake River adjacent to Oregon State Highway 86 in Baker County, Oregon, approximately 75 miles northeast of Baker City, Oregon, and 20 miles northeast of Halfway, Oregon.

The WSA contains 13,895 acres of public land composed of 6,441 acres of BLM land and 7,454 acres of Forest Service land. There is one parcel of split-estate land totaling 560 acres on the BLM portion and three parcels of split-estate land totaling 200 acres on the Forest Service portion. In addition there are 259 acres of private inholdings in the BLM portion of the WSA (see Table 1).

The 7,001 acres of BLM land including the split-estate portion, recently have been designated the Homestead Area of Critical Environmental Concern (ACEC). The ACEC contains outstanding scenic qualities, wildlife and bald eagle habitat.

The 7,654 acres of Forest Service land includes 6,260 acres in the Homestead RARE II (the Forest Service's second roadless area review and evaluation) further planning unit; 200 acres of formerly private land (the three split-estate parcels) acquired by the Forest Service, and 1,194 acres which were transferred from BLM to the Forest Service in 1983 through provisions of the Hells Canyon National Recreation Area Act. This 1,194-acre tract in the northwest portion of the WSA was transferred to the Forest Service with the provision that it remain subject to wilderness review until Congress determines whether the entire WSA will be designated wilderness. A total of 5,414 acres of Forest Service Land in the study area also is located in the Hells Canyon National Recreation Area (NRA), including the 1,194-acre tract and 4,220 acres in Homestead RARE II unit 6291. These lands are withdrawn from energy and mineral location and leasing under the NRA designation.

The WSA is on a north-south oriented hogback ridge. Very short steep drainages (0.5 to 2.5 miles) run east to west through rugged canyons. The boundary of the Hells Canyon NRA follows the crest of this ridge through most of the WSA. The WSA is almost 10 miles long, 5 miles wide at its widest point and 400 yards at its narrowest point. Its average width is 2 miles. It is bordered by private land and power site withdrawals on the east and south,

national forest land on the west, and a 500-kV powerline on the north, east and northwest sides. Two dead-end roads, one mile in length each, enter the WSA along the southwest boundary.

Most of the study area lies on the east-facing slope that fronts Hells Canyon Reservoir. McClain Gulch, the major drainage, occurs on the Forest Service portion of the WSA. It runs in a southern direction to the southern boundary, a distance of 3 miles.

Vegetation is diverse and includes bunchgrass, cheatgrass and wheatgrass, big sagebrush, elderberry, hawthorne, poison ivy, snowberry, Douglas fir, white fir and ponderosa pine. The timber in the WSA on BLM land is predominately old growth. These trees are found on the moist, flatter areas of the steep draws.

The WSA was initially identified and studied under section 603 of the Federal Land Policy and Management Act (FLPMA) with additional acquired split-estate lands studied under section 202. The WSA was included in the Final Oregon Wilderness Environmental Impact Statement (EIS) filed in February of 1990.

There were three alternatives analyzed in the EIS: 1) an all wilderness alternative; 2) a partial wilderness alternative, in which 2,573 acres of BLM and 6,200 acres of Forest Service land (8,773 acres) would be recommended suitable as wilderness; 240 acres of private inholdings would be acquired through purchase or exchange, if the owners are willing, making the total area recommended suitable 9,013 acres; and 5,882 acres would be recommended nonsuitable as wilderness; and 3) a no wilderness/no action alternative (the recommendation in this report). A 200-acre tract adjacent to the WSA, acquired after the wilderness inventory was included in the study process under authority granted in Section 202 of the Federal Land Policy and Management Act (FLPMA) and is not recommended for wilderness designation. These lands are shown on Map 1.

2. Recommendation and Rationale

— 0 acres recommended for wilderness
14,655 acres recommended for nonwilderness

The recommendation for this WSA is to release the entire area for uses other than wilderness. The all wilderness alternative is considered to be the environmentally preferable alternative since it will result in the least change from the natural environment over the long term. However, the no wilderness alternative would be implemented in a manner which would use all practical means to avoid or minimize environmental impacts.

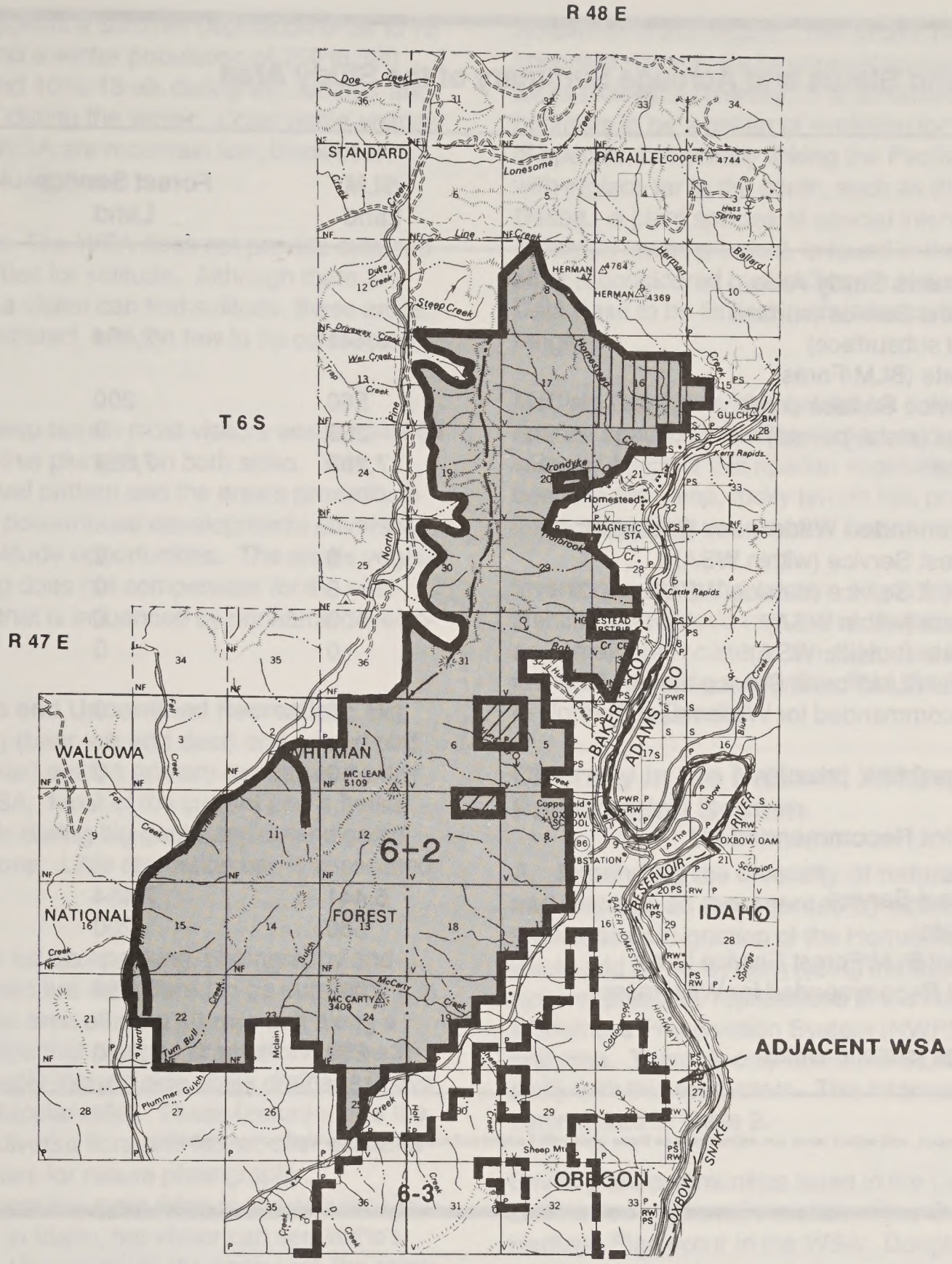
Wilderness characteristics are limited in this WSA and the area would not be manageable as wilderness while opportunities exist to develop mineral resources that have a high potential for occurrence in the study area.

The WSA's wilderness characteristics of solitude and naturalness are considered to be relatively low. Wilderness qualities are limited by the absence of outstanding opportunities for solitude. Areas within the WSA where a visitor can find solitude are small, scattered and too few to be considered outstanding.

The effects of developments and activities outside of the WSA also substantially affect solitude and the area's apparent naturalness. Developments outside the WSA can be seen or heard from most of the area as most of the WSA is on an east-facing slope and thus influenced by unnatural features. Many of these developments are major, consisting of a hydroelectric dam, powerlines, power substations and roads. Power site development of the Hells Canyon Reservoir on the Snake River below the WSA and of the Oxbow Reservoir affects naturalness. A visitor traversing the main hogback ridge would not be screened from these outside activities except in the small timbered areas. In several locations, the west boundary is less than 500 yards from the main ridge, providing the visitor with almost no area that is screened from the developments.

The recommendation would allow for exploration and projected development of mineral resources. The WSA adjoins an active gold, silver and copper mine; contains 48 pre-FLPMA mining claims; and is considered to have a high potential for the occurrence of copper, gold and silver mineralization.

A total of 9,241 acres outside of the Hells Canyon NRA portion of the WSA would be open to mineral entry. Discovery of economic copper, gold and silver deposits is postulated to occur on public land located southwest of the town of Homestead; on the northernmost parcel of the private inholdings; and on the 560-acre split-estate parcel. Projected development of four copper, gold and silver mines, including one open-pit mine, could occur. Even if the area were designated as wilderness, projected development of three mines on existing claims would make management of wilderness values impossible.



RECOMMENDED FOR WILDERNESS (None)

RECOMMENDED FOR NONWILDERNESS

LAND OUTSIDE WSA RECOMMENDED FOR WILDERNESS (None)

SPLIT ESTATE

STATE (None)

PRIVATE

-N-

Homestead Proposal

MAP-1

0 1 2 3

MILES

OR-6-2

January, 1991

Table 1. - Land Status and Acreage Summary of the Study Area

	BLM Land	Forest Service Land	Total
Within Wilderness Study Area			
BLM/Forest Service (surface and subsurface)	6,441	7,454	13,895
Split-Estate (BLM/Forest Service Surface only)[1]	560	200	760
Inholdings (state, private)	259	0	259
Total	7,260	7,654	14,914
Within Recommended Wilderness Boundary			
BLM/Forest Service (within WSA)	0	0	0
BLM/Forest Service (outside WSA)	0	0	0
Split-Estate (within WSA)[1]	0	0	0
Split-Estate (outside WSA)[1]	0	0	0
Total BLM/Forest Service Land Recommended for Wilderness	0	0	0
Inholdings (state, private)	0	0	0
Within Area Not Recommended for Wilderness			
BLM/Forest Service	6,441	7,454	13,895
Split-Estate[1]	560	200	760
Total BLM/Forest Service Land Not Recommended for Wilderness	7,001	7,654	14,655
Inholdings (state, private)	259	0	259

[1] For purposes of this report, split-estate lands are defined only as those lands with Federal surface and non-Federal subsurface (minerals).

3. Criteria Considered in Developing the Wilderness Recommendations

Wilderness Characteristics

A. Naturalness: The WSA appears to be generally natural. The three developments within the WSA are substantially unnoticeable and include one short gap fence and two developed springs. They are well-screened by vegetation and topography and their combined influence is negligible.

Development outside the WSA can be seen or heard from most of the area. The effect on the area's apparent naturalness is substantial. Nearly all of the developments are within a mile of the WSA.

The outside sights and sounds come from water developments (including the Hells Canyon and Oxbow Reservoirs on the Snake River), a dam and powerhouse, powerlines, buildings and bridges, roads and ways, and fences. These outside influences are concentrated along the northern two-thirds of the WSA and its southwestern corner. An area in the southern one-third of the WSA is not affected by external developments.

The WSA supports a summer population of 50 to 75 mule deer, and a winter population of 250 to 300 mule deer, and 10 to 15 elk during the summer and 75 to 100 elk during the winter. Other game animals found in the WSA are mountain lion, black bear, chukar and blue grouse.

B. Solitude: The WSA does not provide outstanding opportunities for solitude. Although there are areas where a visitor can find solitude, these areas are small, scattered, and too few to be considered outstanding.

Due to the steep terrain most visitors would travel on the ridgeline that plunges on both sides. This restrictive travel pattern and the area's proximity to the dam and powerhouse developments adversely influences solitude opportunities. The area's vegetative screening does not compensate for the east-facing slope that is influenced by unnatural developments.

C. Primitive and Unconfined Recreation: Big game hunting (bear, elk and deer) and upland bird hunting (chukar) are the primary recreational activities in the WSA. Most of the current use is horse and foot traffic during big game and upland game hunting seasons. Little recreation use is associated with vehicles.

Opportunities for backpacking, photography and sightseeing also are considered to be outstanding in the WSA. The area offers a 10-mile trek along a knife-edge ridge that plunges dramatically to each side. The deeply-incised side creek drainages have created spectacular relief. These features, plus the study area's diverse flora and fauna, offer outstanding opportunities for nature photography. Sightseeing from the main ridge is spectacular. To the northeast in Idaho, the visitor can see Idaho's Seven Devils Mountains; to the northwest, the snow capped peaks of Oregon's Wallowa Mountains.

D. Special Features: The WSA is adjacent to the Snake River, which provides winter habitat for 40 to 70 bald eagles (three to five within the WSA boundaries). The bald eagle is a Federal listed threatened species in Oregon under the Endangered Species Act. The WSA offers potential habitat for Rocky Mountain bighorn sheep.

Many unusual plant species and specialized plant communities occur in or near the Snake River Canyon. A high concentration of endemic species generally results in many one-of-a-kind plant associations of communities. The Snake River Canyon is second only to the Siskiyou Mountains in the Pacific Northwest in this regard. The Snake River Canyon is important not only for its unusual species, but also for its biological diversity. It is considered by many botanists to be a center of evolution for many groups of species, botanically linking the Pacific Northwest with regions far to the south, such as the Mojave Desert. A plant species of special interest, *Allium madidum* (swamp onion), is found in the WSA. This plant is considered by the Oregon Natural Heritage Data Base to be limited in abundance throughout its range.

McClain Gulch provides habitat for a variety of riparian species, including rushes, sedges, rose and willows. Much of this riparian vegetation is pristine because the steep, rocky terrain has prevented livestock grazing.

Inventories along the western edge of the WSA have identified prehistoric rock cairns, isolated artifacts and small lithic scatters. An old Indian trail crosses the WSA following a ridgeline from the Snake River to North Pine Creek.

Diversity in the National Wilderness Preservation System

A. Expanding the diversity of natural systems and features as represented by ecosystems: Wilderness designation of the Homestead WSA would add an ecosystem (using the Bailey-Kuchler system) presently represented in the National Wilderness Preservation System (NWPS) by only one area. There is only one other BLM area uder study with this ecosystem. This information is summarized in Table 2.

Seven plant communities listed in the Ochoco, Blue and Wallowa Mountain section of the Oregon Natural Heritage Plan occur in the WSA: Douglas fir-ponderosa pine/pinegrass; Douglas fir zone; bluebunch wheatgrass-Idaho fescue; Sandberg's bluegrass complex; big sagebrush-bunchgrass community inside the forest zone, and bitterbrush/bunchgrass.

B. Assessing the opportunities for solitude or primitive recreation within a day's driving time (five hours) of major population centers: The Homestead WSA is within a five-hour drive of three major population centers (over 10,000). Table 3 summarizes the number of and acreage of designated areas and other BLM study areas within a five-hour drive of the population center.

Table 2. - Ecosystem Representation

Bailey-Kuchler Classification	NWPS Areas areas	NWPS Areas acres	Other BLM Studies areas	Other BLM Studies acres
Province/ Potential Natural Vegetation				
NATIONWIDE				
Rocky Mountain Forest Province/ Wheatgrass-bluegrass Grand fir-Douglas fir forest	1	28,176	0	0
OREGON				
	0	0	1	497

Table 3. - Wilderness Opportunities for Residents of Major Population Centers

Population Centers	NWPS Areas areas	NWPS Areas acres	Other BLM Studies areas	Other BLM Studies acres
Boise, Idaho	16	4,741,570	126	5,060,460
Yakima, Washington	48	5,447,447	8	67,186
Richland/Kennewick/Pasco, WA	45	5,816,707	8	67,186

C. Balancing the geographic distribution of wilderness areas: The Homestead WSA would not contribute to balancing of the geographic distribution of areas within the National Wilderness Preservation System. There are eight designated wilderness areas within 100 miles of the WSA.

Manageability

(The area must be capable of being effectively managed to preserve its wilderness character.)

The WSA could not be managed as wilderness. Management would be difficult because of the presence of private and split-estate parcels within the WSA; likely mineral development because of the high potential for the occurrence of copper, gold and silver; past and current mining activity in the vicinity of the study area; and the large number of mining claims located within or partially within the WSA. Manageability especially would be difficult in the northern part of the study area, where mining activity has been concentrated and all 48 mining claims are located. Even if the area were designated as wilderness, three copper/gold/silver mines are projected to be developed.

Access to, and development of the two private inholdings in the southern half of the WSA could adversely affect wilderness characteristics and make management difficult in these areas. Road construction for access would have a substantially noticeable impact upon the area's naturalness.

Energy and Mineral Resource Values

The primary source for evaluation of the geology and energy and mineral potential of the Homestead WSA was a report prepared by WGM, Inc., a consulting firm under contract with BLM. Using this report, the WSA was reevaluated by BLM geologists in 1987.

Based on indirect evidence and quantitatively-minimal direct evidence, the WSA is considered to have low potential for the occurrence of energy resources. This is based on a lack of geologic evidence; no known source for petroleum, coal and geothermal resources; and the absence of existing mineral leases.

Based on abundant direct and indirect evidence, the WSA is considered to have high potential for the occurrence of copper, gold and solver mineralization, which was been discovered at three locations along the eastern edge of the northern portion of the WSA. Numerous metallic mineral occurrences or deposits, including the Iron Dyke mine (an operating underground copper, gold and silver mine located just outside the boundary of the WSA) have been identified in the general area surrounding the Homestead WSA. All other mineral resources have low potential for occurrence. As of May 1991, 46 mining claims were located within or partially within the WSA.

Local Social and Economic Considerations

Livestock use at the current level of 660 AUMs and recreation use totaling 600 visitor days per year are the primary resource outputs that generate economic activity in the WSA. Local personal income generated annually from these existing use levels amounts to approximately $7,920 for livestock grazing and $7,200 related to recreation use of the WSA, for an overall total of $15,120.

Under the recommendation, livestock grazing would remain at 660 AUMs. Projected mineral development would amount to four metallic mines. Overall recreation use would remain at 600 visitor days per year. Annual local personal income generated from resource outputs in the WSA would remain at approximately $15,000 except for an unknown level of increase from projected mineral development. There were no social issues identified in the study of this WSA.

Summary of WSA-Specific Public Comments

Public involvement has occurred throughout the wilderness review process. Certain comments received during the inventory process and early stages of the EIS preparation were used to develop significant study issues and various alternatives for the ultimate management of those lands found to have wilderness values.

During formal review of the draft EIS, a total of 11 comments specifically addressing the Homestead WSA were received. Of those, seven were written and four were oral statements received at public hearings on the draft and supplemental EIS. Nine of the commenters supported wilderness designation and two supported the recommendation.

Commenters supporting wilderness designation favored acquiring the private inholdings and said the WSA meets wilderness criteria. In addition, commenters said designation of the area as wilderness would protect the wide variety of plant communities and the threatened and endangered species, and would protect the deer winter range and bald eagle habitat.

Commenters who did not support wilderness designation said there were too many inholdings within the WSA, that designation would adversely impact the mineral industry and that the mineral resources would be wasted. Commenters also addressed a need to analyze an alternative considering combining Cache Creek with this WSA and the Hells Canyon NRA.

No WSA-specific comments were received from any Federal, state or local agencies.

There were two comment letters received on the final EIS.

Impacts on Resources

The following comparative impact table summarizes the effects on pertinent resources for all of the alternatives considered, including designation or nondesignation of the entire area as wilderness.

Table 4.- Comparative Summary of the Impacts by Alternative

Issue Topics	Recommendation (No Wilderness/No Action Alternative)
Impacts on Wilderness Values	In the absence of wilderness designation, projected activities would directly and indirectly impair wilderness values over approximately 9,000 acres, with further declines from other potential uses over the long term.
Impacts on Energy and Mineral Development	There would be no impact on energy development. Production would occur from four copper/gold/silver mines.
Impacts on Vegetation	Vegetation would be removed on 116 acres and riparian vegetation would be damaged.
Impacts on Wildlife	Habitat for deer and elk would be directly lost on 116 acres. Minor disturbance to wintering bald eagles would occur and habitat for possible bighorn sheep expansion into the area would decrease.
Impacts on Watershed	Watershed condition and water quality would be reduced over several miles of streams in the WSA.
Impacts on Livestock Grazing	Existing livestock use would continue at 660 AUMs. Thirty-seven miles of new roads would benefit livestock management.
Impacts on Recreation Use	The area's recreation use level of 600 visitor days per year would be little affected.
Impacts on Local Personal Income	Annual local personal income would remain at approximately $15,000.

All Wilderness Alternative	Partial Wilderness Alternative
Wilderness designation of the entire 14,655 acres within the Homestead WSA would result in the protection of existing wilderness values.	Wilderness designation of 9,013 acres (assuming acquisition of 240 acres of private land) would protect and enhance existing wilderness values. On the 5,882 acres not designated wilderness, wilderness values would be both directly and indirectly impaired over approximately 5,882 acres, with further declines from other potential uses over the long term.
No impact to energy development is expected. Production would occur from three copper/gold/silver mines. Production would be foregone from one copper/gold/silver mine.	No impact to energy development is expected. Production would occur from four copper/gold/silver mines.
Little or no change would occur to the overall vegetation in the WSA.	Vegetation would be removed on 85 acres and riparian vegetation would be damaged.
Wildlife habitat and populations would be maintained throughout the WSA.	On the area recommended suitable, wildlife habitat and populations would be maintained. On the 5,882 acres recommended nonsuitable, habitat for wintering deer and elk would be directly lost on 85 acres, minor disturbance to wintering bald eagles would occur, and habitat for possible bighorn sheep expansion into the area would decrease.
Watershed and water quality would be little changed from present conditions.	Watershed condition and water quality would be reduced over several miles of streams in the WSA.
Livestock use would remain at approximately 660 AUMs, with no change in livestock management.	Existing livestock use would continue at 660 AUMs, with no change in livestock management.
The area's recreation use level of an estimated 600 visitor days per year would not be affected.	The area's recreation use level of 600 visitor days per year would be little affected.
Annual local personal income would remain at approximately $15,000.	Annual local personal income would remain at approximately $15,000.

Sheep Mountain Wilderness Study Area

1. The Study Area —7,040 acres

The Sheep Mountain Wilderness Study Area (OR-6-3) is located along Oregon State Highway 86, 65 miles northeast of Baker City, Oregon, and 15 miles east of Halfway, Oregon, in Baker County. The community of Copperfield is 1.5 miles north of the WSA.

The WSA contains 7,040 acres of BLM land and encloses two private parcels of private land totaling 200 acres that are located in the north-central portion of the study area (see Table 1). The WSA is almost entirely surrounded by private land; public land borders the southeastern portion of the WSA for 2.5 miles. It lies 0.5 mile southeast of the Homestead WSA (OR-6-2) and Hells Canyon National Recreation Area. At the study area's longest point, the area is 6 miles from north to south; its width varies from 3 miles wide at its southern boundary, tapering to 0.25 mile wide on the north.

Dominating the WSA is Sheep Mountain, which rises 3,230 feet above the Snake River. The study area is bordered on the west and northwest by the Pine Creek drainage which forms a dramatic vertical ascent. The slopes of the area are extremely steep to the west, north and east. Due to the steepness of the slopes in the WSA, most riparian zones are in good condition and are well vegetated with a variety of woody plant species.

The plant community on a flat bench area on top of Sheep Mountain is composed primarily of big sagebrush, squaw currant, snowberry, buckwheat and bluebunch wheatgrass. Grassy slopes consisting of Idaho fescue and bluebunch wheatgrass are found on the south and west aspects adjacent to the flat. In the flatter areas of the steep draws old growth ponderosa pine and Douglas fir are present, covering about 233 acres.

The 7,040-acre WSA is within an area that has been designated an Area of Critical Environmental Concern (ACEC). The ACEC contains outstanding scenery, wildlife and bald eagle habitat.

The WSA was studied under Section 603 of the Federal Land Policy and Management Act (FLPMA), and was included in the Final Oregon Wilderness Environmental Impact Statement (EIS) filed in February of 1990.

Three alternatives were analyzed in the EIS; 1) an all wilderness alternative; 2) an all wilderness, with acquisitions alternative (the recommendation in this report), in which 7,040 acres of public land would be recommended suitable as wilderness and 200 acres of private inholdings would be acquired through purchase or exchange, if the owners are willing, making the total area recommended suitable 7,240 acres; and 3) a no wilderness/no action alternative. These lands are shown on Map 1.

2. Recommendation and Rationale

—7,240 acres recommended for wilderness
0 acres recommended for nonwilderness

The recommendation for this WSA is to designate 7,040 acres of public land as wilderness. In addition, 200 acres of private inholdings would be acquired if the owners are willing.

The all wilderness, with acquisitions, alternative is considered to be the environmentally preferable alternative since it will result in the least change from the natural environment over the long term.

Wilderness characteristics are considered to be high in the WSA and the benefits of preserving these values outweigh benefits of maintaining options for mineral exploration. Under the recommendation, the study area's wilderness values of undeveloped plateaus and canyons, undisturbed riparian lands, outstanding habitat for and large populations of wildlife, special interest plants, habitat for bald eagles, outstanding scenery and outstanding opportunities for solitude and primitive and unconfined recreation would be preserved.

Acquisition of the 200 acres of private inholdings would benefit the above wilderness values of the WSA. This would prevent disturbance from potential incompatible uses in the long term, ensuring the preservation of opportunities for solitude and a natural setting for primitive and unconfined recreational pursuits in the WSA. Acquisition would enhance these opportunities since the private property is located where recreational pursuits occur. If the inholdings were acquired, this also would prevent disturbance to the WSA's outstanding scenery and wildlife populations, and would benefit bald eagle habitat.

Completion of a 4.5-mile foot trail that is a component of the Snake River Breaks Trail would take place under the recommendation. This trail would contribute to increased recreational use of the WSA because it would increase opportunities for viewing wildlife, backpacking and hunting. Three miles of the hiking trail have been completed, and under the recommendation, the remaining 1.5 miles would be constructed. It traverses the part of the WSA which is most screened from activities outside the WSA. Continued development of the trail would cause only a minimal disturbance to naturalness because it would involve only the placement of unobtrusive rock cairns.

Proposed transplants of bighorn sheep and Columbia sharp-tailed grouse (a Federal candidate species for listing under the Endangered Species Act) would occur. Bighorn sheep and sharp-tailed grouse are native to the WSA, and reintroduction would add these species to the WSA's special features.

Much of the riparian vegetation of Black Canyon Creek is pristine because the cliffs have prevented livestock grazing. In addition, the WSA contains three plant species which are candidate species for listing under the Endangered Species Act, and habitat for bald eagles, a Federally listed threatened species in Oregon.

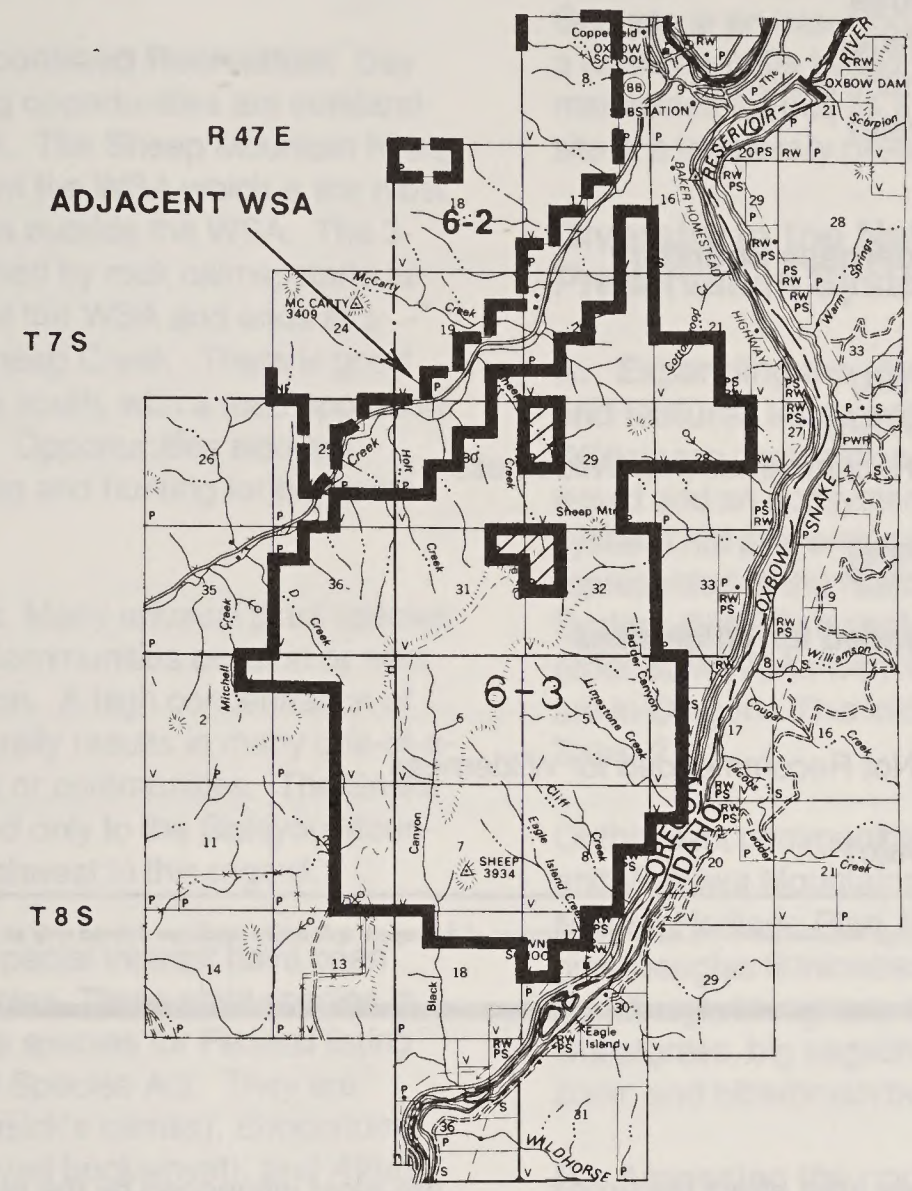
Wilderness designation of this WSA would add an ecosystem (Rocky Mountain Forest Province/ Wheatgrass-Bluegrass) not presently represented in Oregon, and represented in the National Wilderness Preservation System by only one area. There are only two other WSAs in the state with this ecosystem, and neither of them are recommended for wilderness designation.

The 900-acre northern extension of the WSA, McCarty Creek and associated drainages, would be included in the recommendation as the creek and its drainages offer a diversity in terrain and vegetative screening. In addition, no vehicle access presently exists in the 900 acres, as the topography is steep and rugged.

3. Criteria Considered in Developing the Wilderness Recommendations

Wilderness Characteristics

A. Naturalness: The Sheep Mountain WSA is generally natural with minimal human imprints. Six



RECOMMENDED FOR WILDERNESS

RECOMMENDED FOR NONWILDERNESS (None)

LAND OUTSIDE WSA RECOMMENDED FOR WILDERNESS (None)

SPLIT ESTATE (None)

STATE (None)

PRIVATE

- N -

Sheep Mountain Proposal

MAP-1

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MILES

OR-6-3

January, 1991

Table 1 - Land Status and Acreage Summary of the Study Area

	Acres
Within Wilderness Study Area	
BLM (surface subsurface)	7,040
Split Estate (BLM surface only) [1]	0
Inholdings (state, private) [1]	200
Total	7,240
Within Recommended Wilderness Boundary	
BLM (within WSA)	7,040
BLM (outside WSA)	0
Split Estate (within WSA) [1]	0
Split Estate (outside WSA) [1]	0
Total BLM Land Recommended for Wilderness	7,040
Inholdings (state, private) [1]	200
Within Area Not Recommended for Wilderness	
BLM	0
Split Estate [1]	0
Total BLM Land Not Recommended for Wilderness	0
Inholdings (state, private) [1]	0

[1]Appendix 1 is a detailed description of inholdings included within the study. For purposes of this report, split-estate lands are defined only as those lands with Federal surface and non-Federal subsurface (minerals).

developments within the study area affect the area's naturalness: a hiking trail, a radio repeater station located near the summit of Sheep Mountain, a log cabin, two spring developments, and a way that extends 0.3 mile into the southern end of the WSA. These developments are fairly well dispersed, visually influencing approximately 700 acres (10 percent) of the WSA.

With the exception of the radio repeater, these developments inside the WSA are well screened by topography and vegetation. The radio repeater site sits on top of a knoll near the summit of the mountain and can be seen from much of the summit. However, it is a minor intrusion because of its small size and neutral color.

Developments outside the study area, but visible from within the WSA, include: fences; Brownlee, Oxbow and Hells Canyon reservoirs on the Snake River; houses; resorts; powerlines; dams and roads. These are all located within 2 miles of the WSA. For the most part, however, the portions of the WSA that are most influenced by the outside developments are the steep slopes facing the developments, which are the areas that are least likely to be used by wilderness visitors. The developments cannot be seen from the relatively flat top of Sheep Mountain.

The WSA has good quality habitat for the 25 to 40 elk and 50 to 150 mule deer that summer in the WSA. In addition, the elevational relief within the WSA provides numerous niches for many other wildlife species that include black bears, mountain lions, bobcats, red-tailed hawks, kestrels, songbirds, chukar, blue grouse, rodents and coyotes.

B. Solitude: Opportunities for solitude are outstanding in the WSA where topography screens the visitor from outside sights and sounds. The deeply-cut drainages and dense riparian vegetation in the northern portion of the WSA provides both topographic and vegetative screening. The best places to find seclusion within the study area are at the head of Sheep Creek, the head of Black Canyon Creek and its associated flat, and in the southwest corner of the WSA. A combination of coniferous

vegetation and topography along upper Sheep Creek provides effective screening. Topography provides screening in upper Black Canyon Creek. This large, flat basin is encircled by a slightly higher lip formation which confines the visitor's view to the basin and higher elevations outside the WSA.

C. Primitive and Unconfined Recreation: Day hiking and backpacking opportunities are outstanding in most of the WSA. The Sheep Mountain hiking trail traverses the part of the WSA which is the most screened from activities outside the WSA. The 3-mile trail, which is marked by rock cairns, starts in the southwest corner of the WSA and ends at a cabin at the head of Sheep Creek. There is good vehicular access to the south, with a road approaching the hogback ridge. Opportunities also are excellent for sightseeing and hunting for big game and upland birds.

D. Special Features: Many unusual plant species and specialized plant communities occur in or near the Snake River Canyon. A high concentration of endemic species generally results in many one-of-a-kind plant associations or communities. The Snake River Canyon is second only to the Siskiyou Mountains in the Pacific Northwest in this regard.

Four plant species of special interest have been identified in the study area. Three plant species in the WSA are candidate species for Federal listing under the Endangered Species Act. They are *Camassia Cusichii* (Cusick's camas), *Eriogonum thymoides* (Thyme-leaved buckwheat), and *Allium madidum* (Swamp onion). Another plant species identified in the WSA, *Phlox viscida* (Sticky phlox), is under review for possible listing on the Oregon list of Rare, Threatened and Endangered Vascular Plants.

The Snake River Canyon is also important for its biological diversity. It is considered by many botanists to be a center of evolution for many groups of species, botanically linking the Pacific Northwest with regions far to the south, such as the Mojave Desert.

The Snake River, adjacent to the east side of the WSA, and the WSA provide wintering habitat for 75 to 85 northern bald eagles, a species that is Federally listed as threatened in Oregon. Two winter roosts have been located within the WSA boundaries. One roost containing 20 to 30 eagles is located inside the WSA near the eastern boundary. The second roost, which was discovered during the winter of 1988/1989, contains approximately 55 eagles. In addition, a bald eagle roosting area has been located 300 yards outside of the WSA's western boundary.

The WSA contains suitable habitat for bighorn sheep and sharp-tailed grouse transplants. Sharp-tail grouse is a Federal candidate species for listing under the Endangered Species Act.

Two cultural sites have been identified in the WSA. One site is an intact log cabin, located at the head of a creek near the hiking trail. The cabin has been maintained for use as a hunting cabin. The second site is a temporary prehistoric hunting camp.

Diversity in the National Wilderness Preservation System

A. Expanding the diversity of natural systems and features as represented by ecosystems: Wilderness designation of the Sheep Mountain WSA would add an ecosystem (using the Bailey-Kuchler system) not presently represented in Oregon, and represented in the National Wilderness Preservation System (NWPS) by only one area. There are two other BLM WSAs with this ecosystem, both of which are in Oregon. This information is summarized in Table 2.

Of the plant communities listed in the Ochoco, Blue and Wallowa Mountains section of the Oregon Natural Heritage Plan, the WSA contains ponderosa pine-Douglas fir/ninebark, bluebunch wheatgrass-Sandberg's bluegrass, Idaho fescue-bluebunch wheatgrass, big sagebrush/bunchgrass in the forest zone, and bitterbrush/bunchgrass.

B. Assessing the opportunities for solitude or primitive recreation within a day's driving time (five hours) of major population centers: The Sheep Mountain WSA is within a five-hour drive of three major population centers (over 100,000). Table 3 summarizes the number and acreage of designated areas and other BLM study areas within a five-hour drive of the population centers.

C. Balancing the geographic distribution of wilderness areas: The Sheep Mountain WSA would not contribute to balancing of the geographic distribution of areas within the National Wilderness Preservation System. There are eight designated wilderness areas within 100 miles of the WSA.

Manageability

(The area must be capable of being effectively managed to preserve its wilderness character.)

The entire Sheep Mountain WSA could be managed as wilderness. The area's relatively uniform shape

Table 2 - Ecosystem Representation

Bailey-Kuchler Classification	NWPS Areas areas	NWPS Areas acres	Other BLM Studies areas	Other BLM Studies acres
Province/ Potential Natural Vegetation				
NATIONWIDE				
Rocky Mountain Forest Province/ Wheatgrass-bluegrass	1	1,038	2	7,498
OREGON				
	0	0	2	7,498

Table 3 - Wilderness Opportunities for Residents of Major Population Centers

Population Centers	NWPS Areas areas	NWPS Areas acres	Other BLM Studies areas	Other BLM Studies acres
Boise, Idaho	16	4,741,570	126	5,060,460
Yakima, Washington	48	5,447,447	8	67,186
Richland/Kennewick/Pasco, WA	45	5,816,707	8	67,186

and inaccessibility due to very steep terrain would help preserve the area's wilderness character. Manageability would be enhanced if the private inholdings were acquired. Acquisition of the inholdings would prevent potential adverse effects from access to, and incompatible surface-disturbing activities on, these parcels.

Energy and Mineral Resource Values

The U.S. Geological Survey and U.S. Bureau of Mines evaluated the 7,040 acres of public land of the study area for mineral resources and mineral resource potential. According to their 1988 USGS Bulletin 1741-B "Mineral Resources of the Sheep Mountain Wilderness Study Area, Baker County, Oregon," no mineral resources were identified. A low potential exists for silver, lead, zinc, copper and gold in polymetallic vein deposits in the southeastern part of the WSA. The study area has no geothermal energy, uranium and thorium, or oil and gas resource potential.

The primary source for evaluation of the geology and energy and mineral potential of the Sheep Mountain WSA was a report prepared by WGM, Inc., a consulting firm under contract with BLM. Using this report, the WSA was reevaluated by BLM geologists in 1987. Based on indirect evidence and quantitatively-minimal direct evidence, the WSA was considered to have low potential for the occurrence of energy resources. Based on indirect evidence, the entire WSA was considered to have moderate potential for the occurrence of copper, gold and silver. (This potential was based on the presence, in the southeastern corner of the WSA, of the same pre-Tertiary rocks that are exposed north of the WSA and which are mineralized in many locations.) In

summary, the USGS survey found lower potentials for silver, copper, and gold and energy resources than was previously thought to occur.

As of May, 1991, there were no mining claims in this WSA.

Local Social and Economic Considerations

Livestock use of the current level of 30 AUMs and recreation use totalling 500 visitor days per year are the primary resource outputs that generate economic activity in the WSA. Local personal income generated annually from these existing uses levels amounts to approximately $360 for livestock grazing and $6,000 related to recreational use of the WSA, for an overall total of $6,360.

Under the recommendation, livestock use would remain at 30 AUMs and overall recreation use would increase by 500 visitor days per year. Annual local personal income generated from resource outputs in the WSA would increase by approximately $6,000. There were no social issues identified with study of this WSA.

Summary of WSA-Specific Public Comments

Public involvement has occurred throughout the wilderness review process. Certain comments received during the inventory process and early stages of the EIS preparation were used to develop significant study issues and various alternatives for the ultimate management of those lands found to have wilderness values.

During formal review of the draft EIS, a total of 23 comments specifically addressing the Sheep Mountain WSA were received. Of those, 17 were written and six were oral statements received from public hearings on the draft and supplemental EIS. Nine of the commenters supported the recommendation and 14 supported no wilderness.

Commenters agreeing with the recommendation said BLM overstated manageability problems and supported acquiring the inholdings.

One commenter stated no formal position, but just said that the region "already has enough wilderness."

One commenter disagreed with the recommendation on the basis of the WSA's mineral values, saying that Sheep Mountain does have a moderate potential for gold and copper deposits, and that it is a high priority exploration area in Oregon.

Commenters who supported no wilderness said that the area in which visitors can find solitude is small, the opportunities for solitude and primitive and unconfined recreation are limited to a small number of acres in the WSA, the WSA's size limits the potential for extensive recreational use without overcrowding, and that the cost of administration if designated would be excessive in relation to the "small area of solitude represented in the WSA." Another commentor said BLM should acquire the inholdings and choose the All Wilderness alternative.

Another commenter favoring no wilderness said that wilderness designation is not needed because "the WSA is in the same natural state it has been for decades, and so no restrictive designation is needed." One commentor did not support wilderness designation because the study area is not contiguous to any large wilderness in the area. Another disagreed with the EIS that says "unnatural features are generally not noticeable within the Sheep Mountain study area," saying that "the several man-made developments outside the WSA are visible from every topographic promontory that offers a panoramic view of the region." One commentor stated outside sights and sounds are not appropriate criteria for analysis.

Private property that could prevent public access to the WSA was another reason given for supporting no wilderness. Commenters said there would be a potential for trespass due to the proximity of private land in and around the WSA.

One agency commented that wilderness designation would add the Sheep Mountain WSA to the Hells Canyon NRA, and that the WSA's threatened and endangered species and wide variety of plant communities would be protected. Another agency said there was inadequate data on the utility corridor, that Idaho Power Company has a 69-kV powerline between Brownlee and Oxbow dams and north of Oxbow to Hells Canyon. No WSA-specific comments were received from any other federal, state or local agencies.

There was one comment letter received on the final EIS.

Impacts on Resources

The following comparative impact table summarizes the effects on pertinent resources for all of the alternatives considered, including designation or nondesignation of the entire area as wilderness.

Table 4 - Comparative Summary of the Impacts by Alternative

Issue Topics	Recommendation (All Wilderness with Acquisitions Alternative)
Impacts on Wilderness Values	Wilderness designation of 7,240 acres (assuming acquisition of the 200 acres of private property) would protect and enhance existing wilderness values.
Impacts on Energy and Mineral Development	No impact to energy or mineral development is expected.
Impacts on Wildlife	Wildlife populations and habitats would be maintained throughout the WSA. Bighorn sheep and sharp-tailed grouse transplant would occur.
Impacts on Vegetation	The 0.3 mile of way would revegetate. Little or no change would occur to vegetation on the rest of the area.
Impacts on Watershed	Watershed condition and water quality would remain in good condition.
Impacts on Livestock Grazing	Livestock use would remain 30 AUMs. Vehicle use on 0.3 mile of way would be precluded, causing minor inconvenience to livestock operations.
Impacts on Recreation Use	The area's recreation use level of 500 visitor days per year would increase to approximately 1,000 visitor days per year.
Impacts on Local Personal Income	Annual local personal income would increase by approximately $6,000.

All Wilderness Alternative	No Wilderness/No Action Alternative
Wilderness designation of the entire 7,040 acres within the Sheep Mountain WSA would result in the protection and enhancement of existing wilderness values.	In the absence of wilderness designation, there are no projected activities that would impair wilderness values, but further declines are expected from other potential uses over the long term.
No impact to energy or mineral development is expected.	There would be no impact on energy or mineral development in the WSA.
Wildlife populations/habitats would be maintained throughout the WSA. Bighorn sheep and sharp-tailed grouse transplants would occur.	Wildlife populations and habitats would be maintained throughout the WSA. Bighorn sheep, sharp-tailed grouse, and wild turkey transplants would occur.
The 0.3 mile of way would revegetate. Little or no change would occur to vegetation on the rest of the area.	The area's vegetative composition and ecological status would not be affected.
Watershed condition and water quality would remain in good condition.	Water quality and channel conditions of Black Canyon Creek would remain in good condition.
Livestock use would remain 30 AUMs. Vehicle use on 0.3 mile of way would be precluded, causing minor inconvenience to livestock operations.	Livestock grazing use would continue to 30 AUMs in the WSA.
The area's recreation use level of 500 visitor days per year would increase to approximately 1,000 visitor days per year.	The area's recreation use level of 500 visitor days per year would increase to approximately 1,000 visitor days per year.
Annual local personal income would increase by approximately $6,000.	Annual local personal income would increase by approximately $6,000.

Appendix 1 - Estimated Costs of Acquisition of Non Federal Holdings Within Areas Recommended For Designation[1]

Legal Description (Prior to any Subdivision[1]	Total Acreage	Number of Owners (If Parcel has been Subdivided)	Type of Ownership by Estate (Federal, State Private, other)		Presently Proposed for Acquisition (Yes, No)	Preferred Method of Acquisition (Purchase, Exchange, Other)	Estimated Cost of Acquisition	
			Surface Estate	Subsurface Estate			Land Costs	Processing Costs
Parcel #1 T.7S., R.48E., Sec. 29 W1/2NW1/4	80		Private	Private	Yes	Purchase	$12,000	$9,000
Parcel #2 T.7S., R.48E., Sec. 31 NE1/4NE1/4 Sec. 32 W1/2NW1/4	40		Private	Private	Yes	Purchase	$18,000	$9,000

[1]The estimated costs listed in this appendix in no way represent a formal appraised value of the land or mineral estate, but are rough estimates based on sales or exchanges of lands or mineral estates with similar characteristics to those included in the WSA. The estimates are for purposes of establishing a range of potential costs to the government of acquiring non-Federal holdings and in no way represent an offer to purchase or exchange at the cost estimate included in this appendix. Processing costs are all miscellaneous expenses other than land costs. These would include work month costs, appraisals, title work, escrow costs, etc. All lands identified in this table are in Oregon.

Mountain Lakes Wilderness Study Area

1. The Study Area —334 acres

The Mountain Lakes Wilderness Study Area (WSA) (OR 11-1) is located 15 miles northwest of Keno, Oregon, in Klamath County. Oregon State Highway 140 is located approximately 3 miles northeast of the WSA and Oregon State Highway 66 is approximately 13 miles south of the WSA. The 23,071 acre Mountain Lake Wilderness, administered by the U.S. Forest Service, forms the western boundary of this rectangular shaped WSA. Private lands surround the WSA on the north, east and south. The entire 334 acres is public land managed by the BLM. (See Table 1.)

The WSA is characterized by several streams with drainages flowing east to Aspen Lake located outside the WSA, and sparse conifer stands and dense brushfields. The WSA lies on the steep, east slope of Aspen Butte.

The WSA was studied under Section 202 of the Federal Land Policy and Management Act and was included in the Oregon Wilderness Environmental Impact Statement filed in February of 1990. Section 202 of FLPMA refers to areas that are considered to possess wilderness character only in association with adjoining lands designated wilderness by other agencies. The U.S. Forest Service in letters sent to BLM in 1985 and 1986 indicated an interest in managing the Mountain Lakes WSA as an addition to the Mountain Lake Wilderness currently administered by Winema National Forest.

Two alternatives were analyzed in the EIS: an all wilderness alternative, which is the recommendation of this report; and a no wilderness/no action alternative. Under the all wilderness alternative, all 334 acres of the WSA would be recommended suitable for wilderness as an addition to the existing Mountain Lake Wilderness. The no wilderness/no action alternative would recommend the entire WSA nonsuitable as wilderness.

2. Recommendation and Rationale

—334 acres recommended for wilderness
0 acres recommended for nonwilderness

The recommendation is to designate all 334 acres of the Mountain Lakes WSA as a wilderness addition to

the existing Mountain Lake Wilderness administered by the U.S. Forest Service. This is the environmentally preferable alternative as it would result in the least change to the natural environment over the long term.

The recommendation would serve to preserve wilderness values on the 334 acres of the Mountain Lakes WSA, and to enhance the wilderness values present in the adjoining Mountain Lake Wilderness. The U.S. Forest Service, in a letter dated 11/26/85, has stated support for management of the WSA as an addition to the Mountain Lake Wilderness. A second letter dated 9/26/86 also stated the BLM recommendation was a viable alternative in the view of the Winema National Forest Supervisor. This recommendation would help maintain the integrity of the existing wilderness and would benefit the visual character of some of the lands visible from the wilderness by reducing the contrast created by harvest practices occurring on adjacent private lands. This would add 334 acres to the existing 23,071-acre wilderness. Overall manageability of the Mountain Lake Wilderness Area would be improved by the expanded land base.

3. Criteria Considered in Developing the Wilderness Recommendations

Wilderness Characteristics

A. Naturalness: The Mountain Lakes WSA is generally in a natural condition. Steep slopes and limited access have historically precluded timber management or other forms of disturbance.

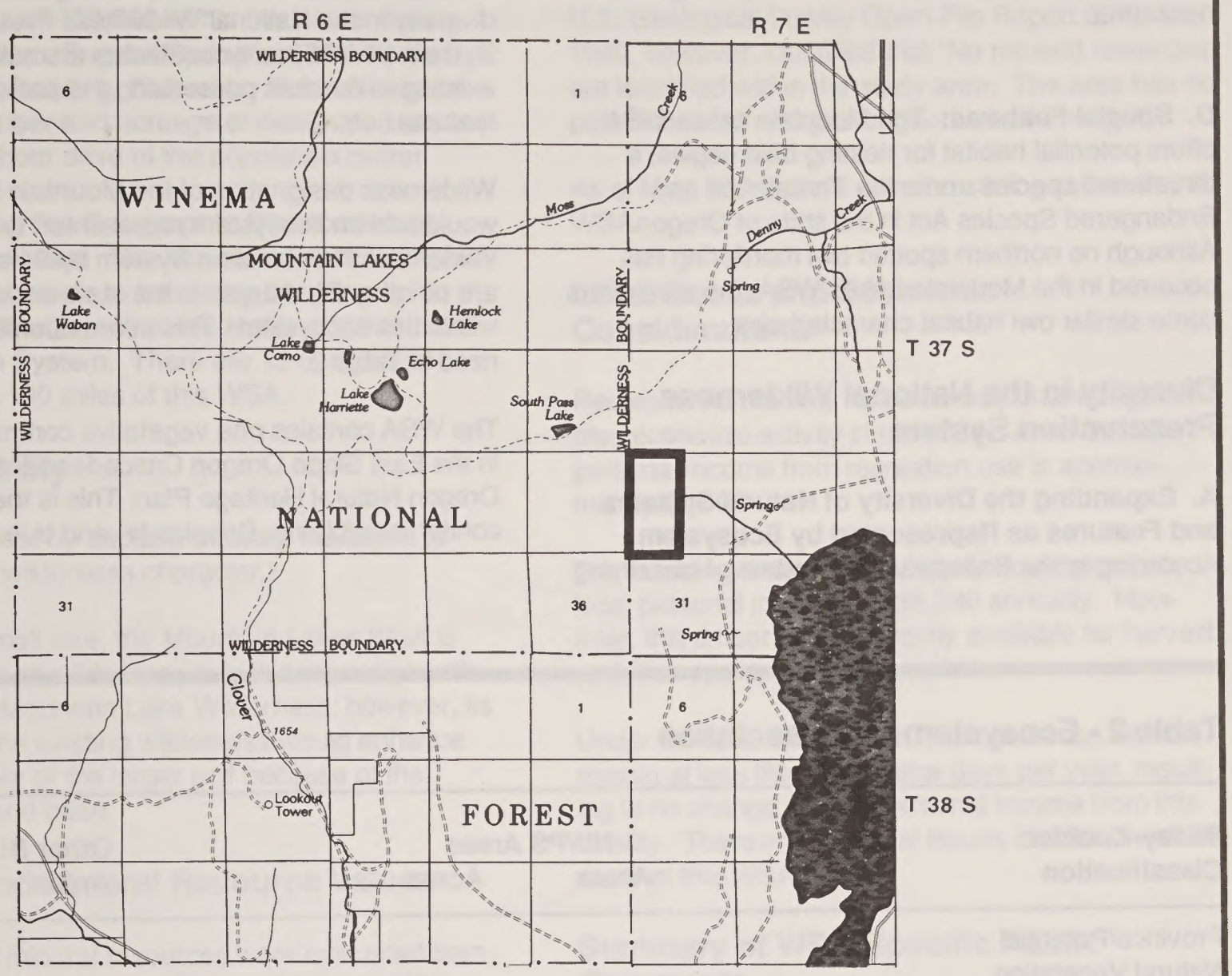
Wildlife such as deer, elk, bear, coyote, and quail use the area seasonally.

B. Solitude: Opportunities for solitude can only be considered outstanding when the WSA is considered in conjunction with the existing Mountain Lake Wilderness, due to the small size of the area and the intense timber management activities on private lands on all but the west side of the WSA. Vegetative screening helps to provide opportunities for solitude.

Table 1. Land Status and Acreage Summary of the Study Area

	Acres
Within Wilderness Study Area	
BLM (surface and subsurface)	334
Split-Estate[1]	0
Inholdings (State, private)	0
Total	334
Within the Recommended Wilderness Boundary	
BLM (within WSA)	334
BLM (outside WSA)	0
Split-Estate (within WSA)[1]	0
Split-Estate (outside WSA)[1]	0
Total	334
Inholdings (State, private)	0
Within the Area Not Recommended for Wilderness	
BLM	0
Split-Estate[1]	0
Total	0
Inholdings (State, private)	0

[1]For purposes of this report, split-estate lands are defined only as those lands with federal surface and non-Federal subsurface (minerals).



RECOMMENDED FOR WILDERNESS

RECOMMENDED FOR NONWILDERNESS (None)

LAND OUTSIDE WSA RECOMMENDED FOR WILDERNESS (None)

SPLIT ESTATE (None)

STATE (None)

PRIVATE (None)

- N -

Mountain Lakes Proposal

MAP-1

0 1 2 3

MILES

OR-11-1

January, 1991

C. Primitive and Unconfined Recreation: Opportunities for primitive recreation include hunting and hiking, but these activities can only be considered outstanding in conjunction with the adjoining wilderness area.

D. Special Features: The Mountain Lakes WSA offers potential habitat for nesting bald eagles, a threatened species under the Threatened and Endangered Species Act in the state of Oregon. Although no northern spotted owl monitoring has occurred in the Mountain Lakes WSA, the area offers some similar owl habitat characteristics.

Diversity in the National Wilderness Preservation System

A. Expanding the Diversity of Natural Systems and Features as Represented by Ecosystem: According to the Bailey-Kuchler system of classifying ecosystems, the Mountain Lakes WSA is located in the Pacific Forest Province and the potential natural vegetation is Fir-hemlock forest. The addition of Mountain Lakes WSA would not significantly add to diversity in the National Wilderness Preservation System (NWPS) as it constitutes a small addition to existing wilderness possessing the same basic features.

Wilderness designation of the Mountain Lakes WSA would add an ecosystem represented in the National Wilderness Preservation System by 24 areas. There are no other BLM areas in the state under study within this ecosystem. This information is summarized in Table 2.

The WSA contains one vegetative community listed in the East Slope Oregon Cascades section of the Oregon Natural Heritage Plan. This is the mixed conifer forest (pine, Douglas fir, and true fir).

Table 2 - Ecosystem Representation

Bailey-Kuchler Classification	NWPS Areas		Other BLM Studies	
	Areas	Acres	Areas	Acres
Province/Potential Natural Vegetation				
Pacific Forest				
	NATIONWIDE			
Fir-Hemlock Forest	24	1,103,850	0	0
	OREGON			
	12	545,701	0	0

Table 3. Wilderness Opportunities for Residents of Major Population Centers

Population Centers	NWPS Areas		Other BLM Studies	
	Areas	Acres	Areas	Acres
Medford, OR	31	2,440,081	21	730,038
Eugene/Springfield, OR	42	2,859,994	43	770,436
Redding, CA	15	1,264,503	11	344,633

B. Assessing the Opportunities for Solitude or Primitive Recreation Within a Day's Driving Time (five hours) of Major Population Centers: There are three standard metropolitan statistical areas with populations over 100,000 within five hours' driving time of the area: Eugene/Springfield and Medford, Oregon; and Redding, California. Table 3 summarizes the number and acreage of designated areas within a five hour drive of the population center.

C. Balancing the Geographic Distribution of Wilderness Areas: The Mountain Lakes WSA would not contribute to balancing the geographic distribution of areas within the National Wilderness Preservation System. There are 13 designated areas within 100 miles of this WSA.

Manageability

(The area must be capable of being managed to preserve its wilderness character.)

Due to its small size, the Mountain Lakes WSA is manageable as wilderness only in conjunction with the existing Mountain Lake Wilderness; however, its addition to the existing wilderness would enhance manageability of the larger unit because of the expanded land base.

Energy and Mineral Resource Values

Energy and mineral resources were evaluated from available BLM and United States Geological Survey (USGS) geologic data. The evaluation consisted of both field examinations and analysis of recently published USGS Conterminous United State Mineral Assessment Program (CUSMAP) data.

Based upon indirect evidence, the entire WSA was considered to have a moderate potential for geothermal resources. Data analysis indicates known geothermal resources in the area, including a warm (94 degrees F) spring 6 miles northeast of the WSA, and the Klamath Falls Known Geothermal Resource Area 8 miles to the southeast.

The joint USGS/Bureau of Mines report issued as U.S. Geological Survey Open-File Report 89-541 in 1989, however, identified that "No mineral resources are identified within the study area. The area has no potential for oil and gas or geothermal energy."

As of May, 1991, there were no mining claims in this WSA.

Local Social and Economic Considerations

Recreation is the only resource output which generates economic activity in the WSA. Annual local personal income from recreation use is approximately $1,000.

The standing timber, if harvested, would generate local personal income of $25,380 annually. However, this timber is not currently available for harvest under an approved land use plan.

Under the recommendation, recreation use would remain at less than 100 visitor days per year, resulting in no change in local personal income from this activity. There are no social issues identified with the study of this WSA.

Summary of WSA-Specific Public Comments

No public comments were received specific to this WSA.

Impacts on Resources

The following comparative impact table summarizes the effects on pertinent resources for the two alternatives considered, designation or nondesignation of the entire area as wilderness.

Table 4. Comparative Summary of Impacts by Alternative

Issue Topics	Recommendation (All Wilderness Alternative)	No Wilderness/No Action Alternative
Impacts on Wilderness Values	Wilderness designation of 334 acres would protect wilderness values and add those acres to the existing Mountain Lake Wilderness.	In the absence of wilderness designation, projected management actions would impair the wilderness values of the entire 334 acres.
Impacts on Energy and Mineral Development	There would be no impact to energy or mineral development since none is projected.	There would be no impact to energy and mineral development in the WSA.
Impacts on Vegetation	No change would occur to vegetation in the area.	Intensive timber management practices would change the natural vegetation on all 334 acres.
Impacts on Wildlife	Habitat for game (including big game, upland game and furbearers), non game species and their existing levels of populations would be maintained throughout the WSA.	Wildlife populations would sustain minor and temporary levels of harassment due to vehicle use on projected roads during management activities. Changes in habitat would improve forage conditions for deer and elk and result in displacement of wilderness-dependent species to the adjacent wilderness area.
Impacts on Watershed	Water quality and stream conditions would be maintained.	Water quality would be reduced and stream conditions altered by projected timber management activities.
Impacts on Soils	There would be no impacts on soils.	Soil productivity would be reduced in the area.
Impacts on Wood Products Harvest	Projected annual harvests of 94 Mbf would be foregone.	Standing timber volume of 7.5 million board feet would be available for harvest. All 334 acres would managed for commercial timber production and the projected annual harvest of 94 Mbf would occur.
Impacts on Recreation Use	Recreation use would remain at less than 100 visitor days per year.	The area's overall level of recreation use would increase to approximately 100-200 visitor days per year.
Impacts on Local Personal Income	Local personal income would remain at approximately $1,000 annually.	Local personal income would increase by approximately $27,000 annually.

Soda Mountain Wilderness Study Area

1. The Study Area —5,640 acres

The Soda Mountain Wilderness Study Area (WSA OR-11-17) is located 18 miles southeast of Ashland, Oregon, in Jackson County. Medford, Oregon, the county seat, is approximately 30 miles northwest of the study area. Oregon State Highway 66 is approximately 4 miles north of the WSA boundary, and Interstate 5 lies approximately 6 miles west of the area. The California border passes very close to the WSA. The area is bounded on the south, west, and northwest by low standard dirt roads, and on the east by a powerline. The northern boundary is on the flanks of Soda Mountain, and the western boundary is along Lone Pine Ridge. Adjacent lands are a mixture of private and public lands.

The WSA, which has an irregular shape, contains 5,640 acres, all of it BLM land (see table 1). About half of this WSA is public domain lands; the remainder is O&C lands, most of which were classified as non-timber or low intensity timberlands under the Timber Production Capability Classification (TPCC) for the current 10-year timber management plan. The TPCC has recently been updated and 583 acres of O&C timberlands have tentatively been reclassified as suitable commercial forests. While under the current timber management plan these lands are not allocated to timber production; all suitable forest land could be considered for allocation to timber production or 312 acres of suitable land could be allocated to spotted owl habitat. The study area lies on the steep, south-facing slopes of the Soda Mountain area.

It contains ridges and peaks varying in elevation from 2,800 to 5,700 feet. Camp Creek, Dutch Oven Creek and Salt Creek dissect the WSA. Vegetation is varied, with stands of mixed conifers and hardwoods; extensive dense brushfields; and some open, grassy slopes.

The WSA was studied under Section 603 of the Federal Land Policy and Management Act (FLPMA), and was included in the Final Oregon Wilderness Environmental Impact Statement (EIS) filed February, 1990. There were three alternatives analyzed in the EIS; an all wilderness alternative, a partial wilderness alternative where 5,057 acres would be designated as wilderness and 583 acres would be released for uses other than wilderness, and a no wilderness/no action alternative. A fourth alternative, partial wilderness where additional acreage (255 acres) would be recommended suitable for designa-

tion and where 28 acres would be designated nonsuitable for wilderness, is the recommended action. The 255 acres of additional acreage is BLM land adjacent to or surrounded by the WSA. These lands are shown on Map 1.

2. Recommendation and Rationale

—5,867 acres recommended for wilderness
28 acres recommended for nonwilderness

The recommendation for this WSA is to designate 5,612 acres of the WSA plus 255 acres of BLM lands adjacent to or surrounded by the WSA as wilderness. The all wilderness alternative is considered to be the environmentally preferable alternative since it would result in the least change from the natural environment over the long term. However, the recommendation would be implemented in a manner which would use all practical means to avoid or minimize environmental impacts.

The recommended action would preserve the area's unusual ecological diversity, spotted owl and black-tailed deer habitat, and wilderness values.

Southwest Oregon is a meeting place of a variety of climates, soils and topography, resulting in an extremely diverse vegetation. While the WSA is primarily in the Klamath (Siskiyou) Mountain province, there is interfingering with contiguous provinces (Cascades, Great Basin and Western Oregon Interior Valleys) contributing to great vegetational diversity and ecotonal overlap. Throughout the WSA there are three major vegetative types: stands of mixed conifers and hardwoods; extensive dense, brushy areas; and some open, grassy slopes.

The climatic conditions, terrain, and plant communities in the WSA form one of the most unusual mosaics of wildlife habitat types found in southwestern Oregon. The WSA provides spring, fall and winter range for a large herd of migratory black-tailed deer. The south slopes and lower elevations (under 2,500 feet) ranging into California constitute crucial winter range for this herd. The oak-shrub plant community on these lower elevations supplies forage for deer during periods when the ground is covered with snow. The WSA also contains approximately 1,000 acres of a 2,200-acre Spotted Owl Management Area (SOMA). This SOMA was established under an ODFW/BLM cooperative agreement entitled, "BLM-ODFW Agreement for Spotted Owl Management on BLM Lands in Western Oregon," to protect spotted owl habitat. The northern spotted owl is listed as a Federal Threatened Species and a state of Oregon Threatened Species.

The recommendation would also preserve the area's wilderness values. The vast majority of area is in a natural condition and provides outstanding opportunities for solitude and primitive recreation. Scenic vistas are numerous along ridges with the steep terrain, three creek drainages, and dense vegetation providing secluded locations throughout the remainder of the area.

Conflicts with other resource uses in this WSA are limited. Grazing practices would be allowed to continue, timber volumes are minimal, and there are no mines, significant prospects or mining claims within the WSA. There is a moderate potential for oil and gas but no oil/gas, geothermal or coal leases within the WSA. No energy or mineral development is projected.

3. Criteria Considered in Developing the Wilderness Recommendations

Wilderness Characteristics

A. Naturalness: The Soda Mountain WSA generally has a natural appearance. The steep terrain, dense brushfields, limited stands of commercial timber and difficult access have all contributed to the area remaining in an essentially natural state. The dense vegetation and convoluted topography obscure what few unnatural features exist.

The wilderness study area contains good, healthy populations of black-tailed deer, bear and coyotes. There is also a small herd of elk west of the wilderness study area that is expected to expand into the area in the near future. Portions of the area contain abundant quail. These animals are all hunted in the WSA.

The area also contains mountain lions and bobcats. There is evidence of a pair of golden eagles in the study area. Their nest location is not known, but it is believed that they nest within the study area boundary based on repeated sightings of young adults in the area. The area contains approximately 1,000

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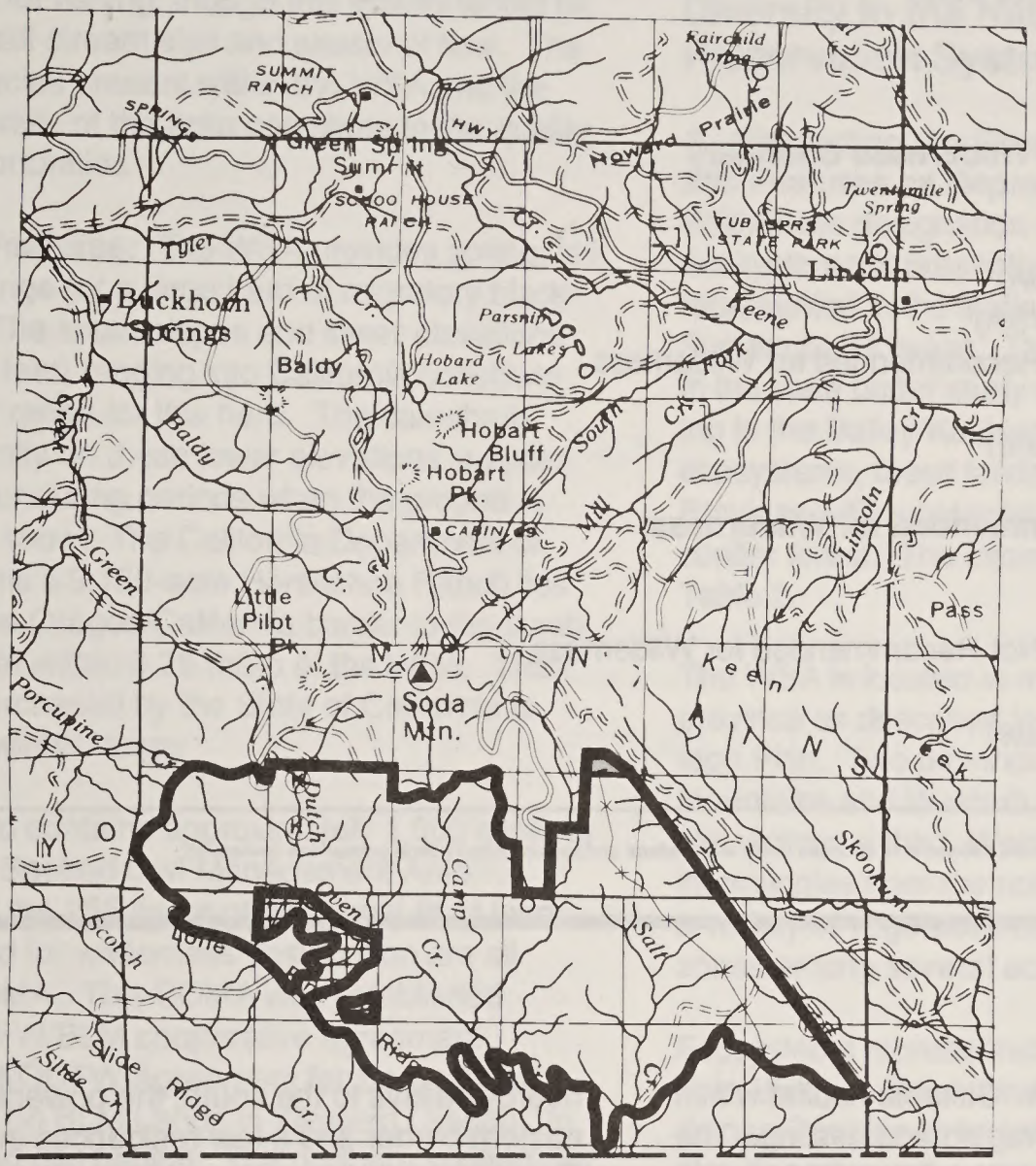


RECOMMENDED FOR WILDERNESS

RECOMMENDED FOR NONWILDERNESS (None)

LAND OUTSIDE WSA RECOMMENDED FOR WILDERNESS

SPLIT ESTATE (None)

STATE (None)

PRIVATE (None)

- N -

Soda Mountain Proposal

MAP-1

0 1 2 3

MILES

OR-11-17

January, 1991

Table I. Land Status and Acreage Summary of the Study Area

	Acres
Within Wilderness Study Area	
BLM (surface and subsurface)	5,640
Split-Estate (BLM surface only) [1]	0
Inholdings (Private)	0
Total	5,640
Within the Recommended Wilderness Boundary	
BLM (within WSA)	5,612
BLM (outside WSA)	255
Split-Estate (within WSA)[1]	0
Split-Estate (outside WSA)[1]	0
Total BLM Land Recommended for Wilderness	5,867
Inholdings (State, Private) [1]	0
Within the Area Not Recommended for Wilderness	
BLM	28
Split-Estate[1]	0
Total BLM Land Not Recommended for Wilderness	28
Inholdings (State, Private) [1]	0

[1]For purposes of this report, split-estate lands are defined only as those lands with Federal surface and non-Federal subsurface (minerals).

acres of a 2,200-acre SOMA. Suitable habitat within the WSA is likely used for foraging and nesting. The presumed nesting area is outside of the WSA boundary.

Unnatural features within the WSA include 3.5 miles of drift fence near the eastern boundary, a well-used campsite on Camp Creek and 2 miles of way. The way extends from the powerline on the eastern boundary through the southeast portion of the WSA to the Schohiem Road.

The drift fence is visible from a small area within the study area. The campsite on Camp Creek is concealed by surrounding trees and is visible only from within the camp area itself. The way does not create an impact on much of the area. These developments can be seen from only a very small percentage of the WSA.

Outside influences visible from within the WSA include timber harvest activities on adjacent lands, farming activities and hydropower developments in nearby valleys to the south, the powerline on the eastern border and a few residences in the Agate Flat area on the southeast edge of the WSA. These sights are visible from a few portions of the WSA and, as perceived by the average visitor, would not detract from the wilderness experience. Since most visitor use would occur in the creek drainage, the outside developments would not be visible in most cases.

B. Solitude: The steep terrain, three creek drainages, and dense vegetation provide outstanding opportunities for solitude within the WSA. Vegetative and topographic screening combine to provide secluded locations throughout the area.

Outside sights and sounds affecting the WSA's opportunity for solitude are minor and are associated with timber harvest activities on adjacent lands and traffic on boundary roads.

C. Primitive and Unconfined Recreation: The study area provides outstanding opportunities for

hiking, camping, horseback riding and hunting. The Pacific Crest National Scenic Trail traverses the northwestern portion of the WSA. There is botanical diversity and opportunities for observing birds and other animals. Scenic vistas are numerous. The three stream drainages are interesting and challenging for short backpacking trips. There are some opportunities for fishing, though this activity would be limited by small stream size and seasonal flow. The variety of species present within the WSA and the geologic diversity of the area contribute to the quality of these opportunities.

D. Special Features: The WSA provides spring, fall and winter range for a large herd of migratory black-tailed deer. The south slopes and lower elevations (under 2,500 feet) ranging into California constitute crucial winter range for this herd. The oak-shrub plant community on these lower elevations supplies forage for deer during periods when the ground is covered with snow. The California Department of Fish and Game's 3,150-acre Horseshoe Ranch lies just across the Oregon/California border to the south and extends to within 0.25 miles of the WSA. This ranch was purchased by the State of California to protect deer winter range.

The WSA also contains approximately 1,000 acres of a 2,200-acre Spotted Owl Management Area (SOMA), and the 255 acres of additional BLM lands recommended for wilderness designation are all within the SOMA. This SOMA was established under an ODFW/BLM cooperative agreement entitled, "BLM/ODFW Agreement for Spotted Owl Management on BLM Lands in Western Oregon," to protect spotted owl habitat. The northern spotted owl is listed as a Federal Threatened Species and a State of Oregon Threatened Species.

Approximately one mile of the Pacific Crest National Scenic Trail passes through the northwestern portion of the WSA. The highest recorded annual use for this portion of the trail was 8,600 hikers in 1980.

There is great ecological diversity in the area. The plant communities in the WSA form one of the most unusual mosaics of habitat types found in southwestern Oregon. The variety of stand conditions (seral stages), structure of vegetation and ecotones in these communities form the diversity of wildlife habitats in this WSA. These diverse habitats have unique assemblages of wildlife species. For example, the black-backed woodpecker and hermit thrush are found associated with the white fir-mixed fir forest; the brown towhee and chipping sparrow with the shrub-grassland; and the Lewis' and acorn woodpecker in an oak-shrub community.

It has also been verified that the WSA contains three plant species of special interest: *Calochortus greenei*, *Cirsium ciliolatum*, and *Fritillaria gentneri*. It is also suspected that the WSA contains two additional special interest plant species: *Limnanthes flocossa* ssp. *bellingeriana* and *Mimulus pygmaeus*.

Diversity in the National Wilderness Preservation System

A. Expanding the Diversity of Natural Systems and Features as Represented by Ecosystems: Wilderness designation of this WSA would add an ecosystem not presently represented in Oregon, and represented in the National Wilderness Preservation System by 27 areas. There are no other BLM areas in the state under study with this ecosystem. According to the Bailey-Kuchler method of classifying ecosystems, these lands are in the Sierran Forest Province with a potential natural vegetation of mixed conifer forest. The information is summarized in Table 2.

The WSA is located in more than one physiographic province as described in the Oregon Natural Heritage Plan. Two provinces, Siskiyou (Klamath) Mountains and Western Slopes and Crest, meet in this vicinity; a third, Western Oregon Interior Valleys, intermingles from the north. The WSA thus contains a variety of vegetation because of the transition zones among several ecosystems.

Ecosystems represented from each province include: from Siskiyou Mountains - Mixed Conifers (ponderosa-Douglas-fir forest), mixed evergreen (Douglas-fir and mixed evergreen hardwoods), white fir forest; from the Western Slopes and Crest - Southwestern Oregon mixed conifer forest, xeric and mexic mountain meadows-forest mosaic, grass bald; and from the Western Oregon Interior Valleys - grassland mosaic, chaparral.

B. Assessing the Opportunities for Solitude or Primitive Recreation Within a Day's Driving Time (Five Hours) of Major Population Centers: The WSA is within a five-hour drive of three major population centers: Eugene/Springfield and Medford, Oregon; and Redding, California. Table 3 summarizes the number and acreage of designated areas and other BLM study areas within five-hour drive of the population centers.

C. Balancing the Geographic Distribution of Wilderness Areas: The Soda Mountain WSA would not contribute to balancing the geographic distribution of areas within the National Wilderness Preser-

Table 2. Ecosystem Representation

Bailey-Kuchler Classification	NWPS Areas	NWPS Acres	Other BLM Studies Areas	Other BLM Studies Acres
Province/Potential Natural Vegetation				
NATIONWIDE				
Sierran Forest/ Mixed Conifer Forest	27	1,786,907	6	36,926
OREGON				
	0	0	0	0

Table 3. Wilderness Opportunities for Residents of Major Population Centers

Population Centers	NWPS Areas	NWPS Acres	Other BLM Studies Areas	Other BLM Studies Acres
Eugene/Springfield, OR	42	2,859,994	43	770,436
Medford, OR	31	2,440,081	21	730,038
Redding, CA	15	1,264,503	11	344,633

vation System (NWPS). Within 100 miles of the WSA are 16 existing wilderness areas.

Manageability:

(The area must be capable of being effectively managed to preserve its wilderness character.)

The entire WSA plus the additional recommended lands could be managed as wilderness. Unnatural features are minimal, resource conflicts are few, and the entire WSA plus the additional lands are BLM. However, at times wilderness values along the margins of the area could be affected by timber management activities on adjacent lands.

Adding the additional recommended lands to the southwest portion of the WSA and subtracting the 28 acres from the northeast portion would enhance manageability by eliminating areas of the WSA boundary that were defined only by differences in vegetation. The resulting boundary would then be defined by a road and a section line in these areas which would make location and enforcement of the boundary much more practical.

Energy and Mineral Resource Values

The U.S. Geological Survey and the Bureau of Mines prepared a mineral assessment entitled "Mineral Resources of the Soda Mountain Wilderness Area, Jackson County, Oregon," in 1990 (USGS Bulletin 1744-C). Based upon their findings, the study area has a low potential for geothermal resources and for oil and gas and building stone. Much of the northern part of the WSA has moderate potential for gold and silver.

Based on BLM's Mineral Potential Classification System as applied by the District geologist, the entire WSA is considered to have a low potential for the occurrence of geothermal resources.

Again, based upon the same system, the entire WSA is considered to have a moderate potential for the occurrence of oil and gas because of the possibility of oil bearing rocks at depth.

Based upon BLM's Mineral Potential Classification System, approximately 2,000 acres of the WSA are considered to have a moderate potential for the occurrence of lead, molybdenum, copper, gold, mercury and silver. Molybdenum, copper, silver, and mercury are strategic and critical minerals; however, there are no known deposits of strategic and critical minerals in the WSA.

The differences between the two reports are minor and are the result of new modeling techniques applied to the same geologic data.

As of May 1991, there were no mining claims within this WSA.

Local Social and Economic Considerations

Livestock use at the current level of 317 AUMs, potential timber harvest of an average annual volume of 60.4 Mbf and recreation use totaling 8,500 visitor days per year are the primary resource outputs that generate economic activity in the WSA. Local personal income generated annually from these existing use levels amounts to approximately $3,804 for livestock, grazing, $16,308 for potential timber production and $102,000 related to recreation use of the WSA, for an overall total of $122,112.

The recommendation could preclude (should it become available for harvest) an average annual timber production of 60.4 thousand board feet with a projected loss of $16,308 annually. Increased recreational use of the area would result in an increase of 10,625 visitor days per year or an increase of $127,500 annually. Livestock grazing would remain at 317 AUMS. The total effect on local personal income would be a net increase of approximately $111,000 per year. There were no social issues identified with the study of this WSA.

Summary of WSA-Specific Public Comments

Public involvement has occurred throughout the wilderness review process. Certain comments received during the inventory process and early stages of the EIS preparation were used to develop significant study issues and various alternatives for the ultimate management of those lands found to have wilderness values.

During the formal review of the Draft EIS and Supplemental EIS, a total of 545 comments specifically addressing this WSA were received. Of those, 448 were written statements and 97 were given in public testimony. Approximately 95 percent of the letters and public hearing testimony supported wilderness designation of the WSA.

Those favoring wilderness designation commented on the outstanding ecological diversity and naturalness of the area. Several of these opinions favored making the WSA part of a much larger citizens' proposed wilderness area of 32,000 acres.

The Oregon Department of Forestry recommended no wilderness for this WSA, while the Oregon Department of Fish and Wildlife and the City of Ashland, Oregon both were in favor of all wilderness. No other WSA-specific comments were received from any other Federal, state, or local agencies.

Three comments were received on the Final EIS specific to this WSA.

Impact on Resources

The following comparative impact table summarizes the effects on pertinent resources for all the alternatives considered, including designation and nondesignation of the entire area as wilderness.

Table 4. Comparative Summary of the Impacts by Alternative

Issue Topics	Recommendation (Partial Wilderness with Additions)	All Wilderness Alternative
Impacts on Wilderness Values	Wilderness designation of 5,867 acres would result in protection and enhancement of existing wilderness values.	Wilderness designation of 5,640 acres would result in protection and enhancement of existing wilderness values.
Impacts on Energy and Mineral Development	No impact to energy or mineral development is expected.	No impact to energy or mineral development is expected.
Impacts on Vegetation	Two miles of way would revegetate. Little or no change would occur to vegetation on the rest of the area.	Two miles of way would revegetate. Little or no change would occur to vegetation on the rest of the area.
Impacts on Wildlife	Habitat and population would be maintained throughout and enhanced along the 2 miles of revegetated way.	Habitat and population would be maintained throughout and enhanced along the 2 miles of revegetated way.
Impacts on Watershed	Water quality would remain in generally good condition.	Water quality would remain in generally good condition.
Impacts on Livestock Grazing	There would be no impact to livestock grazing or livestock operators.	There would be no impact to livestock grazing or livestock operators.
Impacts on Soils	Soil productivity would increase on 2 miles of revegetated way. No change to soil productivity on the rest of the area.	Soil productivity would increase on 2 miles of revegetated way. No change to soil productivity on the rest of the area.
Impacts on Commercial Timber	An average annual harvest of 60.4 Mbf would be foregone.	An average annual harvest of 60.4 Mbf would be foregone.
Impacts on Recreation Use	The area's recreation use level would increase by 10,625 visitors per year.	The area's recreation use level would increase by 10,625 visitors per year.
Impacts on Local Personal Income	Annual local personal income would increase by approximately $111,000.	Annual local personal income would increase by approximately $111,000.

Partial Wilderness Alternative	No Wilderness/No Action Alternative
Wilderness designation of 5,057 acres would protect and enhance existing wilderness values. Projected activities would directly impair wilderness values on 271 acres and indirectly over 400 acres.	Projected management actions would directly impair wilderness values over approximately 275 acres and indirectly over 800 acres.
No impact to energy or mineral development is expected.	No impact to energy or mineral development is expected.
Two miles of way would revegetate. Little or no change would occur to vegetation on the rest of the 5,057 acres designated. Vegetation on 271 acres of the 583 not designated would be subject to intensive timber management practices. The remaining 312 acres would remain unchanged due to SOMA.	Two miles of way would not revegetate. Intensive timber management practices would occur on 271 acres. Little or no change would occur to vegetation on remaining 5,369 acres.
Habitat and population would be maintained throughout the 5,507 acres designated plus 312 acres within the SOMA. Wildlife would sustain temporary and minor levels of harassment during timber management practices on 271 acres not designated.	Wildlife would sustain minor and temporary levels of harassment due to vehicle use and timber management activities on 271 acres.
Water quality would be reduced by projected timber management activities.	Water quality would be reduced by projected timber management activities.
Use would remain at current use levels with no added inconvenience anticipated from closing the 2-mile way.	Use would remain at current levels and management would be unaffected.
Soil productivity would be reduced in proportion to management activities on 271 acres, and increased on 2 miles of revegetated way.	Soil productivity would be reduced in proportion to management activities on 271 acres, and remain unchanged on the rest of the area.
Timber would be available for harvest on 271 acres. An average annual harvest of 60.4 Mbf would be available.	Timber would be available for harvest on 271 acres. An average annual harvest of 60.4 Mbf would be available.
The area's recreation use level would increase by 14,875 visitors per year.	The area's recreation use level would increase by 6,375 visitors per year.
Annual local personal income would increase by approximately $178,000.	Annual local personal income would increase by approximately $76,500.

North Sisters Rocks and Zwagg Island Wilderness Study Areas

1. The Study Area —8 acres

The North Sisters Rocks (OR-12-8) and Zwagg Island (OR-12-14) Wilderness Study Areas (WSAs) are located along the coast in Curry County, Oregon. North Sisters Rocks, three small rocks of about one acre each, are located midway between Port Orford and Gold Beach; Zwagg Island, an island of five acres, is immediately west of Brookings. All acreages are administered by BLM. (See Table 1.)

North Sisters Rocks are surrounded by Pacific surf at high tide and attached on one side to an exposed sand and rock beach at low tide. One rock rises 134 feet and another 78 feet above sea level; the third is somewhat lower. All three rocks have steep, rocky cliffs on all sides and steeply rolling tops. The thin soil mantle atop each rock supports broadleaf coastal shrubs, mostly wind-sheared salal and twinberry, and patches of grass.

Zwagg Island rises abruptly in near-vertical cliffs to a flat top 102 feet above sea level. During the winter months, when prevailing winds are from the southwest, Zwagg Island is surrounded by surf at high tide. Major portions of the top of Zwagg Island are covered with a thin soil mantle which supports coastal shrub vegetation including salal, wax myrtle, twinberry and poison oak. There are also scattered Sitka spruce and grassy rock niches with herbaceous plants.

These WSAs were studied under Section 603 of the Federal Land Policy and Management Act, (FLPMA) and were included in the Final Oregon Wilderness Environmental Impact Statement (EIS) filed in February of 1990. There were two alternatives analyzed in the EIS: an all wilderness alternative which is the recommendation in this report, and a no wilderness/no action alternative. These lands are shown on Map 1.

2. Recommendation and Rationale

—8 acres recommended for wilderness
0 acres recommended for nonwilderness

The recommendation for these WSAs is to designate their entire area as wilderness. This is considered to be the environmentally preferable alternative as it will

result in the least change to the natural environment over the long term.

Both North Sisters Rocks and Zwagg Island are relatively free of the signs of human activities and appear to have been affected primarily by the forces of nature. There is considerable opportunity for solitude on these rocks and island, which are surrounded on three sides by ocean and border an undeveloped beach. They afford a good view of the surrounding coastline and are good vantage points from which to view migrating birds and marine mammals. A sensitive plant species and important archaeological values would be protected by wilderness designation. Public comment strongly supported wilderness designation for both islands.

Management of the WSAs as wilderness would be consistent with the U.S. Fish and Wildlife Service's management of other offshore rocks and islands as a wildlife refuge and wilderness.

3. Criteria Considered in Developing the Wilderness Recommendations

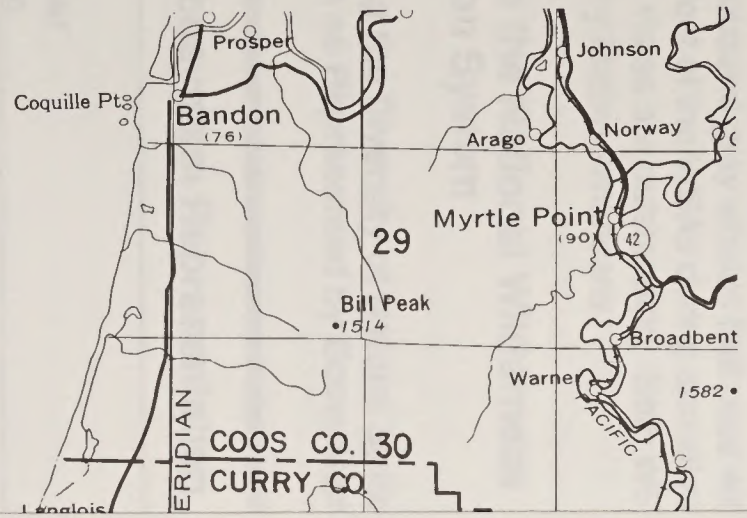
Wilderness Characteristics

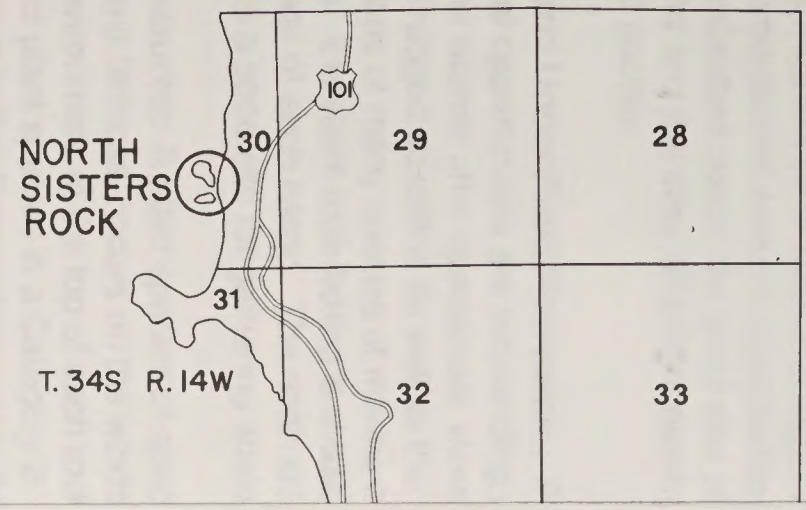
A. Naturalness: Both WSAs are in essentially natural condition and appear to be primarily affected by the forces of nature. Well-worn but unobtrusive foot paths wend their way from the bases to the top of each rock and island. The beaches surrounding each rock and island are isolated and undeveloped, but quarry scars, powerlines, highways and housing developments on the mainland are visible from the WSAs.

Table 1. Land Status and Acreage Summary of the Study Area

	North Sisters OR-12-8 Acres	Zwagg Island OR-12-14 Acres	Total Acres
Within Wilderness Study Area:			
BLM (surface and subsurface)	3	5	8
Split-Estate (BLM surface only)[1]	0	0	0
Inholdings (State, Private)	0	0	0
Total	3	5	8
Within the Recommended Wilderness Boundary			
BLM (within WSA)	3	5	8
BLM (outside WSA)	0	0	0
Split-Estate (within WSA) [1]	0	0	0
Split-Estate (outside WSA)[1]	0	0	0
Total BLM Land Recommended for Wilderness	3	5	8
Inholdings (State, Private)	0	0	0
Within the Area Not Recommended for Wilderness			
BLM (Surface and Subsurface)	0	0	0
Split-Estate (BLM Surface only)	0	0	0
Total Area Not Recommended for Wilderness	0	0	0
Inholdings (State, Private)	0	0	0

[1] For purposes of this report, split-estate lands are defined only as those lands with Federal surface and non-Federal subsurface (minerals).





RECOMMENDED FOR WILDERNESS

RECOMMENDED FOR NONWILDERNESS (None)

LAND OUTSIDE WSA RECOMMENDED FOR WILDERNESS (None)

SPLIT ESTATE (None)

STATE (None)

PRIVATE (None)

- N -

North Sisters Rock
Zwagg Island
Proposal
MAP-1

OR-12-8
OR-12-14
January, 1991

result in the least change to the natural environment over the long term.

Both North Sisters Rocks and Zwagg Island are relatively free of the signs of human activities and appear to have been affected primarily by the forces of nature. There is considerable opportunity for solitude on these rocks and island, which are surrounded on three sides by ocean and border an undeveloped beach. They afford a good view of the surrounding coastline and are good vantage points from which to view migrating birds and marine mammals. A sensitive plant species and important archaeological values would be protected by wilderness designation. Public comment strongly supported wilderness designation for both islands.

Management of the WSAs as wilderness would be consistent with the U.S. Fish and Wildlife Service's management of other offshore rocks and islands as a wildlife refuge and wilderness.

3. Criteria Considered in Developing the Wilderness Recommendations

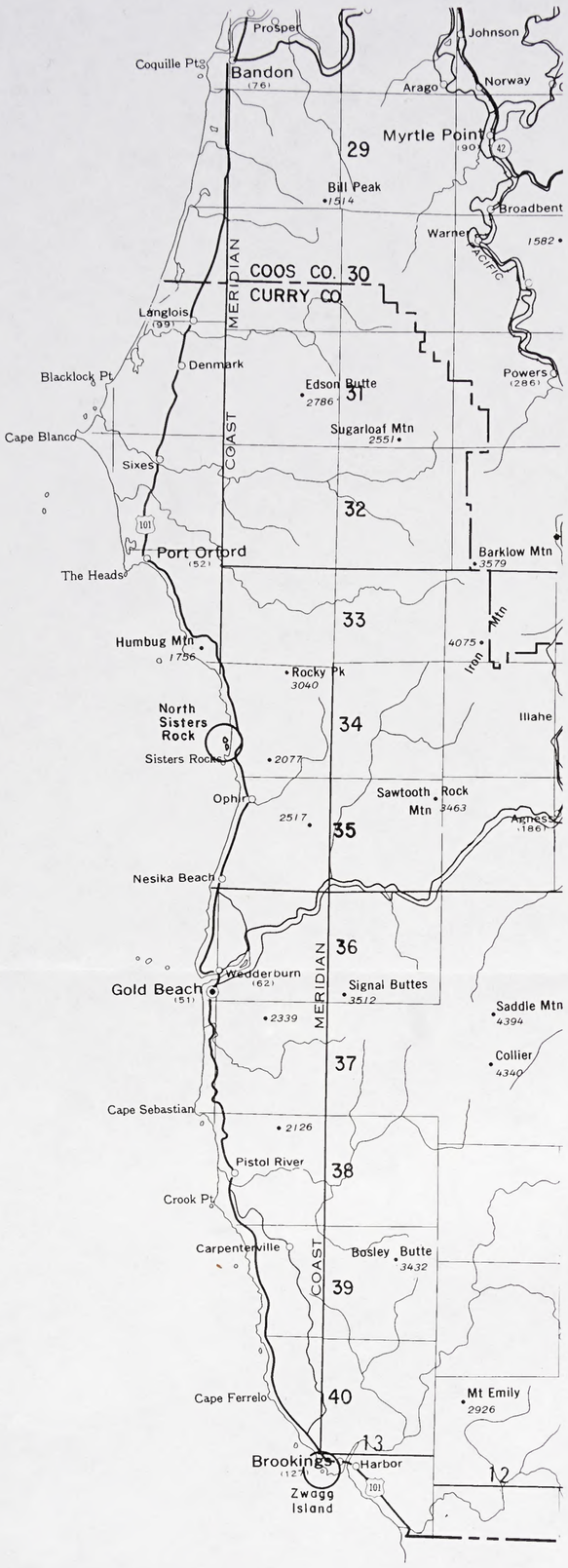
Wilderness Characteristics

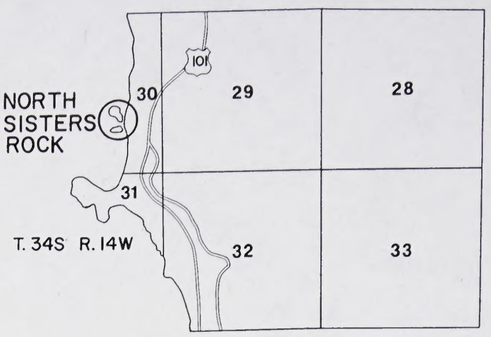
A. Naturalness: Both WSAs are in essentially natural condition and appear to be primarily affected by the forces of nature. Well-worn but unobtrusive foot paths wend their way from the bases to the top of each rock and island. The beaches surrounding each rock and island are isolated and undeveloped, but quarry scars, powerlines, highways and housing developments on the mainland are visible from the WSAs.

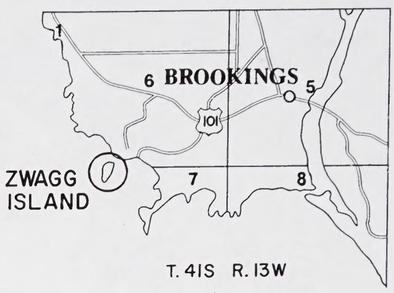
Table 1. Land Status and Acreage Summary of the Study Area

	North Sisters OR-12-8 Acres	Zwagg Island OR-12-14 Acres	Total Acres
Within Wilderness Study Area:			
BLM (surface and subsurface)	3	5	8
Split-Estate (BLM surface only)[1]	0	0	0
Inholdings (State, Private)	0	0	0
Total	3	5	8
Within the Recommended Wilderness Boundary			
BLM (within WSA)	3	5	8
BLM (outside WSA)	0	0	0
Split-Estate (within WSA) [1]	0	0	0
Split-Estate (outside WSA)[1]	0	0	0
Total BLM Land Recommended for Wilderness	3	5	8
Inholdings (State, Private)	0	0	0
Within the Area Not Recommended for Wilderness			
BLM (Surface and Subsurface)	0	0	0
Split-Estate (BLM Surface only)	0	0	0
Total Area Not Recommended for Wilderness	0	0	0
Inholdings (State, Private)	0	0	0

[1] For purposes of this report, split-estate lands are defined only as those lands with Federal surface and non-Federal subsurface (minerals).







Wilderness Study Area

RECOMMENDED FOR WILDERNESS

RECOMMENDED FOR NONWILDERNESS (None)

LAND OUTSIDE WSA RECOMMENDED FOR WILDERNESS (None)

SPLIT ESTATE (None)

STATE (None)

PRIVATE (None)

N

North Sisters Rock
Zwagg Island
Proposal
MAP-1

OR-12-8
OR-12-14
January, 1991

B. Solitude: Opportunities for solitude are outstanding in the North Sisters Rocks and Zwagg Island WSAs. This is particularly true during the frequent occasions of rain, strong winds and fog. During the less frequent clear days and especially during the summer tourist season, opportunities for solitude are diminished due to the small size of the rocks and island and the easy hike from nearby points of public access.

C. Primitive and Unconfined Recreation: Primitive recreational opportunities are outstanding within the WSAs. The islands offer spectacular views of the ocean and rugged coastline as well as the annual migrations of many species of marine mammals and birds. Excellent rock fishing is available on the seaward side of each island. The north side of Zwagg Island is a good site for gathering abalone.

D. Special Features: A plant species of special interest, *Dudleya farinosa*, occurs on the windswept, often harsh environment at the top of each rock and the island. This plant species is a Category 2 species according to the Oregon Natural Heritage, and is considered threatened in Oregon at the northern edge of its range. Another special feature is the several thousand gray whales that pass within a few hundred feet of the WSAs during annual migrations. Scenic vistas are outstanding. Both WSAs were utilized by Native Americans.

Diversity in the National Wilderness Preservation System

A. Expanding the Diversity of Natural Systems and Features as Represented by Ecosystems: This particular ecosystem is well represented within the National Wilderness Preservation System, especially in Oregon where over 1,400 offshore islands are already part of the Oregon Islands Wilderness Area, administered by the U.S. Fish and Wildlife Service. There are only three other coastal islands under BLM jurisdiction, and these were designated as wilderness in 1978.

B. Assessing the Opportunities for Solitude or Primitive Recreation Within a Day's Driving Time (five hours) of Major Population Centers: These WSAs are within a five hour drive of four major population centers. Table 3 summarizes the number and acreage of designated areas and other BLM study areas within five hours drive of the population centers.

C. Balancing the Geographic Distribution of Wilderness Areas: The North Sisters/Zwagg Island WSA would not contribute to balancing the geographic distribution of areas within the National Wilderness Preservation System. Approximately 1,400 islands, rocks, and reefs along the Oregon Coast, including many within five miles of the WSA, are already part of the Oregon Islands Wilderness Area. There are seven additional wilderness areas within 100 miles of these WSAs.

Manageability

(The area must be capable of being effectively managed to preserve its wilderness character.)

Each of the areas would be manageable as wilderness. The location and difficulty of access to each of

Table 2. Ecosystem Representation

Bailey-Kuchler Classification	NWPS Areas areas	NWPS Areas acres	Other BLM Studies areas	Other BLM Studies acres
Province/Potential Natural Vegetation				
NATIONWIDE				
Pacific Forest Province/ Spruce-Cedar-Hemlock Forest	6	25,257	0	0
OREGON				
	6	25,257	0	0

Table 3. Wilderness Opportunities for Residents of Major Population Centers

Population Center	NWPS Areas areas	NWPS Areas acres	Other BLM Studies areas	Other BLM Studies acres
Eugene/Springfield, OR	42	2,859,994	43	770,436
Portland, OR	48	4,537,392	16	91,762
Salem, OR	45	2,888,764	18	210,085
Medford, OR	31	2,440,081	21	730,038

the WSAs ensures solitude for the visitor. While the carrying capacity of each of the rocks and islands is limited, the number of visitors will undoubtedly always be small. There are no privately owned interests, valid existing rights, or rights-of-way associated with either of the WSAs.

Energy and Mineral Resource Values

The U.S. Geological Survey (USGS) and U.S. Bureau of Mines surveys have determined that no mineral values are associated with the WSAs. These results were published in reports titled "Mineral Resources of the North Sisters Wilderness Study, Curry County, Oregon," (USGS Open File Report 88-12) and "Mineral Resources of the Zwagg Island Wilderness Study Area, Curry County, Oregon," (USGS Open File Report 88-257).

The extremely small size of the WSAs makes it unlikely that they would be suitable for procurement of geothermal resources. The rock comprising the WSAs is not suitable for use as rip rap and jetty construction.

As of May, 1991, there were no mining claims within these WSAs.

Local Social and Economic Considerations

There are no significant economic values or activities directly associated with the rocks and island. The amount of recreational activity is too small to attribute to dollars of local personal income. There were no social impacts identified with the study of this WSA.

Summary of WSA-Specific Public Comments

Public involvement has occurred throughout the wilderness review process. Certain comments received during the inventory process and early stages of the EIS preparation were used to develop significant study issues and various alternatives for the ultimate management of these lands found to have wilderness values.

During formal public review of the Draft EIS and its Supplement, a total of 11 comments specifically addressing these WSAs were received. Of these, 11 were written statements. In general, ten comments supported wilderness designation for the WSAs, while one supported the no wilderness alternative.

Those favoring wilderness commented on the outstanding naturalness of the area, its scenic quality, cultural values, and uniqueness within the National Wilderness System. The majority of those commenting were from the local area.

Those opposing designation were concerned that the small size of the WSAs would preclude manageability as wilderness. Several comments recommended transferring these WSA islands to the U.S. Fish and Wildlife Service, which already administers over 1,400 offshore islands as designated wilderness.

There were 23 comment letters received after the formal public review for the Final EIS. Of those, 21 supported the BLM's wilderness proposal, one opposed designation, and one recommended transfer to the U.S. Fish and Wildlife Service.

Impacts on Resources

The following comparative impacts table summarizes the effects on pertinent resources for all the alternatives considered including designation and nondesignation of the entire area as wilderness.

Table 4. Comparative Summary of the Impacts by Alternative

Issue Topics	Recommendation (All Wilderness Alternative)	No Wilderness/No Action Alternative
Impacts on Wilderness Values	Wilderness designation of 3 acres of North Sisters Rocks and 5 acres of Zwagg Island would protect existing wilderness values.	No impacts expected, since no impairing activities are projected.
Impacts on Energy and Mineral Development	No impact to energy or mineral development is expected, since none are projected.	No impact to energy or mineral development.

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Energy and Mineral Resource Values

The U.S. Geological Survey (USGS) and U.S. Bureau of Mines surveys have determined that no mineral values are associated with the WSAs. These results were published in reports titled "Mineral Resources of the Zuniga Island Wilderness Study Area, Curry County, Oregon," (USGS Open File Report 88-12) and "Mineral Resources of the Zuniga Island Wilderness Study Area, Curry County, Oregon," (USGS Open File Report 88-157).

The extremely small size of the WSAs makes it unlikely that they would be suitable for development of geothermal resources. The rock comprising the WSAs is not suitable for use in rip rap and jetty construction.

As of May, 1991, there were no mining claims within these WSAs.

Local Social and Economic Considerations

There are no significant economic values or activities directly associated with the rocks and island. The amount of recreational activity is too small to relate to dollars of local personal income. There were no social impacts identified with the study of this WSA.

Impacts on Resources

The following comparative impacts table summarizes the effects on resource values for all the alternatives considered, including designation and nondesignation by the public and as wilderness.

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