

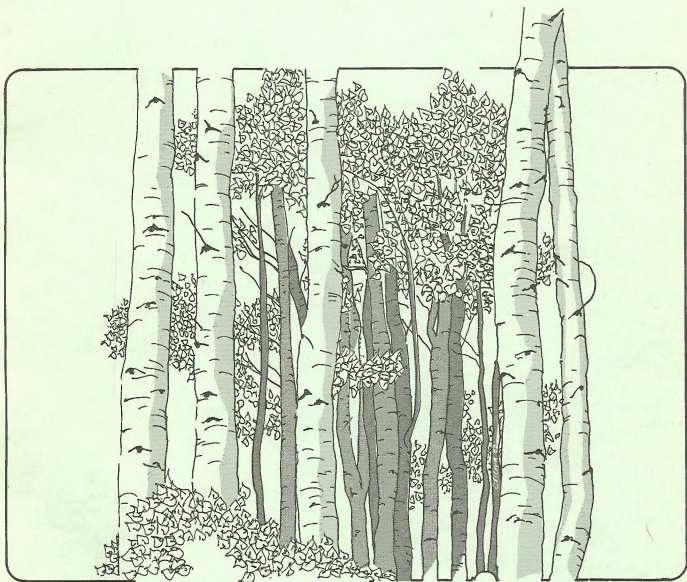
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WINNEMUCCA

Wilderness • Technical • Report



*U.S. Department of the Interior
Bureau of Land Management
Winnemucca District, Nevada*



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WILDERNESS
TECHNICAL REPORT

DEPARTMENT OF INTERIOR
BUREAU OF LAND MANAGEMENT

WINNEMUCCA DISTRICT
NEVADA

1983

For 18 Wilderness Study Areas in
Northwest Nevada

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CHAPTER I. INTRODUCTION

Purpose

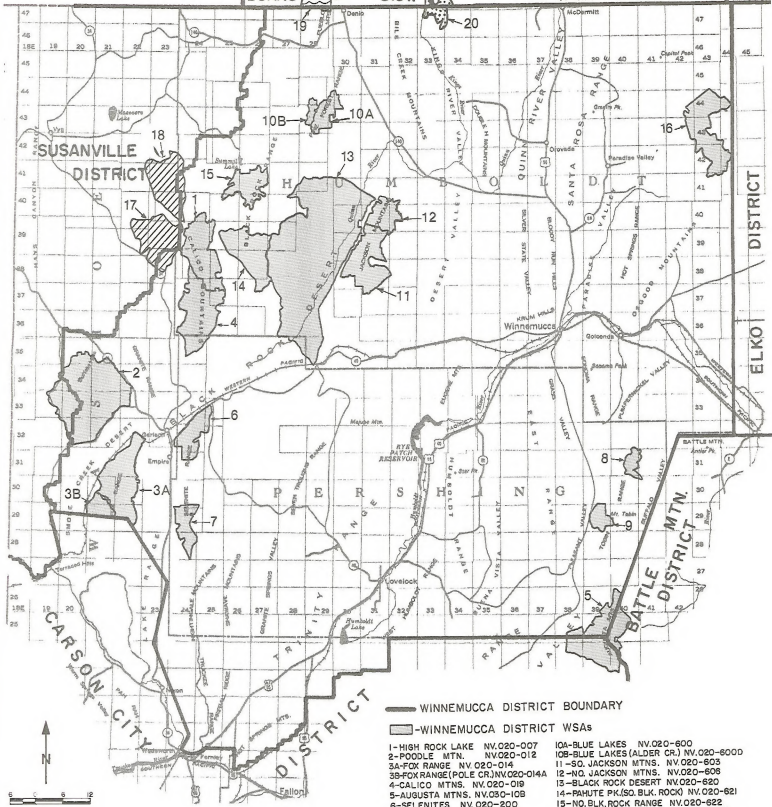
This document supplies technical information required to complete the Winnemucca District Bureau of Land Management (BLM) Wilderness Environmental Impact Statement (EIS) and Study Reports on eighteen Wilderness Study Areas (WSAs) in northwestern Nevada (see Winnemucca District Map). The Winnemucca District BLM is studying these WSAs for possible inclusion into the National Wilderness Preservation System as directed by the Federal Land Policy and Management Act of 1976.

The BLM published its Wilderness Study Policy in the Federal Register (47 FR 5098) on February 3, 1982. This document establishes the policies, criteria and guidelines for conducting wilderness studies, including two criteria and six quality standards necessary for documentation. These criteria and standards are to be applied WSA by WSA in the Wilderness Study Reports and the Draft Environmental Impact Statement. To accomplish this, and to keep the documents within reasonable lengths, the Winnemucca District prepared this Technical Report. Information in the Technical Report is summarized and referenced extensively in the Wilderness EIS and Study Reports. Additional information on the eighteen WSAs is available from the Winnemucca District Office, BLM, 705 E. 4th Street, Winnemucca, Nevada 89445.

Method

Chapter I outlines the purpose and method of this Technical Report. Chapter II is the WSA by WSA analysis for each of the eighteen WSAs under study. This includes a basic description of each WSA followed by a review of the two criteria and six quality standards. A WSA unit map and mineral potential map will be found immediately following each WSA analysis in Chapter II. Chapter III contains a district-wide summary of the WSA by WSA analysis.

In cases where information applies to several or all WSAs rather than one specifically, the document is included in Chapter III only. For example, many public comments address general issues and did not apply to specific WSAs.



— WINNEMUCCA DISTRICT BOUNDARY
 [Shaded Area] WINNEMUCCA DISTRICT WSAs

- 1-HIGH ROCK LAKE NV.020-007
- 2-POODLE MTN. NV.020-012
- 3A-FOX RANGE NV.020-014
- 3B-FOX RANGE(POLE CR.)NV.020-014A
- 4-CALICO MTS. NV.020-019
- 5-AUGUSTA MTS. NV.030-108
- 6-SELENITES NV.020-200
- 7-MT. LIMBO NV.020-201
- 8-TOBIN MTS.(CHINA MT) NV.020-406P
- 9-TOBINS NV.020-406Q
- 10A-BLUE LAKES NV.020-600
- 10B-BLUE LAKES (ALDER CR.) NV.020-600D
- 11-SQ. JACKSON MTS. NV.020-603
- 12-NO. JACKSON MTS. NV.020-608
- 13-BLACK ROCK DESERT NV.020-620
- 14-PAHITE PK.(SO. BLK. ROCK) NV.020-621
- 15-NO. BLK. ROCK RANGE NV.020-622
- 16-NO. FORK LITTLE HUMBOLDT RIVER NV.020-827

- [Hatched Area] SUSANVILLE DISTRICT WSAs
- 17-LITTLE HIGH ROCK CANYON NV.020-008
- 18-HIGH ROCK CANYON NV.020-008A
- [Envelope Icon] BURNS DISTRICT WSAs
- 19-PUEBLO MTS. NV.020-642
- [Dotted Area] VALE DISTRICT WSAs
- 20-DISASTER PK. NV.020-859

WINNEMUCCA DISTRICT



CHAPTER 2

Wilderness Study Area 007: High Rock Lake

DESCRIPTION

Location

- western Humboldt County, Nevada approximately 40 miles northeast of Gerlach, Nevada
- three-hour drive from Reno, the nearest Standard Metropolitan Statistical Area
- best access^{is} well-maintained Soldier Meadows county road (HU 217,R2) on eastern boundary

Configuration and Size

- bounded by county or BLM maintained roads (40.5 miles) and ways (0.8 mile) except small portions which abut against private land (16 miles) and topographic features (9.0 miles)
- about 16 miles north-south and from three to eight miles east-west
- 61,902 acres of public land

Physical Environment

- altitude range: 4,000 feet to 7,000 feet
- Bailey-Kuchler ecosystem: sagebrush-steppe (3130-49) (also see Table 3-2 in Chapter 3)
- Sonoma-Gerlach Grazing EIS vegetation communities: sagebrush (western 2/3); saltbush (eastern 1/3)
- some riparian vegetation along Donnelly Creek (4.5 miles)
- 007 straddles a north-south ridge of the Calico Mountains; typical range of the Basin and Range Province
- three distinct landforms: west of main divide; east of main divide and south of Box Canyon; east of main divide from Box Canyon north
 - west of main divide (one to two miles wide, 12 miles long):
 - drops sharply from ridge, particularly in northern part where imposing rimrock bluffs drop abruptly 700 feet to valley floor
 - includes, in its northwestern part, High Rock Lake--an intermittent lake roughly 3/4 by 1 1/2 miles covering 700 acres that formed by a landslide that blocked its outlet through Box Canyon
 - east of main divide and south of Box Canyon (three to five miles wide and 13 miles long):
 - is a rolling landscape dissected by major drainages, which are from north to south: Cherry Creek, Willow Creek, and Donnelly Creek
 - descends slowly from main divide toward Black Rock Desert on east boundary
 - east of main divide from Box Canyon north (about five by five miles):
 - is markedly flatter than other parts of WSA due to underlying basalt flow

- contains Fly Canyon in the north, a narrow chasm cutting through the basalt flow across the entire WSA; drains partly into Mud Meadows to the east and High Rock Lake to the west; includes "The Potholes" (see Special Features: GEOLOGIC)
- contains Box Canyon, once the outlet from High Rock Lake, now a dry, narrow, 700-foot deep canyon cutting across WSA from east to west

STUDY POLICY CRITERIA

Criterion 1: Evaluation of Wilderness Values

Component A: Mandatory Wilderness Characteristics

SIZE

- ~~61,982~~ ^{61,982} acres within boundary, including 80 acres of private land and 480 acres of privately-owned mineral rights not part of the WSA

NATURALNESS

Developments within WSA

Range-related developments (see Table B-1 in Appendix B)

- three grazing allotments located within 007 (also see Table B-2 in Appendix B)

Other man-made features

- two roads totalling 2.3 miles following Donnelly Creek and leading from west boundary (see Table 3 in Appendix B)
- ten ways totalling 13.4 miles near periphery of unit (see Table 3 in Appendix B)
- all known mining areas were separated from WSA during the Intensive Inventory

Outside imprints

- two small mining areas near east boundary involving minor surface disturbance can be seen from adjacent areas in WSA
- several roads, including Soldier Meadows road (HU 217, R2), are visible from parts of WSA--traffic caused dust is particularly visible from extreme east edge of WSA
- a few fencelines, cattleguards, and ranches are visible from the edge of WSA but impact is minimal

Location and size of areas subject to imprints

- nearly two-thirds of area along ridgecrest virtually free of imprints

- most imprints are visually insignificant except within one mile or so from boundary, particularly on east side
- most apparent imprints are mining areas adjacent to east boundary and the road and developments along Donnelly Creek--affects approximately one-quarter of WSA

Rehabilitation potential

- most developments could be rehabilitated without major mechanical manipulation (see Tables B-1 and B-3 in Appendix B) except the road into Donnelly Creek

Potential for separating areas in WSA subject to imprints

- mining areas already separated but create two artificial intrusions into WSA from east side
- difficult to separate road up Donnelly Creek without compromising significant portion of southeast corner of WSA
- many range improvements could be eliminated by pulling boundary back a few hundred yards from boundary roads
- visual impact of east boundary road could be eliminated by moving boundary up to base of mountains away from Black Rock Desert

Overall influence of imprints

- most areas in WSA substantially natural
- imprints most significant on east side where topographic screening is limited and outside imprints are significant
- visitors would have little difficulty locating substantially natural landscapes

SOLITUDE

Solitude is defined as the opportunity to avoid the sights and sounds, and evidence of other people.

Influence of outside sights and sounds

Economic activity

- sporadic mining near east boundary can be seen from small areas within WSA
- localized and seasonal ranching (roundups, salting, and maintenance of range improvements near and in WSA)

Aircraft flights

- regular, low-level (500' to 11,000' above ground level) military flights from Ontario, Oregon (route IR 300)

- no known landing areas inside WSA; abandoned private airstrip near southeast boundary used in recent past
- State of Nevada Department of Wildlife conducts annual wildlife censuses:
 - antelope counts in January (fixed-wing); August (helicopter); regular since 1950s
 - deer counts November-December and March-April (helicopter); regular since mid-1970s
- BLM conducts livestock and wild horse censuses/round-ups on 007:
 - livestock tallies as needed (usually fixed-wing)
 - wild horse inventories every other year August-October; occasional checks during critical weather
 - wild horse roundups when needed (using helicopter), usually July-October; third priority (out of 12 areas) district-wide

Vehicular traffic

- periodic traffic on east boundary road (R2) visible from extreme eastern WSA
- occasional traffic on other boundary roads (R1, R3, R4, R6) visible from parts of WSA immediately adjacent; impact is occasional dust trail

Physical factors influencing solitude

Topographic and vegetative screening

- west of main divide:
 - low shrubs provide minimal vegetative screening
 - minimal topographic screening in northern half
 - minor drainages provide some screening in southern half
- east of main divide south of Box Canyon:
 - low shrubs provide minimal vegetative screening--except along Donnelly Creek where riparian areas offer excellent screening
 - topographic screening fair except poor in flatter areas adjacent to Black Rock Desert
- east of main divide from Box Canyon north:
 - low shrubs providing minimal vegetative screening
 - poor topographic screening except locally excellent in Box and Fly Canyons

Size and configuration

- size is sufficient to provide solitude
- elongated (north to south) configuration means visitors never more than three miles from WSA boundary
- two mining areas (deleted from WSA during inventory) on east side detract from solitude

Ability of user to find secluded spot

- easily locatable in main drainages

- east of the main ridge down to the Black Rock Desert
- in Fly and Box Canyons
- in local spots west side of ridge three to four miles south of High Rock Lake
- more difficult to find
 - on entire Black Rock Desert piedmont (east side)
 - in flat areas north of Box Canyon (east side)
 - along west rim in vicinity of High Rock Lake and near R4 in vicinity of Harry Spring

PRIMITIVE AND UNCONFINED RECREATION OPPORTUNITY

Access

- all areas are within three miles of a boundary road
- excellent year-round access from east side (HU 217, R2)
- less reliable from north, west, and south sides except with high-clearance vehicles
- vehicular access into WSA on one road (R5) and three ways (W11, W9, W1)

Attractions (see also Special Features)

Points of interest

- Applegate-Lassen Trail (north boundary)
- Fly Canyon potholes
- variety of wildlife, including several game species
- rockhound collecting areas
- High Rock Lake
- Box Canyon
- Donnelly Creek

Challenge

- typical desert/steppe climate with associated challenges (hot dry summers, cold winters)
- water scarce in summer except
 - 11 perennial springs concentrated in southern part of WSA
 - approximately 4.5 miles of perennial stream (Donnelly Creek)
 - High Rock Lake during wet years

Scenic qualities

- contrast of steep, west facing rim near High Rock Lake and the angular sides of Box Canyon with surrounding flat landscape enhances perceptions of scale and grandeur
- Fly Canyon's narrow, twisting course, colorful rock walls, and sculptured potholes offer scale, contrast, and geologic interest
- open, rolling, vast landscape with excellent views of natural landscape south of Box Canyon
- views of Black Rock Desert, Donnelly Peak, and nearby desert landforms give impression of isolation in a hostile environment

-High Rock Lake (when full) striking contrast to the black cliffs to the east

Activities (see also Table 3-1 in Chapter 3)

Dayhiking (water availability not critical)

-entire 007 accessible to dayhiking
-most likely destinations include Box Canyon, High Rock Lake Area, Fly Canyon and its potholes, Donnelly Creek riparian areas, Upper Cherry and Willow Creek drainages, and along main ridgecrest

Camping

-best along Donnelly Creek and isolated perennial springs concentrated in south part
-dry camping feasible throughout most of WSA

Backpacking

-on one proposed route of the proposed Desert National Scenic Trail
-most attractions concentrated on edge of WSA and are accessible to dayhikers; little advantage to backpacking
-north-south oriented trips feasible (e.g., along main ridgecrest)

Hunting

-small antelope herd intermittently in southern part of WSA
-a few mule deer and cougars, especially in higher elevations
-chukar and sage grouse in fair numbers
-access good for hunters

Horsepacking

-constraints: limited water (especially in north) and some areas too rugged (e.g., Box Canyon, Fly Canyon)
-advantages: generally available forage, good access, favorable topography in most areas

Rock climbing and scrambling, caving

-rock climbing good on rim above High Rock Lake in Box and Fly Canyons
-technical climbing expertise necessary in portions of Fly Canyon
-rock scrambling opportunities marginal except in steeper areas along west rim
-no caves are known

Nature study

-viewing/photographing wild horses and antelope
-photography in High Rock Lake area, Fly and Box Canyons, Donnelly Creek
-geology study

Fishing

- no known fish populations
- potential exists in Donnelly Creek

Winter sports

- winter camping
- access limited during winter months

Water sports

- wading and swimming possible year-round in Donnelly Creek and intermittently in High Rock Lake
- water quality poor

Rockhounding

- jasper, fire-opal, agate, and petrified wood are known to occur

Component B: Special Features

CULTURAL (see also Table B-4 in Appendix B)

Prehistoric

- total recorded sites: seven
- 52 sites: one rock shelter
- 53 sites: one isolated find; one rock shelter
- Unrated sites: three lithic scatters; one rock shelter

Historic

- Applegate-Lassen trail passes along north boundary
- mid-1800s emigrant trail
- also general route of John C. Fremont's 1843-1844 exploring expedition
- Fly Canyon wagon slide at north end--point where emigrants made hazardous descent into Fly Canyon
- wagon slide and one-mile wide corridor along trail on National Register of Historic Places
- see Jones (1980) for more information

ZOOLOGIC

Fisheries

- no known fish populations but potential exists in Donnelly Creek if habitat improved

Wild horses and burros

- in Calico Mountain Herd Use Area (horses only)

Other mammals

- year-round antelope in southeast portion of WSA
- year-round deer habitat in the south-central and southwestern part of 007
- kit fox in east one-half of WSA
- mountain lion throughout WSA except southwestern edge

Birds

- sage grouse range
- quail in northern part of WSA

BOTANIC

- no threatened or endangered plants have been identified
- riparian habitat along Donnelly Creek, including small areas with aspen; stream was at only 54% of optimum habitat (Sonoma-Gerlach URA)

GEOLOGIC

- Fly Canyon potholes:
 - ground out of bedrock creating large whirlpools (up to 78 feet deep, 151 feet wide)
 - located in narrow chasm of Fly Canyon (as little as five feet wide)
- High Rock Lake believed to have formed by rockslide blocking drainage through Box Canyon
- eroded volcanic tuffs with unique colors and forms located along southern boundary road (R1)

PALEONTOLOGIC

- three known sites containing Miocene mammal fossils

ACECs

- none

SCENIC

- northern part of WSA within viewshed for the Applegate-Lassen Trail

Component C: Multiple Resource Benefits

Wilderness designation of WSA could restrict motorized vehicular traffic on approximately 13.4 miles of ways and approximately 20,000 acres of land which is now accessible to off-road vehicles. A vehicle closure would enhance opportunities for primitive and unconfined recreation within those areas of WSA currently accessible to vehicles.

Long-term benefits from wilderness designation may accrue to those resources which would otherwise deteriorate should the area return to other

multiple uses. Although current land-use plans essentially maintain the existing environment and resource commitments should WSA not be designated wilderness, the federal land would remain accessible to mineral patenting, leasing, and other development. These potential developments could adversely impact water, soil, air, visual, cultural, and other resources which benefit from the existing, non-developed environment. The extent of future development in WSA is unknown.

Component D: Diversity in the National Wilderness Preservation System

ECOSYSTEM AND LANDFORM DIVERSITY

- Bailey-Kuchler ecosystem: sagebrush steppe (3130-49)(see Table 3-2 in Chapter 3)
- Sonoma-Gerlach Grazing E.I.S. vegetative communities: sagebrush (western 2/3); saltbush (eastern 1/3)
- 007 not a unique representation of this ecosystem within Winnemucca District
- unknown how WSA compares with other WSAs with the same ecosystem outside the Winnemucca District

RECREATION NEAR SMSAs (see also Table 3-1 in Chapter 3)

- approximately three hour drive from Reno, the nearest SMSA

GEOGRAPHIC DISTRIBUTION OF WILDERNESS

- see Chapter III, Component D for analysis (see also Table 3-3 in Chapter 3)

Criterion 2: Manageability

Physical Factors Influencing Manageability

CONFIGURATION

- eastern boundary somewhat erratic due to elimination of mining areas during the Inventory Phase
- no significant manageability problems due to configuration

ACCESS

- difficult to control, off-road vehicle use from some boundary roads, especially on the east side (R2, R3, R6)
- difficult to control off-road vehicle use from portions of the following roads and ways within 007:
 - W1 (3.5 miles) which traverses rolling country along main ridge
 - R5 (1.8 miles) which traverses Black Rock Desert piedmont for 1.5 miles
 - W7 (1.4 miles) which travels through west end of Box Canyon
 - W8, 8a (1.9 Miles) which traverses flat terrain SE of Fly Canyon
 - W6 (1.6 miles) which traverses Black Rock Desert piedmont

LANDFORM

- landforms conducive to off-road vehicle use which may be difficult to control include:

- portions of Black Rock Desert piedmont on east side of 007
- flat and rolling terrain between Fly Canyon and Box Canyon
- extreme west side of WSA south of High Rock Lake
(see also Table B-5 in Appendix B)

INTRUSIONS AND OUTSIDE INFLUENCES

- managing for solitude would be difficult in those areas described above where access is hard to control
- military aircraft flights most significant outside influence-- potential for reduction of flights or rerouting unknown
- other influences would not significantly impede manageability

Nonconforming But Accepted Uses

VALID EXISTING RIGHTS

Mining claims (see also Table B-6 in Appendix B)

- approximately 600 acres of WSA have 28 registered mining claims:
 - all claims located east of main divide
 - concentrated near Donnelly Creek and south of Box Canyon
- possible to eliminate most areas containing mining claims without substantially impairing wilderness values
- wilderness manageability would be difficult should mining claimants develop claims

Leases (See also Tables B-7 and B-8 in Appendix B)

- KGRA in the north east part*
- 5,935 acres of oil and gas leases along the east and west boundaries
- probability of leases being developed undetermined
- possible to separate areas of geothermal leasing without substantially reducing wilderness values

Non-federal land (see also Table B-9 in Appendix B)

- 80 acres of private land located in Fly Canyon
 - cattle grazing primary use and expected to continue
 - possible to separate areas of private land without substantially reducing wilderness values
- 480 acres of private mineral rights located south of Fly Canyon
 - probability of owner exercising mineral rights unknown
 - difficult to separate this area without substantially reducing wilderness values in the Fly Canyon area

ESTABLISHED AIRCRAFT AND MOTORBOAT USE

- low-level military flights over WSA
- Nevada Department of Wildlife conducts animal censuses during winter and spring using fixed-wing and helicopter
- BLM conducts wild horse censuses and roundups, and livestock tallies over WSA by fixed-wing and helicopter
- none of the established aircraft use would significantly reduce wilderness manageability
- see Influence of Outside Sights and Sounds for more detail (e.g., dates flying established)

EXISTING AND PROPOSED RESOURCE FACILITIES

- no non-range facilities except roads
- proposed change in a fenceline to accommodate antelope migrations
- none of the proposed facilities would significantly impair wilderness manageability

LIVESTOCK GRAZING

Present grazing activities

- three allotments located in WSA
- existing range facilities would not significantly impair wilderness manageability
- see NATURALNESS for details of existing facilities and seasons-of-use

Changes identified in Sonoma-Gerlach Grazing E.I.S.

- two proposed fencelines
 - one running east-west, vicinity of Willow Creek
 - one running east-west, vicinity of Cherry Creek
- proposed vegetative manipulation in west edge of WSA (Leadville Allotment); might not be allowed in designated wilderness under wilderness management policy
- area of proposed vegetative manipulation could be separated from WSA without significantly impairing wilderness values

STUDY POLICY QUALITY STANDARDS

Quality Standard 1: Energy and Critical Minerals

For background information and general description of the District see Appendix A.

General Geology

The High Rock Lake WSA is located on the north end of Calico Mountains, a fault block range of the Basin and Range Province. The Calico Mountains are a faulted portion of the larger Modoc Plateau, a volcanic plateau area covering the northwest corner of Nevada and northeast California.

Rock types within the High Rock Lake WSA consist of Upper Miocene-Pliocene basalt flows, Miocene rhyolitic ash-flow tuffs of the Soldier Meadow Tuff, Miocene rhyolitic to basaltic tuffs, flows and sedimentary rocks of the High Rock Sequence and Oligocene, dacitic to basaltic flows, agglomerates, breccias and intrusives of the South Willow formation. Quaternary alluvium covers the lower valley areas.

Nevada was undergoing extensive erosion resulting in deposition of continental sediments during Paleocene, Eocene and Oligocene Epochs of the early Tertiary Period. Studies conducted in the Cedarville area indicated that the northwest corner of Nevada and adjoining California lay at an elevation of 1,000-1,500 feet, above sea level and consisted of dense deciduous hardwood forests and other lush vegetation during the Tertiary (Russell 1928). This vegetal matter and other organic life may be preserved as hydrocarbon deposits within the northwest corner of Nevada.

Several volcanic vent centers and calderas are postulated (assumed) west and north of the WSA, and are likely the source areas for many of the volcanic units in the High Rock Lake area (Greene and Plouff 1981).

The eastern edge of one of the postulated calderas, identified as a magnetic minimum from aeromagnetic surveys, extends in a southwest direction from Warm Springs Canyon through Soldier Meadow Hot Springs, Fly Canyon and across the north end of High Rock Lake. The southern edge of the postulated caldera then curves to the northwest just north of High Rock Lake and trends through the High Rock Canyon area. Approximate dimensions of this postulated caldera are 12 by 24 kilometers, elongated in a north-south direction (Greene and Plouff 1981).

Similar postulated caldera structures with associated mineralization have been identified in a U.S. Geological Survey open-file report by Cathrall and others (1978) in the Charles Sheldon Wilderness Study Area some 18 miles north of the High Rock Lake Area. Geochemical and geophysical surveys in that area have indicated a strong relationship between geochemical anomalies for base and precious metals and geophysical anomalies thought to represent collapsed calderas.

Geochemical surveys conducted by Barringer Resources (1982) have also indicated significant geochemical anomalies for base and precious metals in association with postulated caldera structures in the High Rock Lake/High Rock Canyon area. Claim staking and exploration activities also have increased significantly in the last two to three years in the Cottonwood Creek/Hog Ranch Mountain areas just west of the High Rock Lake area.

Following is a discussion of the energy and mineral potential in the High Rock Lake WSA. Please refer to the Mineral Potential Classification on Scheme, Figure 1 in Appendix A, for further explanation of alpha-numeric classifications. Also see, in Appendix B, Tables B-10, B-11, B-12 and B-13 showing acreages for Metallic Mineral, Nonmetallic Mineral, Geothermal and Oil and Gas Potential; and Tables B-6, B-7 and B-8 showing acreages of Unpatented Mining Claims, and Geothermal and Oil and Gas Leases; as well as summary Tables B-14 and B-15 showing the Energy and Mineral Threshold Levels and Holdings affected by four of the alternatives proposed in the EIS (all except No Wilderness Alternative).

Metallic Mineral Potential

Metallic minerals are not known to have been produced from any of the mining claims within the WSA. There are two operating precious opal mines adjacent to the eastern boundary (see High Rock Lake Nonmetallic Minerals for more information) of the WSA. Some mineral production has occurred from the Donnelly District just west of the WSA (see Calico Mountains WSA for more information), but this District is presently inactive.

The geochemical and geostatistical survey conducted by Barringer Resources (1982) indicated a fairly extensive area they termed the "Northern Calico Mountains" as having significant anomalous metal values and responses to geostatistical modeling. This large anomalous area covers most of the High Rock Lake WSA and the four WSA units presently in the Susanville District. For the purpose of this technical report the High Rock Lake WSA has been

divided into smaller anomalous sub-zones to aid in discussion of the metallic mineral potential in a more site specific manner. Please refer to the Mineral Potential Maps for locations of these anomalous sub-zones discussed below.

DONNELLY CREEK ANOMALOUS ZONE. (3B) Moderate Potential.

This zone is in the southern tip of the WSA, centered about Donnelly Creek. Rock types include the Miocene South Willow Formation, Soldier Meadow Tuff and Miocene-Pliocene basalts.

Geochemical sampling and geostatistical modeling results shows:

Response to Geostatistical Modeling

Low: mafic copper-nickel

Very low: base-precious metal, antimony-mercury

Anomalous Values

High: barium

Moderate: gold, nickel*, antimony*

Low: zinc*, tungsten*, mercury*

These anomalous responses may be related to hydrothermal activity along a north-south fault zone that produced the precious opal deposit at the Duffy Mine 1 1/2 miles north of Donnelly Creek.

Some minor prospecting activities, including ~~two~~ short adits (less than 20 feet long), have occurred on portions of 28 mining claims in this zone. These two adits were driven in a tuff unit, likely of the Soldier Meadow Tuff, but there was no apparent visible mineralization in the dump material.

BOX CANYON ANOMALOUS ZONE. (3B) Moderate Potential.

This zone is in the central portion of the WSA, centered about the Box Canyon area. Rock type is the Miocene Soldier Meadow Tuff.

Geochemical sampling and geostatistical modeling results show:

Response to Geostatistical Modeling

Low: gold-silver, mercury-antimony, volcanic uranium

Anomalous Values

High: mercury*

Moderate: silver, molybdenum

Anomalous molybdenum and mercury values occur in a north-south fault-controlled drainage on the north and south sides of Box Canyon. More detailed work needs to be done to determine if the faulting and anomalous values might be related to the postulated caldera, identified as a magnetic low, located just west of the WSA. Stream sediment samples in Box Canyon contain anomalous silver values which appear to have been transported in from the High Rock Lake area where other anomalous metal values are indicated in the Barringer Report. Tributary drainages to Box Canyon do not contain anomalous silver values.

No prospecting activities or mining claims are known in this zone.

FLY CANYON ANOMALOUS ZONE. (3B) Moderate Potential.

This zone is at the northern end of the WSA, centered on Fly Canyon. Rock types include tuffs of the Miocene High Rock Sequence.

Geochemical sampling and geostatistical sampling results show:

Response to Geostatistical Modeling

Low: gold-silver, base-precious metal

Anomalous Values

High: mercury*

Moderate: zinc*

These anomalous responses may be attributed to the postulated caldera structure projected through Fly Canyon and/or the hot spring activity at Soldier Meadows, one mile north.

No prospecting activities or mining claims occur in this zone.

SMOKEY CANYON ANOMALOUS ZONE. (2B) Low Potential.

This zone is in the west-central portion of the WSA along Smokey Canyon. Rock types include the Miocene Soldier Meadow Tuff and High Rock Sequence.

Geochemical sampling and geostatistical modeling results show:

Response to Geostatistical Modeling

Low: mafic copper-nickel

Anomalous Values

Low: nickel*, cobalt*, tungsten*, zinc*

These anomalous responses likely reflect elevated concentrations occurring naturally in mafic rocks.

No prospecting activities or mining claims are known in this zone.

WILLOW CREEK ANOMALOUS ZONE. (2B) Low Potential.

This zone is in the east-central portion of the WSA centered about Willow Creek. Rock types include Miocene Soldier Meadow Tuff and Pliocene-Miocene basalts.

Geochemical sampling and geostatistical modeling results show:

Anomalous Values

Low: silver, mercury*, barium

These anomalous values may be related to hydrothermal activity that has produced the precious opal deposits currently being prospected on mining claims in this zone.

Nonmetallic Mineral Potential

Precious opals are known to occur in the Willow Creek Zone and are being produced from the Duffy Mine in the Donnelly Creek Zone. These deposits occur in north-south fault zones and likely have been replaced by hot spring activity.

The following portions of the WSA are considered to have nonmetallic mineral potential:

High (4D) - Willow Creek Zone - known precious opal occurrence; Donnelly Creek Zone - precious opal production

Moderate (3B) - Remainder of WSA - precious opals

Geothermal Resources

The Soldier Meadow Known Geothermal Resource Area (KGRA) is at the extreme northern tip of the High Rock Lake WSA. Numerous hot spring vents are found less than a mile north of the WSA boundary. This hot spring activity is on the eastern boundary of the postulated caldera structure and the intersection of other fault zones. The hot spring activity may be related to a buried heat source (hot igneous rocks) within the caldera complex. White (1975) has rated reservoir temperature of the Soldier Meadows Hot Spring (KGRA) to be about 115°C, not presently suitable for electrical generation, but attractive for space and process heating. However, no deep drilling has been conducted in this area to confirm or deny this potential.

Portions of Sections 25 and 35, T. 40 N., R. 24 E., are public lands within the WSA that are part of the Soldier Meadows KGRA. To date none of the KGRA lands have been leased nor are there any existing geothermal leases on the surrounding public lands.

Other warm springs do occur along the eastern edge of the WSA at the flank of Calico Mountains (USDI Buffalo Hills URA 1979). Geothermal leasing activity has occurred in the southwest corner of T. 38 N., R. 25 E., just north of Donnelly Creek, but these leases have since been dropped.

The following portions of the WSA are considered to have geothermal potential:

High (4D) - A 2-mile-wide strip inside north boundary and a 1 1/2- to 2-mile-wide strip with warm springs on east side

Moderate (3B) - A 2-mile-wide strip on west side

Low (2B) - The remainder of the WSA

Oil and Gas Potential

The possibility exists that Late Cretaceous-Early Tertiary continental sediments are buried at depth beneath the thick Tertiary volcanic sequence throughout the WSA.

Two oil and gas lease blocks extend into the WSA on the east and west-central sides, with extensive leasing several miles to the west. To date no exploration activities have occurred in the general area.

The northwest corner of Nevada beginning at High Rock Lake westward and small portions of the Black Rock Desert along the southeastern tip of the WSA are classified prospectively valuable for oil and gas by Smith and Gere (USGS 1977).

The oil and gas potential of this WSA is classified 2A, low potential, insufficient data.

Quality Standard 2: Impact on Other Resources

Recreation

- current recreational use of WSA favors motorized and motorized-supported recreational activities (off-road vehicles, hunting, rockhounding)
- wilderness designation could restrict vehicular access on approximately 13.4 miles of ways and approximately 20,000 acres of land currently accessible to off-road recreational vehicles
- most significant impact to recreation from wilderness designation from restricting vehicular traffic on W1 and W11

Cultural Resources

- wilderness designation could indirectly add to the existing legal protection of cultural resources limiting resource development and use
- wilderness designation could possibly curtail excavation and stabilization of historic, prehistoric, or paleontological finds if action would impair wilderness values.
- rock shelter has excavating potential
- inventory data for WSA is sparse and sites which warrant excavation may be identified in the future

Energy and Mineral Resources

- wilderness designation imposes strict guidelines on all allowed mineral and energy development--potentially making development infeasible
- mining claims located after designation could not be developed
- see Quality Standard 1 for more detail

Livestock Grazing

- costs of maintaining range developments and livestock management would increase where permittee vehicular access is curtailed
- future beneficial range developments/treatments may be restricted; including proposed sagebrush control on west edge of WSA

Other Resources

Current resource plans identify no other resources which would be adversely impacted by wilderness designation. However, wilderness management could impose additional constraints on future projects in these programs: fire; wildlife; wild horses and burros; lands; soil, water, and air; aquatic habitat and visual resources.

Quality Standard 3: Impact of Non-designation on Wilderness Values

SHORT-TERM IMPACTS

-reduced opportunities for primitive and unconfined recreation and solitude in those areas accessible to off-road vehicles in WSA

LONG-TERM IMPACTS

-continued development of mineral and energy resources could eventually eliminate opportunities for naturalness, solitude, and primitive and unconfined recreation in WSA; potential discussed in Quality Standard 1

-area would remain open for development of other resources which might impair wilderness values; extent speculative

Quality Standard 4: Public Comment

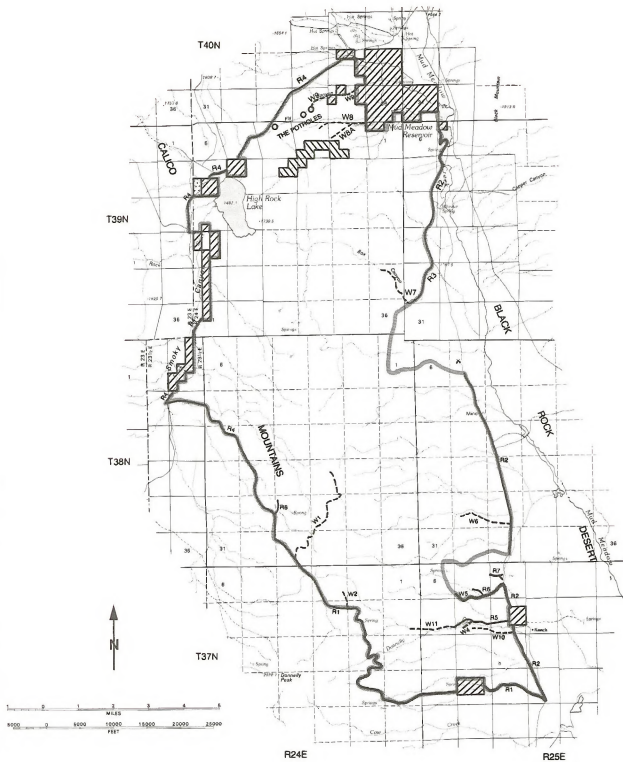
See District-wide Analysis, Chapter II




Quality Standard 5: Local and Regional Socioeconomic Effects

See District-wide Analysis, Chapter III

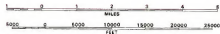
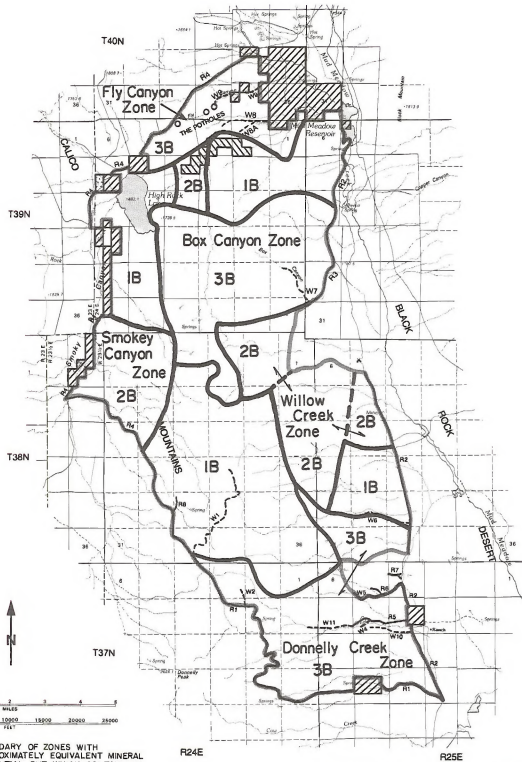
Quality Standard 6: Consistency With Other Plans

See District-wide Analysis, Chapter IV



-  PRIVATE LAND (SURFACE & MINERALS)
-  PRIVATE MINERALS—PUBLIC SURFACE
-  PRIVATE SURFACE—PUBLIC MINERALS
-  W. S. A. BOUNDARY
-  ROAD
-  WAY
-  GRAVEL PIT

NV-020-007 HIGH ROCK LAKE



- BOUNDARY OF ZONES WITH APPROXIMATELY EQUIVALENT MINERAL POTENTIAL BUT WHICH CONTAIN DIFFERENT MINERALS (SEE TEXT).
- PRIVATE LAND (SURFACE & MINERALS)
- PRIVATE MINERALS—PUBLIC SURFACE
- PRIVATE SURFACE—PUBLIC MINERALS
- W. S. A. BOUNDARY
- ROAD
- WAY
- GRAVEL PIT

R24E

FAVORABILITY

1. UNFAVORABLE POTENTIAL
2. LOW POTENTIAL
3. MODERATE POTENTIAL
4. HIGH POTENTIAL

LEVEL OF CONFIDENCE

- A. INSUFFICIENT DATA
- B. LOW CONFIDENCE (Indirect evidence)
- C. MODERATE CONFIDENCE (Direct evidence)
- D. HIGH CONFIDENCE (Abundant direct evidence)

R25E



NV-020-007 HIGH ROCK LAKE
MINERAL POTENTIAL

Wilderness Study Area 012: Poodle Mountain

DESCRIPTION

Location

- central Washoe County, Nevada approximately 15 miles northwest of Gerlach, Nevada
- two hour drive from Reno, the nearest Standard Metropolitan Statistical Area
- best access via State Highway 447 along east boundary (R1) and Washoe county road (WA33; R2) along southern boundary

Configuration and Size

- bounded by roads (57.1 miles), private land (22.7 miles) and topographic features (2.5 miles)
- approximately 18 miles north-south and 18 miles east-west; nearly round configuration
- 142,050 acres of public land (116,520 acres on Winnemucca District and 25,530 acres on Susanville District)

Physical Environment

- altitude range: 3,850 feet to 6,832 feet
- Bailey-Kuchler ecosystem: sagebrush-steppe with juniper (3130-49)
- Sonoma-Gerlach Grazing E.I.S. vegetation communities: sagebrush, saltbush, and annuals
- no extensive riparian habitat
- WSA encompasses most of the Buffalo Hills, a circular shaped basaltic plateau dominated by large canyons radiating generally from the center
- three distinct landforms in WSA; basalt plateau highlands; basalt plateau canyon country; and fringing desert piedmont
- basalt plateau highlands (about three to eight miles wide and 12 miles long):
 - is located in the north-central and northwest part of WSA
 - consists of flat to rolling basalt plateau and a small area of alluvium, vicinity Boulder Basin
 - includes Poodle Mountain, the volcanic vent from which the Buffalo Hills basalt issued
 - is only moderately eroded compared to the canyon country surrounding it
- basalt plateau canyon country (fringing the basalt highlands to the west, south and east, up to five miles wide):
 - contains numerous deeply-cut canyons and gorges, including Paul's Camp, Turn, Tin, Wrangler, Stockade, Twin Springs, Buffalo, Trail, Tule, Crooked, Granite, Five Springs, Little and Big Sawmill, Horse, Wall, Poodle Mountain, Jones and Currant Canyons
 - includes finger-like, flat-topped ridges and remnant plateaus between the canyons (e.g., Eddies Garden)
 - is an extremely rugged, rocky, high-relief landscape as compared to the low-relief highland plateau from which it radiates

- fringing desert piedmont (up to three miles wide)
- located along the south and southwestern boundary
- is the transition between the Buffalo Hills and the Smoke Creek Desert to the south
- is a low-relief alluvial landscape with low, parallel ridges and drainages lying perpendicular to the basalt plateau

STUDY POLICY CRITERIA

Criterion 1: Evaluation of Wilderness Values

Component A: Mandatory Wilderness Characteristics

SIZE

- 145,756 acres within boundary, including 3,706 acres of private land and 142,050 acres of public land

NATURALNESS

Developments within WSA

Range-related developments (see Table B-1 in Appendix B)

- three grazing allotments in WSA: (see Table B-2 in Appendix B)

Other man-made features

- six roads totalling 19.2 miles
- 63 ways and vehicle paths totalling 76.9 miles
- five stream channels along the southern boundary road (R2) were contoured to reduce flood impact - extends up to 1/4 mile into WSA
- three borrow pits located along R2 (three others were deleted from WSA during Intensive Inventory)

Outside imprints

- abandoned and existing ranches located near west, south and east boundaries visible from portions of WSA; impact is minimal
- highway and major county road along east and southeast boundaries visible from adjacent areas in WSA; traffic light

Location and size of areas subject to imprints

- majority of imprints (e.g., roads and ways, gravel pits) located along fringing desert piedmont on southeast boundary and within the basalt plateau highlands (approximately one-half of WSA)
- majority of basalt plateau canyon country contains minimal or no imprints (approximately one-half of WSA)
- most apparent imprints are the roads and ways along the east and southeast boundaries

Rehabilitation potential

- nearly all of the roads and ways in the WSA would require little or no mechanical manipulation for regeneration due to rocky surfaces and lack of vegetation
- one road (R9) from southeastern boundary would require substantial mechanical manipulation for regeneration
- channeled streams and gravel borrow pits along R2 would require substantial mechanical manipulation for regeneration
- range improvements in the WSA would require little or no mechanical manipulation for regeneration; many of these, however, are located on private land inholdings

Potential for separating areas within WSA subject to imprints

- majority of imprints could be separated by eliminating fringing desert piedmont and basalt plateau highlands from WSA
- wilderness values are highest within the basalt plateau canyons where imprints are minimal or nonexistent
- range improvements are located throughout the WSA and would be impossible to separate from WSA

Overall influence of imprints

- although WSA has a relatively high number of roads and ways, their visual impact is lessened due to the character of the basalt landscape; most are little more than four-wheel drive (4WD) paths across very rocky ground
- the most significant influence of imprints is that they are located throughout the WSA, with the canyon containing the fewest and the fringing desert piedmont containing the most; visitors would be frequently encountering watering troughs, vehicle paths, fencelines, and the like
- most landscapes in the WSA appear substantially natural except basalt plateau highlands

SOLITUDE

Solitude is defined as the opportunity to avoid the sights, sounds and evidence of other people.

Influence of outside sights and sounds

Economic activity

- localized and seasonal ranching (roundups, salting, and maintenance of range improvements near and in the WSA)

Aircraft flights

- two military training routes pass over the WSA
 - VR 1254 (visual rules--pilot controls flight) over center of WSA
 - ranges in altitude from 500 feet or below to 1,500 feet above ground level
 - VR 1261 passes over western edge of the WSA
 - same flying altitude as VR 1254

- one Military Operations Area (Reno MOA)
 - altitude 13,000 feet to 18,000 feet
 - hours of use: 1000-1500 Tuesday-Saturday and by notice
- State of Nevada Department of Wildlife conducts annual wildlife censuses:
 - deer counts November-December and March-April (helicopter); occasionally land in WSA for breaks; regular since mid-1970s
 - antelope counts in January (fixed-wing); composition studies in August (helicopter), which occasionally land in WSA; regular since 1950s
 - sage grouse strutting grounds survey in March-April (fixed-wing super-cub); lands in the WSA occasionally; regular since 1979, sporadically before
- BLM conducts livestock and wild horse censuses/roundups on WSA:
 - livestock tallies as needed (usually fixed wing); since 1950s
 - wild horse inventories every other year, August-October (helicopter and fixed-wing piper-cub); began in 1971; last inventory 1980
 - occasional checks during critical weather
 - wild horse roundups as needed:
 - last was during 1979 and 1980
 - not included in 1983 gathering priority
- BLM conducts fire detection flights as needed, usually 500' above ground level; administered by Susanville District Office

Vehicular traffic

- periodic traffic on east and southeast boundary roads (R1 and R2)
- east boundary road (R1) receives some truck traffic hauling gypsum wallboard from Empire and flagstone from the north end of the Buffalo Hills (out of the WSA)

Physical factors influencing solitude

Topographic and vegetative screening

- basalt plateau highlands
 - scattered juniper offer fair to good local vegetative screening
 - topographic screening fair due to rolling landform
- basalt plateau canyons
 - scattered juniper offering locally fair to good vegetative screening
 - deep canyons, many meandering, offer good to excellent topographic screening
- fringing desert piedmont
 - low shrubs provide poor vegetative screening
 - low relief provides fair to poor topographic screening

Size and configuration

- size is sufficient to provide solitude
- road from north boundary to center of unit creates an artificial intrusion which detracts from solitude

Ability of user to find secluded spot

- easily locatable within basalt canyon landform
- more difficult to find in basalt plateau highlands and in fringing desert piedmont

PRIMITIVE AND UNCONFINED RECREATION

Access

- all areas in WSA within five miles of a boundary road or R6
- excellent year-round access from the east and southeast sides (R1 and R2)
- very poor access along west and north boundaries, requiring high clearance or 4-WD vehicles year-round
- vehicular access in the WSA along numerous roads and ways; however, most require 4-WD vehicles

Attractions (see also Special Features)

Points of interest

- Noble_ wagon route (south boundary)
- Poodle Mountain volcanic vent
- wild horses
- antelope
- sage grouse
- numerous impressive canyons
- Indian Rock on southwest boundary

Challenge

- typical desert-steppe climate with associated challenges (hot, dry summers, cold winters)
- some water scarcity except
 - over 50 perennial springs (some on private land)
 - several miles of perennial stream along Buffalo, Jones and Frog Creeks

Scenic qualities

- deep, twisting canyons dotted with juniper
- excellent views of surrounding desert, plateau country and Granite Mountains
- open, rugged beauty of seemingly endless canyons and ridges
- wildlife viewing (especially antelope and wild horses)

Activities

Dayhiking

- south and east sides generally accessible to dayhiking
- most likely destinations are up the major canyons

Camping

- best locally in drainage bottoms and where fringing desert piedmont meets basalt plateau; limited by rocky terrain

Backpacking

- backpacking trips which start up one canyon and return via another the most feasible; numerous possibilities
- north and west sides may only be accessible by backpacking for those visitors without 4-WD vehicles

Hunting

- antelope in the northern two-thirds
- deer except in small areas along boundary
- mountain lion in the northern half
- sage grouse in entire unit; strutting ground near north boundary
- valley quail along eastern boundary
- medium to high density chukar range
- access good for hunters along southeast and east boundaries

Horsepacking

- entire area except along steep canyon walls accessible to horsepackers

Rock climbing and scrambling, caving

- rock climbing opportunities within steeper canyons
- rock scrambling opportunities fair to good within canyons
- no caves are known

Nature study

- viewing/photographing wild horses and antelope
- photography within major canyons and locally within desert piedmont
- geology study: Poodle Mountain basalt vent
- juniper trees (some of which are reportedly very old)

Fishing

- no known fish populations
- potential exists in Frog, Buffalo and Jones creeks

Winter sports

- winter camping; access limited to east and southeast sides
- cross-country skiing may be feasible during wet winters

Rockhounding

- no known rockhounding areas

Component B: Special Features

CULTURAL

Prehistoric

- total recorded sites: one
- 33 sites: one lithic scatter
- antiquities observation: five lithic scatters

Historic

- Nobles' Route passes along the southern boundary
- California-bound emigrant wagon route
- used during mid-1800s
- first use 1852
- see Jones (1980) for more information

ZOOLOGIC

Fisheries

- possible fisheries habitat in Jones Canyon, Buffalo Hills Reservoir, Buffalo Creek and Frog Creek

Wild horses and burros

- Buffalo Hills Herd Use Area (horses only)

Other mammals

- deer yearlong habitat (except southwest and northwest corners)
- antelope yearlong habitat (northern two-thirds)
- mountain lion (north half)
- kit fox (southern third)

Birds

- sage grouse range (strutting grounds along northeastern boundary)
- valley quail along eastern boundary
- medium to high chukar along central portion of 012

BOTANIC

- no threatened or endangered plants have been identified
- possible riparian habitat along Buffalo Creek

GEOLOGIC

- Poodle Mountain is reportedly a vent for an extinct volcano

PALEONTOLOGIC

- no known sites

ACECs

-none

SCENIC

-southern part within viewshed of Nobles' Route emigrant trail

Component C: Multiple Resource Benefits

Wilderness designation of the WSA could restrict motorized vehicular traffic on approximately 76.9 miles of ways approximately 44,000 acres of land which is now accessible to off-road vehicles. A vehicle closure would enhance opportunities for primitive and unconfined recreation within those areas of the WSA currently accessible to vehicles.

Long-term benefits from wilderness designation may accrue to those resources which would otherwise deteriorate should the area return to other multiple uses. Although current land-use plans essentially maintain the existing environment and resource commitments should the WSA not be designated wilderness, the federal land would remain accessible to mineral patenting, leasing and other development. These potential developments could adversely impact water, soil, air, visual, cultural and other resources which benefit from the existing, non-developed environment. The extent of future development in the WSA is unknown.

Component D: Diversity in the National Wilderness Preservation System

ECOSYSTEM AND LANDFORM DIVERSITY

-Bailey-Kuchler ecosystem: sagebrush-steppe (3130-49)
-Sonoma-Gerlach E.I.S. vegetative communities: sagebrush, salthush, greasewood and annuals

RECREATION NEAR SMSAs

-approximately two-hour drive from Reno, the nearest SMSA

GEOGRAPHIC DISTRIBUTION OF WILDERNESS

-see Chapter 1, Component D for an analysis

Criterion 2: Manageability

Physical Factors Influencing Manageability

CONFIGURATION

-road from north boundary to the private land in the center of the WSA (R6) creates an artificial intrusion which would be difficult to manage
-no other significant manageability problems due to configuration

ACCESS

- difficult to control off-road vehicle use from southeast boundary road (R2)
- difficult to control off-road vehicle use from many of the numerous roads and ways in the WSA, particularly those crossing the fringing desert piedmont and the basalt plateau highlands

LANDFORM

- landforms conducive to off-road vehicle use include the fringing desert piedmont and portions of the basalt plateau highlands in the vicinity of Boulder Flat

INTRUSIONS AND OUTSIDE INFLUENCES

- managing for solitude would be difficult in those areas described above where access is hard to control
- military aircraft flights most significant outside influence-- potential for reduction of flights or rerouting unknown
- other influences would not significantly impede manageability

Nonconforming But Accepted Uses

VALID EXISTING RIGHTS

Mining claims

- approximately 1,400 acres of WSA has ^{7A} registered mining claims; located in one block in the southern tip of WSA
- possible to eliminate area with mining claims without substantially reducing wilderness values
- wilderness manageability would be difficult should mining claimants develop claims

Leases

- no oil and gas or geothermal leases in WSA as of 3/83

Non-federal land

- 3,706 acres of private land with the boundary of WSA:
 - 480 acres which have federally-controlled mineral rights
 - majority of acreage in scattered parcels on east side
 - one large block near the center of WSA with access via road R6
 - present use is range oriented and expected to continue
 - many of the parcels do not currently have vehicular access
 - although private land use in the WSA is compatible with wilderness management, its acreage and distribution could create significant manageability problems in the future should landowners further exercise rights

ESTABLISHED AIRCRAFT AND MOTORBOAT USE

- low level military flights over WSA
- Nevada Department of Wildlife conducts animal censuses during winter, spring and summer using fixed-wing and helicopter
- BLM conducts wild horse censuses and roundups, livestock tallies and fire detection flights over WSA using fixed-wing and helicopter
- military flights slightly reduce manageability for solitude; other aircraft use would not significantly reduce wilderness manageability
- see Influence of Outside Sights and Sounds, for more detail

EXISTING AND PROPOSED RESOURCE FACILITIES

- no non-range facilities in the WSA except roads
- present land-use plans propose no facilities which would impair wilderness manageability

LIVESTOCK GRAZING

Present grazing activities

- three allotments in the WSA
- existing range facilities would slightly reduce managing for naturalness where they are concentrated (along north boundary, Boulder Flat)
- see NATURALNESS for details of existing facilities and seasons-of-use

Changes Identified in Sonoma-Gerlach Grazing E.I.S. and Eagle Lake MFP II

- no changes identified on Winnemucca District's portion of WSA
- proposed bighorn sheep reintroduction on Susanville District portion, which may require vehicular access

STUDY POLICY QUALITY STANDARDS

Quality Standard 1: Energy and Critical Minerals

For background information and general description of the District see Appendix A.

General Geology

The Poodle Mountain WSA is on Poodle Mountain along the eastern edge of the Modoc Plateau and western edge of the Basin and Range Province. Poodle Mountain is considered to be a major vent area from which thick sequences of late Miocene to Pliocene olivine basalts have erupted. Total accumulated thickness of the basalt sequence is more than 1,000 feet. These basalt flows have covered Miocene rhyolitic to basaltic tuffs, flows and sedimentary rocks of the High Rock Sequence, and the Miocene Canon Rhyolite exposed around the edges of Poodle Mountain. Other pre-Tertiary crystalline rocks exposed along the Southeastern edge of Poodle Mountain are Permian(?), Triassic(?), Jurassic(?), metavolcanic rocks and Jurassic to Cretaceous granodiorites (Bonham 1969). Quaternary alluvium covers the lower valley areas.

Following is a discussion of the energy and mineral potential in the Poodle Mountain WSA. Please refer to the Mineral Potential Classification on Scheme, Figure 1 in Appendix A, for further explanation of alpha-numeric classifications. Also see, in Appendix B, Tables B-10, B-11, B-12 and B-13 showing acreages for Metallic Mineral, Nonmetallic Mineral, Geothermal and Oil and Gas Potential; and Tables B-6, B-7 and B-8 showing acreages of Unpatented Mining Claims, and Geothermal and Oil and Gas Leases; as well as summary Tables B-14 and B-15 showing the Energy and Mineral Threshold Levels and Holdings affected by four of the alternatives proposed in the EIS (all except No Wilderness Alternative).

Metallic Mineral Potential

No mineral production has been recorded from the Poodle Mountain WSA. A few unpatented lode mining claims have been located at the southeastern tip of the WSA in sections 26, 27, and 35(?) or Sections 24 and 25(?) of T. 32 N., R. 20 E. Annual assessment work on the claims appears to be the only activity on the claim block. Some minor prospecting activities have also occurred in the metavolcanics exposed in the Five Springs Canyon area along the southeastern boundary of the WSA.

Barringer Resources (1982) indicated an area of moderate interest termed the "Hog Spring" anomalous area in the extreme southern tip of the WSA. Other anomalous areas of interest have been identified in the WSA and are discussed in this report. Please refer to the Mineral Potential Maps for locations of these anomalous zones.

HOG SPRING ANOMALOUS ZONE. (3C/B) Moderate Potential.

This zone is located at the extreme southern tip of the WSA.

Rock types include volcanic and sedimentary units of the High Rock Sequence.

Geochemical sampling and geostatistical results show:

Responses to Geostatistical Modeling

Low: volcanic uranium

Anomalous Values

High: mercury*

Moderate: zinc*, tungsten*

Low: molybdenum, barium

Some of these anomalous values, especially mercury, may be related to hot springs activity presently occurring in the general area. Wall Spring, a warm spring (83°F) located one mile northeast of this zone, is an indication of the geothermal activity in the area. Numerous dozer trenches have been cut on mining claims in this zone.

INDIAN ROCK ANOMALOUS ZONE. (3B) Moderate Potential.

This zone is also along the east-central boundary of the WSA, just south of Big Sawmill Canyon. Rock types include Miocene-Pliocene olivine basalts of the Poodle Mountain vent center.

Geochemical sampling and geostatistical results show:

Response to Geostatistical Modeling

Low: base-precious metal

Anomalous Values

High: mercury*, tungsten*

Moderate: zinc*

Low: barium

These anomalous values may be related to warm spring activity, documented (USDI Buffalo Hills URA 1979) along the eastern base of Poodle Mountain.

No prospecting activities or mining claims are known in this zone.

SQUAW CREEK ANOMALOUS ZONE. (3B) Moderate Potential.

This zone is located along the east-central boundary of the WSA between Poodle Mountain Canyon and Big Sawmill Canyon. The Miocene Canon Rhyolite is the only mapped rock type in this zone.

Geochemical sampling and geostatistical results show:

Response to Geostatistical Modeling

Low: gold-silver

Anomalous Values

Moderate: silver, zinc*, molybdenum, tungsten*, uranium

These anomalous values may be related to warm spring activity along the northeast base of Poodle Mountain. The silver and uranium values are of interest and warrant further work.

No prospecting activities or mining claims are known in this zone.

POODLE MOUNTAIN CANYON ANOMALOUS ZONE. (2B) Low Potential.

This zone is in the east-central portion of the WSA, centered on the Poodle Mountain Canyon drainage basin. Rock types include Miocene-Pliocene olivine basalts of the Poodle Mountain vent center.

Geochemical sampling and geostatistical results show:

Response to Geostatistical Modeling

Low: mafic copper-nickel

Anomalous values

Low: nickel*, cobalt*, zinc*, tungsten*, molybdenum

These anomalous responses likely reflect elevated concentrations occurring naturally in the mafic rocks. Concentrations of metal values may vary between individual flow units.

No prospecting activities or mining claims are known in this zone.

WILLOW BASIN ANOMALOUS ZONE. (2B) Low Potential.

This zone is in the south-central portion of the WSA, centered on the Willow Basin and Granite Canyon drainage basins. Rock types include Miocene-Pliocene olivine basalts of the Poodle Mountain vent center.

Geochemical sampling and geostatistical results show:

Response to Geostatistical Modeling
Moderate: mafic copper-nickel
Low: mercury-antimony, gold-silver
Anomalous values
Moderate: zinc*
Low: nickel*, molybdenum

Apparently other metals such as arsenic, etc., may be causing the response for the mercury-antimony and gold-silver vein models. These anomalous responses likely reflect elevated concentrations occurring in the mafic rocks of a particular flow unit.

No prospecting activities or mining claims are known in this zone.

CHICKEN CANYON, JONES FLAT AND TIN CANYON ANOMALOUS ZONES.
(2B) Low Potential.

These zones are in the northwest portion of the WSA. Rock types include Miocene-Pliocene olivine basalts of the Poodle Mountain vent center.

Geochemical sampling and geostatistical results show:

Anomalous Values
Moderate: zinc*
Low: molybdenum, zinc, tungsten*

All of these zones have molybdenum, zinc and tungsten, except the Jones Flat zone which has no anomalous tungsten values. The moderate anomalous zinc values occur in the Tin Canyon Zone. Background values for these metals may need to be reevaluated throughout the WSA.

No prospecting activities or mining claims are known in these zones.

Nonmetallic Mineral Potential

Washoe County operates several sand and gravel pits along the southeastern boundary and one red cinder pit two miles north of the WSA boundary. Good gravel sources are scarce in this area. Several sales for volcanic facing stone have been made on the northern edge of the boundary. Similar mafic rock types of facing stone quality occur throughout the WSA.

The following portions of the WSA are considered to have nonmetallic mineral potential:

- High (4D) - A 1/2 to 1-mile-wide strip inside southeast boundary: county sand and gravel pits
- Moderate (3C) - Entire WSA - northern edge has sales sites of decorative, volcanic facing stone and county pit of red cinder aggregate.

Geothermal Resource Potential

Several warm springs occur along the southeastern base, northeastern base, and northwestern side of Poodle Mountain (USDI Buffalo Hills URA 1979). Temperatures of these springs range from 64°F to 84°F. Two likely sources of the geothermal activity could be younger unexposed volcanic rocks associated with the Poodle Mountain vent center or deep percolation of thermal waters along basin and range faults around the base of Poodle Mountain. Deep drilling would have to be done to determine the heat source and the economic potential of the geothermal resources.

At present there are no geothermal leases within or adjacent to the WSA. Some minor geophysical surveys have been conducted to the east. The warm springs surrounding Poodle Mountain are attractive for greenhouse use.

The following portions of the WSA are considered to have geothermal potential:

Moderate (3C) - A 1- to 2-mile strip inside northeastern and southeastern boundary.

Low (2B) - The remainder of the WSA.

Oil and Gas Potential

Some minor leasing activity is occurring in the Smoke Creek Desert to the east, Duck Flat to the northwest and on the west-central boundary of the WSA. To date exploration activities in the WSA have been limited to minor geophysical surveys.

The possibility of late Cretaceous-Early Tertiary sedimentary rocks buried beneath the thick volcanics in this area is likely the cause of the present speculation.

The possible occurrence of these sedimentary rock and their oil and gas potential will not be known until the first few wells are drilled. The western half of the WSA is classified prospectively valuable for oil and gas by Smith and Gere (USGS 1977).

The oil and gas potential of this WSA is classified 2A, low potential, insufficient data.

Quality Standard 2: Impacts on Other Resources

Recreation

- current recreational use in WSA favors motorized and motorized-supported recreational activities (off-road vehicles, hunting)
- wilderness designation could restrict vehicular access on approximately 76.9 miles of ways and 44,000 acres of land in WSA currently accessible to off-road recreational vehicles

Cultural Resources

- wilderness designation could indirectly add to the existing legal protection of cultural resources by limiting resource development and use
- wilderness designation could possibly curtail excavation and stabilization of historic, prehistoric or paleontological finds if such action would impair wilderness values
- excavation of known sites is unlikely
- inventory data for WSA is sparse and sites which warrant excavation may be identified in the future

Energy and Mineral Resources

- wilderness designation imposes strict guidelines on all allowed mineral and energy development--potentially making development infeasible
- mining claims located after designation could not be developed
- see Quality Standard 1 for more detail

Livestock Grazing

- costs of maintaining range developments and livestock management would increase where permittee vehicular access is curtailed
- future beneficial range developments/treatments may be restricted; none are planned at this time

Other Resources

Current resource plans identify no other resources which would be adversely impacted by wilderness designation. However, wilderness management could impose additional constraints on future projects in these programs: fire; wildlife; wild horse and burros; lands; soil, water, and air; aquatic habitat and visual resources.

Quality Standard 3: Impact of Non-designation on Wilderness Values

SHORT-TERM IMPACTS

- reduced opportunities for primitive and unconfined recreation and solitude in those areas accessible to off-road vehicles in the WSA

LONG-TERM IMPACTS

- continued development of mineral and energy resources could eventually eliminate opportunities for naturalness, solitude, and primitive and unconfined recreation in the WSA; potential discussed in Quality Standard 1
- area would remain open for development of other resources which might impair wilderness values; extent speculative

Quality Standard 4: Public Comment

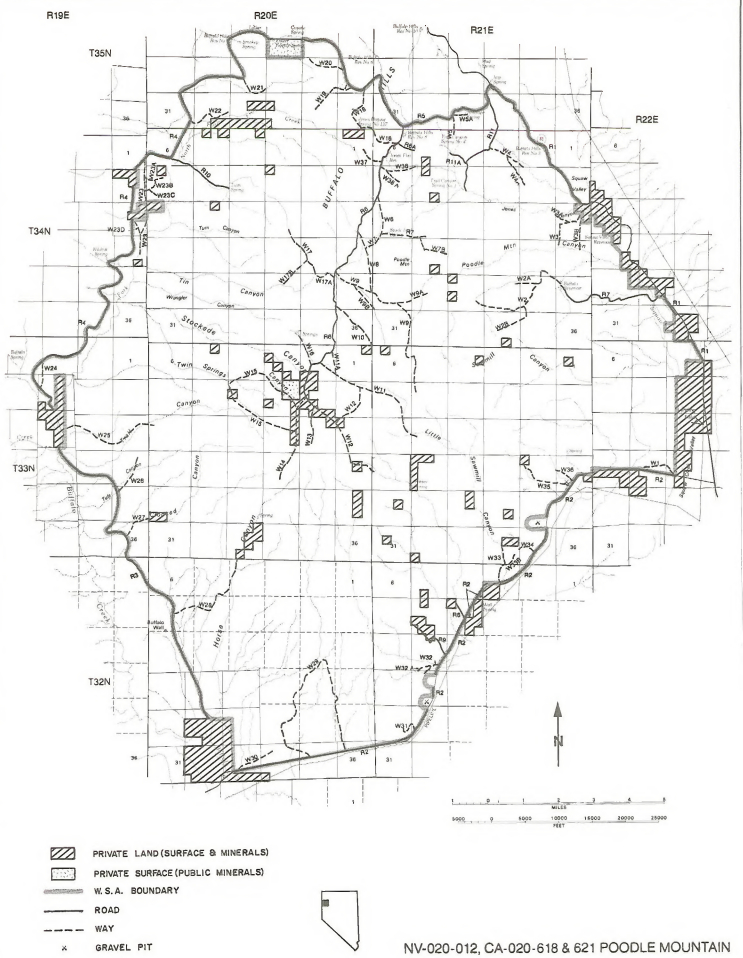
See District-wide Analysis, Chapter III

Quality Standard 5: Local and Regional Socioeconomic Effects

See District-wide Analysis, Chapter III

Quality Standard 6: Consistency With Other Plans

See District-wide Analysis, Chapter III



R19E

R20E

R21E







R22E

T35N

T34N

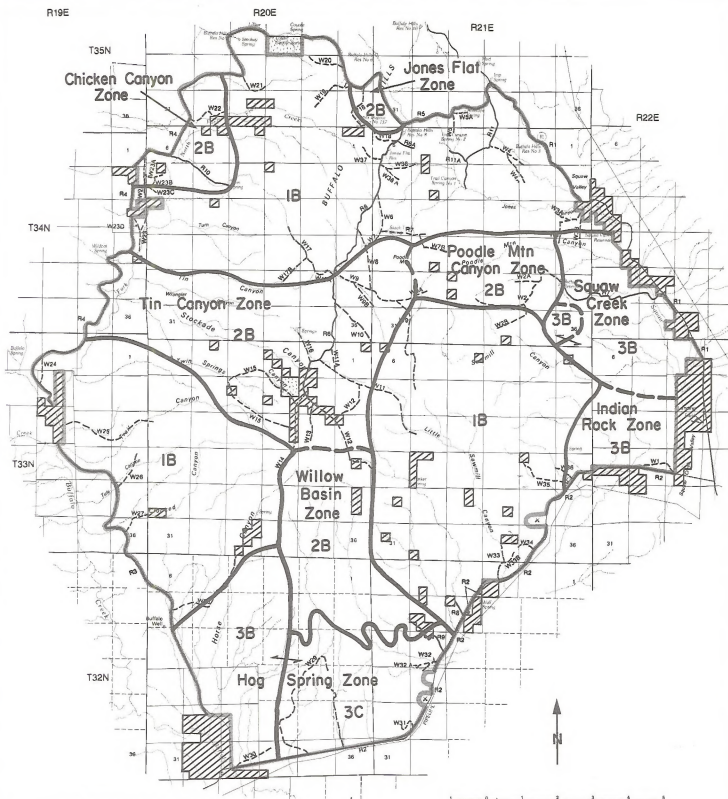
T33N

T32N

-  PRIVATE LAND (SURFACE & MINERALS)
-  PRIVATE SURFACE (PUBLIC MINERALS)
-  W. S. A. BOUNDARY
-  ROAD
-  WAY
-  GRAVEL PIT



NV-020-012, CA-020-618 & 621 POODLE MOUNTAIN



- BOUNDARY OF ZONES WITH APPROXIMATELY EQUIVALENT MINERAL POTENTIAL BUT WHICH CONTAIN DIFFERENT MINERALS (SEE TEXT).
- ▨ PRIVATE LAND (SURFACE & MINERALS)
- ▤ PRIVATE SURFACE (PUBLIC MINERALS)
- W.S.A. BOUNDARY
- ROAD
- - - WAY
- x GRAVEL PIT

- | FAVORABILITY | LEVEL OF CONFIDENCE |
|--------------------------|---|
| 1. UNFAVORABLE POTENTIAL | A. INSUFFICIENT DATA |
| 2. LOW POTENTIAL | B. LOW CONFIDENCE (Indirect evidence) |
| 3. MODERATE POTENTIAL | C. MODERATE CONFIDENCE (Direct evidence) |
| 4. HIGH POTENTIAL | D. HIGH CONFIDENCE (Abundant direct evidence) |



**NV-020-012, CA-020-618 & 621 POODLE MOUNTAIN
MINERAL POTENTIAL**

Wilderness Study Area 014: Fox Range

DESCRIPTION

Location

- central Washoe County, Nevada approximately ten miles southwest of Gerlach, Nevada
- two hour drive from Reno, the nearest Standard Metropolitan Statistical Area
- best access via powerline road (R2) along northeastern boundary

Configuration and Size

- bounded by roads (44.5 miles), the Western Pacific Railroad (5.8 miles), private land (7.2 miles), topographic features (0.6 mile) and Pyramid Lake Indian Reservation (5.8 miles)
- about 20 miles north-south and from two to nine miles east-west
- conspicuously narrow at the northern tip, forming a "panhandle"
- 75,404 acres of public land

Physical Environment

- altitude range: 3,900 feet to 7,608 feet
- Bailey-Kuchler ecosystem: sagebrush-steppe with juniper (3130-49)
- Sonoma-Gerlach Grazing E.I.S. vegetation communities: sagebrush, saltbush, waste, desert shrub and barren
- some riparian vegetation along Rodeo Creek
- WSA straddles the north end of the Fox Mountain Range, a typical range of the basin and range province
- Smoke Creek Desert lies to the west and the San Emidio Desert to the east; both are represented on the fringe of WSA
- three distinct landforms in the WSA: Fox Range from the main divide west; Fox Range from the main divide east; and the fringing desert piedmont
- Fox Range, west side (up to three miles wide and 17 miles long):
 - is a highly dissected, rugged landform of steep canyons and prominent ridges
 - contains much of WSA's juniper vegetation
 - shows an abrupt transition from the desert piedmont on the west
 - includes "Juniper Flat," a bowl-like basin of low relief near the ridgecrest
- Fox Range, east side (one to five miles east-west and 19 miles north-south):
 - is a smoother, more rolling landform than is the west side
 - includes several major canyons and drainages: Trail, Little Rattlesnake and Rattlesnake Canyons; Rodeo, Bull Basin, Coyote, Willow and Cottonwood Creeks
 - alternates between narrow, confined drainages and more open drainages
 - becomes more gently sloping to the east; blends gradually into the San Emidio Desert to the east
 - includes small area of granitic rock outcrops and remnant boulders just east of Pah Rum Peak
 - contains widely scattered juniper stands with scattered thick pockets on north slopes

- fringing desert piedmont (up to two miles wide):
 - is the transition between the Fox Range and the Smoke Creek Desert to the west and the San Emidio Desert to the east
 - typical alluvial landscape with gentle slopes and shallow parallel washes
 - contains several small sand dune areas, most notably along north tip

STUDY POLICY CRITERIA

Criterion 1: Evaluation of Wilderness Values

Component A: Mandatory Wilderness Characteristics

SIZE

- 76,718 acres within boundary, including 400 acres of private land, 914 acres of public land deleted due to mining, and 75,404 acres of public land (WSA)

NATURALNESS

Developments within WSA

Range-related developments (see Table B-1 in Appendix B)

- one grazing allotment (Rodeo Creek) (see Table B-2 in Appendix B for seasons-of-use)

Other man-made features

- three roads totalling 8. miles
- 17 ways totalling 18.4 miles
- all known mining areas were deleted from WSA during Intensive Inventory

Outside imprints

- portion of northeast boundary formed by powerline and road; visible from adjacent areas in the WSA
- Western Pacific Railroad located along northern and western boundary; visible and audible from adjacent areas in the WSA
- small farming areas visible from portions of WSA along east boundary
- isolated, small range improvements visible from within WSA; impact minimal
- two mining areas adjacent to WSA can be seen from small areas within WSA: Cottonwood Creek and Wild Horse Canyon (both areas were deleted during Intensive Inventory)
- cabin on private land in Rodeo Creek can be seen from within WSA

Location and size of areas subject to imprints

- most of WSA within Fox Range free of substantial imprints except adjacent mining areas within Wildhorse and Cottonwood Creek and three roads

- most significant imprints are railroad and powerline, which substantially affect much of the desert piedmont on the west, north and northeast sides up to one mile into WSA

Rehabilitation potential

- mining areas would need substantial mechanical manipulation for regeneration
- roads in the WSA would require some mechanical manipulation for regeneration

Potential for separating areas in WSA subject to imprints

- mining areas already separated; Cottonwood Creek area creates an awkward artificial intrusion into WSA
- effect of powerline and railroad could be substantially reduced by eliminating desert piedmont areas from WSA
- roads in the WSA could not be eliminated without substantially reducing wilderness values

Overall influence of imprints

- most areas in the WSA substantially natural
- railroad and powerline imprints most significant and influence most of fringing desert piedmont
- mining areas affect small portions in the WSA; Cottonwood Creek area "breaks" WSA into two sections by creating a hard-to-avoid, artificial intrusion which nearly bisects the WSA
- most visitors would have little difficulty locating substantially natural landscapes in the WSA outside of the desert piedmont and mining areas

SOLITUDE

Solitude is defined as the opportunity to avoid the sights, sounds and evidence of other people.

Influence of outside sights and sounds

Economic activity

- sporadic mining has occurred in the Cottonwood Creek area and can be expected to continue
- farming along east boundary can be seen from small areas in the WSA
- localized and seasonal ranching (roundups, salting and maintenance of range improvements near and in the WSA)
- Western Pacific Railroad visible and audible from portions of WSA on the north and west side

Aircraft flights

- three military training routes pass over the southwest edge of WSA; altitude range: 500 feet to 1,500 feet above ground level

- within Reno Military Operations Area; hours of use 1,000-1,500 hours Tuesday-Saturday
- State of Nevada Department of Wildlife conducts annual wildlife censuses
 - antelope counts in January (fixed-wing); August (helicopter); regular since 1950s
 - deer counts November-December and March-April (helicopter); regular since mid-1970s
 - semi-annual survey of sage grouse strutting grounds (fixed-wing); regular since 1979
- BLM conducts livestock, wild horse censuses/roundups and fire detection flights over WSA
 - livestock tallies as needed (usually fixed-wing); since 1950s
 - wild horse inventories every other year August-October (fixed-wing); occasional checks during critical weather; began 1976
 - wild horse roundups when needed (helicopter); last roundups in 1979 and 1980, scheduled for 1983
 - fire detection flights (by Carson City BLM); usually 500 feet above or more ground level

Vehicular traffic

- periodic, light traffic along boundary roads visible from immediately adjacent areas in the WSA
- interior roads and ways receive very light, occasional use

Physical factors influencing solitude

Topographic and vegetative screening

- Fox Range, west side
 - low shrubs and scattered juniper offer fair to poor vegetative screening
 - highly dissected drainages offer excellent topographic screening
- Fox Range, east side
 - low shrubs and scattered juniper offer fair to poor vegetative screening
 - topographic screening fair in rolling hill country, locally good in deeper cut drainages
- fringing desert piedmont
 - low shrubs provide minimal vegetative screening
 - topographic screening generally poor

Size and configuration

- size is sufficient to provide solitude
- northern tip of WSA narrow; no part more than 1.5 miles from boundary
- central portion about nine miles wide, sufficient to provide solitude
- Cottonwood Creek deleted area provides artificial intrusion which detracts from solitude in the northern half of WSA

Ability of user to find secluded spot

- easily locatable
 - throughout Fox Range, west side
 - within most of Fox Range, east side
- more difficult to find
 - in entire desert piedmont
 - Fox Range, east side vicinity Cottonwood Creek and locally in Rodeo Creek and Rattlesnake Canyon

PRIMITIVE AND UNCONFINED RECREATION OPPORTUNITY

Access

- all areas in WSA within four and one-half miles of a boundary road
- excellent year-round access from east side
- less reliable access on north and west sides
- southern boundary accessible only by foot or horseback
- vehicular access along four roads and 17 ways

Attractions (see also Special Features)

Points of interest

- John C. Fremont's 1842-1843 exploration passed through eastern edge of WSA; see (Jones 1980)
- variety of wildlife, including antelope, wild horses and game birds
- Pah Rum Peak
- views of Pyramid Lake, vicinity Pah Rum Peak
- narrow, deeply cut drainages, west side Fox Range
- Juniper Flat

Challenge

- typical desert/steppe climate with associated challenges (hot dry summers, cold winters)
- water scarce in summer, except
 - 18 perennial springs concentrated in the southern Fox Range
 - perennial streams in portions of Rodeo Creek and Wild Horse Canyon
 - steep, rugged topography difficult to traverse (west side)

Scenic qualities

- rugged west side of Fox Range has numerous steep, colorful canyons
- juniper stands in Fox Range
- east side is open, rolling landscape affording good views of surrounding desert
- views of Pyramid Lake from Pah Rum Peak highly scenic
- granitic rock outcrops, vicinity east of Pah Rum Peak, add color and texture contrasts to the surrounding, smooth landform

Activities

Dayhiking (water availability not critical)

- entire WSA accessible to dayhiking
- most likely destinations include the numerous canyons on the west side, Pah Rum Peak, the major canyons on the southeast side and along main ridgecrest

Camping

- best on east side of Fox Range and locally on west side where topography favorable (e.g., Juniper Flat); numerous isolated springs in southern part of Fox Range
- dry camping feasible throughout most of desert piedmont, but lacking in screening and/or attractiveness
- much of west side of Fox Range too steep for outstanding camping

Backpacking

- little advantage to backpacking in the northern half of WSA
- short (two or three days) backpacking trips easily arranged in the southern part of WSA, particularly along main ridgecrest to Pah Rum Peak and along canyons of east and west sides of the Fox Range
- on one proposed route of the proposed Desert National Scenic Trail

Hunting

- year-round antelope in the southern part
- year-round deer in the south-central part
- sage grouse, chukar and valley quail in parts of WSA
- access fair to poor on west side, fair to good on east side, poor on south side

Horsepacking

- east side of Fox Range excellent topography for horsepacking; forage generally available
- limited opportunity on west side of Fox Range due to steep, rocky slopes

Rock climbing and scrambling, caving

- rock climbing and scrambling opportunities good to excellent locally on west side of Fox Range; fair to poor elsewhere
- no caves are known

Nature study

- viewing/photographing wild horses, antelope
- photography in canyons, west side of Fox Range, and of old juniper stands
- geology study

Fishing

- no known fish populations
- potential exists in Wild Horse Canyon

Winter sports

- marginal winter camping
- snow depth generally not conducive to winter sports

Rockhounding

- no known rockhounding areas

Component B: Special Features

CULTURAL

Prehistoric

- total recorded sites: 15
- 83 sites: 15 isolated finds

Historic

- eastern edge part of John C. Fremont's 1842-1843 exploring route, guided by Kit Carson; no actual trace of the passage; see Jones (1980) for more information

ZOOLOGIC

Fisheries

- no known fish populations but potential exists in Wild Horse Canyon (partially in the WSA)

Wild horses and burros

- in Fox and Lake Range Wild Horse Use Area (no burros)

Other mammals

- year-round antelope (southern Fox Range)
- year-round deer (central Fox Range)

Birds

- sage grouse range (central Fox Range)
- medium to high density chukar except southeast corner
- valley quail (southeast corner)

BOTANIC

- no threatened or endangered species are known to occur in the WSA
- riparian vegetation along Rodeo Creek (1.5 miles of 3.5 miles in the WSA)

GEOLOGIC

- complex and interesting geologic patterns, particularly on west side Fox Range

PALEONTOLOGIC

- no known sites

ACECs

- none

SCENIC

- northern tip of WSA within viewshed of Nobles' Cutoff from Applegate-Lassen Emigrant Trail (across Smoke Creek Desert)

Component C: Multiple Resource Benefits

Wilderness designation of the WSA could restrict motorized vehicular traffic on approximately 18.4 miles of ways and approximately 13,000 acres of land which is now accessible to off-road vehicles. A vehicle closure would enhance opportunities for primitive and unconfined recreation within those areas of the WSA currently accessible to vehicles.

Long-term benefits from wilderness designation may accrue to those resources which would otherwise deteriorate should the area return to other multiple uses. Although current land-use plans essentially maintain the existing environment and resource commitments should the WSA not be designated wilderness, the federal land would remain accessible to mineral patenting, leasing and other development. These potential developments could adversely impact water, soil, air, visual, cultural and other resources which benefit from the existing, non-developed environment. The extent of future development in the WSA is unknown. A utility corridor along the northeastern boundary extends into the WSA and could be used for power transmission lines, gas pipelines, etc. Desert Land Entry applications are pending on 306 acres on the eastern edge of the WSA.

Component D: Diversity in the National Wilderness Preservation System

ECOSYSTEM AND LANDFORM DIVERSITY

- Bailey-Kuchler ecosystem: sagebrush-steppe with juniper (3130-49)
- Sonoma-Gerlach Grazing E.I.S. vegetative communities: sagebrush, saltbush, waste, desert shrub and barren

RECREATION NEAR SMSAs

-approximately two hour drive from Reno, the nearest SMSA

GEOGRAPHIC DISTRIBUTION OF WILDERNESS

-see Chapter III, Component D for an analysis

Criterion 2: Manageability

Physical Factors Influencing Manageability

CONFIGURATION

- mining area vicinity Cottonwood Creek creates artificial intrusion into O14; difficult to manage for primitive recreation and solitude adjacent to this intrusion
- northern tip of WSA significantly narrower than southern part; may be difficult to manage for solitude from Cottonwood Creek north

ACCESS

- difficult to control off-road vehicle use from some boundary roads, especially within the desert piedmont (R5, R2, R4)
- difficult to control off-road vehicle use from portions of the following roads and ways in the WSA: W1, W2, W4, W5, W13, R9, R7

LANDFORM

- desert piedmont conducive to off-road vehicle use

INTRUSIONS AND OUTSIDE INFLUENCES

- managing for solitude difficult in those areas described above where access is hard to control and within sight/sound of Western Pacific Railroad
- military aircraft flights and railroad most significant outside influences; potential for reduction or rerouting of flights unknown
- other influences would not significantly impair manageability

Nonconforming But Accepted Uses

VALID EXISTING RIGHTS

Mining claims

- approximately 2,100 acres (46 claims) in nine separate blocks have registered mining claims
 - over half of the acreage in the Cottonwood Creek area
 - other parcels scattered but within one to one and a half miles of the WSA boundary
 - not possible to eliminate most of the areas with mining claims without substantially impairing wilderness values
 - wilderness manageability would be difficult should claimants develop claims

Leases

- 2,267 acres of oil and gas leases on the northwest edge
- 867 acres of geothermal leases in the northern end
- probability of leases being developed undetermined
- wilderness manageability would be difficult in the northern one-third of WSA should leases be developed; separating leased areas would reduce wilderness values, particularly along west side of Fox Range

Non-federal land

- 400 acres of private land in six parcels, located on the east side of the Fox Range
- cattle grazing primary use; expected to continue
- difficult to separate private parcels without substantially reducing wilderness values

ESTABLISHED AIRCRAFT USE

- low level military flight over WSA
- Nevada Department of Wildlife conducts animal censuses during winter and spring using fixed-wing and helicopter
- BLM conducts wild horse censuses and roundups, livestock tallies and fire detection flights over O14 by fixed-wing and helicopter
- none of the established aircraft use would significantly reduce wilderness manageability; military flights would slightly reduce opportunities for solitude
- see Influence of Outside Sights and Sounds for more detail (e.g., dates flying established)

EXISTING AND PROPOSED RESOURCE FACILITIES

- no non-range facilities within WSA except roads
- utility corridor along northeast boundary extends into WSA; future utility lines could be placed within this corridor

LIVESTOCK GRAZING

Present grazing activities

- one allotment (Rodeo Creek) located in the WSA
- existing range facilities would not significantly impair wilderness manageability
- see NATURALNESS for details of existing facilities and seasons-of-use

Changes identified in Sonoma-Gerlach Grazing E.I.S

- one proposed fenceline cutting west to east across WSA, vicinity Willow and Bull Creek
- two proposed windmills north end of WSA
- none of these changes would significantly impair wilderness manageability

STUDY POLICY QUALITY STANDARDS

Quality Standard 1: Energy and Critical Minerals

For background information and general description of the District see Appendix A.

General Geology

These two WSAs are located in the Fox Range, a north-south fault block mountain of the Basin and Range Province. Rock types in the WSA include the Triassic and Jurassic metamorphosed sedimentary rocks of the Nightingale Sequence which have been intruded and metamorphosed by at least two different ages of Cretaceous granodiorite. The granodiorite body at the northern tip of the Fox Range is highly foliated. Also, the metamorphic rocks in the northern part of the range are distinctly more foliated and are of higher metamorphic grade than the metamorphic rocks in the southern part of the range. Overlying these rocks are Miocene basalts, andesites and dacite flows, breccias, tuffs and sedimentary rocks of the Pyramid Sequence, and younger Miocene-Pliocene olivine basalt flows. At the southern boundary of the WSA two Pliocene rhyolitic plugs have intruded the Nightingale Sequence, the Cretaceous granodiorites and the Pyramid Volcanic Sequence. Quaternary alluvium covers the lower valley areas.

A highly complex zone of faulting, fracturing and strong brecciation occurs in metamorphic rocks of Nightingale Sequence on the west side of the Fox Range. This pervasive zone of fracturing and brecciation also contains highly contorted and folded metamorphic rocks of the Nightingale Sequence. Much of the movement and brecciation has occurred along foliation planes in the metamorphic rocks. This zone is about one mile wide and extends northward from Reynard Siding for about two miles. Bonham (1969) has suggested this zone to be a major landslide or gravity slide block; however, he indicated the area needed to be studied in more detail. This zone is overlain by undisturbed volcanic rocks of the Pyramid Sequence.

Following is a discussion of the energy and mineral potential in the Fox Range WSA. Please refer to the Mineral Potential Classification Scheme, Figure 1 in Appendix A, for further explanation of alphanumeric classifications. Also see, in Appendix B, Tables B-10, B-11, B-12 and B-13 showing acreages for Metallic Mineral, Nonmetallic Mineral, Geothermal and Oil and Gas Potential; and Tables B-6, B-7 and B-8 showing acreages of Unpatented Mining Claims, and Geothermal and Oil and Gas Leases; as well as summary Tables B-14 and B-15 showing the Energy and Mineral Threshold Levels and Holdings affected by four of the alternatives proposed in the SIS (all except No Wilderness Alternative).

Metallic Mineral Potential

The Cottonwood Mining District is the only formally recognized district in the Fox Range WSA and includes all of the mines and prospects in the range. Basically the major activities have been centered at the head of Cottonwood Creek in the north-central portion of the WSA and along Wild Horse Canyon and Rodeo Canyon near the southern boundary of the WSA. Most of the production in this district likely occurred prior to the 1900s before any records were kept. Bonham (1969) estimates that total production did not

greatly exceed \$100,000, judging from the extent of the workings at the various mines. The metals occurring and possibly produced from this district include gold, silver, copper, lead, zinc, antimony and tungsten. A trace of nickel has been found in intrusive rocks in Wild Horse Canyon but there has been no production.

Barringer Resources (1982) indicated two significant anomalous areas termed the "Central Fox Range" and "Southern Fox Range," and an area of moderate interest termed the "Northern Fox Range" in the WSA. These three areas have been divided into several smaller anomalous sub-zones to aid in discussion of the metallic mineral potential in a more site-specific manner. Please refer to the mineral Potential Maps for locations of these anomalous sub-zones discussed below.

ROUGH CANYON ANOMALOUS ZONE. (3D) Moderate Potential.

This zone is in the southwest corner of the two WSAs, centered about Rough Canyon. Rock types include metasediments of the Nightingale Sequence, the Pyramid Volcanic Sequence and the Miocene-Pliocene basalt flows.

Geochemical sampling and geostatistical modeling results show:

Response to Geostatistical Modeling

High: base-precious metal

Moderate: antimony-mercury

Anomalous Values

High: mercury*, lead*

Low: barium

Little is known about the geologic controls or sources of these significant anomalous values. No prospecting activities or mining claims are known in this zone.

WILD HORSE CANYON ANOMALOUS ZONE. (4D) High Potential.

This zone is in the southwest corner of the WSA, centered about Wild Horse Canyon. Rock types include the Nightingale Sequence, Cretaceous granodiorite and the Pyramid Volcanic Sequence.

The Wild Horse Mine near the head of Wild Horse Canyon consists of several adits, shallow shafts, pits and an open stope. These workings explore two sets of mineralized faults trending northeast and northwest which cut a Cretaceous granodiorite stock intruding metasediments and a hornblende gabbro of the Nightingale Sequence. A five-stamp mill was in operation in 1912 treating vein quartz, mined from the two shear zones, for its gold and silver content. Bonham (1969) also indicated the gabbro body contained disseminated pyrrhotite and chalcopyrite and assays of grab samples indicated traces of nickel and 0.18 percent copper.

Other prospecting activities (at least one known adit) also occur at the mouth of Wild Horse Canyon. This adit was driven on a shear zone in granitic intrusive rock and metasediments of the Nightingale Sequence (USDI Buffalo Hills URA 1979). Little else is known about the type of mineralization sought in this adit.

Geochemical sampling and geostatistical modeling results show:

Response to Geostatistical Modeling

High: base-precious metal

Moderate: gold-silver

Low: mafic copper-nickel

Anomalous Values

High: clustering of silver, zinc*, molybdenum

Moderate: cluster of copper*, lead*, mercury*, nickel*, barium

RODEO CREEK ANOMALOUS ZONE. (3C) Moderate Potential.

This zone is in the extreme south-central portion of the WSA, centered about the headwaters of Rodeo Creek and Rattlesnake Canyon. Rock types include metasedimentary rocks of the Nightingale Sequence that have been intruded by Cretaceous granodiorite.

The garnet tungsten prospect on the ridge between Rodeo and Rattlesnake Canyons includes trenches, shallow pits and a shallow shaft along the metasediment-granodiorite contact. Minor scheelite occurs along this contact. No production figures are available but the small size of the workings indicate that not more than a few units of tungsten could have been produced (Bonham 1969). A 14-inch quartz vein containing argentiferous galena has been reported in Rodeo Canyon but Bonham (1969) was unable to locate this occurrence.

Geochemical sampling and geostatistical modeling results show:

Anomalous Values

High: mercury*

Moderate: molybdenum

Low: tungsten*, zinc*

All of these metals except mercury are compatible with the high temperature environment of an intrusive body. The anomalous values for mercury must represent a much younger and lower temperature event that appears to have affected the whole Fox Range.

BLM mining claim records do not indicate any current or active mining claims.

JUNIPER FLAT ANOMALOUS ZONE. (3C) Moderate Potential.

This zone is in the west-central portion of the WSA, centered about the Juniper Flat area. The boundary of this zone essentially outlines the perimeter of a Cretaceous granodiorite body.

Geochemical sampling and geostatistical modeling results show:

Anomalous Values

High: molybdenum, mercury*

Low: barium

The molybdenum values in this zone are significant and the intrusive body should be examined for a possible stockwork or disseminated type mineralization. The highly anomalous mercury values likely represent a much younger, lower temperature event that has affected the whole Fox Range. There are no known prospecting activities or mining claims in this zone.

REYNARD SIDING ANOMALOUS ZONE. (3D) Moderate Potential.

This zone is along the northwestern side of the WSA between Reynard Siding on the south and the Bronte section house on the north. Rock types include metasediments of the Nightingale Sequence intruded by a moderate-sized (one mile diameter) Cretaceous granodiorite plug and covered by the Pyramid Volcanic Sequence.

The only prospecting activities known are about two miles east of Reynard Siding at the southern end of the zone. Here a short adit has been driven on a north-south range front fault zone. A BLM field examination in 1981 indicated that the fault zone was highly limonitic, altered and weathered. Some minor anomalous values for molybdenum were indicated in the area of the adit (Barringer Resources 1982).

Geochemical sampling and geostatistical modeling results show:

Response to Geostatistical Modeling

High: gold-silver, base-precious metal

Low: mercury-antimony

Anomalous Values

High: clustering of silver, zinc*, molybdenum, barium

Moderate: copper*, mercury*, antimony*

Most of these anomalous values occur along a six-mile-long zone just west of the mining activity in the headwaters of Cottonwood Canyon. Very little is known about the geology of this highly anomalous strip other than it occurs in metasediments of the Nightingale Sequence. This highly anomalous strip also appears to lie north of the contorted and fractured gravity(?) slide block mentioned by Bonham (1969), and also north of the Cretaceous granodiorite body mentioned above.

Only two lode mining claims are known to occur, with minor activity on one.

COTTONWOOD AREA (4D) High Potential.

This area is in the central portion of the WSA, centered about the headwaters of Cottonwood Creek. Rock types include metasediments of the Nightingale Sequence overlain by the Pyramid Volcanic Sequence.

The mining activity in this area consists of some extensive underground workings which explore northeast trending shear zones containing vein quartz. These shear zones have cut granite porphyry dikes and sills that have intruded schistose argillites, phyllites, quartz-biotite schist and marble of the Nightingale Sequence. The quartz veins, up to six feet thick, contain visible sphalerite, tetrahedrite, Jamesonite and pyrite. Assays have indicated 0.7 to 5.0 percent lead, 0.9 to 3.0 percent copper,

0.5 to 2.4 percent antimony, 0.7 to 1.7 percent zinc, 0.06 to 0.16 oz./ton gold, and 7.68 to 70.68 oz./ton silver from the vein material (Bonham 1969).

Geochemical sampling and geostatistical modeling results show:

Anomalous Values

Moderate: silver, molybdenum

Low: zinc*, mercury*, barium

Only two samples were taken at the mouth of Cottonwood Creek about two miles downstream from the mining activity in the headwaters. Sampling closer to the source of the mineralization would likely have resulted in high anomalous values and for more elements than presently indicated.

TRAIL CANYON ANOMALOUS ZONE. (2B) Low Potential.

This zone is on the extreme southeastern corner of the USA centered about Trail Canyon. Rock types include metasediments of the Nightingale Sequence, the Pyramid Volcanic Sequence and two rhyolite intrusive bodies.

Geochemical sampling and geostatistical modeling results show:

Response to Geostatistical Modeling

Low: gold-silver

Anomalous Values

High: tungsten*

Moderate: mercury*

Low: molybdenum, barium

The moderate values for tungsten are likely due to the concentration of sheelite in stream sediments derived from the metasediment-granodiorite contact zone to the west. It is not clear from which rock type the other metal values are derived. The two Tertiary rhyolitic plugs in this zone are of interest for their metal bearing potential. At present there are no known prospecting activities in this zone; however, placer mining claims have been located along the eastern boundary.

EAST FOX RANGE AND WILLOW CREEK. (2B/C) Low Potential.

These zones are along the eastern-central side of the USA. Volcanic rocks of the Pyramid Sequence are the only rock types mapped in this zone (Bonham 1969). However, it is possible that small unmappable outcroppings of granitic or metasediments may be exposed in the deeper drainages.

Geochemical sampling and geostatistical modeling results show:

Response to Geostatistical Modeling

Low: mercury-antimony

Anomalous Values

High: mercury*

Low: molybdenum, tungsten*, mercury*, barium

The Willow Creek zone contained high anomalous mercury values and the response to the mercury-antimony model, in addition to low anomalous tungsten and barium values. The East Fox Range zone contains low anomalous mercury, molybdenum and barium values. Past hot spring activity may be the source for the high anomalous mercury values in the Willow Creek zone.

A few scattered mining claims do occur throughout these two zones but nothing is known about these prospecting activities.

NORTHEAST FOX RANGE, WESTERN PACIFIC AND PHIL SIDING ANOMALOUS ZONES.
(2B/C) Low Potential.

These three zones are in the northern tip of the WSA. Rock types include metasediments of the Nightingale Sequence and foliated Cretaceous granodiorite, with some minor cappings of the Pyramid Volcanic Sequence.

The Northeast Fox Range zone is about one and one-half miles north of the mouth of Cottonwood Creek. Some minor prospecting activities and dozer cuts occur on mining claims containing east-west quartz veins cutting the metasediments one mile north of the mouth of Cottonwood Canyon. The type of metals sought is not known.

Geochemical sampling and geostatistical modeling results show:

Anomalous Values
Moderate: fluorine
Low: uranium

The uranium and fluorine values are about one-half mile north of the prospecting activities along the metasediment-foliated granodiorite contact.

The Western Pacific zone is about one and one-half miles south of the Western Pacific Railroad tracks in the foliated granodiorites.

Geochemical sampling and geostatistical modeling results show:

Response to Geostatistical Modeling
Low: base-precious metal
Anomalous Values
Low: zinc*, mercury*

There are no prospecting activities or mining claims known in this zone.

The Phil Siding zone is on the extreme northern tip of the WSA and the Fox Range.

Geochemical sampling and geostatistical modeling results show:

Anomalous Values
Low: mercury*, molybdenum, tungsten*, barium

A north-south range front fault zone cuts the granodiorites in this area. Some of the metal values may be related to this fault.

No prospecting activities or mining claims are known in this zone.

Nonmetallic Mineral Potential

There have been no reports or suspected deposits of nonmetallic minerals in this WSA, therefore potential is classified 1A, unfavorable, insufficient data.

Geothermal Resource Potential

The San Emidio Known Geothermal Resource Area (KGRA) is one mile east and the Gerlach KGRA is three miles northeast of the Fox Range WSA. These two KGRAs have been the sights of a few deep geothermal exploration wells. Several geothermal leases covering a portion of the northern end of the WSA have recently been dropped. Based on the proximity of these KGRAs to the WSA, the following portions are considered to have geothermal potential:

- High (4D) - A 1-mile-wide strip inside eastern boundary
- Moderate (3B) - A 1-mile-wide strip inside western boundary
- Low (2B) - The remainder of the WSA

Oil and Gas Potential

The central core of Fox Range is not considered to have any oil and gas potential, basically because of the high temperature metamorphic and igneous events recorded in the range. The sedimentary units of the Miocene Pyramid Sequence are too young and too thin to provide a favorable environment for hydrocarbon accumulations. Some speculative oil and gas potential is possible, however, along the western, northern and eastern boundaries of the WSA along the more valleyward side of the Fox Range. At present there is one large oil and gas lease block extending into the WSA from the Smoke Creek Desert between Reynard Siding and Bronte Section House. This lease block covers seven partial sections within the WSA boundary. Another large block is in the Smoke Creek Desert, just one mile northwest of the WSA, and there are a few leases about two miles east of the southeastern tip of the WSA in the San Emidio Desert. One oil and gas geophysical survey has been conducted a few miles north of the WSA.

The southwestern portion of Smoke Creek Desert is classified as prospectively valuable for oil and gas by Smith and Gere (USGS 1977).

A one-mile-wide strip inside the eastern, northern and western boundaries of the WSA is classified as 2A, low favorability, but with insufficient data. The remainder of the WSA is classified 1D, unfavorable with a high confidence level.

Quality Standard 2: Impacts on Other Resources

Recreation

- current recreational use of WSA favors motorized and motorized-supported recreational activities (off-road vehicles, hunting)
- wilderness designation could restrict vehicular access on approximately 18.4 miles of ways and about 13,000 acres of land currently accessible to off-road recreational vehicles
- most significant impact to recreation from wilderness destination from restricting vehicular traffic on R7, R9, W7, and W6

Cultural Resources

- wilderness designation could indirectly add to the existing legal protection of cultural resources by limiting resource development and use
- wilderness designation could possibly curtail excavation and stabilization of historic, prehistoric or paleontological finds if action would impair wilderness values.
- excavation of known sites is unlikely
- inventory data for WSA is sparse and sites which warrant excavation may be identified in the future

Energy and Mineral Resources

- wilderness designation imposes strict guideline on all allowed mineral and energy development--potentially making development infeasible
- mining claims located after designation could not be developed
- see Quality Standard 1 for more detail

Livestock Grazing

- costs of maintaining range developments and livestock management would increase where permittee vehicular access is curtailed
- future beneficial range developments/treatments may be restricted

Lands

- utility corridor along northeast boundary extends into WSA; wilderness designation could restrict future utility lines along the west side of this corridor (none proposed at this time)
- 306 acres along the east boundary are under application for Desert Land Entry; wilderness management would not generally allow agricultural use

Other Resources

Current resource plans identify no other resources which would be adversely impacted by wilderness designation. However, wilderness management could impose additional constraints on future projects in these programs: fire; wildlife; wild horses and burros; soil, water and air; aquatic habitat and visual resources.

Quality Standard 3: Impact of Non-designation on Wilderness Values

SHORT-TERM IMPACTS

-reduced opportunities for primitive and unconfined recreation and solitude in those areas accessible to off-road vehicles

LONG-TERM IMPACTS

-continued development of mineral and energy resources could eventually eliminate opportunities for naturalness, solitude and primitive and unconfined recreation in the WSA; potential discussed in Quality Standard 1
-area would remain open for development of other resources which might impair wilderness values; extent speculative

Quality Standard 4: Public Comment

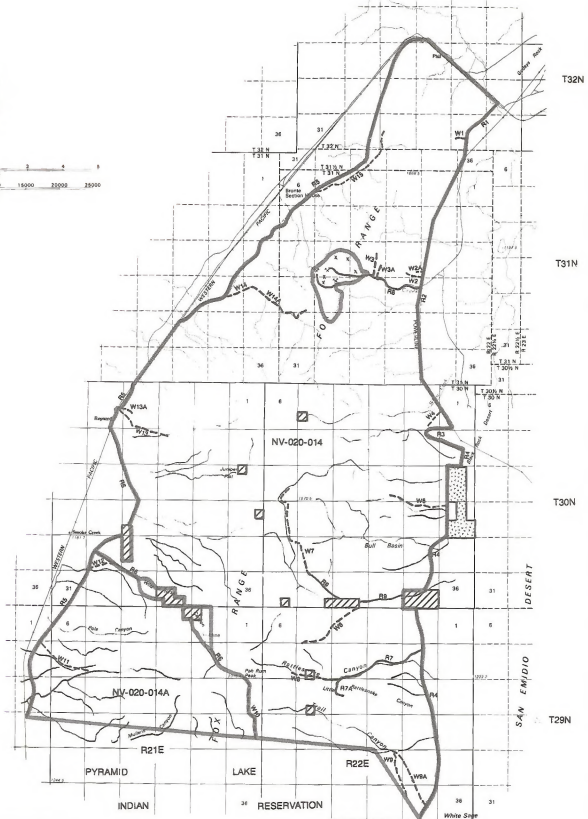
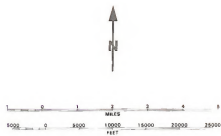
See District-wide Analysis, Chapter III








Quality Standard 5: Local and Regional Socioeconomic Effects

See District-wide Analysis, Chapter III

Quality Standard 6: Consistency With Other Plans

See District-wide Analysis, Chapter III



-  PRIVATE LAND (SURFACE & MINERALS)
-  PRIVATE SURFACE—PUBLIC MINERALS
-  W. S. A. BOUNDARY
-  ROAD
-  WAY
-  PROSPECT
-  MINE



NV-020-014 FOX RANGE
 NV-020-014A FOX RANGE (POLE CREEK)



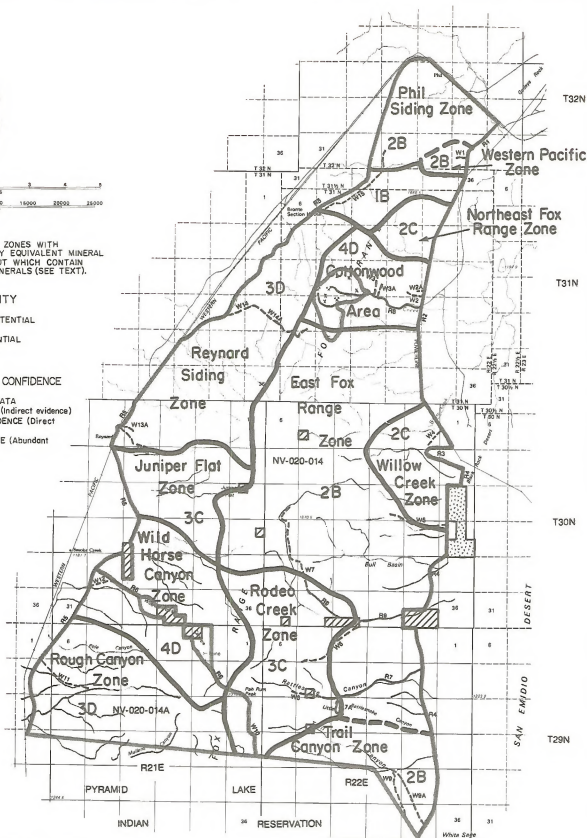
BOUNDARY OF ZONES WITH APPROXIMATELY EQUIVALENT MINERAL POTENTIAL BUT WHICH CONTAIN DIFFERENT MINERALS (SEE TEXT).

FAVORABILITY

1. UNFAVORABLE POTENTIAL
2. LOW POTENTIAL
3. MODERATE POTENTIAL
4. HIGH POTENTIAL

LEVEL OF CONFIDENCE

- A. INSUFFICIENT DATA
- B. LOW CONFIDENCE (Indirect evidence)
- C. MODERATE CONFIDENCE (Direct evidence)
- D. HIGH CONFIDENCE (Abundant direct evidence)



PRIVATE LAND (SURFACE & MINERALS)

PRIVATE SURFACE - PUBLIC MINERALS

W. S.A. BOUNDARY

ROAD

WAY

PROSPECT

MINE



NV-020-014 FOX RANGE
NV-020-014A FOX RANGE (POLE CREEK)

MINERAL POTENTIAL

Wilderness Study Area 014A: Pole Creek

DESCRIPTION

Location

- central Washoe County, Nevada approximately 20 miles southwest of Gerlach, Nevada
- three-hour drive from Reno, the nearest Standard Metropolitan Statistical Area
- best access via Western Pacific Railroad maintenance road (R5) along the west boundary (approach from Pyramid Lake to the south)

Configuration and Size

- bounded by roads (11.6 miles), Pyramid Lake Indian Reservation (6.3 miles), private land (1.7 miles) and topographic features (1.1 miles)
- roughly triangular in shape with five to six miles on a side
- 12,969 acres of public land

Physical Environment

- altitude range: 3,900 feet to 7,608 feet
- Bailey-Kuchler ecosystem: sagebrush-steppe with juniper (3130-49)
- Sonoma-Gerlach Grazing E.I.S. vegetation communities: saltbush (western one-third) and sagebrush
- some riparian vegetation along Wild Horse Creek, a small portion of which may be within 014A
- 014A is located along the west face of the Fox Mountain Range, a typical range of the Basin and Range Province
- the Smoke Creek Desert lies to the west, and is represented on the western edge of 014A
- two distinct landforms within 014A: Fox Range and fringing desert piedmont
 - Fox Range (three to five miles east-west, two to five miles north-south)
 - is a highly dissected, rugged landform of steep canyons and prominent ridges
 - contains all 014A's juniper vegetation
 - is markedly smoother and less dissected along the east edge adjacent to the main ridgeline
 - contains several prominent canyons: Wild Horse (on north boundary); Pole and Rough, which run east-west; Mullens and Fox, which run north-south
 - fringing desert piedmont (up to one and one-half miles wide):
 - is the transition between the Smoke Creek Desert to the west and the Fox Mountain Range
 - typical alluvial landscape with gentle slopes and shallow, parallel washes
 - includes a small wave-cut terraced hill in the south of 014A

STUDY POLICY CRITERIA

Criterion 1: Evaluation of Wilderness Values

Component A: Mandatory Wilderness Characteristics

SIZE

-12,969 acres, all public land

NATURALNESS

Developments within WSA

Range-related developments (see Table B-1 in Appendix B)

-two grazing allotments within O14A: Pole Creek and Rodeo Creek; see Table B-2 in Appendix B for seasons-of-use

Other man-made features

-two ways totalling 2.4 miles
-no known mining areas .

Outside imprints

-Western Pacific Railroad located along western boundary; visible and audible from adjacent areas within O14A
-mining area in Wild Horse Canyon visible from small portions of O14A
-isolated range improvements visible from within O14A; impact minimal

Location and size of areas subject to imprints

-most of O14A within Fox Range free of imprints except within Wild Horse drainage
-most significant imprint is the railroad; this generally affects only the fringing desert piedmont

Rehabilitation potential

-mining area in Wild Horse Canyon would require substantial mechanical manipulation for regeneration
-ways and other features within O14A could be rehabilitated without substantial mechanical manipulation

Potential for separating areas in WSA subject to imprints

-Wild Horse Canyon could be separated with moderate impacts to wilderness values

Overall influence of imprints

- most areas within 014A substantially natural
- railroad most significant imprint and influences most of fringing desert piedmont
- most visitors would have little difficulty locating substantially natural landscapes within 014A

SOLITUDE

Solitude is defined as the opportunity to avoid the sights, sounds and evidence of other people.

Influence of outside sights and sounds

Economic activity

- Western Pacific Railroad visible and audible from portions of 014A on the west side

Aircraft flights

- three military training routes pass over 014A; altitude range: 500 feet or below to 1,500 feet above ground level
- within Reno Military Operations Area; hours of use 1000-1500 hours Tuesday-Saturday and by notification
- State of Nevada Department of Wildlife conducts annual wildlife censuses:
 - antelope counts in January (fixed-wing); August (helicopter); regular since 1950s
 - deer counts November-December and March-April (helicopter); regular since mid-1970s
 - semi-annual survey of sage grouse strutting grounds (fixed-wing); regular since 1979
- BLM conducts livestock, wild horse censuses/round-ups and fire detection flights over 014A:
 - livestock tallies as needed (usually fixed-wing); since 1950s
 - wild horse inventories every other year, August-October (fixed-wing); occasional checks during critical weather; began 1976
 - wild horse roundups when needed (helicopter); last roundups in 1979 and 1980, scheduled for 1983
 - fire detection flights (by Carson City BLM); usually 500 feet or higher above ground level

Vehicular traffic

- periodic, light traffic along boundary roads visible from immediately adjacent areas within 014A
- interior ways receive very light, occasional use

Physical factors influencing solitude

Topographic and vegetative screening

-Fox Range

- low shrubs and scattered juniper offer fair to poor vegetative screening
- highly dissected drainages offer excellent topographic screening
- fringing desert piedmont
- low shrubs provide minimal vegetative screening
- topographic screening generally poor except fair on wave-cut terraced hills, south end

Size and configuration

- size is sufficient to provide solitude
- solitude is not affected by configuration, except for that portion of 014A within Wild Horse Canyon

Ability of user to find secluded spot

-easily locatable

- throughout Fox Range except locally in Wild Horse Canyon
- more difficult to find
- in entire desert piedmont
- Fox Range vicinity of mining and road in Wild Horse Canyon

PRIMITIVE AND UNCONFINED RECREATION OPPORTUNITY

Access

- all areas in 014A within three miles of a boundary road
- fair year-round access from east side
- less reliable access on northeast and east sides
- southern boundary accessible only by foot or horseback
- vehicular access within 014A along two ways (W11, W12)

Attractions (see also Special Features)

Points of interest

- variety of wildlife including antelope, wild horses and game birds
- Pah Rum Peak
- views of Pyramid Lake, vicinity Pah Rum Peak
- narrow, deeply cut drainages of the Fox Range; Rough and Pole Canyons of particular interest
- excellent views of Smoke Creek Desert to west

Challenge

- typical desert/steppe climate with associated challenges (hot dry summers, cold winters)
- water scarce in summer, except
 - four perennial springs in the Fox Range
 - perennial; streams in portions of Wild Horse Canyon
- steep, rugged topography difficult to traverse (Fox Range)

Scenic qualities

- rugged west side of Fox Range has numerous steep, colorful canyons, including Pole and Rough Canyons
- juniper stands in Fox Range
- views of Pyramid Lake from Pah Rum Peak highly scenic

Activities

Dayhiking (water availability not critical)

- entire O14A accessible to dayhikers
- most likely destinations include the numerous canyons on the west side, Pah Rum Peak and the main ridgecrest

Camping

- best on main ridgecrest vicinity of Pah Rum Peak
- dry camping feasible throughout most of desert piedmont, but lacking in screening and/or attractiveness
- much of Fox Range too steep for outstanding camping except in local spots

Backpacking

- little advantage to backpacking in O14A except in combinations with trips into O14
- short backpacking trips can be arranged in the Fox Range part of O14A, particularly along main ridgecrest to Pah Rum Peak, and along canyons in the Fox Range
- on one proposed route of the proposed Desert National Scenic Trail

Hunting

- year-round antelope in the Fox Range
- year-round deer in the Fox Range
- sage grouse and chukar within parts of O14A
- access fair to poor due to road conditions

Horsepacking

- limited opportunity on west side of Fox Range due to steep, rocky slopes

Rock climbing and scrambling, caving

- rock climbing and scrambling opportunities good to excellent locally in Fox Range; fair to poor elsewhere
- no caves are known

Nature study

- viewing/photographing wild horses, antelope
- photography in canyons, west side of Fox Range and of old juniper stands
- geology study

Fishing

- no known fish populations
- potential exists in Wildhorse Canyon

Winter sports

- marginal winter camping
- snow depth generally not conducive to winter sports

Rockhounding

- no known rockhounding areas within 014A

Component B: Special Features

CULTURAL

Prehistoric

- no known sites

Historic

- no known sites

ZOOLOGIC

Fisheries

- no known fish populations but potential exists in Wild Horse Canyon (partially within 014A)

Wild horses and burros

-in Fox and Lake Range Wild Horse Use Area (no burros)

Other mammals

-year-round antelope (southern Fox Range)
-year-round deer (Fox Range)

Birds

-sage grouse range (central Fox Range)
-medium to high density chukar

BOTANIC

-no threatened or endangered species are known to occur within 014A
-riparian vegetation along Wild Horse Canyon Creek (a small portion within 014A)

GEOLOGIC

-complex and interesting geologic patterns, particularly vicinity of Pole and Rough Canyons

PALEONTOLOGIC

-no known sites

ACECs

-none

SCENIC

-no areas of special scenic interest except Pole and Rough Canyons

Component C: Multiple Resource Benefits

Wilderness designation of 014A could restrict motorized vehicular traffic on approximately 2.4 miles of ways and approximately 3,000 acres of land which is now accessible to off-road vehicles. A vehicle closure would enhance opportunities for primitive and unconfined recreation within those areas of 014A currently accessible to vehicles.

Long-term benefits from wilderness designation may accrue to those resources which would otherwise deteriorate should the area return to other multiple uses. Although current land-use plans essentially maintain the existing environment and resource commitments should 014A not be designated wilderness, the federal land would remain accessible to mineral patenting, leasing and other development. These potential developments could adversely impact water, soil, air, visual, cultural and other resources which benefit from the existing, non-developed environment. The extent of future development in 014A is unknown.

Component D: Diversity in the National Wilderness Preservation System

ECOSYSTEM AND LANDFORM DIVERSITY

- Bailey-Kuchler ecosystem: sagebrush-steppe with juniper (3130-49)
- Sonoma-Gerlach Grazing E.I.S. vegetative communities: sagebrush, saltbush

RECREATION NEAR SMSAs

- approximately three hour drive from Reno, the nearest SMSA

GEOGRAPHIC DISTRIBUTION OF WILDERNESS

- see Chapter III, Component D for an analysis

Criterion 2: Manageability

Physical Factors Influencing Manageability

CONFIGURATION

- mining area vicinity Wild Horse Canyon creates artificial intrusion into O14A; difficult to manage for the rest of watershed primitive recreation and solitude because of this intrusion
- no other manageability problems due to configuration

ACCESS

- difficult to control off-road vehicle use from western boundary road (R5), that portion of the Wild Horse Canyon road which traverses the desert piedmont, and W11 and W12

LANDFORM

- desert piedmont conducive to off-road vehicle use

INTRUSIONS AND OUTSIDE INFLUENCES

- managing for solitude difficult in those areas described above where access is hard to control and within sight/sound of Western Pacific Railroad
- military aircraft flights and railroad most significant outside influences; potential for reduction or rerouting of flights unknown
- other influences would not significantly impair manageability

Non-conforming But Accepted Uses

VALID EXISTING RIGHTS

Mining claims

- approximately 100 acres of 014A in two separate blocks have five registered mining claims
- both associated with mining area within Wild Horse Canyon
- possible to eliminate areas with claims without seriously jeopardizing wilderness values
- wilderness manageability would be only slightly reduced if claimants should develop claims, due to the unnatural condition of the watershed

Leases

- no leases or lease applications within 014A

Non-federal land

- no non-federal land within 014A

ESTABLISHED AIRCRAFT USE

- low level military flights over 014A
- Nevada Department of Wildlife conducts annual censuses during winter and spring using fixed-wing and helicopter
- BLM conducts wild horse censuses and roundups, livestock tallies and fire detection flights by fixed-wing and helicopter
- none of the established aircraft use would significantly reduce wilderness manageability; military flights would slightly reduce opportunities for solitude
- see Influence of Outside Sights and Sounds for more detail (e.g., dates flying established)

EXISTING AND PROPOSED RESOURCE FACILITIES

- no non-range facilities within 014A except ways

LIVESTOCK GRAZING

Present grazing activities

- two allotments (Pole Canyon and Rodeo Creek) located within 014A
- existing range facilities would not significantly impair wilderness manageability
- see NATURALNESS for details of existing facilities and seasons-of-use

Changes identified in Sonoma-Gerlach Grazing E.I.S.

- one proposed windmill along boundary road in northwest corner would not significantly reduce wilderness manageability

STUDY POLICY QUALITY STANDARDS

Quality Standard 1: Energy and Critical Minerals

See Quality Standard 1 in Fox Range WSA discussion.

Quality Standard 2: Impacts on Other Resources

Recreation

- current recreational use of O14A slightly favors motorized and motorized-supported recreational activities (off-road vehicles, hunting)
- wilderness designation could restrict vehicular access *on about 2.4 miles of ways and* approximately 3,000 acres of land in O14A currently accessible to off-road recreational vehicles
- most significant impact to recreation from wilderness designation from restricting vehicular traffic on W11

Cultural Resources

- wilderness designation could indirectly add to the existing legal protection of cultural resources by limiting resource development and use
- wilderness designation could possibly curtail excavation and stabilization of historic, prehistoric or paleontological finds if action would impair wilderness values.
- although there are known sites in O14A, inventory data is sparse for this WSA and sites which would warrant excavation may be identified in the future

Energy and Mineral Resources

- wilderness designation imposes strict guidelines on all allowed mineral and energy development--potentially making development infeasible
- mining claims located after designation could not be developed
- see Quality Standard 1 for more detail

Livestock Grazing

- costs of maintaining range developments and livestock management would increase where permittee vehicular access is curtailed
- future beneficial range developments/treatments may be restricted

Other Resources

Current resource plans identify no other resources which would be adversely impacted by wilderness designation. However, wilderness management could impose additional constraints on future projects in these programs: fire; wildlife; wild horses and burros; lands, soil, water and air; aquatic habitat and visual resources.

Quality Standard 3: Impact of Non-designation on Wilderness Values

SHORT-TERM IMPACTS

-reduced opportunities for primitive and unconfined recreation and solitude in those areas accessible to off-road vehicles within 014A

LONG-TERM IMPACTS

-continued development of mineral and energy resources could eventually eliminate opportunities for naturalness, solitude, and primitive and unconfined recreation within 014A; potential discussed in Quality Standard 1

Quality Standard 4: Public Comment

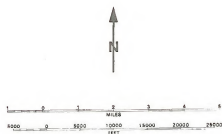
See District-wide Analysis, Chapter III








Quality Standard 5: Local and Regional Socioeconomic Effects

See District-wide Analysis, Chapter III

Quality Standard 6: Consistency With Other Plans

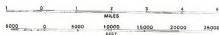
See District-wide Analysis, Chapter III



-  PRIVATE LAND (SURFACE & MINERALS)
-  PRIVATE SURFACE - PUBLIC MINERALS
-  W.S.A. BOUNDARY
-  ROAD
-  WAY
-  PROSPECT
-  MINE



NV-020-014 FOX RANGE
 NV-020-014A FOX RANGE (POLE CREEK)



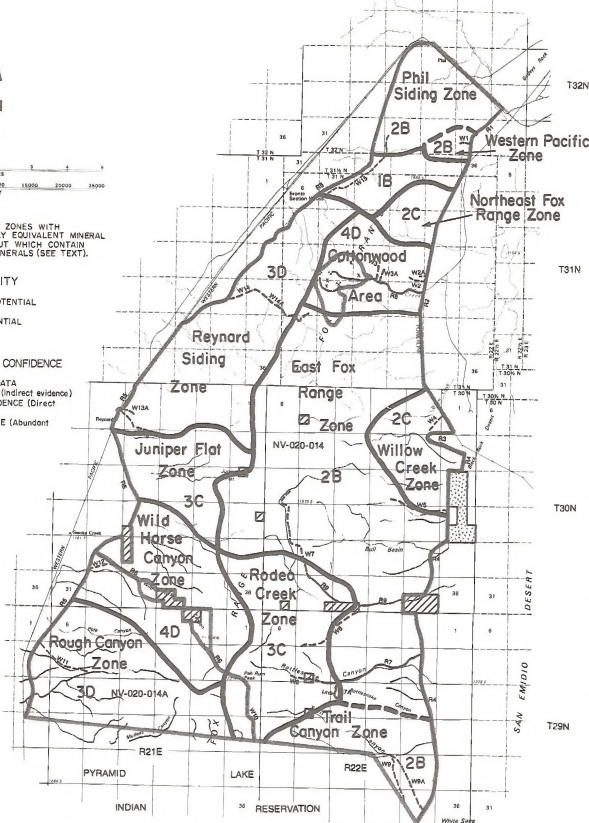
--- BOUNDARY OF ZONES WITH APPROXIMATELY EQUIVALENT MINERAL POTENTIAL BUT WHICH CONTAIN DIFFERENT MINERALS (SEE TEXT).

FAVORABILITY

- 1 UNFAVORABLE POTENTIAL
- 2 LOW POTENTIAL
- 3 MODERATE POTENTIAL
- 4 HIGH POTENTIAL

LEVEL OF CONFIDENCE

- A. INSUFFICIENT DATA
- B. LOW CONFIDENCE (Indirect evidence)
- C. MODERATE CONFIDENCE (Direct evidence)
- D. HIGH CONFIDENCE (Abundant direct evidence)



- PRIVATE LAND (SURFACE & MINERALS)
- PRIVATE SURFACE - PUBLIC MINERALS
- W.S.A. BOUNDARY
- ROAD
- WAY
- PROSPECT
- MINE



NV-020-014 FOX RANGE
NV-020-014A FOX RANGE (POLE CREEK)
MINERAL POTENTIAL

WILDERNESS STUDY AREA 019: Calico Mountains

DESCRIPTION

Location

- western Humboldt County and northwestern Pershing County, Nevada approximately 30 miles northeast of Gerlach
- two and one-half hour drive from Reno, the nearest Standard Metropolitan Statistical Area
- best access well-maintained Soldier Meadows road (HU 217, R2) on eastern boundary

Configuration and Size

- bounded by roads (53.6 miles), private land (3.7 miles), topographic features (3.3 miles) and a fenceline (1.3 miles)
- about 19 miles north-south and seven miles east-west
- 67,647 acres of public land

Physical Environment

- altitude range: 3,950 feet to 8,491 feet
- Bailey-Kuchler ecosystem: sagebrush-steppe (3130-40)
- Sonoma-Gerlach Grazing EIS vegetation communities: sagebrush, greasewood, saltbush, barren and waste
- some riparian vegetation along Donnelly Creek (2.5 miles) including some aspen stands
- 019 straddles the southern end of the Calico Mountain Range, a typical range of the Basin and Range Province
- four distinct landforms within 019: high elevation ridgecrest around Donnelly and South Donnelly peaks; the dendritic drainages east of Donnelly Peak; the dendritic drainages west of the ridgecrest; and the fringing desert piedmonts including Hualapai Flat, the Black Rock Desert and Donnelly Flat
 - high elevation ridgecrest (six miles long, 1/2 to 1 1/2 miles wide)
 - runs from north boundary road (R1) south to South Donnelly Peak
 - includes Donnelly Peak (Division Peak)
 - characterized by rolling ridges and shallow, moderately dissected drainages
 - the dendritic drainages, east side (two to four miles wide and 13 miles long):
 - contains parallel (east-west) drainages deeply cut into underlying basalt and andesite flows
 - includes Mormon Dan and Petrified Canyons, containing steep cliffs and colorful ridges
 - contains large areas of landscape with variegated colors ("Calico")
 - includes the headwaters of Donnelly Creek and associated riparian habitat

- the dendritic drainages, west side (one to four miles wide, 16 miles long)
 - is less steep than east side
 - contains shallow, lightly dissected drainages
 - blends gradually into fringing desert piedmonts
 - contains small area of variegated color landscape ("Calico") in south half
- fringing desert piedmonts (1/2 to two miles wide around east, south and west edges of 019)
 - nearly flat alluvium with low parallel ridges
 - sandy hummocks common in south part
 - not as well delineated on west side as on east side

STUDY POLICY CRITERIA

Criterion 1: Evaluation of Wilderness Values

Component A: Mandatory Wilderness Characteristics

SIZE

- 67,671 acres of public land, including 24 acres of land deleted due to previous mining
- no private land within 019

NATURALNESS

Developments within WSA

Range-related developments (see Table B-1 in Appendix B).

- three grazing allotments within 019 (see Table B-2 in Appendix B)

Other man-made features

- two roads one mile long south of Petrified Canyon (see Table B-3 in Appendix B)
- 15 ways totalling 18.5 miles located near periphery of 019 (see Table A-5)
- all known mining areas were separated during the Intensive Inventory

Outside imprints

- two small mining areas and one gravel pit on east side can be seen from adjacent areas within 019
 - impact minimal from mine at "Morely Place" and gravel pit
 - impact higher at mine south of Petrified Canyon; access road visible north and east for several miles
- one abandoned mine on west side near Donnelly Peak; impact substantial from small area in 019 within same drainage
- a few fencelines, ranches and roads are visible from edge of 019 but impact is minimal

Location and size of areas subject to imprints

- about half of 019 along main ridgecrest nearly free of imprints
- most imprints visually insignificant except within one mile or so of boundary roads
- most apparent imprints are
 - mining area south of Petrified Canyon
 - mining area west of Donnelly Peak
 - northern boundary road (R1)

Rehabilitation potential

- road into mining area south of Petrified Canyon would require substantial mechanical manipulation
- all ways could be rehabilitated without substantial mechanical manipulation
- range improvements would require minimal mechanical manipulation (see Table B-1 in Appendix B)

Potential for separating areas in WSA subject to imprints

- mining areas and gravel pits already separated but create artificial intrusions into 019
- most ways crossing desert piedmont could be eliminated without compromising wilderness values
- W12 could not be separated without compromising wilderness values
- range improvements disperse; difficult to separate all of them without compromising wilderness values
- effect of boundary roads on east, south and west sides could be reduced by moving boundary back to base of mountains
- could reduce impact of north boundary road (R1) only in local areas (e.g. east of Buck Springs)

Overall influence of imprints

- most areas within 019 substantially natural
- imprints most significant on east and north sides adjacent to boundary roads
- visitors would have little difficulty locating substantially natural landscapes in 019

SOLITUDE

Solitude is defined as the opportunity to avoid the sights, sounds and evidence of other people.

Influence of outside sights and sounds

Economic activity

- mine west of Donnelly Peak subject to re-opening which could impair solitude
- localized and seasonal ranching activities (roundups, salting and maintenance of range improvements near and within 019) slightly reduce opportunity for solitude
- borrow pit (east side) used sporadically

Aircraft flights

- regular low-level (500' to 11,000' above ground level) military flights from Ontario, Oregon (route IR 300)
- no known landing areas inside 019
- State of Nevada Department of Wildlife conducts annual wildlife censuses
 - antelope counts in January (fixed-wing); August (helicopter); regular since 1950s
 - deer counts November-December and March-April (helicopter); regular since mid-1970s
- BLM conducts livestock and wild horse censuses/roundups on 019:
 - livestock tallies as needed (usually fixed-wing)
 - wild horse roundups when needed (using helicopter) usually July-October

Vehicular traffic

- periodic traffic on east boundary road (R2) visible from extreme eastern 019
- occasional light traffic on other boundary roads (R1, R8, R3, R6, R5, R4) visible from parts of 019 immediately adjacent; impact is occasional dust trail

Physical factors influencing solitude

Topographic and vegetative screening

- high elevation ridgecrest
 - low shrubs provide minimal vegetative screening
 - topographic screening poor on ridgecrest, fair in drainage bottoms
- dendritic drainages east side
 - low shrubs provide minimal vegetative screening except along riparian areas adjacent to Donnelly Creek, where screening is good
 - topographic screening fair on ridgecrests and good to excellent in drainage bottoms
- dendritic drainages west side
 - poor vegetative screening
 - fair to poor topographic screening
- fringing desert piedmonts
 - poor vegetative screening
 - poor topographic screening except fair in hummock areas

Size and configuration

- size is sufficient to provide solitude
- elongated (north to south) configuration means visitors never more than four miles from 019 boundary
- northwestern tip of 019 too narrow to provide outstanding solitude

Ability of user to find secluded spot

- easily locatable within drainages east of ridgecrest and local spots on west side
- more difficult to find
 - along main ridgecrest
 - throughout desert piedmont
 - west of main ridgecrest

PRIMITIVE AND UNCONFINED RECREATION OPPORTUNITY

Access

- all areas of O19 within four miles of a boundary road
- excellent year around access from east side (HU 217,R2)
- less reliable access from north and west sides
- vehicular access within O19 from one road (R7) and several ways, the most significant being W14, W1, W12 and W5

Attractions (see also Special Features)

Points of interest

- brightly colored, intriguing "Calico" landscape
- variety of wildlife, including several game species
- rockhound collecting areas
- Donnelly Peak
- rock formations throughout mountain range

Challenge

- typical desert/steppe climate with associated challenges (hot, dry summers, cold winters)
- water scarce in summer, except
 - 30 perennial springs, concentrated in north and east side
 - approximately 2.5 miles of perennial water along Donnelly Creek
 - approximately 0.4 miles of perennial water below pipeline spring
- areas of steep topography throughout main ridge; difficult to traverse

Scenic qualities

- colorful twisted geologic formations throughout Calico Hills, one of the prominent features in this region of the Black Rock Desert
- open rolling high country in vicinity of Donnelly Peak highly scenic
- interesting and varied canyons and drainages throughout most of O19
- views of surrounding desert landscape give impression of isolation and naturalness

Activities

Dayhiking (water availability not critical)

- entire WA accessible to dayhiking
- most likely destinations include east side canyons (e.g., Mormon Dan, Petrified Canyons); Donnelly Peak area; Calico Hills

Camping

- best along Donnelly Creek and isolated perennial springs vicinity of Donnelly Peak
- dry camping possible in isolated spots throughout 019

Backpacking

- most attractions accessible to dayhikers; little advantage to backpacking
- best route via main ridgeline and up drainages from east side
- on one proposed route of the proposed Desert National Scenic Trail

Hunting

- small antelope herd intermittently in northern part of 019
- a few mule deer and cougar, especially in higher elevations
- chukar and sage grouse in fair numbers during wet seasons
- access good for hunters

Horsepacking

- generally good opportunity in higher elevations
- forage and water limited in southern 019
- steeper areas probably not accessible to horsepackers

Rock climbing and scrambling, caving

- several isolated cliffs offer limited rock climbing
- rock scrambling opportunities fair to good in Calico Hill area
- shallow caves west of Petrified Canyon in volcanic tuffa

Nature study

- viewing/photographing wild horses and antelope
- ample photography subjects throughout 019
- geology study, particularly in Calico Hills

Fishing

- no known fish populations
- potential exists in Donnelly Creek

Winter sports

- limited winter camping, cross-country skiing during wet years
- access to higher elevations during winter limited

Water sports

- wading possible in Donnelly Creek

Rockhounding

- petrified wood is actively collected in Petrified Canyon

Component 3: Special Features

CULTURAL

Prehistoric

- total recorded sites: 13
 - S2 sites: one spring associated open lithic scatter with apparent depth
 - test excavation
 - S3 sites: five isolated finds
 - S4 sites: four isolated finds
- unrated sites: three lithic scatters

Historic

- no known sites

ZOOLOGIC

Fisheries

- no known fish populations but potential exists in Donnelly Creek if habitat improved

Wild horses and burros

- part of Calico Herd Use Area in 019 (horses only)

Other mammals

- year-round antelope in the northern and western portions
- year-round mule deer in north-central portions
- kit fox inhabit entire area except northwest corner
- mountain lion in northwest corner

Birds

- designated sage grouse range, north half of 019
- raptors occur throughout 019

BOTANIC

- Astragalus pterocarpus found in extreme southeast corner of 019; listed as "other rare" on District list, 1/19/1982
- small area of riparian vegetation along Donnelly Creek, including aspen trees

GEOLOGIC

- Calico Hills area of geologic interest
- petrified wood abundant in Petrified Canyon

PALEONTOLOGIC

- no known paleontologic sites

ACECs

none

SCENIC

-prominent scenic resource within Black Rock Desert region

Component C: Multiple Resource Benefits

Wilderness designation of 019 could restrict motorized vehicular traffic on approximately 19.7 miles of roads and ways and about 26,000 acres of land now accessible to off-road vehicles. A vehicle closure would enhance opportunities for primitive and unconfined recreation within those areas of 019 currently accessible to vehicles.

Long-term benefits from wilderness designation may accrue to those resources which would otherwise deteriorate should the area return to other multiple uses. Although current land-use plans essentially maintain the existing environment and resource commitments if 019 is not designated wilderness, the federal land would remain accessible to mineral patenting, leasing and other development. These potential developments could adversely impact water, soil, air, visual, cultural and other resources which benefit from the existing, non-developed environment. The extent of future development in 019 is unknown.

Component D: Diversity in the National Wilderness Preservation System

ECOSYSTEM AND LANDFORM DIVERSITY

- Bailey-Kuchler ecosystem: sagebrush-steppe (3130-49)
- Sonoma-Cerlach Grazing E.I.S. vegetative communities: sagebrush, saltbush, greasewood, barren and waste
- two areas totalling 34,943 acres with sagebrush-steppe ecosystem designated wilderness: Jarbidge Wilderness in northeastern Nevada and Lava Beds National Monument in northeastern California
- three areas of sagebrush-steppe totalling 343,450 acres endorsed as suitable by the President and pending before Congress
- landform of 019 unique within Winnemucca District
- unknown how 019 compares with other WSAs with the same ecosystem outside the Winnemucca District
- 143 WSAs in Nevada, California, Idaho and Oregon with sagebrush-steppe representation

RECREATION NEAR SMSAs

- approximately two and one-half hour drive from Reno, the nearest SMSA
- 12 designated wilderness areas and numerous WSAs within a five hour drive of Reno

GEOGRAPHIC DISTRIBUTION OF WILDERNESS

- one designated wilderness in Nevada (Jarbidge, U.S. Forest Service)
- see Chapter III, Component D, for an analysis

Criterion 2: Manageability

Physical Factors Influencing Manageability

CONFIGURATION

- two mining areas separated during the Wilderness Intensive Inventory created artificial intrusions into 019 (west of Donnelly Peak and north of Petrified Canyon); manageability not greatly affected
- mining area within boundary south of Mormon Dan Canyon but separated during Intensive Inventory locally reduces manageability for solitude and naturalness
- narrow configuration created between boundary roads R1 and R4 in extreme north of 019 would be difficult to manage for wilderness values
- difficult to control off-road vehicle use off most boundary roads (R1, R2, R3, R4, R5, R6)
- difficult to control off-road vehicle use from portion of the following roads and ways within 019
 - W1 (2.7 miles) portion which traverses desert piedmonts
 - W2 (0.8 mile)
 - W3 (1.1 mile)
 - W4, 4a (1.7 mile)
 - W5, 5a (2.3 miles) Petrified Canyon rockhounds frequently stray from established ways due to poor road conditions
 - W12 (3.8 miles)
 - W14 (2.8 miles)
 - R7 (1.0 mile) lowest portion traverses desert piedmont

LANDFORM

- landforms conducive to off-road vehicle use which would be difficult to control include
 - portions of fringing desert piedmonts, especially east side
 - portion of high elevation ridgecrest accessible from R1 and W12

INTRUSIONS AND OUTSIDE INFLUENCES

- managing for solitude would be difficult in areas described above where access is hard to control
- military aircraft flights most significant outside influence
- other influences would not significantly impede manageability

Nonconforming But Accepted Uses

VALID EXISTING RIGHTS

Mining claims

- approximately 1,500 acres of 019 have 82[✓] registered mining claims
 - west of Donnelly Peak associated with Donnelly Mine
 - south of Mormon Dan Peak
 - near southern tip of 019
- Wilderness manageability difficult should mining claimants develop claims

Leases

- 369 acres of geothermal lease located on southeast edge
- 271 acres of oil and gas leases located on the western boundary
- probability of leases being developed undetermined
- possible to eliminate both areas of geothermal and simultaneous leasing without substantially reducing wilderness values

Non-federal land

- no non-federal land within 019

ESTABLISHED AIRCRAFT USE

- low-level military flights over 019 (north end)
- Nevada Department of Wildlife conducts animal censuses during winter and spring using fixed-wing and helicopter
- BLM conducts wild horse censuses and roundups, and livestock tallies in 019 by fixed-wing and helicopter
- none of the established aircraft use would significantly reduce wilderness manageability
- see Influence of Outside Sights and Sounds for more detail (e.g., dates flying established)

EXISTING AND PROPOSED RESOURCE FACILITIES

- one wildlife guzzler within 019; more guzzlers planned pending adequate funding
- proposed change in fenceline 770 to accommodate antelope migrations
- none of the proposed changes would significantly impair wilderness manageability

LIVESTOCK GRAZING

Present grazing activities

- three grazing allotments within 019
- existing range facilities would not significantly reduce wilderness manageability
- see NATURALNESS for details of existing facilities and seasons of use

Changes identified in Sonoma-Gerlach Grazing E.I.S.

- no proposed range facilities within 019

STUDY POLICY QUALITY STANDARDS

Quality Standard 1: Energy and Critical Minerals

For background information and general description of the District see Appendix A.

General Geology

The Calico Mountains is a north-south fault block range of the Basin and Range Province. This mountain range is a faulted portion of the larger Modoc Plateau, a volcanic plateau area covering the northwest corner of Nevada and northeast California.

Rock types within the Calico Mountains WSA are: Cretaceous or Tertiary granodiorite; metamorphosed fine-grained clastic sedimentary rocks of Triassic or Jurassic Age; Oligocene, basaltic to dacitic flows, agglomerates, breccias and intrusives of the South Willow Formation; and Upper Miocene-Pliocene basalt flows (Willden 1964; Bonham 1969). Quaternary alluvium covers the lower valley areas.

Following is a discussion of the energy and mineral potential in the Calico Mountains WSA. Please refer to the Mineral Potential Classification Scheme, Figure 1 in Appendix A, for further explanation of alphanumeric classifications. Also see, in Appendix B, Tables B-10, B-11, B-12 and B-13 showing acreages for Metallic Mineral, Nonmetallic Mineral, Geothermal and Oil and Gas Potential; and Tables B-6, B-7 and B-8 showing acreages of Unpatented Mining Claims, and Geothermal and Oil and Gas Leases; as well as summary Tables B-14 and B-15 showing the Energy and Mineral Threshold Levels and Holdings affected by four of the alternatives proposed in the EIS (all except No Wilderness Alternative).

Metallic Mineral Potential

The Donnelly Mining District on the northwestern boundary of the WSA just west of Donnelly Peak has produced some \$90,000 in gold and silver values. The gold and silver values occur in quartz veins cutting the granodiorite and metamorphic rocks. This is the only area in the Calico Mountains where these igneous and metamorphic rocks crop out.

Barringer Resources (1982) indicated a fairly extensive and significant anomalous area termed the "Southern Calico Mountain" covering most of the WSA. This large area has been divided into several smaller anomalous sub-zones to aid in discussion of the metallic mineral potential in a more site-specific manner. Please refer to the Mineral Potential Maps for locations of these anomalous sub-zones discussed below.

DONNELLY DISTRICT. (4D) High Potential.

The Donnelly District is in the northwestern tip of the WSA. Rock types include Cretaceous-Tertiary granodiorite, Triassic-Jurassic metasediments, volcanics of the South Willow Formation and Upper Miocene-Pliocene basalt flows.

Gold and silver have been produced from quartz veins cutting the granodiorite and metasedimentary rocks. Development work consists of three short adits and one inclined shaft on two different properties. Remains of partially dismantled mills and building foundations are on both properties.

Geochemical sampling and geostatistical modeling results show:

Response to Geostatistical Modeling

Moderate: gold-silver

Low: mafic copper-nickel, base-precious metal

Very low: antimony-mercury

Anomalous Values

High: silver, tungsten*

Moderate: gold, lead*, nickel*, cobalt*, barium

Low: zinc*, mercury*

PETRIFIED CANYON ANOMALOUS ZONE. (3B) Moderate Potential.

This zone is on the eastern boundary of the WSA at the mouth of Petrified Canyon. Rock types include volcanics of the South Willow Formation overlain by a narrow band of Upper Miocene-Pliocene basalts along the east flank of the Calico Mountains.

Geochemical sampling and geostatistical modeling results show:

Response to Geostatistical Modeling

Very low: gold-silver

Anomalous Values

Moderate: gold, zinc*, molybdenum, barium

Low: tungsten*

A BLM field reconnaissance of this zone in 1983 did not find any evidence of mining activity or mining claims. A zone of Jasper Float was found in Petrified Canyon and some of the volcanic units contained narrow, bleached zones along fractures.

MORMAN DAN CANYON ANOMALOUS ZONE. (3D) Moderate Potential.

This zone is in the southeastern portion of the WSA. Rock types include volcanics of the South Willow Formation.

Geochemical sampling and geostatistical modeling results show:

Response to Geostatistical Modeling

Moderate: gold-silver, base-precious metal, mercury-antimony,
volcanic uranium

Anomalous Values

High: silver, antimony*

Low: molybdenum, barium

Field observations by Barringer Resources (1982) indicated extensive argillic alteration in this zone, and also showed a response to geostatistical modeling for clay deposits. These significant metal values indicated above and the clay development are likely due to hydrothermal alteration of the volcanic rocks.

The extensive argillic (clay) alteration and associated coloration in this area is responsible for the mountain range being named the Calico Mountains.

Some minor prospecting activity, including an access road and some drilling, has occurred in this zone in the past. A large block of mining claims covering two sections were staked during 1982. Other companies have also expressed an interest in this area.

CALICO HILLS ANOMALOUS ZONE. (2B) Low Potential.

This zone is in the extreme southern tip of the WSA. Rock types include volcanics of the South Willow Formation.

Geochemical sampling and geostatistical modeling results show:

Response to Geostatistical Modeling

Very low: base-precious metal

Anomalous Values

Moderate: tungsten*, barium

Low: silver, mercury*

This zone contains anomalous mercury and tungsten values not indicated in the Mormon Dan Canyon Zone to the east. This change in mineralization may represent a zonation related to the much stronger mineralizing event apparent in the Mormon Dan Canyon Zone.

Five mining claims in this zone show some minor prospecting activity, mostly handwork.

BURRO SPRING ANOMALOUS ZONE. (2B) Low Potential.

This zone covers the east-central portion of the WSA. Rock types include volcanics of the South Willow Formation capped by a narrow band of Upper Miocene-Pliocene basalts along the east flank of the Calico Mountains.

Geochemical sampling and geostatistical modeling results show:

Response to Geostatistical Modeling

Very low: base-precious metal

Anomalous Values

Moderate: barium

Low: molybdenum, zinc*

The small dashed area on the eastern side of the zone shows isolated zinc values not indicated elsewhere in the zone.

No prospecting activities or mining claims are known in this zone.

JACKASS FLATS ANOMALOUS ZONE. (2B) Low Potential.

This zone is in the northeast corner of the WSA. Rock types include volcanics of the South Willow Formation capped by a narrow band of Upper Miocene-Pliocene basalts along the flank of the Calico Mountains.

Geochemical sampling and geostatistical modeling results show:

Response to Geostatistical Modeling

Very low: mercury-antimony

Anomalous Values
Moderate: barium
Low: mercury*

No prospecting activities or mining claims are known in this area.

CANE SPRINGS ANOMALOUS ZONE. (2B) Low Potential.

This zone is in the west-central portion of the WSA. Rock types include volcanic units of the South Willow Formation.

Geochemical sampling and geostatistical modeling results show:

Anomalous Values
High: tungsten*
Low: mercury*, barium

High tungsten values also occur in the Donnelly Creek District to the north, but there the values are more likely associated with possible skarn deposits along the Cretaceous granodiorite contact. High tungsten values continuing southward into the volcanics of this zone are somewhat difficult to explain. Cane Springs is a warm spring, indicating that thermal waters are active in the area. These tungsten values may be related to past hot spring activity similar to the hot spring-related tungsten deposits of the Golconda Mine near Golconda, Nevada.

No prospecting activities or mining claims are known in this zone.

Nonmetallic Mineral Potential

Petrified wood has been reported in Petrified Canyon by rockhounds. A BLM field reconnaissance of the area in 1983 did not indicate the presence of petrified wood, although Jasper Float was found in the area.

The following portions of the WSA are considered to have nonmetallic mineral potential:

High (4D) - Petrified Canyon - occurrences of semiprecious gemstones (petrified wood)
Moderate (3B) - rest of WSA has petrified wood potential

Geothermal Resource Potential

The Fly Ranch Northeast Known Geothermal Resource Area (KGRA), which at one time included the southern tip of the WSA, has been declassified by the U.S. Geological Survey. The larger Fly Ranch KGRA located one mile south of the WSA is still classified as such. Brook (1979) estimated the reservoir temperature of the Fly Ranch KGRA at 100°C. These temperatures are presently marginal for electrical generation but are attractive for space and process heating. The areas of geothermal potential in the WSA would be along the southwest and eastern flanks of the Calico Mountains. There are a few warm springs in these same areas (USDI Buffalo Hills URA 1979).

One geothermal lease covering a partial section is inside the southwestern boundary of the WSA. Several other leases in the same area have since been dropped.

The following portions of the WSA are considered to have geothermal potential:

- High (4D) - A 2-mile-wide strip inside east boundary, and a 2- to 3 1/2-mile-wide strip inside southwest boundary
- Moderate (3B) - A 1-mile-wide strip inside northwest boundary
- Low (2B) - The remainder of the WSA

Oil and Gas Potential

Extensive leasing activities have occurred along the western boundary of the WSA, but to date no geophysical exploration or drilling activities have occurred. The possibility of Early Tertiary sedimentary rocks buried at depth in this area is likely the cause of the present speculation (see Oil and Gas Potential, High Rock Lake WSA). The valley portion of the Black Rock Desert just west of the WSA boundary is classified as prospectively valuable for oil and gas by Smith and Gere (USGS 1977).

The oil and gas potential of this WSA is classified 2A, low potential, insufficient data.

Quality Standard 2: Impacts or Other Resources

Recreation

- current recreational use of O19 favors motorized and motorized-supported recreational activities (off-road vehicles, hunting, rockhounding)
- wilderness designation could restrict vehicular access to 19.5 miles of roads and ways and 24,000 acres of land currently accessible to off-road vehicles
- most significant impact to recreation from wilderness designation would be restricting access on W5 and W12

Cultural Resources

- wilderness designation could indirectly add to the existing legal protection of cultural resources by limiting resource development and use
- wilderness designation could possibly curtail excavation and stabilization of historic, prehistoric or paleontological finds if action would impair wilderness values
- lithic scatter which has been excavated has potential for additional excavation
- inventory data is sparse for O19 and other sites which warrant excavation may be identified in the future

Energy and Mineral Resources

- wilderness designation imposes strict guidelines on all allowed mineral and energy development--potentially making development infeasible
- mining claims located after designation could not be developed
- see Quality Standard 1 for more details

Livestock Grazing

- costs of maintaining range developments and livestock management would increase where permittee vehicular access curtailed
- future beneficial range developments/treatments may be restricted, none proposed in O19 at this time

Other Resources

Current resource plans identify no other resources which could be adversely impacted by wilderness designation. However, wilderness management could impose additional constraints on future projects in these programs: fire; wildlife; wild horses and burros; lands; soil, water and air; aquatic habitat and visual resources.

Quality Standard 3: Impact of Non-designation on Wilderness Values

SHORT-TERM IMPACTS

- reduced opportunities for primitive and unconfined recreation and solitude in those areas accessible to off-road vehicles within O19

LONG-TERM IMPACTS

- continued development of mineral and energy resources could eventually eliminate opportunities for naturalness, solitude, and primitive and unconfined recreation within O19; potential discussed in Quality Standard 1
- area would remain open for development of other resources which might impair wilderness values; extent speculative

Quality Standard 4: Public Comment

See District-wide Analysis, Chapter III

Quality Standard 5: Local and Regional Socioeconomic Effects

See District-wide Analysis, Chapter III

Quality Standard 6: Consistency With Other Plans

See District-wide Analysis, Chapter III

T38N

T37N

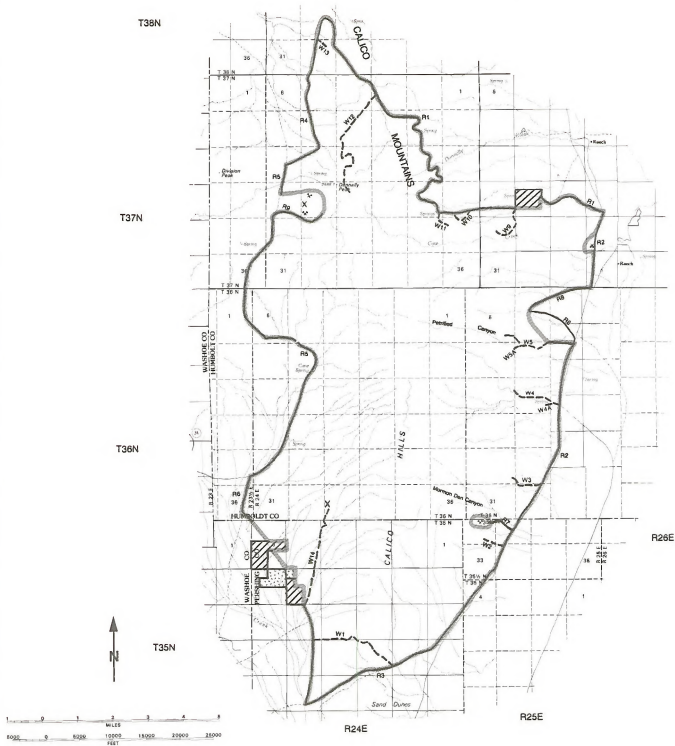
T36N

T35N

R26E

R24E

R25E



PRIVATE LAND (SURFACE & MINERALS)



PRIVATE SURFACE - PUBLIC MINERALS

W. S. A. BOUNDARY

ROAD

WAY

X PROSPECT

* MINE

▲ GRAVEL PIT



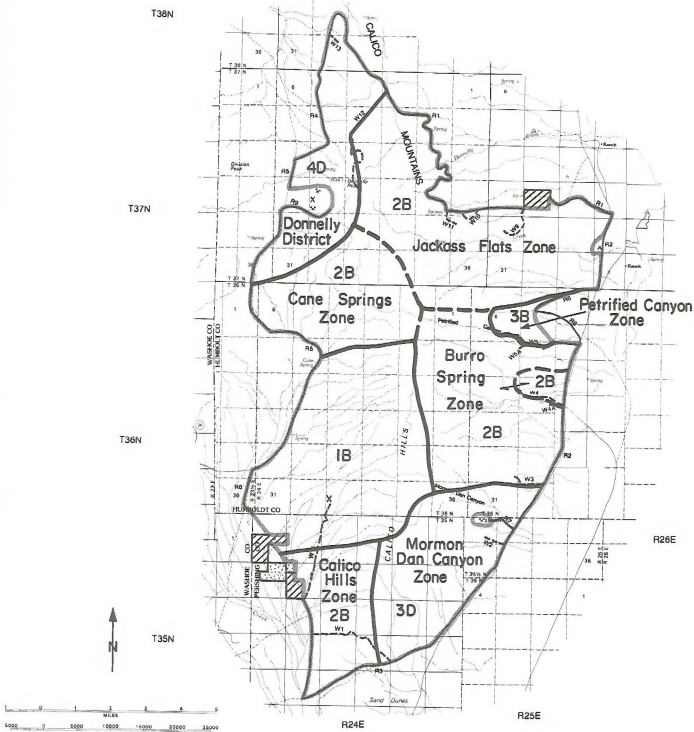
NV-020-019 CALICO MOUNTAINS

T38N

T37N

T36N

T35N



R24E

R25E

R26E

--- BOUNDARY OF ZONES WITH APPROXIMATELY EQUIVALENT MINERAL POTENTIAL BUT WHICH CONTAIN DIFFERENT MINERALS (SEE TEXT)

PRIVATE LAND (SURFACE & MINERALS)

PRIVATE SURFACE - PUBLIC MINERALS

— W. S. A. BOUNDARY

— ROAD

- - - WAY

X PROSPECT

v MINE

* GRAVEL PIT

FAVORABILITY

1. UNFAVORABLE POTENTIAL
2. LOW POTENTIAL
3. MODERATE POTENTIAL
4. HIGH POTENTIAL

LEVEL OF CONFIDENCE

- A. INSUFFICIENT DATA
- B. LOW CONFIDENCE (Indirect evidence)
- C. MODERATE CONFIDENCE (Direct evidence)
- D. HIGH CONFIDENCE (Abundant direct evidence)

NV-020-019 CALICO MOUNTAINS
MINERAL POTENTIAL

Wilderness Study Area 108: Augusta Mountain

DESCRIPTION

Location

- located within three counties in Nevada: southeast Pershing, northeast Churchill, west Lander; approximately 60 miles southeast of Winnemucca, Nevada
- five-hour drive from Reno, the nearest Standard Metropolitan Statistical Area
- best access is well-maintained Pershing County road (PE 111) on western boundary

Configuration and Size

- bounded by well-maintained roads (57.7 miles) except small portions which abut against private land (five miles) and topographic features (two miles)
- about 17 miles north-south and from two to 13 miles east-west
- 89,372 acres of public land

Physical Environment

- altitude range: 8,400 feet to 3,500 feet
- Bailey-Kuchler ecosystem: great basin sagebrush (3130-32), juniper/pinyon woodland (3130-21)
- Sonoma-Gerlach Grazing E.I.S. vegetation communities: sagebrush (60%), pinyon/juniper (40%)
- small amount of riparian vegetation in the larger drainages (Favret Canyon)
- WSA straddles a north-south ridge of the Augusta Mountain (Cain Mountain)
- three distinct landforms within 108: southern portion; center portion (Cain Mountain); northern portion
 - southern portion (six to seven miles long, 13 miles wide)
 - Churchill County portion of 108
 - south of Cain Mountain
 - uniformly hilly, with shallow washes and gullies draining southwest
 - small section of approximately 1,000 acres of pinyon-juniper woodland covering slopes above 6,600 feet
 - gently sloping foothills vegetated with low sagebrush and rabbitbrush
 - center portion (Cain Mountain)
 - Cain Mountain (limestone peak) highest elevation in 108 (8,409 feet)
 - mountain drains in all directions via rugged, deep drainages
 - Favret Canyon - largest drainage

- canyons littered with fossils and blocked by ^{intermittent} waterfalls
- dense pinyon-juniper inhabit upper reaches of the canyons
- northern portion
- soft landscape of silicic ash-flow tuff canyons and drainages (stratified colors)
- scattered isolated pinyon-juniper

STUDY POLICY CRITERIA

Criterion 1: Evaluation of Wilderness Values

Component A: Mandatory Wilderness Characteristics

SIZE

- 89,372 acres of public land
- no private land within 108

NATURALNESS

Developments within WSA

- Range-related developments (see Table B-1 in Appendix B)
- four grazing allotments (see Table B-2 in Appendix B)

Other man-made features

- 12 short cherrystems roads totalling 16.5 miles located near periphery of unit
- six ways totalling 4.4 miles (see Table B-3 in Appendix B)
- historic cabin along northeast boundary; stone corral near cabin (T. 26 N., R. 40 E., Section 21)

Outside imprints

- mining areas
 - past mining at end of two cherrystem roads (R12, R13) along eastern boundary
 - along northwest boundary; boundary follows surface disturbance
 - extreme southern border - McCoy Mine
- traffic-caused dust from boundary roads and other nearby roads
- fencelines, ranches, fields, are visible from the edge of 108 and higher peaks, but impact is minimal

Location and size of areas subject to imprints.

- some imprints located along 108's periphery are visible from the ridgelines

-most imprints are visually insignificant except within one mile or so of the area of imprint

Rehabilitation potential

-most of the developments or man-made features could be rehabilitated without major mechanical manipulation except for the major cherrystem roads along the eastern boundary and the historical cabin

Potential for separating areas in WSA subject to imprints

-greatest portion of cherrystem roads and ways located along the eastern and western boundary could be eliminated by moving the boundary back to the base of the mountain

Overall influence of imprints

-greatest portion of 108 substantially natural
-imprints most significant along eastern boundary
-visitors would have little difficulty locating substantially natural landscapes in 108

SOLITUDE

Solitude is defined as the opportunity to avoid the sights, sounds and evidence of other people.

Influence of outside sights and sounds

Economic activity

-sporadic mining near southern boundary can be seen from a localized vicinity within the southern sector of 108
-localized and seasonal ranching activities (roundups, salting, maintenance of range improvements near and within 108, cultivating) reduce opportunity for solitude

Aircraft flights

-military flights
-IR 281 (Instrument Rules--plane is under radar control) passes through western edge of 108
-altitude ranges from 500 feet to 11,000 feet above ground level
-frequency of flights: 1 to 2 times a week, 2 to 3 aircraft at a time
-departure route from IR 281
-northern tip of 108 within 10-nautical-mile-wide corridor
-altitude range: 500 feet to 8,500 feet above ground level
-VR 1253 and 1258 - northern half of 108

- altitude ranges: 500 feet to 1,500 feet above ground level
- course not used on a regular schedule
- Gabbs North Military Operations Area (MOA) - entire WSA
- use: six days a week for 80% of year
- number of aircraft: one to 25 aircraft at one time
- low altitude flying
- no restriction of aircraft to single route
- State of Nevada Department of Wildlife conducts annual wildlife censuses
 - deer counts November-December and March-April (helicopter, fixed-wing)
- BLM conducts fire detection flights with fixed-wing aircraft, above 500 feet
- BLM conducts livestock and wild horse censuses/roundups on 108:
 - wild horse inventories conducted August through October (helicopter, fixed-wing)
 - no wildhorse roundups to this date; future roundups are possible (helicopter)
 - livestock tallies as needed (fixed-wing)

Vehicular traffic

- western boundary road (PE 111) main access for ranch; visible from nearby and from high peaks and ridges
- eastern boundary road major access route; moderate traffic; impact is occasional dust trail
- major cherrystem roads, occasional use; little impact

Physical factors influencing solitude

Topographic and vegetative screening

- center section (Cain Mountain)
 - northern slopes and midlevel elevations dense population of pinyon-juniper
 - deep, rugged drainages lined with willow and cottonwoods
 - excellent topographic, vegetation screening on this portion of 108
- southern sector
 - low growing vegetation of rabbitbrush and sagebrush except for isolated section of pinyon-juniper (1,000 acres)
 - shallow canyons and low hills turning to a broad outwash plain along the southern boundary
 - topographic and vegetative screening is poor
- northern sector
 - edges of boundary consist of dissected alluvial fans
 - landscape changes moving inwards to moderate canyons and washes made up of silicic ash-flow tuffs
 - vegetation consists of scattered juniper and low growing sagebrush and rabbitbrush, with occasional clumps of willow in drainage bottoms
 - screening is good

Size and Configuration

- size is sufficient to provide solitude
- pear-shaped configuration (narrow at north end, broadening at southern end)
- extreme northern end (long neck shape) too narrow to provide outstanding solitude

Ability of user to find secluded spot

- easily locatable within canyons and drainages that extend from Cain Mountain
- more difficult to find
 - within alluvial fan along western border
 - moderate washes and drainages that occupy the northern sector
 - low-line hills and piedmont that make-up the southern half of 108

PRIMITIVE AND UNCONFINED RECREATION OPPORTUNITY

Access

- excellent access along northern, eastern, western boundary
 - cherry system roads extend into 108 from boundary roads
 - short distance from boundary roads across alluvial fan to foothills
- poor access into 108 from southern boundary; no cherry system roads

Attractions (see also Special Features)

Points of interest

- Cain Mountain - limestone monolith
- rugged drainages that extend from Cain Mountain (Favret Canyon)
 - rock formations
 - vegetation
 - fossils
 - waterfalls
- silica ash flow tuff formations
- variety of wildlife, including game species

Challenge

- typical great basin climate with associated challenges (hot, dry summers, cold winters)
- potable water available from seeps within portions of 108
- areas of steep, rugged topography within major drainages; difficult to traverse, intermittent waterfalls with 30' drops

Scenic qualities

- geologic structures and formations
 - Cain Mountain (limestone monolith)
 - steep, rugged rock outcrops
 - colorful layers of erosional patterns
 - silica ash flow tuffs

Activities

Dayhiking (water availability not critical)

- entire WSA accessible to dayhiking
- most likely destinations include canyons and drainages around Cain Mountain (Favret Canyon)
- Home Station Wash (crosses northern tip of 108)

Camping

- best along Home Station Wash and eastern boundary
- dry camping possible in isolated spots throughout 108

Backpacking

- good opportunity to backpack into the Augusta Range and set up base camp
- no specific routes for short or long trips

Hunting

- small deer population
- valley quail located within extreme northern tip of 108
- access fair for hunters

Horsepacking

- generally good opportunity
- major points of interest inaccessible by horseback
- steep areas not accessible to horse-packers
- forage and water limited in southern 108

Rock climbing and scrambling, caving

- limited rock climbing on and around Cain Mountain
- rock scrambling opportunities good in most of the larger and steeper drainages and canyons
- no known caves

Nature study

- view/photograph wildlife
- ample photographic subjects in most areas of 108
- geology study

Fishing

- no known fish populations

Rockhounding

- fossils abundant in drainages and canyons
- gold panning in major drainages

Component B: Special Features

CULTURAL

Prehistoric

- total recorded sites: 3
 - S1 sites: spring associated-site
 - dense lithic scatter with hearths and groundstone fragments
 - S3 sites: one isolated find, one lithic scatter
 - antiquities observation: one lithic scatter

Historic

- no recorded sites
- wilderness study observation: old line shack located on east boundary at mouth of Home Station Wash

ZOOLOGIC

Fisheries

- no known fish populations

Wild horses and burros

- 108 lies within the Augusta Mountain wild horse and burro use area which contains wild horses only

Other mammals

- year-round deer population
- some bobcat

Birds

- raptors throughout
- valley quail extreme north end
- small population of chukar

BOTANIC

- Phacelia glaberrima (smooth phacelia) found within southern sector of 108; listed as "sensitive plant" on Nevada Native Plant Society list, 1/19/82

GEOLOGIC

- Cain Mountain (limestone)
- silicic ash flow tuffs
- geologic stratified layers

PALFONTOLOGIC

-one known paleontologic site containing Miocene mammal fossils

ACECs

none

SCENIC

-prominent scenic resource within Cain Mountain area

OTHER

-the Augusta Mountain are recognized as a source for pine nuts

Component C: Multiple Resource Benefits

Wilderness designation of 108 could restrict motorized vehicular traffic on approximately 20.9 miles of roads and ways and on 65,000 acres of land which is now accessible to off-road vehicles. A vehicle closure would enhance opportunities for primitive and unconfined recreation within those areas of 108 currently accessible to vehicles.

Long-term benefits from wilderness designation may accrue to those resources which would otherwise deteriorate should the area return to other multiple uses. Although current land-use plans essentially maintain the existing environment and resource commitments should 108 not be designated wilderness, the federal land would remain accessible to mineral patenting, leasing and other development. These potential developments could adversely impact water, soil, air, visual, cultural and other resources which benefit from the existing, non-developed environment. The extent of future development in 108 is unknown.

Component D: Diversity in the National Wilderness Preservation System

ECOSYSTEM AND LANDFORM DIVERSITY

- Bailey-Kuchler ecosystem: Great Basin sagebrush (3130-32), juniper/pinyon woodland (3130-21)
- Sonoma-Gerlach Grazing E.I.S. vegetative communities: sagebrush, pinyon-juniper
- five Forest Service, three National Park Service and six U.S. Fish and Wildlife Service areas with juniper/pinyon woodland in California, Utah, and Nevada administratively endorsed as suitable
- one area totalling 62,695 acres with Great Basin sagebrush ecosystem designated wilderness: Domeland wilderness in California
- four U.S. Forest Service and four U.S. Fish and Wildlife Service areas with Great Basin sagebrush in California and Nevada administratively endorsed as suitable
- unknown how 108 compares with other WSAs with the same ecosystem outside the Winnemucca District

RECREATION NEAR SMSAs

- approximately five hour drive from Reno, the nearest SMSA
- several designated wilderness areas and numerous WSAs within a five-hour drive of Reno

GEOGRAPHIC DISTRIBUTION OF WILDERNESS

- one designated wilderness in Nevada (Jarbidge, U.S. Forest Service)
- see Chapter III, Component D for a more complete analysis

Criterion 2: Manageability

Physical Factor Influencing Manageability

CONFIGURATION

- two mining areas detected during the Wilderness Inventory create artificial intrusions into 108 (northwest boundary and eastern boundary off cherrystem roads); manageability not greatly affected
- narrow configuration of northern portion of 108 (extremely narrow)

ACCESS

- difficult to control off-road vehicle use off southwestern and southern boundary road
- difficult to control off-road vehicle use from portions of the following roads and ways within 108

- R-22 (0.4 mile)
- R-21 (1.2 miles)
- R-20 (2.7 miles)
- R-19 (0.7 mile)
- R-18 (0.6 mile)
- R-17 (0.6 mile)
- W-6 (0.3 mile)
- R-16 (2.7 miles)
- R-15 (1.5 miles)
- R-14 (2.3 miles)
- W-5 (0.4 mile)
- R-13 (0.7 mile)
- R-12 (2.9 miles)
- W-3 (0.8 mile)

LANDFORM

- landforms conducive to off-road vehicle use which would be difficult to control include:
 - portions of fringing desert piedmonts, especially southern sector of 108
 - dry sandy washes along northwest and northeast boundary

INTRUSIONS AND OUTSIDE INFLUENCES

- managing for solitude would be difficult in areas (described above) where access is hard to control
- military aircraft flights most significant outside influence
- other influences would not significantly impede manageability

Nonconforming But Accepted Uses

VALID EXISTING RIGHTS

Mining claims

- approximately 2,000 acres of 108 have registered mining claims
 - block of claims east of Cain Mountain
 - two separate blocks of claims along northeast boundary
 - small block along northwest boundary; near area eliminated during inventory due to mining
- wilderness manageability difficult should mining claimants develop claims

Leases

- 18,101 acres of geothermal leases located within southern portion of 108
- 44,266 acres of oil and gas leases located within southern portion of 108

Non-federal land

- no non-federal land within 108

ESTABLISHED AIRCRAFT USE

- low-level military flights over 108
- Nevada Department of Wildlife conducts animal censuses during winter and spring using fixed-wing and helicopter
- BLM conducts wild horse censuses and roundups, and livestock tallies in 108 by fixed-wing and helicopter
- none of the established aircraft use would significantly reduce wilderness manageability
- see Influence of Outside Sights and Sounds for more detail (i.e., dates flying established)

EXISTING AND PROPOSED RESOURCE FACILITIES

- none proposed

LIVESTOCK GRAZING

Present grazing activities

- three grazing allotments
- existing range facilities would not significantly reduce wilderness manageability
- see NATURALNESS for details of existing facilities and seasons-of-use

Changes identified in Sonoma-Gerlach Grazing E.I.S.

-no proposed range facilities

STUDY POLICY QUALITY STANDARDS

Quality Standard 1: Energy and Critical Minerals

For background information and general description of the District see Appendix A.

General Geology

The Augusta Mountain WSA is in the Augusta Mountains, a roughly north-south trending, fault-bounded mountain range that is typical of the Basin and Range Province of Nevada. The range extends northward from the confluence of the Clan Alpine and New Pass Mountains and is terminated in the north by a low pass which separates it from the Fish Creek Mountains to the northeast.

The dominant rocks of the WSA consist of a nearly conformable sequence of Triassic age offshore to near shore marine strata of the Augusta Sequence. Outside the WSA these rocks are shown to unconformably overlie Early Triassic andesites and rhyolites of the Koipato Sequence; the Koipato in turn overlies the allochthonous middle(?) to Late Paleozoic Havallah Sequence in the Augusta Mountains. The Koipato Sequence thins toward the east and is locally absent between the Augusta Sequence and the Havallah Sequence.

The WSA exhibits the most complete type section of the Augusta Sequence where six formations (the Tobin, Dixie Valley, Favret, Augusta Mountain, Cane Spring and Osobb) form an unbroken succession of Early Triassic to Late Triassic age rocks (Silberling and Roberts 1962; Nilsen and Stewart 1980; Johnson 1977; Stewart 1980). These rocks were deposited in an offshore to near shore marine environment just west of the lower Triassic continental land mass (Stewart 1980).

The basal portion of the Augusta Sequence is characterized by terrigenous clastic deposition. The lowermost formation in the sequence is the Tobin Formation which consists of fine-grained calcareous clastics. The overlying Dixie Valley Formation exhibits higher energy coarse conglomeratic, dolomitic sandstone with shaly or sandy limestone interbeds. Overlying this clastic basal zone is as much as 5,000 feet of carbonate rocks belonging to the Favret, Augusta Mountain and Cane Spring Formations which in general indicate a low energy shallow offshore depositional environment. Capping the Augusta Sequence is the Osobb Formation and a shift to shallow water clastic deposition. Cross-bedded quartz sandstones with wedge-shaped, low angle and tabular cross sets indicate beach and shallow water bar deposition (Johnson 1977). The Augusta Sequence dips gently to steeply southwest and appears to be a northward continuation of the westward dipping homoclinal structure in the New Pass Range (Stewart 1980; Willden and Speed 1974).

A sizeable Jurassic gabbro body cropping out in the Clan Alpine Mountains to the south just barely extends into the southern boundary of the WSA.

The Tertiary rocks within the WSA consist of basalt, andesite and dacite flows, ash flow and ash fall tuffs and a few local units of tuffaceous sedimentary rocks.

These Tertiary formations crop out in the extreme northern and southern portions of the WSA. The oldest of these volcanic formations is the Oligocene-Miocene Edwards Creek Tuff cropping out in the southern portion of the WSA. Originally this ash-flow sheet probably covered an area of some 400 square miles; now only distal remnants are found. An Oligocene porphyritic basalt flow lies along the southwestern edge of the range, which has apparently issued from an early normal fault. Tertiary algal limestone locally occurs below or interbedded with the basalt (Willden and Speed 1974).

Overlying the Edwards Creek Tuff in the extreme north of the WSA is the early Miocene Fish Creek Mountain Tuff. This formation is composed of crystal rich rhyolite tuff and welded tuff and is locally derived from the Fish Creek Mountain volcanic center, approximately 10 miles northeast of the WSA (McKee and Silberman 1970; Burke and McKee 1979; Johnson 1977). This saucer-shaped, collapsed volcanic caldera structure of Fish Creek Mountain lies along the southwestern margin of a major east-west trending, mid-Cenozoic volcano-tectonic trough. This trough and related calderas predate crustal extension from Basin and Range faulting, and are characterized by rhyolitic to andesitic volcanism and coeval faulting. Thus the fault-bounded trough filled itself with volcanics as it subsided (Burke and McKee 1979).

In the extreme southern portion of the WSA, small remnants of the once widespread Bates Mountain Tuff crop out. At the time of deposition this early Miocene rhyolitic ash flow sheet probably covered 1,500 square miles in Lander County alone. In most of this region this formation is the youngest present (Stewart et al. 1977).

Miocene-Pliocene lacustrine sedimentary deposits in the northern tip of the WSA (Jersey Valley area) have been divided into three units: "a basal unit, at least 1,700 feet thick, of mudstone, subordinate siltstone and sandstone with minor conglomerate and thin pyroclastic layers; a middle unit, about 1,030 feet thick, of poorly sorted siltstone and silty mudstone with 30 thin tuffaceous interbeds; an upper unit of unknown thickness consisting of tuff, mudstone, and a minor conglomerate. These units, as well as other Tertiary sedimentary rocks elsewhere in the county, have been faulted and tilted and are beveled by erosion. Locally, the Tertiary sedimentary rocks are covered by pediment gravel" (Johnson 1977). The tuffaceous interbeds of this unit contain commercial zeolite deposits.

Quaternary alluvium covers the lower valley areas of the WSA.

Following is a discussion of the energy and mineral potential in the Augusta Mountain WSA. Please refer to the Mineral Potential Classification on Scheme, Figure 1 in Appendix A, for further explanation of alphanumeric classifications. Also see, in Appendix B, Tables B-10, B-11, B-12 and B-13 showing acreages for Metallic Mineral, Nonmetallic Mineral, Geothermal and

Oil and Gas Potential; and Tables B-6, B-7 and B-8 showing acreages of Unpatented Mining Claims, and Geothermal and Oil and Gas Leases; as well as summary Tables B-14 and B-15 showing the Energy and Mineral Threshold Levels and Holdings affected by four of the alternatives proposed in the EIS (all except No Wilderness Alternative).

Metallic Mineral Potential

Mining districts adjacent to the WSA include the Wild Horse District on the southern tip, the Bernice District six miles south, Mount Tobin District on the northern tip and Jersey Valley District two miles further north.

Mercury was discovered in the Wild Horse District around the year 1916. Between that time and 1970 a total of approximately 1,200 flasks of mercury were produced from the two principal mines of the district, the McCoy Mine and the Wild Horse Mine. These mercury deposits occur along fractures and in small cavities within partially silicified limestones. The mineralization consists of crusts, films, veinlets and crystal aggregates of cinnabar and small amounts of mercuric chloride minerals (Stewart et al. 1977). This mineralization is the result of relatively low temperature hydrothermal activity which deposited HgS in fractures and vugs, along with silica within the limestones (Berry and Mason 1959). In 1954 a manganese deposit was discovered in the southern portion of the mining district and in 1958 some limited production took place at the Black Devil Mine. This deposit consists of large lenses of manganese-rich material (predominantly psilomelane) which has partially replaced volcanic water lain tuffs and agglomerates (Stewart et al. 1988). Psilomelane is typically a secondary mineral formed under surface pressures and temperatures. It has been found to form concretionary masses in clays and in lake and swamp deposits. It is possible that this deposit was formed in this manner during the late Tertiary, early Quaternary periods. Antimony is also known to occur within the district.

The Bernice District in the Clan Alpine Mountains south of the WSA has produced silver, mercury and antimony. Only the Red Bird Mine of this district will be discussed as it is closest to the WSA.

"Cinnabar deposits [of the Red Bird Mine] occur in Upper Triassic sedimentary rocks in a northward-trending block which is faulted on its eastern and western sides against Tertiary rhyolitic rocks. The Upper Triassic rocks consist of interbedded black limestone and orange siltstone. Slightly younger massive light-gray dolomite of Triassic Age is thrust over the alternating siltstones and limestones.

. . . The adit is principally in black limestone, but the ore occurs in fractures in both limestone and siltstone. The trace of the thrust of massive dolomite occurs less than 100 feet east of the portal and at slightly greater distances to the south and west. Thus, the Red Bird deposits are believed to occur at the uppermost level of the lower-plate rocks, which are exposed in a local undulation of the thrust. The structural setting of the deposits suggests localization of cinnabar in fractures associated with the thrust faults.

Considerable prospecting has been done about one-half mile southeast of the Red Bird mine in similar rocks overlain by slides of Tertiary rhyolite. Cinnabar deposits are apparently absent in Tertiary rocks of this area" (Willden and Speed 1974).

The Mount Tobin District has mercury and fluorspar deposits in the southern Tobin Range and zeolite deposits in Jersey Valley. Only the zeolite deposits will be discussed as they are closest to the WSA. Please refer to Nonmetallic Minerals, Augusta Mountain WSA.

The Jersey Valley District is located on the east flank of the Fish Creek Mountains just north of the WSA.

"The silver-lead mines in Storm Canyon were located in 1873 and worked intermittently until 1945. The greatest period of productivity was between 1880 and 1910. The mines, known as the Jersey Valley Group and the Rex Group, are developed by shafts, adits, and tunnels. The ores were mined chiefly for silver and lead, but zinc, copper, and gold were also recovered.

The Black Eagle manganese mines were located in 1934 and explored by the U.S. Bureau of Mines in 1941. The mine produced small shipments of 21.0 percent manganese ore, mined by open-pit methods in 1952 and 1953; in the U.S. Bureau of Mines report, this operation is discussed under Blue Lead District.

No detailed study of the silver-lead mines has been made. From the sparse information available, the ore was primarily argentiferous galena, associated with sphalerite and minor carbonates and oxides. The deposits are confined to the diorite, which is highly altered.

The manganese deposits are three narrow, lenticular bodies consisting of an intimate mixture of manganese oxides (chiefly psilomelane), wad, and silica. The ore consisted of veinlets of manganese oxides in chert and a manganese oxide groundmass containing numerous fine particles of chert and silica. The major ore body was 820 feet long and averaged about 35 feet thick; it strikes N. 45° W. and dips 30° SW. Two smaller lenticular pods or lenses occur 200 feet south of the main body but are not continuous" (Johnson 1977).

Barringer Resources (1982) indicated a significant anomalous area termed the "Augusta Mountains," basically covering most of the WSA. This large area has been divided into several smaller anomalous sub-zones to aid in discussion of the metallic mineral potential in a more site-specific manner. Please refer to the Mineral Potential Maps for locations of these anomalous sub-zones discussed below.

WILD HORSE MINING DISTRICT. (3B) Moderate Potential.

The Wild Horse Mining District is in the extreme southeastern portion of the WSA. The dominant rock types of this zone consist of the carbonate portion of the Triassic Augusta Sequence. These strata have been overlain by the Oligocene-Miocene Edward Creek Tuff. This zone has been extensively faulted by steeply-dipping normal faults.

Geochemical sampling and geostatistical modeling results show:

Anomalous Values

High: tungsten

Low: barium

The high tungsten values may be related to past hot spring activity similar to the hot spring related tungsten deposits of the Golconda Mine near Golconda, Nevada. The McCoy and Wild Horse Mines one-half mile and one and one-half miles south of the WSA, respectively, have produced about 1,200 flasks of mercury.

The small dashed area labeled 1B, two miles north of the Wild Horse District, does contain some isolated low zinc values.

HOLE IN THE WALL ANOMALOUS ZONE. (3B) Moderate Potential.

This zone is in the southwest corner of the WSA. The dominant rock types occurring in this area are the Triassic sedimentary Augusta Sequence and Jurassic gabbro overlain by a Tertiary basalt flow in the highlands. These in turn are overlain by later Tertiary rhyolites and ash flow tuffs, with Tertiary tuffaceous sediments.

Geochemical sampling and geostatistical modeling results show:

Response to Geostatistical Modeling

Low: mafic copper-nickel

Anomalous Values

High: clustering of silver, zinc*, molybdenum

Moderate: cluster of copper*, lead*, mercury*, nickel*, barium

Several north-south frontal faults cross this zone, any one of which could have been a conduit for mineralizing hydrothermal fluids. Two fault zones in the Cain Mountain zone contained silica sinter. Hyder Hot Spring on the west edge and numerous other hot springs to the north are indications of hydrothermal activity. The Jurassic gabbro body cropping out at Hole in the Wall Spring on the southern edge of the WSA is the source for the response to the mafic copper-nickel model.

No prospecting activities or mining claims are known in this zone.

CAIN MOUNTAIN ANOMALOUS ZONE. (3B) Moderate Potential.

The Cain Mountain zone is in the west-central portion of the WSA. The dominant rock types which crop out in this area are a fairly complete representation of the central carbonate formations with portions of the upper and lower clastic formations of the Triassic age Augusta Sequence and Jurassic gabbro.

Geochemical sampling and geostatistical modeling results show:

Response to Geostatistical Modeling

Very low: base-precious metal

Anomalous Values

High: nickel*

Moderate: cobalt*

A BLM field reconnaissance in this zone in 1983 discovered an unmapped gabbro body approximately 90 x 40 meters in size. The relationship of this body with the country rock is not known for the contacts were covered by colluvium. A nickel value of 973 ppm is indicated in the sample taken just below the outcrop. This outcrop is likely the continuation of the larger Jurassic gabbro body cropping out on the west slope of the Clan Alpine Mountains to the south.

The Table Mountain District in the Stillwater Range approximately 15 miles west-southwest of this area produced high grade nickel ore between 1882 and 1890 and intermittently thereafter. These nickel deposits formed at the contact between Jurassic age gabbros and Jurassic sediments or within shear zones at these contacts.

Also discovered during a field reconnaissance of the area were two shear zones containing minor silica sinter with limonitic staining and possible cinnabar(?).

No prospecting activities or mining claims are known in this zone.

FAVRET CANYON ANOMALOUS ZONE. (3C) Moderate Potential.

This zone is in the west-central portion of the WSA centered about Favret Canyon. Rock types in this zone are Triassic volcanic and sedimentary rocks of the Koipato Group and Triassic sedimentary rocks of the Tobin, Dixie Valley and Favret Formations, overlain by the Miocene Fish Creek Mountains Tuff.

Geochemical sampling and geostatistical modeling results show:

Response to Geostatistical Modeling

Low: gold-silver, mafic copper-nickel

Very low: base-precious metal, antimony-mercury

Anomalous Values

High: nickel*

Moderate: cobalt*, antimony*, molybdenum

Low: zinc*

The responses in this zone are somewhat similar to the Gain Mountain zone but with the additional response to the gold-silver and mercury-antimony models. Here again these anomalous values may be associated with hydrothermal activity along range frontal faults. The response to the mafic copper-nickel model, however, is likely related to a small unmapped Jurassic gabbro body.

No prospecting activities or mining claims are known in this zone.

HOME STATION WASH ANOMALOUS ZONE. (3C) Moderate Potential.

This zone is in the northeast portion of the WSA. Rock types include Oligocene andesite, Oligocene or Miocene Edwards Creek Tuff, the Miocene Fish Creek Mountain Tuff and Miocene-Pliocene sedimentary rocks.

Geochemical sampling and geostatistical modeling results show:

Response to Geostatistical Modeling

Moderate: volcanic uranium, base-precious metal

Low: mafic copper-nickel, gold-silver, mercury-antimony

Anomalous Values

High: zinc*, tungsten*

Low: molybdenum, mercury*, beryllium*, barium

Garside (1973) has reported a radioactive occurrence on the Old Jaw Bone property approximately two miles west of this zone. Little else is known about this property or its exact location. Several companies have been interested in the uranium potential of the Fish Creek Mountains.

Approximately 142 mining claims have been staked in this area, likely for uranium, but there is no information about prospecting activities on these claims.

The volcanic rocks of this zone are related to the development of an east-west Oligocene, volcano-tectonic trough (Burke and McKee 1979). Burke (1974) has suggested that the mercury mineralization in the Mount Tobin, Black Knob and Antelope Springs Districts in Pershing County are all genetically related to development of this east-west trough. The anomalous values in this zone are also likely related to this tectonic-igneous event.

Nonmetallic Mineral Potential

The zeolite deposits in Jersey Valley occur in Miocene-Pliocene lacustrine sedimentary rocks. These deposits have been explored from 1958 to the present. Johnson (1977) has indicated that

"The only production was about 50 tons of zeolite mined at the Northern Zeolite deposit by Mobil Oil Corp. by open-pit methods for its own use in petroleum processing, and an unknown tonnage of massive zeolite-rich rock mined from the Southern Zeolite deposit for building stone.

Zeolites, including clinoptilolite, erionite, mordenite, and phillipsite, occur in the Tertiary sedimentary deposits that form part of a dissected pediment on the west side of Jersey Valley. Zeolite-rich beds were formed by diagenesis of vitric volcanic ash that fell into saline, alkaline lakes; they occur in different pyroclastic and tuffaceous units of the sedimentary rocks."

Although zeolites have not been reported in this WSA these same sedimentary units extend into the northern tip of the WSA and are considered to have potential for similar zeolite deposits. In addition, this WSA has potential high grade limestone and dolomite beds in the Triassic sedimentary rocks.

The following portions of the WSA are considered to have nonmetallic mineral potential:

Moderate (3C) - Home Station Wash Zone - sedimentary rocks are same type as five miles north of zone where rich zeolite deposits have been found
Moderate (3C) - limestone and dolomite beds in Augusta Mountains are potential cement sources

Geothermal Resource Potential

The Dixie Valley Known Geothermal Resource Area (KGRA) occurs as several isolated blocks all through northern Dixie Valley. One of these KGRA blocks surrounding Hyder Hot Spring on the southwest boundary includes Sections 15, 21, 22, 27 and 28 of the WSA. Hot spring activity continues northward all along the western boundary of the WSA, including Lower Ranch, McCoy, Home Station Ranch, Jersey Valley Hot Springs and numerous other unnamed hot springs. Electrical generation potential or reservoir temperature calculations for Hyder Hot Spring, within the KGRA, have not been made. Lower Ranch and Jersey Valley Hot Springs have calculated reservoir temperatures of 212° F and 360° F, respectively. Exploration activities have been very extensive throughout Dixie Valley and along the western side of the Augusta Mountains. Deep drilling (7,000-13,000') by Trans Pacific Geotheraml and SUNEDCO nine miles west near the Lamb Ranch, have discovered reservoir fluid temperatures in the 400° F range.

The McCoy Mine located one-half mile south of the WSA has also been the site of some 2,000' geothermal gradient holes. Hot spring sinter deposits occur at the mine site but active hot springs are not known in the area. Many geothermal leases in this area have been combined into one geothermal federal unit.

Extensive geothermal lease blocks cover most of the western half of the WSA. A few of these leases have just recently been dropped.

The following portions of the WSA are considered to have geothermal potential:

- High (4D) - A 1 1/2-mile-wide strip inside northwest boundary and a 6-mile-wide strip inside southwest boundary
- Moderate (3C) - A 2-mile-wide strip inside the southern and eastern boundaries
- Low (2B) - The remainder of the WSA

Oil and Gas Potential

Geophysical exploration activities for oil and gas have been very extensive throughout northern Dixie Valley. Most of this activity, however, has stopped at the western boundary of the WSA basically because of restrictive non-impairment criteria within the WSA. No wells have yet been drilled but one company has expressed an interest. Interest in this area is based on the documented occurrences of oil in ammonites found in Triassic shales in the Augusta Mountains (Bortz 1983). Oil has also been found by Bureau geologists in the Triassic ammonite fossil beds in the Augusta Mountain WSA. Potential for reservoir rocks, however, are felt to be in the down-dropped valley portion of Dixie Valley and along the base of the Augusta Mountains. Oil in the unfaulted portions of the Augusta Mountains likely has migrated outward or if still trapped within the mountain range is likely immature oil.

Oil and gas lease blocks extend into the WSA all along the western and eastern base of the Augusta Mountains.

The following portions of the WSA are considered to have oil and gas potential.

Moderate (3B) - A 1 1/2-mile-wide strip inside northwest boundary and a 6-mile-wide strip inside southwest boundary

Low (2B) - The remainder of the WSA

Quality Standard 2: Impacts of Other Resources

Recreation

- current recreational use favors motorized and motorized supported recreational activities (hunting) in portions of 108
- wilderness designation could restrict vehicular access to 20.9 miles of roads and ways and about 65,000 acres of land in 108 currently accessible to off-road vehicles

Cultural Resources

- wilderness designation could indirectly add to the existing legal protection of cultural resources by limiting resource development and use
- wilderness designation could possibly curtail excavation and stabilization of historic, prehistoric or paleontological finds if action would impair wilderness values.
- Sl lithic scatter has good potential for excavation
- inventory data for 108 is sparse and other sites which would warrant excavation may be identified in the future

Energy and Mineral Resources

- wilderness designation imposes strict guidelines on all allowed mineral and energy development--potentially making development infeasible
- mining claims located after designation could not be developed
- see Quality Standard 1 for more details

Livestock Grazing

- costs of maintaining range developments and livestock management would increase where permittee vehicular access curtailed
- future beneficial range developments/treatments may be restricted, none proposed in 108 at this time

Other Resources

Current resource plans identified no other resources which could be adversely impacted by wilderness designation. However, wilderness management could impose additional constraints on future projects in these programs: fire; wildlife; wild horses and burros; lands; soil, water and air; aquatic habitat and visual resources.

Quality Standard 3: Impact of Non-designation on Wilderness Values

SHORT-TERM IMPACTS

-reduced opportunities for primitive and unconfined recreation and solitude in those areas in 108 accessible to off-road vehicles

LONG-TERM IMPACTS

-continued development of mineral and energy resources could eventually eliminate opportunities for naturalness, solitude, and primitive and unconfined recreation within 108; potential discussed in Quality Standard 1
-area would remain open for development of other resources which might impair wilderness values; extent speculative

Quality Standard 4: Public Comment

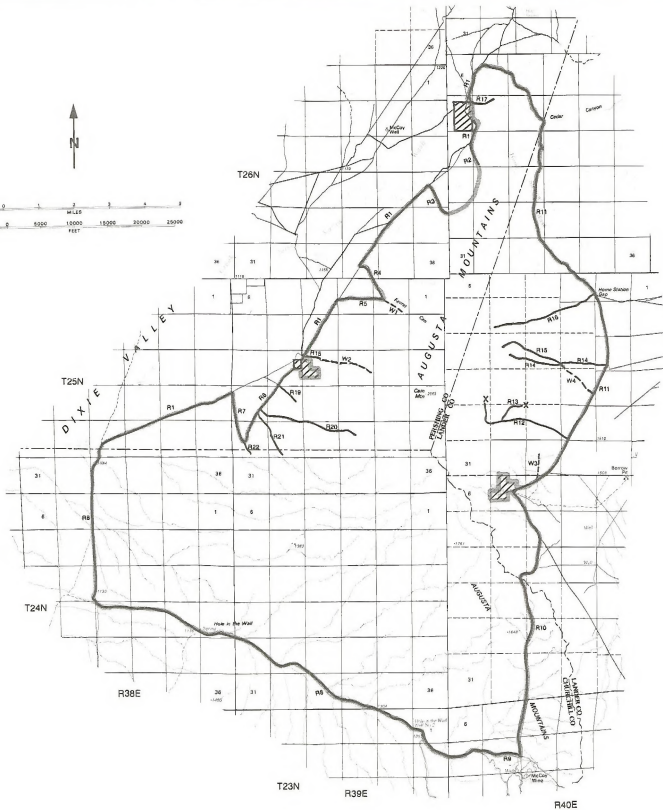
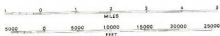
See District-wide Analysis, Chapter III

Quality Standard 5: Local and Regional Socioeconomic Effects

See District-wide Analysis, Chapter III

Quality Standard 6: Consistency With Other Plans

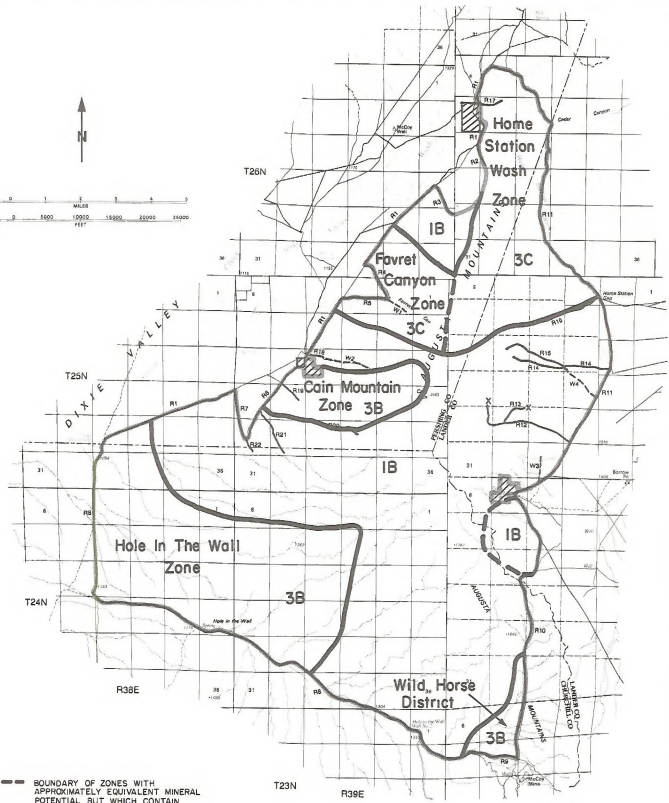
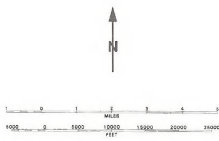
See District-wide Analysis, Chapter III



-  PRIVATE LAND (SURFACE & MINERALS)
-  W. S. A. BOUNDARY
-  ROAD
-  WAY
-  PROSPECT



NV-030-108 AUGUSTA MTS.



- BOUNDARY OF ZONES WITH APPROXIMATELY EQUIVALENT POTENTIAL BUT WHICH CONTAIN DIFFERENT MINERALS (SEE TEXT).
- ▨ PRIVATE LAND (SURFACE & MINERALS)
- W.S.A. BOUNDARY
- ROAD
- - - WAY
- X PROSPECT

- FAVORABILITY
1. UNFAVORABLE POTENTIAL
 2. LOW POTENTIAL
 3. MODERATE POTENTIAL
 4. HIGH POTENTIAL

- LEVEL OF CONFIDENCE
- A. INSUFFICIENT DATA
 - B. LOW CONFIDENCE (Indirect evidence)
 - C. MODERATE CONFIDENCE (Direct evidence)
 - D. HIGH CONFIDENCE (Abundant direct evidence)



NV-030-108 AUGUSTA MTS.
MINERAL POTENTIAL

Wilderness Study Area 200: Selenite Mountains

DESCRIPTION

Location

- western Humboldt County, Nevada, and a small part in eastern Washoe County, Nevada; approximately two miles southeast of Gerlach, Nevada
- two-hour drive from Reno, the nearest Standard Metropolitan Statistical Area
- best access via State Highway 447 (R9) (a paved road on the west boundary), and along State Highway 48 (a dirt road along the northwest boundary)

Configuration and Size

- bounded by roads and ways (29.6 miles) and legal descriptions (6.7 miles)
- about 13 miles long north-south and from three to five miles wide east-west
- 32,041 acres of public land

Physical Environment

- altitude range: 3,980 feet to 7,115 feet
- Bailey-Kuchler ecosystem: sagebrush-steppe (3130-49)
- Sonoma-Gerlach Grazing E.I.S. vegetation communities: sagebrush, saltbush, greasewood and waste
- no known riparian areas; some small juniper stands
- 200 straddles the northern end of the Selenite Range, a north-south range flanked by alluvial desert basins
- three distinct landforms within 200: main ridge axis; narrow fringing desert piedmont on northwest side; footslope on southeast side
 - main ridge axis (13 miles long and 1/2 to five miles wide):
 - is composed predominantly of eroded granite and basalt flows
 - is steepest on the northwest facing slope
 - contains several dominant drainage systems on the west and northwest side running perpendicular to ridge axis
 - is predominantly a rolling landform with a few steep granitic rock outcrops and cliff areas
 - contains noticeable wave-cut terraces from the Pleistocene Lake Lahontan on the northwest side
 - is dominated by Selenite Peak
 - fringing desert piedmont, northwest side: (1/2 to one mile wide and twelve miles long)
 - is an abrupt transition from steeper ridge axis
 - is characterized by conical alluvial fans and roughly parallel drainages
 - freeslope, southeast side (1/2 to two miles wide, 13 miles long)

- is similar to main ridge axis except less steep, lower elevation
- drops slowly from main ridge to desert valley to east
- contains numerous, parallel drainages not deeply incised
- is predominantly rolling to flat with a few scattered granitic rock outcrops

STUDY POLICY CRITERIA

Criterion 1: Evaluation of Wilderness Values

Component A: Mandatory Wilderness Characteristics

SIZE

- 32,208 acres within boundary, including 167 acres of private land and 32,041 acres of public land
- 42 acres of public land with a Free Use Permit to the State of Nevada Highway Department for a material site (currently in use)

NATURALNESS

Developments within WSA

Range-related developments (see Table B-1 in Appendix B)

- one grazing allotment located in 200 (see Table B-2 in Appendix B)

Other man-made features

- four roads within 200 totalling 2.1 miles located along edge of unit (see Table B-3 in Appendix B)
- thirteen ways within 200 totalling 9.8 miles located along edge of unit (see Table B-3 in Appendix B)
- one gravel pit located on the west edge of 200 (State of Nevada Department Free Use Permit)
- one small prospect pit located adjacent to R1

Outside Imprints

- Western Pacific railway visible and audible from main ridge axis to boundary road on northwest side
- communities of Gerlach and Empire visible from vicinity of Selenite Peak
- Empire gypsum plant visible from vicinity of Selenite Peak
- other outside imprints minimal

Location and size of areas subject to imprints

- most of footslope on southeast side free of imprints
- west and northwest of main ridgcrest subject to imprints except within deeper drainages
- imprint of bounding roads R1 and R9 significantly impact 200 up to two miles away
- most significant imprints are R1, the Western Pacific Railroad and Empire/Gerlach

Rehabilitation potential

- R6 and all ways could be rehabilitated without substantial mechanical manipulation
- R7 and R5 would require substantial mechanical manipulation for rehabilitation
- Nevada Highway Department gravel pit currently in use

Potential for separating areas in WSA subject to imprints

- difficult to separate areas on northwest and west sides without sacrificing wilderness values
- could separate corral without reducing wilderness values
- impact of ways and roads not substantial enough to require separation
- could separate Nevada Highway Department gravel pit without sacrificing wilderness values

Overall influence of imprints

- imprints are substantial on northwest and west sides of 200-- difficult to mitigate without compromising other wilderness values
- imprints minimal on east and southeast side of 200

SOLITUDE

Solitude is defined as the opportunity to avoid the sights, sounds and evidence of other people.

Influence of Outside Sights and Sounds

Economic activity

- Western Pacific Railroad visible and audible from northwest portion of 200
- Empire gypsum plant visible from portion of 200 west of Selenite Peak
- towns of Gerlach and Empire visible from western part of 200

Aircraft flights

- no established routes over 200
- sporadic light aircraft over 200; higher than the District average frequency due to proximity to Gerlach airstrip (two miles northwest)
- State of Nevada Department of Wildlife conducts annual wildlife censuses
 - deer counts November-December and March-April (helicopter); regular since 1980
- BLM conducts livestock and wild horse censuses/roundups on 200
 - livestock tallies as needed (usually fixed-wing)
 - wild horse inventories every other year, August-October; occasional checks during critical weather
 - wild horse roundups when needed (using helicopter), usually July-October

Vehicular traffic

- periodic traffic, especially on northwest boundary road (R1) visible from ridgecrest to road; moderate traffic on paved boundary road R9
- light traffic on other boundary roads (R2, R3, R4)

Physical factors influencing solitude

Topographic and vegetative screening

- main ridge axis
 - low shrubs and barren areas provide a minimal vegetative screening, topographic screening fair to good in main drainages, particularly northwest of ridgecrest
 - topographic screening fair to poor outside drainages, along ridge crests and on southeast side
- fringing desert piedmont, northwest side
 - little or no vegetative screening
 - topographic screening fair to poor throughout
- footslope, southeast side
 - low shrubs provide minimal vegetative screening
 - topographic screening generally poor due to shallow drainages and smooth to rolling landforms; locally good in deeper drainages

Size and configuration

- size is sufficient to provide solitude
- elongated (northeast to southwest) configuration means visitors never more than 2.5 miles from boundary

Ability of user to find secluded spots

- easily locatable within main drainages along northwest side of main ridge axis
- more difficult to find throughout remainder of 200

PRIMITIVE AND UNCONFINED RECREATION OPPORTUNITY

Access

- all areas in 200 within 2.5 miles of a boundary road
- excellent year-round access from northwest and east sides (R1, R2, R3, R4) and small part of west side (R9)
- access difficult from south side
- vehicular access within 200 on several roads and ways; limited to high clearance vehicles

Attractions (see also Special Features)

Points of interest

- wave-cut terraces from Pleistocene Lake Lahontan northwest side
- Indian "pebble mounds"
- rockhounding area (garnets)
- views of Black Rock Desert
- Selenite Peak

Challenge

- typical desert climate with associated challenges (hot, dry summers, cold winters)
- water scarce; no perennial springs or streams

Scenic qualities

- a few scattered granite rock outcrops provide variety
- views of nearby desert landforms, particularly Black Rock Desert and The Razorback
- landscape not outstanding when compared to nearby areas (e.g., southern Selenites)

Activities

Dayhiking (water availability not critical)

- entire WSA accessible to dayhiking
- most likely destinations include main drainages on west and northwest side and Selenite Peak

Camping

- dry camping only
- feasible throughout 200; locally good campsites in major drainages

Backpacking

- all attractions within 200 accessible to dayhikers; little advantage to backpacking
- constrained by a lack of water
- trips along main ridgecrest feasible
- on one proposed route of proposed Desert National Scenic Trail

Hunting

- deer year-round
- high and medium density chukar range
- valley quail and sage grouse range
- good hunter access

Horsepacking

- constraints: limited water; low forage in some areas
- advantages: generally favorable topography

Rock climbing and scrambling, caving

- a few scattered areas for marginal rock climbing
- rock scrambling potential good locally on northwest slope
- no known caves

Nature study

- geology study
- marginal opportunity to view wild horses

Fishing

- no perennial water

Winter sports

- wintercamping marginal due to lack of snow

Rockhounding

- known garnet collecting area; other unknown rocks collected on west edge of 200

Component B: Special Features

CULTURAL

Prehistoric

- total recorded sites: seven
- S2 sites: pebble mounds associated with Lake Lahontan shoreline considered to have high scientific potential
- S3 sites: six lithic scatters

Historic

- S4 sites: site containing old bottles, cans and debris

ZOOLOGIC

Fisheries

- no fisheries

Wild horses and burros

- in Selenite Range herd use area
- small portion of east side in Lava Beds herd use area
- both horses and burros occur in 200

Other mammals

- year-round deer range

Birds

- sage grouse range
- chukar range
- valley quail range

BOTANIC

- no threatened or endangered plants known to occur in 200
- no extensive riparian areas within 200
- small population of junipers near Selenite Peak

GEOLOGIC

- wave-cut terraces from Lake Lahontan

PALEONTOLOGIC

- no known sites

ACECs

- none

SCENIC

- no unique scenic resources

Component C: Multiple Resource Benefits

Wilderness designation of 200 could restrict motorized vehicular traffic on approximately 11.9 miles of roads and ways and about 14,000 acres of land now accessible to off-road vehicles. A vehicle closure would enhance opportunities for primitive and unconfined recreation within those areas of 200 currently accessible to vehicles.

Long-term benefits from wilderness designation may accrue to those resources which would otherwise deteriorate should the area return to other multiple uses. Although current land-use plans essentially maintain the existing environment and resource commitments if 200 is not designated wilderness, the federal land would remain accessible to mineral patenting, leasing and other development. These potential developments could adversely impact water, soil, air, visual, cultural and other resources which benefit from the existing, non-developed environment. The extent of future development in 200 is unknown.

Component D: Diversity in the National Wilderness Preservation System

ECOSYSTEM AND LANDFORM DIVERSITY

- Bailey-Kuchler ecosystem: sagebrush-steppe (3130-49)
- Sonoma-Gerlach Grazing E.I.S. vegetation communities: sagebrush, saltbush, greasewood and waste
- two areas totalling 34,943 acres with sagebrush-steppe ecosystem designated wilderness: Jarbidge Wilderness in northeastern Nevada and Lava Beds National Monument in northeastern California
- three areas of sagebrush-steppe totalling 343,450 acres endorsed as suitable by the President and pending before Congress
- 200 not a unique representative of this ecosystem within the Winnemucca District

- unknown how 200 compares with other WSAs with the same ecosystem outside the Winnemucca District
- 143 WSAs in Nevada, California, Idaho and Oregon with sagebrush-steppe representation

RECREATION NEAR SMSAs

- approximately two-hour drive from Reno, the nearest SMSA
- twelve designated wilderness areas and numerous WSAs within a five-hour drive of Reno
- no designated wilderness with sagebrush-steppe ecosystem within five-hour drive of Reno

GEOGRAPHIC DISTRIBUTION OF WILDERNESS

- one designated wilderness in Nevada (Jarbidge, U.S. Forest Service)
- see Chapter III, Component D, for a more complete analysis

Criterion 2: Manageability

Physical Factors Influencing Manageability

CONFIGURATION

- no significant manageability problems due to configuration

ACCESS

- difficult to control off-road vehicle use off some boundary roads, especially on northwest and east side (R1, R2, R3, R4)
- difficult to control off-road vehicle use from portions of the following roads and ways within 200:
 - all ways and roads on fringing desert piedmont (R5, R6, R7; W2, W3, W4, W6, W7, W8)
 - W9, W11, W12 (east side)

LANDFORM

- landforms conducive to off-road vehicle use which would be difficult to control include:
 - all parts of fringing desert piedmont, northwest side
 - flatter portions of the footslope, southeast side

INTRUSIONS AND OUTSIDE INFLUENCES

- managing for solitude would be difficult in those areas overlooking Western Pacific Railroad, Empire and Gerlach
- other influences would not significantly impede manageability

Nonconforming But Accepted Uses

VALID EXISTING RIGHTS

Mining claims

-no registered mining claims within 200

Leases

-None

-Known Geothermal Resource Area (KGRA) along northwest corner

Non-federal land

-167 acres of private land in two separate parcels

-possible to exclude parcel on east side without jeopardizing wilderness values

-excluding parcel on northeast end of 200 would slightly reduce wilderness values in the immediate area

Free Use Permits

-42 acres in two separate parcels on west edge of 200; State of Nevada Department of Highway's gravel site; currently in use

-possible to exclude both parcels without jeopardizing wilderness values

ESTABLISHED AIRCRAFT AND MOTOR BOAT USE

-Nevada Department of Wildlife conducts animal censuses during winter and spring using helicopter

-BLM conducts wild horse and burro censuses and roundups, and livestock tallies over 200 by fixed-wing and helicopter

-none of the established use would significantly reduce wilderness manageability

-see Influence of Outside Sights and Sounds for more detail (e.g. dates flying established)

EXISTING AND PROPOSED RESOURCE FACILITIES

-no non-range facilities within 200

-four proposed guzzler sites within 200 (Nevada Department of Wildlife)

-proposed utility corridors on northwest and west edge parallel to boundary (MFP III) would extend up to 1.5 miles into 200

LIVESTOCK GRAZING

Present grazing activities

-one allotment within 200 (Blue Wing)

-one corral on east edge of 200 only existing range facility within 200; does not impair wilderness manageability

-see NATURALNESS for details of existing facilities and seasons-of-use

Changes identified in Sonoma-Gerlach Grazing E.I.S.

- two proposed fencelines running east-west:
 - one vicinity of Selenite Peak (west side)
 - one vicinity of Duque Springs (east side)

STUDY POLICY QUALITY STANDARDS

Quality Standard 1: Energy and Critical Minerals

For background information and general description of the District see Appendix A.

General Geology

The Selenite Mountains WSA is in the northern Selenite Range, a north to northeast trending fault block mountain of the Basin and Range Province. Rock types in the WSA include Upper Permian(?) metavolcanic rocks, on the southwest and northern sides of the Selenites, which have been intruded by Cretaceous granodiorite plutonic rocks. These rocks have in turn been overlain by Quaternary-Tertiary basalt flows (Johnson 1977). Quaternary alluvium covers the lower valley areas. Although no detailed work has been done in these Permian(?) metavolcanic rocks they are likely of an island arc affinity (Russell 1981). Volcanic rocks represented are Permian meta-andesitic and meta-dacitic flows, breccias and tuffs, with interbedded limy shale and minor chert. The Cretaceous granodiorite body is part of a larger batholithic complex that underlies most of western Pershing County (Smith et al. 1971).

Following is a discussion of the energy and mineral potential in the Selenite Mountains WSA. Please refer to the Mineral Potential Classification on Scheme, Figure 1 in Appendix A, for further explanation of alphanumeric classifications. Also see, in Appendix B, Tables B-10, B-11, B-12 and B-13 showing acreages for Metallic Mineral, Nonmetallic Mineral, Geothermal and Oil and Gas Potential; and Tables B-6, B-7 and B-8 showing acreages of Unpatented Mining Claims, and Geothermal and Oil and Gas Leases; as well as summary Tables B-14 and B-15 showing the Energy and Mineral Threshold Levels and Holdings affected by four of the alternatives proposed in the EIS (all except No Wilderness Alternative).

Metallic Mineral Potential

The Hooker Mining District two miles south of the WSA is presently producing gypsum and has been a past producer of tungsten farther south. The gypsum deposits mined by U.S. Gypsum, using open pit methods, are in the Triassic-Jurassic Auld Lang Syne Group which consists of slate, phyllite, hornfels, quartzite and marble. Tungsten has been produced from the granodiorite sedimentary contact zone. See Mount Linbo WSA, Energy and Critical Minerals, for more details about the tungsten production.

Barringer Resources(1982) did not indicate any significant anomalous areas within the WSA even though some responses were shown on modeling maps. Some areas of the WSA do contain anomalous values and some minor indications of past mining activity. Please refer to the Mineral Potential Maps for locations of these anomalous zones discussed below.

SELENITE PEAK ANOMALOUS ZONE. (3C) Moderate Potential.

This zone occurs along the southwest side of the WSA and contains Permian(?) metavolcanic rocks that have been intruded by Cretaceous granodiorite.

Both of these units have in turn been overlain by Quaternary-Tertiary basalt flows.

Geochemical sampling and geostatistical modeling results show:

Anomalous Values
High: tungsten*
Low: molybdenum

It is most likely that these values are associated with the metavolcanic-granodiorite contact as skarn type mineralization. The values are strongest at the southern end of the zone with only one slightly anomalous values for tungsten occurring at the north end. However, the northern two-thirds of this contact zone are covered with basalt flows and are likely masking any skarn mineralization that may occur. More detailed work would have to be done, however, to determine the source.

At present, prospecting activities are not known to occur in this zone and there are no recorded mining claims.

ARCTURUS MINE ANOMALOUS ZONE. (3C) Moderate Potential.

This zone is located in the extreme northern tip of the WSA. Rock types include Permian(?) metavolcanics intruded by Cretaceous granodiorite.

Geochemical sampling and geostatistical modeling results show:

Response to Geostatistical Modeling
Very low: gold-silver, antimony-mercury
Anomalous values
Moderate: silver
Low: tungsten*, barium

Most of the anomalous values in this zone are located along the meta-volcanic-granodiorite contact. The response to the antimony-mercury model is at the extreme northern tip of the zone, and it is not known what is the cause for this response.

The Arcturus Mine is a patented mining claim on the contact zone. There is nothing available in the literature about this mine, but it is assumed it was at least developed for the silver values indicated in this area. Skarn mineralization containing at least garnets is known to occur in the contact zone (Johnson 1977). The mine is a tunnel driven into the contact zone.

No other unpatented mining claims are in this zone.

MUD SPRING ANOMALOUS ZONE. (2B) Low Potential.

This zone is on the southeast side of the WSA just east of Selenite Peak. This zone contains Quaternary-Tertiary basalts which overlie granodiorite.

Geochemical sampling and geostatistical modeling results show:

Anomalous Values

Low: mercury*, barium

These values appear to be related to the basalt cap covering most of this zone. At present there are no known prospecting activities or mining claims recorded.

NORTHEAST SELENITE ANOMALOUS ZONE. (2B) Low Potential.

This zone is on the northeast side of the WSA and contains only granodiorite igneous rocks.

Geochemical sampling and geostatistical modeling results show:

Response to Geostatistical Modeling

Low: gold-silver

Anomalous Values

Low: mercury*, barium

Little else is known about the geology of this zone.

At present there are no known prospecting activities or mining claims recorded in this zone.

FLOWING WELL ANOMALOUS ZONE. (2B) Low Potential.

This zone is on the northwest side of the WSA and contains only Cretaceous granodiorite rocks.

Geochemical sampling and geostatistical modeling results show:

Response to Geostatistical Modeling

Low: mercury-antimony

Anomalous Values

Moderate: gold

Low: mercury*, molybdenum

Some of this mineralization may be related to hot spring activity. This area does warrant further investigation to determine source of anomalous values, especially gold.

At present there are no known prospecting activities or mining claims recorded in this zone.

Nonmetallic Mineral Potential

Nonmetallic minerals are not known or suspected in this WSA, therefore, potential is classified 1A, unfavorable, insufficient data.

Geothermal Potential

Part of the Gerlach Known Geothermal Resource Area (KGRA) extends into the southwestern side of the WSA including Sections 25 and 36 of T. 32 N., R. 23 E. Also the Gerlach Northeast KGRA is one and one-half miles north of the northwestern side and a portion of the Trego KGRA is three and one-half miles northeast of the northern tip of the WSA. A major portion of the Gerlach KGRA has been leased but not the sections inside the WSA. Until recently leasing has not been allowed in the Gerlach Northeast or the Trego KGRA, but many leases have been issued outside of these KGRAs. At present only a small portion of a lease application block extends into Section 13, T. 33 N., R. 24 E., inside the northern tip of the WSA.

Most of the leasing activities have occurred to the northeast and west, with none on the southeast side of the WSA.

Several hot springs are within the Gerlach KGRA along the eastern base of the Granite Range. One hot spring is in the Trego KGRA and there are no known surface manifestations of hot spring activity in the Gerlach Northeast KGRA. Several warm springs also occur at the Garret Ranch one mile northeast of the WSA.

Most geothermal exploration activities have been concentrated in the Gerlach KGRA, Trego KGRA and north of the Gerlach Northeast KGRA. Exploration activities have included geophysical surveys, shallow (500') temperature drilling, and one deep (5,871') exploration well drilled within the Gerlach KGRA. No information is available on this well which was drilled by Sunoco Energy Development Company (USDI Blue Wing URA 1979).

The following portions of the WSA are considered to have geothermal potential:

- High (4D) - A 1-mile-wide strip inside the western boundary
- Moderate (3B) - A 2-mile-wide strip inside the northeast boundary narrowing down to 1-mile-wide inside the southeast boundary
- Low (2B) - The remainder of the WSA

Oil and Gas Potential

Neither the central granitic core, the metavolcanic or the basalts exposed in the Selenite Range have any oil and gas potential. The only area in the WSA that may possibly contain oil and gas accumulations is along the western down-faulted portion of the WSA. Here, possible Early Tertiary sedimentary rocks could be preserved in down-dropped blocks in the deeper portions of the Black Rock Desert. Down-dropping of the valley on the east side of the Selenite Range appears to be much less than in the Black Rock Desert and likely does not hold much potential for preservation of thick sequences, Early Tertiary sedimentary rocks.

At present there are no oil and gas leases in the WSA and the nearest leasing activities are about 10 miles to the northeast in the Black Rock Desert. One oil and gas geophysical survey has been conducted near the western boundary of the WSA.

A one-mile-wide strip inside the western boundary of the WSA is classified 2A, low favorability but with insufficient data. The remainder of the WSA is classified 1D, unfavorable with a high confidence level.

Quality Standard 2: Impacts on Other Resources

Recreation

- current recreational use favors motorized-supported recreation (hunting, rockhounding)
- wilderness designation could restrict vehicular access on approximately 11.9 miles of roads and ways and about 14,000 acres of land within 200 and currently accessible to off-road vehicles

Cultural Resources

- wilderness designation could indirectly add to the existing legal protection of cultural resources by limiting resource development and use
- wilderness designation could possibly curtail excavation and stabilization of historic, prehistoric or paleontological finds if action would impair wilderness values.
- pebble mounds have potential for excavation
- inventory data for 200 is sparse and other sites may be identified in the future which would warrant excavation

Energy and Mineral Resources

- wilderness designation imposes strict guidelines on all allowed mineral and energy development--potentially making development infeasible
- mining claims located after designation could not be developed
- see Quality Standard 1 for more detail

Livestock Grazing

- costs of maintaining range developments and livestock management would increase where permittee vehicular access is curtailed
- further beneficial range development/treatments may be restricted

Lands

- proposed utility corridors (NFP III) on northwestern and western edge of 200 could be restricted if these portions were designated wilderness

Other Resources

Current resource plans identify no other resources which would be adversely impacted by wilderness designation. However, wilderness management could impose additional constraints on future projects in these programs: fire; wildlife; wild horse and burros; soil, water and air; aquatic habitat and visual resources.

Quality Standard 3: Impact of Non-designation on Wilderness Values

SHORT-TERM IMPACTS

-reduced opportunities for primitive and unconfined recreation and solitude in those areas accessible to off-road vehicles

LONG-TERM IMPACTS

-continued development of mineral and energy resources could eventually eliminate opportunities for naturalness, solitude, and primitive and unconfined recreation within 200; potential discussed in Quality Standard 1

-area would remain open for development of other resources which might impair wilderness values; extent speculative

Quality Standard 4: Public Comment

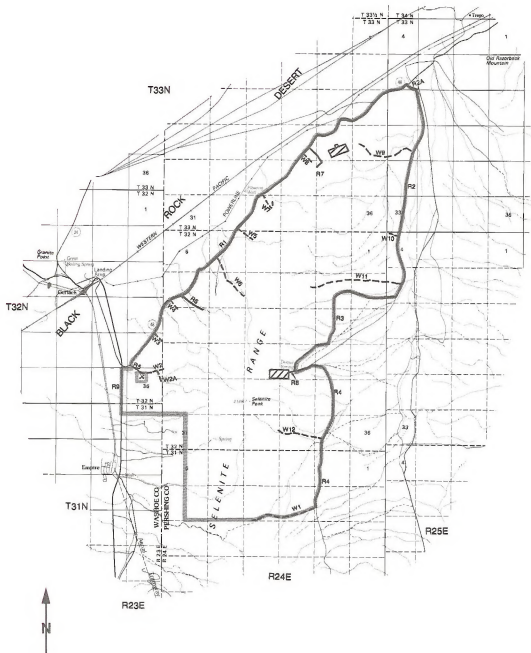
See District-wide Analysis, Chapter III






Quality Standard 5: Local and Regional Socioeconomic Effects

See District-wide Analysis, Chapter III

Quality Standard 6: Consistency With Other Plans

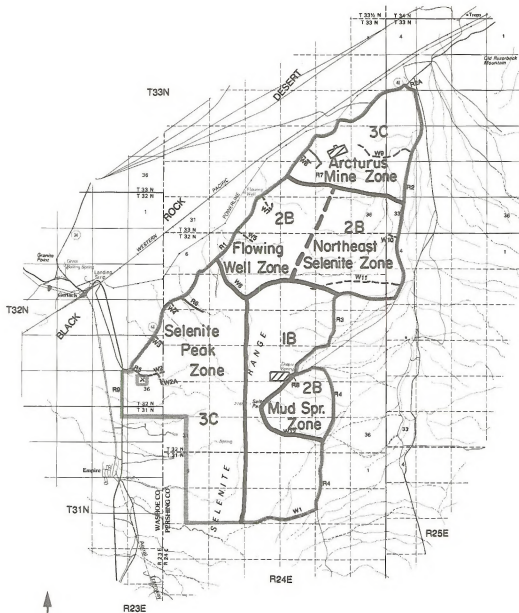
See District-wide Analysis, Chapter III



-  PRIVATE LAND (SURFACE & MINERALS)
-  W.S.A. BOUNDARY
-  ROAD
-  WAY
-  GRAVEL PIT



NV-020-200 SELENITES



--- BOUNDARY OF ZONES WITH APPROXIMATELY EQUIVALENT MINERAL POTENTIAL BUT WHICH CONTAIN DIFFERENT MINERALS (SEE TEXT).



- PRIVATE LAND (SURFACE & MINERALS)
- W.S.A. BOUNDARY
- ROAD
- WAY
- GRAVEL PIT

FAVORABILITY

1. UNFAVORABLE POTENTIAL
2. LOW POTENTIAL
3. MODERATE POTENTIAL
4. HIGH POTENTIAL

LEVEL OF CONFIDENCE

- A. INSUFFICIENT DATA
- B. LOW CONFIDENCE (Indirect evidence)
- C. MODERATE CONFIDENCE (Direct evidence)
- D. HIGH CONFIDENCE (Abundant direct evidence)



NV-020-200 SELENITES
MINERAL POTENTIAL

Wilderness Study Area 201: Mount Limbo

DESCRIPTION

Location

- western Pershing County, Nevada, approximately 50 miles north of Wadsworth, Nevada
- approximately one and one-half hour drive from Reno, the nearest Standard Metropolitan Statistical Area
- best access via State Highway 447 near the western boundary

Configuration and Size

- bounded by roads (27.1 miles) and ways (0.9 mile), topographic features (5.2 miles), legal subdivision boundaries (2.0 miles) and private land (2.0 miles)
- twelve miles north-south and from one-half to five miles east-west
- 23,702 acres of public land

Physical Environment

- altitude range: 3,880 feet to 8,237 feet
- Bailey-Kuchler ecosystem: sagebrush-steppe (3130-49)
- Sonoma-Gerlach Grazing E.I.S. vegetation communities: sagebrush, saltbush, winterfat and waste
- aspens stands, vicinity Kumiva Peak
- Utah juniper along main ridgecrest
- 201 straddles the southern tip of the Selenite Mountains; typical range of the Basin and Range Province
- three distinct landforms within 200: Selenite Mountains ridgecrest, granitic; Selenite Mountains ridgecrest, basaltic; fringing desert piedmont
- Selenite Mountains ridgecrest, granitic (one to four miles wide, eight miles long)
 - located in the northern 3/4 of 201
 - is a single granitic ridgeline of steep, angular landforms with a distinctly serrated appearance
 - contains three major peaks (from north to south): Kumiva Peak, Purgatory Peak and Mount Limbo
 - contains shallow drainage systems running perpendicular to main ridgecrest
 - includes numerous granitic rock outcrops and granitic boulder slopes
 - two aspen groves and four meadow areas located along drainages, vicinity Kumiva Peak
 - all Utah juniper within 201 located within this landform
- Selenite Mountains ridgecrest, basaltic (about one mile wide and six miles long)

- is distinctly more rounded, darker than granitic ridgeline to the north
- is dominated by a west-facing escarpment, nearly flat to the east with slopes exceeding 100% to the west
- minimally eroded, with only very shallow drainage systems on west side
- separated from granitic ridgecrest by a distinct southwest-northeast drainage southeast of Mount Limbo
- fringing desert piedmont (up to two miles wide running the length of 201
- flat to gently sloping with shallow, parallel drainages separated by low ridges
- is widest along northwest and southeast side of 201

STUDY POLICY CRITERIA

Criterion 1: Evaluation of Wilderness Values

Component A: Mandatory Wilderness Characteristics

SIZE

- 23,783 acres within boundary, including 91 acres of private land and 23,702 acres of public land

NATURALNESS

Developments within WSA

Range-related developments (see Table B-1 in Appendix B)

- one allotment within 201 (Blue Wing); see Table B-2 in Appendix B)

Other man-made features

- 14 ways totalling 16.9 miles (see Table B-3 in Appendix B)
- all known mining areas were deleted during the Intensive Inventory

Outside imprints

- two small mining areas near west boundary involving minor surface disturbance can be seen from adjacent areas within 201
- several roads, most notably State Highway 447, visible from portions of 201
- a powerline and service road forms the west boundary and can be seen throughout much of the western half of 201
- town of Empire barely visible from the summit of Kuriva Peak

Location and size of areas subject to imprints

- most of 201 subject to outside imprints listed above; impact does not substantially degrade overall feeling of naturalness
- impacts within 201 highest on east side due to numerous ways; impact is minimal (few ways are visible for more than a few yards)
- most substantial imprint is powerline along west boundary

Rehabilitation potential

- developments within 201 can all be rehabilitated without substantial mechanical manipulation

Potential for separating areas in WSA subject to imprints

- areas with ways (except part of W15) could be separated without substantially reducing wilderness values (i.e., separate desert piedmont from 201)
- difficult to mitigate impact of powerline by adjusting boundary; probably not necessary due to its minimal impact

Overall influence of imprints

- although most of 201 subject to some imprints, the overall feeling is one of naturalness due to the distance at which these imprints are likely to be viewed

SOLITUDE

Solitude is defined as the opportunity to avoid the sights, sounds and evidence of other people.

Influence of outside sights and sounds

Economic activity

- mining areas near west boundary not currently being developed
- mill at Empire only visible from summit of Kumiva Peak
- localized and seasonal ranching activities (roundups, salting and maintenance of range improvements near and within 201)

Aircraft flights.

- no known landing areas within 201
- State of Nevada Department of Wildlife conducts annual wildlife censuses:
 - deer and sage grouse counts November-December and March-April (helicopter); regular since late 1970s
- BLM conducts livestock and wild horse censuses/roundups on 201
 - livestock tallies as needed (usually fixed wing)
 - wild horse inventories every other year, August-October; occasional checks during critical weather
 - wild horse roundups when needed (using helicopter), usually July-October

Vehicular traffic

- periodic traffic on boundary roads visible from portions of 201; impact is occasional dust trail
- travel on ways within 201 very light

Physical factors influencing solitude

Topographic and vegetative screening

- Selenite Mountains ridgecrest, granitic
 - a few scattered Utah juniper and two aspen groves provide locally good vegetative screening
 - most areas have low shrubs providing minimal vegetative screening
 - topographic screening generally fair to poor due to lack of dissected drainage systems and steep slopes; locally excellent where rock outcrops common
- Selenite Mountains ridgecrest, basaltic
 - low shrubs provide minimal vegetative screening
 - fair topographic screening due to lack of dissected drainage systems
- fringing desert piedmont
 - low shrubs provide minimal vegetative screening
 - topographic screening poor except locally fair in small drainages

Size and configuration

- size is sufficient to provide solitude
- elongated (north to south) configuration means visitors never more than two miles from 201 boundary
- narrow southern tip reduces opportunity for solitude
- two mining areas on west side deleted during Intensive Inventory slightly reduce opportunity for solitude immediately adjacent to them

Ability of user to find secluded spot

- fair to good throughout Selenite Mountains, granitic landform
- fair to poor within Selenite Mountain, basaltic; and fringing desert piedmont

PRIMITIVE AND UNCONFINED RECREATION OPPORTUNITY

Access

- all areas in 201 are within two miles of a road
- excellent year-round access from west side via paved State Highway 447
- good access on east side via well-graded boundary road (R3)
- vehicular access within 201 via 14 ways concentrated on east side; generally limited to high clearance vehicles

Attractions

Points of interest

- Kumiva and Purgatory Peaks, Mount Limbo
- granite rock outcrops, north end
- riparian areas near Kumiva Peak
- variety of wildlife, especially game birds and wild horses and burros
- mountain climbing areas, particularly vicinity Mount Limbo
- Utah juniper

Challenge

- typical desert/steppe climate with associated challenges (hot, dry summers, cold winters)
- water scarce in summer except
 - ten perennial springs concentrated vicinity Kumiva Peak
 - two aspen groves, vicinity Kumiva Peak
- numerous cliff areas along entire Selenite range, especially vicinity Mount Limbo, difficult to traverse

Scenic qualities

- steep jagged ridgeline rises abruptly above surrounding desert; provides contrast, scale, color, texture and line variation to create a highly scenic landscape
- granitic rock outcrops with scattered Utah juniper provide focal points and considerable scenic variation along granitic ridgecrest
- basaltic ridgeline sharp contrast to granitic ridgecrest due to color and texture differences
- fringing desert piedmont lacks variation for good scenic qualities
- 201 is within viewshed of State Highway 447; this route is lightly traveled, but receives a fair amount of recreationist traffic enroute to Black Rock Desert region
- views from 201 to surrounding desert landforms give impression of isolation and naturalness, particularly to the east

Activities

Dayhiking (water availability not critical)

- entire WSA accessible to dayhiking
- most likely destinations occur throughout granitic ridgecrest, including Kumiva and Purgatory Peaks, Mount Limbo
- supurb opportunities due to good access, proximity to urban area, and high scenic qualities in the northern portion of 201
- dayhiking opportunity lower along basaltic ridgecrest and along fringing desert piedmont due to fewer scenic attractions
- accessible year-round

Camping

- opportunity limited in steeper areas along main ridgecrest
- a few isolated camping sites of excellent quality located along base of main ridgeline where topographic screening is good
- opportunity limited throughout much of desert piedmont due to lack of screening and/or poor scenic qualities

Backpacking

- all attractions easily accessible to dayhikers, little advantage to backpacking except along entire ridgecrest where an overnight north-south trip is feasible
- on one of the proposed routes of the proposed Desert National Scenic Trail

Hunting

- high density chukar area in north part of 201; medium density elsewhere: receives significant hunting pressure
- sage grouse and valley quail also occur within 201
- yearlong and summer mule deer range
- access excellent for hunters; also close to population center (Reno)

Horsepacking

- constraints: limited water (especially in south) and most of granitic ridgecrest too rugged; poor forage in rockier areas
- advantages: favorable topography along southern tip and in desert piedmont which lacks scenic attractiveness

Rock climbing and scrambling, caving

- rock climbing opportunity excellent along granitic ridgecrest; fair to good along basaltic ridgecrest
- rock scrambling opportunity excellent throughout granitic ridgecrest area; fair to poor elsewhere
- best opportunity for rock climbing within Winnemucca District WSAs due to proximity to population centers, good access, and favorable topography and scenery
- no caves are known

Nature study

- viewing and photographing wildlife, especially wild horses and burros, deer
- superb photography throughout granitic ridgecrest area
- geology study

Fishing

-no known fish populations

Winter sports

-lack of consistent snowfall for good winter sports

Rockhounding

-no known areas within 201

Component B: Special Features

CULTURAL

Prehistoric

-total recorded sites: eight

-S3 sites: seven lithic scatters, one rock shelter

Historic

-no known sites

ZOOLOGIC

Fisheries

-no known fisheries

Wild horses and burros

-in Selenite wild horse and burro use area; contains both horses and burros

Other mammals

-mule deer summer and yearlong range

Birds

-chukar, sage grouse and valley quail range

BOTANIC

-no threatened or endangered plants have been identified

-three aspen groves, vicinity Kumiva Peak

-four meadows vicinity Kumiva Peak

-Utah juniper along main granitic ridgecrest

GEOLOGIC

-granitic ridgeline unique within Winnemucca District

PALEONTOLOGIC

-no known sites

ACECS

-none

SCENIC

-within viewshed of State Highway 447

Component C: Multiple Resource Benefits

Wilderness designation of 201 could restrict motorized vehicular traffic on approximately 16.9 miles of ways and about 8,000 acres of land which is now accessible to off-road vehicles. A vehicle closure would enhance opportunities for primitive and unconfined recreation within those areas currently accessible to vehicles.

Long-term benefits from wilderness designation may accrue to those resources which would otherwise deteriorate should the area return to other multiple uses. Although current land-use plans essentially maintain the existing environment and resource commitments if 201 is not be designated wilderness, the federal land would remain accessible to mineral patenting, leasing, and other development. These potential developments could adversely impact water, soil, air, visual, cultural and other resources which benefit from the existing non-developed environment. The extent of future development in 201 is unknown; however, a utility corridor which could potentially impair the above-mentioned values, has been identified along the western boundary (USDI Sonoma-Gerlach MFP III).

Component D: Diversity in the National Wilderness Preservation System

ECOSYSTEM AND LANDFORM DIVERSITY

- Baily-Kuchler ecosystem: sagebrush-steppe (3130-49)
- Sonoma-Gerlach Grazing E.I.S. vegetative communities: sagebrush, saltbush, winterfat, and waste
- two areas totalling 34,943 acres with sagebrush-steppe ecosystem designated wilderness: Jarbidge Wilderness in northeastern Nevada and Lava Beds National Monument in northeastern California
- three areas of sagebrush-steppe totalling 343,450 acres endorsed as suitable by the President and pending before Congress
- 201 an excellent representation of this ecosystem within Winnemucca District
- unknown how 201 compares with other WSAs with the same ecosystem outside the Winnemucca District
- 143 WSAs in Nevada, California, Idaho, and Oregon with sagebrush-steppe representation

RECREATION NEAR SMSAs

- approximately one and one-half hour drive from Reno, the nearest SMSA
- twelve designated wilderness areas and numerous WSAs within a five-hour drive of Reno
- no designated wildernesses with sagebrush-steppe ecosystem within five-hour drive of Reno

GEOGRAPHIC DISTRIBUTION OF WILDERNESS

- one designated wilderness in Nevada (Jarbidge, U.S. Forest Service)
- see Chapter III, Component D, for an analysis

Criterion 2: Manageability

Physical Factors Influencing Manageability

CONFIGURATION

- western boundary somewhat erratic due to elimination of mining areas during the Intensive Inventory
- southern tip of 201 would be difficult to manage for wilderness values due to its narrow configuration

ACCESS

- difficult to control off-road vehicle use from east and west boundary roads (R1, R3 and R4)
- difficult to control off-road vehicle use from the ways along the east edge (W4 through W14) and along W15

LANDFORM

- fringing desert piedmont landform conducive to off-road vehicle use

INTRUSIONS AND OUTSIDE INFLUENCES

- managing for solitude difficult in those areas where off-road vehicle use hard to control
- influence of powerline along west boundary reduces impression of naturalness within adjacent portions of 201

Nonconforming But Accepted Uses

VALID EXISTING RIGHTS

Mining claims

-none

Leases

-none

Non-federal land

- 81 acres of private land located in the extreme north end of 201
 - livestock grazing major present use; expected to continue
 - not possible to eliminate areas of private land without jeopardizing wilderness values

ESTABLISHED AIRCRAFT AND MOTORBOAT USE

- Nevada Department of Wildlife conducts annual censuses during winter and spring using helicopter
- BLM conducts livestock and wild horse and burro censuses using fixed-wing
- chance BLM will conduct future wild horse and burro roundups if conditions warrant; probability low
- none of the established aircraft use would significantly reduce wilderness manageability
- see Influence of Outside Sights and Sounds for more detail (e.g., dates flying established)

EXISTING AND PROPOSED RESOURCE FACILITIES

- no existing non-range facilities within 201 except roads
- State of Nevada Department of Wildlife currently exploring feasibility of wildlife guzzlers within 201
- utility corridor on west side extends into 201; no plans to add utility lines identified at this time but could under MPP III
- guzzlers would not significantly impair wilderness manageability; future utility lines might impair wilderness manageability

LIVESTOCK GRAZING

Present grazing activities

- one allotment located with 201 (Blue Wing)
- existing range facilities would not significantly impair wilderness manageability
- see NATURALNESS for details of existing facilities and seasons-of-use

Changes identified in Sonoma-Gerlach Grazing E.I.S.

- one proposed fence line running east to west, south of Jenny Creek on west side
- proposed vegetative manipulation (sagebrush control and seed) along desert piedmont, west side; not allowed under wilderness management policy
- area of proposed vegetative manipulation could be eliminated from 201 without significantly impairing wilderness values

STUDY POLICY QUALITY STANDARDS

Quality Standard 1: Energy and Critical Minerals

For background information and general description of the District see Appendix A.

General Geology

The Mount Limbo WSA is in the southern Selenite Range, a north-south fault block mountain range of the Basin and Range Province. Rock types include a central core of Cretaceous granodiorite that has been cut by a few Cretaceous felsic dikes, quartz veins and pegmatites. Occurring along the flanks and as remnant caps within the central core of the granodiorite body are Miocene rhyolite and Miocene-Pliocene basalt, andesite and sedimentary rocks.

The volcanic rocks along the flanks of the Selenite Range are in fault contact with the central granodiorite core along range front faults (Johnson 1977). This granodiorite body is part of a larger batholithic complex that underlies most of western Pershing County (Smith et al. 1971). Quaternary alluvium covers the lower valley areas.

Following is a discussion of the energy and mineral potential in the Mount Limbo WSA. Please refer to the Mineral Potential Classification Scheme, Figure 1 in Appendix A, for further explanation of alphanumeric classifications. Also see, in Appendix B, Tables B-10, B-11, B-12 and B-13 showing acreages for Metallic Mineral, Nonmetallic Mineral, Geothermal and Oil and Gas Potential; and Tables B-6, B-7 and B-8 showing acreages of Unpatented Mining Claims, and Geothermal and Oil and Gas Leases; as well as summary Tables B-14 and B-15 showing the Energy and Mineral Threshold Levels and Holdings affected by four of the alternatives proposed in the EIS (all except No Wilderness Alternative).

Metallic Mineral Potential

Garside (1973) has indicated three areas of anomalous radioactivity in the Southern Selenites.

The Limbo group in the SE1/4 Sec. 9, T. 28 N., R. 24 E., on the southwest side of the WSA, has three shallow pits developed on pegmatite and quartz dikes (veins) cutting the granodiorite. The anomalous radioactivity readings are probably associated with the pegmatites.

The Black Granite/Willow group in the SE1/4 Sec. 4, T. 28 N., R. 24 E., also on the southwest side of the WSA, contains several dozer cuts developed on pegmatites and rhyolite dikes cutting granodiorite. The very slight radioactivity is associated with both the pegmatites and rhyolite dikes (Garside 1973).

Other prospecting activities have also occurred in the granodiorite in the NW1/4 Sec. 15, T. 28 N., R. 24 E., about one-half mile south of the Limbo group. Nothing is known about the type of exploration activities or type of mineralization sought.

Airborne radiometric surveys conducted by the U.S. Atomic Energy Commission identified a radioactive anomaly over Sections 21 or 28, T. 30 N., R. 24 E., in the northern tip of the WSA (Garside 1973). It is not clear whether the anomaly is associated with the granodiorite body, the remnant rhyolite caps in this area or both.

The Hooker Mining District, a portion of which includes the extreme northern tip of the WSA, has been a past producer of tungsten and is presently producing gypsum near Empire to the north. The Stormy Day, Thrasher and Thrabert Mines on the west side of the Selenite Range two miles north of the WSA produced some 19,523 tons of tungsten ore, averaging 0.66 percent WO₃, between 1941 and 1957. The ore occurs as tactite deposits in Triassic and Jurassic metasediments adjacent to the granodiorite contact. Ore minerals include scheelite, powellite, molybdenite, pyrite, pyrrhotite and chalcopyrite (Johnson 1977).

Other prospecting activities in this portion of the mining district consist of a tunnel driven in granodiorite in the Jerry Creek area (NE1/4 Sec. 32, T. 30 N., R. 24 E.) on the northern border of the WSA. Nothing is known about the type of mineralization sought in this exploration.

Barringer Resources (1982) indicated a moderate anomalous area termed the "Southern Selenite Range" covering the northern two-thirds of the WSA. This large area has been divided into several smaller anomalous sub-zones to aid in discussion of the metallic mineral potential in a more site-specific manner. Please refer to the Mineral Potential Maps for locations of these anomalous sub-zones discussed below.

JAYHAWK CREEK ANOMALOUS ZONE. (3C) Moderate Potential.

This zone is on the southwestern side of the WSA on the southern tip of the Selenite Range. The Cretaceous granodiorite is the only rock type cropping out in this zone.

Geochemical sampling and geostatistical modeling results show:

Anomalous Values

Low: molybdenum, zinc*, mercury*

Anomalous radioactive readings, as mentioned above, are known to occur in prospects developed on pegmatites and rhyolite dikes in this zone but, for reasons unknown, anomalous values for uranium were not indicated in the stream sediment survey.

A large block of unpatented mining claims are located along the western edge of this zone but no claims are recorded in the zone.

JENNY CREEK ANOMALOUS ZONE. (3C) Moderate Potential.

This zone is in the northwest corner of the WSA. Rock types include Miocene-Pliocene basalts and andesites along the flank of the Selenite Range in fault contact with the Cretaceous granodiorite core.

Geochemical sampling and geostatistical modeling results show:

Response to Geostatistical Modeling

Very low: gold-silver

Anomalous Values

Moderate: uranium

Low: tungsten*, mercury*

One tunnel may be found on the south side of Jenny Creek, but nothing is known about the type of mineralization sought. Although some sampling has occurred within the Miocene-Pliocene basalts and andesites, it is felt that these anomalous values are attributed to the granodiorite because many of the anomalous values occur up-drainage of volcanic outcroppings. Radiometric readings have also been indicated near the northeast corner of this zone.

KUMIVA PEAK ANOMALOUS ZONE. (2B) Low Potential.

This zone is on the extreme northeast tip of the WSA between Kumiva Peak to the south and Cowles Ranch to the north. Rock types in this zone include Cretaceous granodiorite overlain by some remnant rhyolite caps.

Geochemical sampling and geostatistical modeling results show:

Anomalous Values

Low: uranium, mercury*, molybdenum, barium

In addition, an airborne radioactive anomaly was indicated over Sections 21 or 28, which is the area containing and adjacent to the rhyolite cap rocks. Some minor prospecting activities have been conducted near the center of Section 27, just south of the main road crossing over the Selenite Range. This prospecting appears to be near the rhyolite-granodiorite contact and it is not known which rock type the prospecting occurs in or the type of mineralization sought. More detailed work would have to be done in this area to determine the sources and significance of the anomalous values.

No mining claims have been recorded in this zone.

PURGATORY PEAK ANOMALOUS ZONE. (2C) Low Potential.

This zone is on the west-central portion of the WSA just northwest of Purgatory Peak. The Cretaceous granodiorite is the only rock type cropping out in this zone.

Geochemical sampling and geostatistical modeling results show:

Response to Geostatistical Modeling

Low: base-precious metal

Anomalous Values

Moderate: zinc*

Low: mercury*, uranium

Little is known about the geology or possible sources for these anomalous values. No prospecting activities or mining claims are known in this zone. However, an extensive claim block has been recorded just southwest of this zone.

MOUNT LIMBO ANOMALOUS ZONE. (2B) Low Potential.

This zone is in the east-central portion of the WSA east of Mount Limbo. Rock types in this zone include Miocene-Pliocene basalts, andesites and sedimentary rocks along the flank of the Selenite Range in fault contact with the Cretaceous granodiorite core.

Geochemical sampling and geostatistical modeling results show:

Anomalous Values

Low: uranium, mercury*, tungsten*, zinc*

Here again these anomalous values are associated with the granodiorite body, as sediment samples taken strictly within the Miocene-Pliocene volcanic and sedimentary rocks have not indicated any anomalous values.

No prospecting activities or mining claims are known in this zone.

Nonmetallic Mineral Potential

Pegmatites are known to occur within the granodiorite core of the WSA. These pegmatites could have potential for feldspar, beryl and other associated pegmatite minerals.

The southern one-fourth of the WSA is covered by volcanic rocks and does not contain near surface potential for pegmatite minerals.

The following portions of the WSA are considered to having nonmetallic mineral potential:

Moderate (3C) - All of the WSA except the southern one-fourth for pegmatite minerals

Low (1A) - The southern one-fourth of the WSA

Geothermal Resource Potential

Several warm springs are located across Poito Valley about five miles west of the southern tip of the WSA. Warm springs ranging in temperature from 64°F to 75°F occur along the eastern flank of the Lake Range. Some minor shallow temperature drilling has been conducted throughout Poito Valley and along the western flank of the WSA. Based on the proximity to these warm springs, the western edge of the WSA from the base of the Selenite Range toward the valley is considered to have geothermal potential.

Several geothermal lease applications in Poito Valley have recently been dropped.

The following portions of the WSA are considered to have geothermal potential:

Moderate (3C) - A 1-mile-wide strip inside western boundary

Low (2B) - The remainder of the WSA

Oil and Gas Potential

The central granitic core of the Selenite Range has no oil and gas potential. It is likely that this whole area above the Cretaceous batholith intrusion was domed up and was the sight of erosion and not deposition during the Cretaceous and Early Tertiary. The Late Tertiary (Miocene-Pliocene) sedimentary rocks cropping out in the southeast tip of the WSA are considered too young and too thin for favorable accumulations of hydrocarbons. There are no oil and gas leases within or adjacent to the WSA, nor have there been any exploration activities.

The oil and gas potential of this WSA is classified 1D, unfavorable, high confidence.

Quality Standard 2: Impacts on Other Resources

Recreation

- current recreational use of 201 favors motorized and motorized-supported recreational activities (off-road vehicles, hunting)
- wilderness designation could restrict vehicular access on approximately 16.9 miles of ways and about 8,000 acres of land currently accessible to off-road recreational vehicles

Cultural Resources

- wilderness designation could indirectly add to the existing legal protection of cultural resources by limiting resource development and use
- wilderness designation could possibly curtail excavation and stabilization of historic, prehistoric or paleontological finds if action would impair wilderness values
- rock shelter has excavation potential
- inventory data for 201 is sparse and other sites which would warrant excavation may be identified in the future

Energy and Mineral Resources

- wilderness designation imposes strict guidelines on all allowed mineral and energy development--potentially making development infeasible
- mining claims located after designation could not be developed
- see Quality Standard 1 for more detail

Livestock Grazing

- costs of maintaining range developments and livestock management would increase where permittee vehicular access is curtailed
- future beneficial range developments/treatments may be restricted, including proposed sagebrush control on west edge of 201

Lands

-MFP III identifies utility corridor along the west boundary of 201; wilderness designation of this area may preclude future utility lines within the corridor

Other Resources

Current resource plans identify no other resources which would be adversely impacted by wilderness designation. However, wilderness management could impose additional constraints on future projects in these programs: fire; wildlife; wild horses and burros; soil, water and air; aquatic habitat and visual resources.

Quality Standard 3: Impact of Non-designation on Wilderness Values

SHORT-TERM IMPACTS

-reduced opportunities for primitive and unconfined recreation and solitude in those areas accessible to off-road vehicles within 201

LONG-TERM IMPACT

-continued development of mineral and energy resources could eventually eliminate opportunities for naturalness, solitude, and primitive and unconfined recreation within 201; potential discussed in Quality Standard 1

-area would remain open for development of other resources which might impair wilderness values; extent speculative

Quality Standard 4: Public Comment

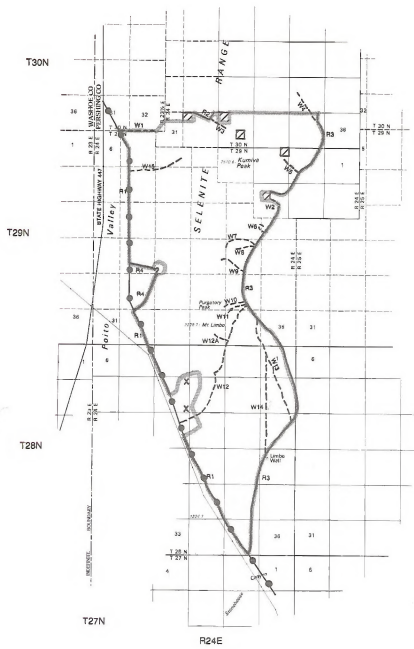
See District-wide Analysis, Chapter III







Quality Standard 5: Local and Regional Socioeconomic Effects

See District-wide Analysis, Chapter III

Quality Standard 6: Consistency With Other Plans

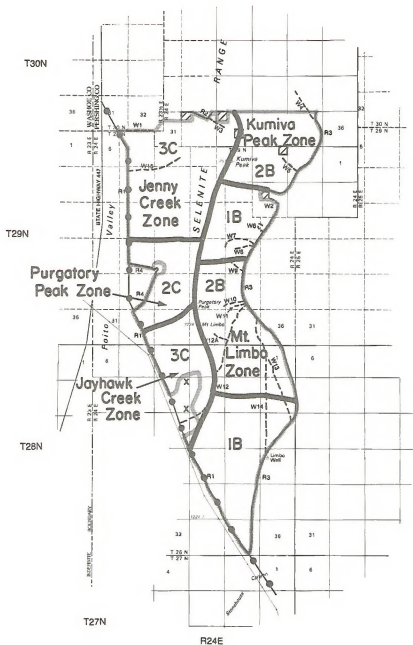
See District-wide Analysis, Chapter III



-  PRIVATE LAND(SURFACE & MINERALS)
-  W.S.A. BOUNDARY
-  ROAD
-  WAY
-  PROSPECT
-  POWER LINE



NV-020-201 MT. LIMBO



FAVORABILITY

- 1 UNFAVORABLE POTENTIAL
2. LOW POTENTIAL
3. MODERATE POTENTIAL
4. HIGH POTENTIAL

LEVEL OF CONFIDENCE

- A. INSUFFICIENT DATA
- B. LOW CONFIDENCE (Indirect evidence)
- C. MODERATE CONFIDENCE (Direct evidence)
- D. HIGH CONFIDENCE (Abundant direct evidence)


 PRIVATE LAND (SURFACE & MINERALS)

 W. S. A. BOUNDARY

 ROAD

 WAY

 PROSPECT

 POWER LINE



NV-020-201 MT. LIMBO
MINERAL POTENTIAL

Wilderness Study Area 406P: China Mountain

DESCRIPTION

Location

- eastern Pershing County, Nevada, approximately 30 miles southeast of Winnemucca, Nevada
- four-hour drive from Reno, the nearest Standard Metropolitan Statistical Area
- best access via Pershing County Road 112 from Battle Mountain

Configuration and Size

- bounded by roads (2.8 miles), private land (7.7 miles) and topographic features (12.0 miles)
- about seven miles north-south and three miles east-west
- 10,358 acres of public land

Physical Environment

- elevation range: 5,060 feet to 8,842 feet
- Bailey-Kucher ecosystems: Great Basin sagebrush (3130-32), east half; juniper-pinyon woodland (3130-21), west half
- Sonoma-Gerlach Grazing E.I.S. vegetation communities: sagebrush, annuals, waste and saltbush
- riparian vegetation along Hoffman Canyon (1.3 miles) and Lee Canyon (0.3 mile)
- located on the east slope of the Tobin Range
- three distinct landforms within 406P: high elevation plateau, China Mtn; parallel canyons; mountain foot slope
 - high elevation plateau, China Mountain (two and one-half miles north-south and one mile east-west)
 - is a gently sloping plateau above 8,000 feet, flanked by steep and jagged cliffs
 - located at the head of Cherry Creek, Hoffman and Lee Canyon
 - is the highest elevation in the northern end of the Tobin Range
 - parallel canyons (seven miles long and from one to three miles wide)
 - consists of several parallel, northwest-southeast-oriented canyons, including Cherry Creek, Lee Canyon and Hoffman Canyon
 - deeply cut steep-sided canyons with relatively smooth sides; headwaters steep with impressive cliffs within Hoffman and Lee Canyons
- mountain footslope four miles long and 1/2 to two miles wide
 - located on extreme south-east end of 406P
 - is abrupt transition from steep canyons to the west
 - contains parallel drainages separated by low alluvial ridges; average slope 10-15%

STUDY POLICY CRITERIA

Criterion 1: Evaluation of Wilderness Values

Component A: Mandatory Wilderness Characteristics

SIZE

- 10,438 acres within boundary, including 80 acres of private land and 10,358 acres of public land

NATURALNESS

Developments within WSA

Range-related developments (see Table B-1 in Appendix B)

- one allotment in 406P (South Buffalo)(see Table B-2 in Appendix B)

Other man-made features

- three ways totaling 1.8 miles within 406P
- one road totalling 0.2 mile

Outside imprints

- one ranch immediately adjacent on east boundary, base of Hoffman Canyon (abandoned)
- several roads visible from east edge
- mining area visible from extreme northeast corner
- impact of outside imprints minimal

Location and size of areas subject to imprints

- most of China Mountain area and west end of canyons free of imprints
- imprints concentrated on extreme eastern edge

Rehabilitation Potential

- all imprints could be rehabilitated without substantial mechanical manipulation

Potential for separating areas in WSA subject to imprints

- all imprints could be separated without reducing wilderness values

Overall influence of imprints

- imprints throughout Tobin Range very minimal
- imprints along footslope minimal except mining area on northeast side, where impact on wilderness values substantial

SOLITUDE

Solitude is defined as the opportunity to avoid the sights, sounds and evidence of other people.

Influence of outside sights and sounds

Economic activity

-localized and seasonal ranching activities (roundups, salting and maintenance of range improvements near and within 406P); impact on solitude minimal

Aircraft flights

- no known landing areas within 406P
- State of Nevada Department of Wildlife conducts annual wildlife censuses
 - deer and sage grouse tallies in November-December and March-April (helicopter); regular since mid-1970s
- BLM conducts wild horse inventories (fixed-wing and helicopter) as needed, from August through October; roundups (helicopter) as necessary, from July through October; low priority area

Vehicular traffic

-periodic, light traffic on roads to east of 406P; visible from small areas on east side

Physical factors influencing solitude

Topographic and vegetative screening

- high elevation plateau, China Mountain
 - low shrubs, bare areas provide minimal vegetative screening
 - rolling topography provides fair to poor topographic screening on plateau; excellent screening between plateau and canyons below
- parallel canyons:
 - low shrubs and barren areas provide minimal vegetative screening
 - topographic screening excellent due to deeply cut canyons throughout area
- mountain footslope
 - low shrubs and barren areas provide minimal vegetative screening
 - topographic screening poor due to flat terrain and shallow drainages

Size and configuration

- size is sufficient to provide solitude
- configuration may reduce solitude in extreme southeast corner of 406P where two converging boundary roads form a narrow "V" within the mountain footslope

Ability of user to find secluded spot

- easily locatable
 - in major canyons below China Mountain
 - locally along the China Mountain plateau
- more difficult to find:
 - throughout mountain footslope
 - in the flatter areas of the China Mountain plateau

PRIMITIVE AND UNCONFINED RECREATION OPPORTUNITY

Access

- all areas within three miles of a boundary road
- access to vicinity very poor, especially from the west side
- access to higher elevations difficult, especially during winter
- one of the most difficult WSAs within Winnemucca District to reach by vehicle

Attractions (see also Special Features)

- imposing cliffs below China Mountain
- China Mountain plateau
- scenic Hoffman and Lee Canyons

Challenge

- typical desert/steppe climate with associated challenges (hot, dry summers, cold winters)
- water scarce in summer except
 - 17 perennial springs in main canyons and on China Mountain plateau
 - 1.6 miles of perennial stream in Hoffman and Lee Canyons
 - snowbanks in the higher elevations commonly last until early summer
- steeper areas throughout Tobin Range, especially on face of China Mountain, offer excellent challenges

Scenic qualities

- China Mountain plateau is an exceptionally scenic area due to its high elevation, persistent green vegetation, and imposing cliffs which flank it; views of surrounding mountains and deserts particularly notable
- Hoffman and Lee Canyons offer spectacular views of cliffs below China Mountain; rugged topography, deep canyons and riparian vegetation provides exceptionally scenic setting with high variety of textures, colors and scale
- smaller drainages (Cherry Creek, several unnamed canyons) less scenic due to lack of topographic variation
- mountain footslope area typical of many desert valleys in region; lacks variety, scale, color or textural variation

Activities

Dayhiking (water availability not critical)

- entire WSA accessible to dayhiking; backpacking may be more appropriate in vicinity China Mountain, Hoffman and Lee Canyons

Camping

- best along major drainages and on China Mountain plateau
- most canyon slopes too steep for outstanding camping opportunity
- mountain footslope lacks screening and diversity for good camping

Backpacking

- best up major canyons and along China Mountain plateau, where excellent "loop" hikes can be arranged
- topography and scenic qualities sufficiently varied to provide some of the best short backpacking opportunities on the Winnemucca District

Hunting

- a few mule deer and cougar concentrated in the higher elevations
- sage grouse, Hungarian partridge, chukar and valley quail

Horsepacking

- limited to drainage bottoms and mountain footslopes due to steep, rocky terrain and cliffs

Rock climbing and scrambling, caving

- excellent opportunities for rock climbing on cliffs below China Mountain
- rock scrambling opportunities good to excellent on steeper slopes in the prominent canyons
- no caves are known

Nature study

- photography, wildlife viewing excellent except along mountain footslope, where it is poor
- geology study potentially of high interest

Fishing

- habitat for brown, cutthroat and rainbow trout in Hoffman Canyon; stream in "fair" condition

Winter sports

- cross-country skiing possible along China Mountain plateau, but limited by access
- winter camping feasible in higher elevations

Rockhounding

-no known rock collecting

Component B: Special Features

CULTURAL

Prehistoric

-no identified sites

Historic

-none within 406P; historic horse trap immediately adjacent

ZOOLOGIC

Fisheries

-fishery habitat for brown, cutthroat and rainbow trout in Hoffman Canyon; in "fair" condition

Wild horses and burros

-wild horse herd use area in the Tobin Range

Other mammals

-deer and cougar

Birds

- sage grouse use area, including one brood use area, vicinity Hoffman Ranch
- Hungarian partridge, extreme density northwest 1/3; high density rest of 406P
- valley quail, Hoffman Canyon
- cliff nesting raptor area

BOTANIC

- no Threatened or Endangered plants have been identified
- riparian vegetation along Hoffman Canyon and small segment of Lee Canyon
- identified meadow area, China Mountain plateau

GEOLOGIC

-cliff areas vicinity China Mountain could be of geologic interest

PALEONTOLOGIC

-no known sites

SCENIC

-China Mountain and heads of Hoffman and Lee Canyons

ACECs

-none

Component C: Multiple Resource Benefits

Wilderness designation of 406P could restrict motorized vehicular traffic on about two miles of roads and ways and about 1,000 acres of land which is now accessible to off-road vehicles. A vehicle closure would enhance opportunities for primitive and unconfined recreation within those areas of 406P currently accessible to vehicles.

Long-term benefits from wilderness designation may accrue to those resources which would otherwise deteriorate should the area return to other multiple uses. Although current land-use plans essentially maintain the existing environment and resource commitments should 406P not be designated wilderness, the federal land would remain accessible to mineral patenting, leasing, and other development. These potential developments could adversely impact water, soil, air, visual, cultural and other resources which benefit from the existing, non-developed environment. The extent of future development in 406P is unknown.

Component D: Diversity in the National Wilderness Preservation System

ECOSYSTEM AND LANDFORM DIVERSITY

- Bailey-Kuchler ecosystems: Great Basin sagebrush (3130-32); juniper-pinyon woodland (3130-21)
- Sonoma Gerlach Grazing E.I.S. vegetative communities: sagebrush, saltbush, annuals and waste
- two areas totalling 7,020 acres with Great Basin sagebrush designated wilderness (California); six areas totalling 639,000 acres endorsed as suitable by the President and pending before Congress
- three areas totalling 43,168 acres with pinyon-juniper woodland designated wilderness (California); eight areas totalling 549,000 acres endorsed as suitable by the President and pending before Congress
- 406P lacks extensive pinyon-juniper woodland to be truly representative of this ecosystem
- one of the most scenic representations of Great Basin sagebrush on the Winnemucca District
- unknown how 406P compares with other WSAs with the same ecosystems outside the Winnemucca District
- 77 WSAs within Nevada, California and Utah with Great Basin sagebrush representation
- 92 WSAs within Nevada, California and Utah with juniper-pinyon woodland representation

RECREATION NEAR SMSAs

- approximately five-hour drive from Reno, the nearest SMSA
- twelve designated wilderness areas and numerous WSAs within a five-hour drive of Reno

GEOGRAPHIC DISTRIBUTION OF WILDERNESS

- one designated wilderness in Nevada (Jarbidge, U.S. Forest Service)
- see Chapter III, Component D, for an analysis

Criterion 2: Manageability

Physical Factors Influencing Manageability

CONFIGURATION

- extreme southeast corner of 406P is formed by two roads converging to a narrow "V" which would be difficult to manage as wilderness
- west boundary formed by topographic features, which are particularly difficult to locate in vicinity of China Mountain

ACCESS

- difficult to control off-road vehicle use from east boundary roads adjacent to mountain footslope (R2, R4)

LANDFORM

- mountain footslope landform conducive to offroad vehicle use and would be difficult to control

INTRUSIONS AND OUTSIDE INFLUENCES

- managing for solitude would be difficult in the mountain footslope area

Nonconforming but Accepted Uses

VALID EXISTING RIGHTS

Mining claims

- 500 acres within 406P have 31 registered mining claims
 - northeast corner adjacent to mining area just outside boundary (Cherry Creek)
 - along ridge between Cherry Creek and Lee Canyon
 - just west of Hoffman Ranch, base of Hoffman Canyon
- possible to exclude areas containing claims in Cherry Creek without seriously impairing wilderness values
- other two areas could not be excluded without reducing wilderness values

Leases

- 232 acres of oil and gas leases in extreme southeast corner
- possible to exclude this area without reducing wilderness values

Non-federal land

- ?? acres of private land
 - one parcel in Cherry Creek
 - one parcel in Lee Canyon
- not possible to exclude these parcels without substantially reducing wilderness values
- cattle grazing and associated activities present use; expected to continue

ESTABLISHED AIRCRAFT AND MOTORBOAT USE

- Nevada Department of Wildlife conducts animal censuses during winter and spring using helicopters
- BLM conducts livestock tallies using fixed-wing
- none of the established aircraft use would substantially reduce wilderness manageability
- see Influences of Outside Sights and Sounds for more detail (e.g., dates flying established)

EXISTING AND PROPOSED RESOURCE FACILITIES

- no non-range facilities except roads
- no proposed resource facilities

LIVESTOCK GRAZING

Present grazing activities

- one allotment (South Buffalo)
- existing range facilities do not significantly impair wilderness manageability
- see NATURALNESS for details of existing facilities and seasons-of-use

Changes identified in Sonoma-Gerlach Grazing E.I.S.

- proposed sagebrush control and seed on extreme southeast corner; generally not allowed within designated wilderness

STUDY POLICY QUALITY STANDARDS

Quality Standard 1: Energy and Critical Minerals

For background information and general description of the District see Appendix A.

General Geology

The China Mountain WSA is in the northern tip of the Tobin Range, a north-south fault block mountain range. Rock types include volcanic and sedimentary rocks ranging in age from lower Pennsylvanian to middle-upper Triassic. These rocks include lower Pennsylvanian to lower Permian greenstone, chert and argillite of the Pumpernickel Formation and middle Pennsylvanian and lower Permian heterogeneous sequence of quartzite, chert,

argillite, limestone, sandstone and greenstone of the Havallah Formation. These two formations are lithologically similar and crop out together in a generally complex structural setting of folding and thrusting. Rocks of the Pumpernickel Formation host the syngenetic manganese deposits in the Black Diablo and Jersey Valley Districts, and for massive sulfide deposits at the Big Mike Mine.

Overlying these rocks, both stratigraphically and as thrust faults, are lower Triassic volcanic and sedimentary rocks of the Koipato Group (China Mountain Formation); middle Triassic limestone, dolomite, chert, calcareous shale, siltstone and sandstone of the Prida Formation; and middle and upper Triassic massive limestone and dolomite with interbeds of silty limestone, shale and greenstones of the Cane Spring/Augusta Mountain Formations. A small body of intrusive rock less than 1,000 feet long and 300 feet wide also crops out in Lee Canyon. Age and mineralogy of this intrusive is not known (Johnson 1977). See Energy and Critical Minerals section (Augusta Mountain WSA) for more information on some of these formations. Quaternary alluvium covers the lower valley areas.

Following is a discussion of the energy and mineral potential in the China Mountain WSA. Please refer to the Mineral Potential Classification on Scheme, Figure 1 in Appendix A, for further explanation of alpha-numeric classifications. Also see, in Appendix B, Tables B-10, B-11, B-12 and B-13 showing acreages for Metallic Mineral, Nonmetallic Mineral, Geothermal and Oil and Gas Potential; and Tables B-6, B-7 and B-8 showing acreages of Unpatented Mining Claims, and Geothermal and Oil and Gas Leases; as well as summary Tables B-14 and B-15 showing the Energy and Mineral Threshold Levels and Holdings affected by four of the alternatives proposed in the EIS (all except No Wilderness Alternative).

Metallic Mineral Potential

The Iron Hat District is in the northeast portion of the WSA.

"Silver-lead ore was discovered in the Iron Hat District in the 1880's and intermittently mined to 1945. In recent years, renewed exploration in the district for silver, lead, and copper has been stimulated by the development of the Big Mike copper deposit nine miles west of the district. Available production records are incomplete; total production has been small, probably amounting to between \$15,000 and \$30,000. The only recorded production was in 1944-45, when \$9,626 was recovered at the Valmy Mine from 341 tons of ore containing 3 oz. gold, 5,331 oz. silver, 800 lb. copper, and 66,700 lb. lead at the location of either the Aldrich Mine (also known as the Iron Hat Mine), surveyed during the 1920's along Cherry Creek (NE1/4 sec. 7, NW1/4 sec. 8, T. 31 N., R. 41 E.) as the Solid Metal and Finance claims, or the Silver-Lead Mine, worked during the 1880's, half a mile south of the Aldrich Mine in the north half of SE1/4 sec. 7. It is not known which of these groups was operated as the Valmy Mine.

The Ore Drag Mine, on the south side of Lee Canyon (sec. 14, T. 31 N., R. 40 E.), apparently was first worked in the early 1940's. The first production was approximately 26 tons of 62 percent antimony ore; subsequent production in 1942 was approximately eight tons of

tungsten ore containing 111 units of WO_3 . In addition to antimony and tungsten, the ore contains small amounts of silver.

. . . The silver-lead ores consist of galen, sphalerite, and pyrite in lenticular replacement deposits in limestone along a fault that dips 60° - 70° W. The Koipato Group, predominantly volcanic and clastic units, is exposed on the west side of the fault; the Prida, Augusta Mountain, and Cane Spring Formations, predominantly limestone and dolomite, are exposed on the east side of the fault. The Aldrich Mine is developed by a shaft, crosscut tunnel, and drifts to intersect the ore deposit at about 500 feet below the surface.

The Ore Drag Mine, in the Augusta Mountain Formation, is developed on a narrow shear zone between two north-trending faults: two northern trenches in shale, chert, and limestone mined for tungsten. Small- to medium-size pods and streaks of stibnite occur in stringers, veins, and masses of quartz in the shear zone. Scheelite is associated with the stibnite as coarse crystals in calcite veinlets cutting limestone.

The copper prospects in the northern part of the district consist of small pits and one shaft exploring malachite and azurite along a north-trending fault in chert and quartzite of the Pumpernickel Formation" (Johnson 1977).

Barringer Resources (1982) indicated a significant anomalous area termed "China Mountain" covering the northern two-thirds of the WSA. This same anomalous area has been termed, for this report, the Iron Hat District, after the mining district in the northeast portion of the WSA. Also a small anomalous zone on the southeast tip of the WSA is discussed. Please refer to the Mineral Potential Maps for locations of these anomalous zones.

IRON HAT DISTRICT. (4D) High Potential.

This district is located in the north half of the WSA. The Iron Hat District is underlain by a stratigraphically and structurally complex sequence of Pennsylvanian, Permian, Triassic and undated intrusive rocks.

The major ore deposits in the southern part of the district are in north-trending, steeply dipping fault zones between different formations in the Triassic sequence; the prospects in the northern part of the district are in the Pennsylvanian-Permian Pumpernickel Formation and Triassic Augusta Mountain and Cane Spring Formations.

Geochemical sampling and geostatistical modeling results show:

Response to Geostatistical Modeling

High: gold-silver, mercury-antimony, base-precious metal

Anomalous Values

High: silver, lead*, zinc*, barium

Moderate: mercury*, antimony*

Low: copper*, tungsten*

Exploration activities are continuing in this district along the north-eastern boundary of the WSA.

TRAIL CANYON ANOMALOUS ZONE. (2B) Low Potential.

This zone is in the southeastern tip of the WSA. Rock types include alluvial fan deposits derived from the middle Pennsylvanian and lower Permian Havallah Formation.

Geochemical sampling and geostatistical modeling results show:

Response to Geostatistical Modeling
Very low: gold-silver
Anomalous Values
Low: silver, barium

Anomalous values in this zone may represent similar mineralization as found in the Iron Hat District along north-south fault zones.

No prospecting activities or mining claims are known in this zone. Four mining claims containing some minor underground development are located midway up Hoffman Canyon, just north of this zone. Little is known about this development work or the type of mineralization sought.

Nonmetallic Mineral Potential

Small high grade barite deposits are known to occur in Triassic limestones on the northern end of China Mountain. These deposits have been explored but are too small for commercial development. Also these Pennsylvanian, Permian and Triassic Formations may contain potential cement grade limestone-dolomite deposits.

The entire WSA is classified 3C, moderate potential for these types of deposits.

Geothermal Resource Potential

Buffalo Valley Hot Springs, 12 miles southeast of the WSA, has a recorded surface temperature of 174° F. This hot spring is likely associated with a flanking fault of the Fish Creek Mountains. Two young (2.6-3 million-year-old) basaltic cones occur two to five miles south of the hot spring (USDI Sonoma URA 1979).

Two other hot springs are reported along the southwestern edge of Buffalo Valley six miles south of the WSA. One spring had a recorded temperature of 162° F (Garside and Schilling 1979). These two hot springs are likely associated with range front faults along the eastern side of Tobin Range.

The Leach Hot Spring Known Geothermal Resource Area (KGRA) is seven miles west of the WSA in the Grass Valley area. The Leach Hot Spring system is rated capable of producing 77 megawatts of electricity for 30 years (Brook et al. 1979).

Extensive exploration and research by the U.S. Geological Survey and Lawrence Berkeley Laboratory has been conducted in the Leach Hot Spring area. Numerous shallow, temperature gradient holes have been drilled by several companies. Sunoco Energy Development Company as joint operator with Aminoil completed a deep test well in July 1980 to a depth of 8,500+ feet. Down hole temperatures were reported to be about 230° F. The well was plugged and abandoned upon completion. This was the first deep test well to be drilled on a federal geothermal lease in the Winnemucca District.

Some minor shallow temperature gradient drilling and geophysical surveys have also been conducted in the Buffalo Valley area east of the WSA.

Extensive lease blocks occur within two miles of the western boundary and one lease block, covering four sections, is within two miles of the south-eastern tip of the WSA.

The following portions of the WSA are considered to have geothermal potential:

- Moderate (3C) - A 1/2- to 1-mile-wide strip inside eastern boundary.
- Low (2B) - The remainder of the WSA

Oil and Gas Potential

The middle Triassic sedimentary rocks outcropping in the WSA are correlative to the middle Triassic sedimentary rocks of the Augusta Mountains which do contain reported oil occurrences (see Oil and Gas Potential Augusta Mountain WSA). No oil shows, however, have been reported in these similar sedimentary rocks of the China Mountain WSA. If oil occurs in these sedimentary rocks it likely has migrated to the down-dropped valley portions outside of the WSA boundaries.

Some widely spaced oil and gas geophysical lines have been run in Pumpnickel and Buffalo Valleys to the north and east.

One oil and gas lease covering a major portion of one township is located one mile east of the WSA boundary. Several other large lease blocks to the south, one of which covered a partial section of the southeastern tip of the WSA, have recently been dropped.

The oil and gas potential of the WSA is classified 2B, low potential, low confidence.

Quality Standard 2: Impact on Other Resources

Recreation

- current recreational use of 406P favors motorized and motorized-supported recreational activities (off-road vehicles, hunting)
- wilderness designation could restrict vehicular access on about two miles of roads and ways and about 1,000 acres of land currently accessible to off-road recreational vehicles

- current vehicle use associated with recreation probably very light due to lack of access and unsuitable terrain

Cultural Resources

- wilderness designation could indirectly add to the existing legal protection of cultural resources by limiting resource development and use
- wilderness designation could possibly curtail excavation and stabilization of historic, prehistoric or paleontological finds if action would impair wilderness values.
- excavation of known sites is unlikely
- inventory data for 406P is sparse and sites which warrant excavation may be identified in the future

Energy and Mineral Resources

- wilderness designation imposes strict guidelines on all allowed mineral and energy development--potentially making development infeasible
- mining claims located after designation could not be developed
- see Quality Standard 1 for more detail

Livestock Grazing

- costs of maintaining range developments and livestock management would increase where permittee vehicular access is curtailed
- future beneficial range development/treatments may be restricted, including proposed sagebrush control on southeast edge of 406P

Other Resources

Current resource plans identify no other resources which would be adversely impacted by wilderness designation. However, wilderness management could impose additional constraints on future projects in these programs: fire; wildlife; wild horses and burros; lands; soil, water and air; aquatic habitat and visual resources.

Quality Standard 3: Impact of Non-designation on Wilderness Values

SHORT-TERM IMPACTS

- reduced opportunities for primitive and unconfined recreation and solitude in those areas accessible to off-road vehicles within 406P

LONG-TERM IMPACTS

- continued development of mineral and energy resources could eventually eliminate opportunities for naturalness, solitude, and primitive and unconfined recreation within 406P; potential discussed in Quality Standard 1
- area would remain open for development of other resources which might impair wilderness values; extent speculative

Quality Standard 4: Public Comment

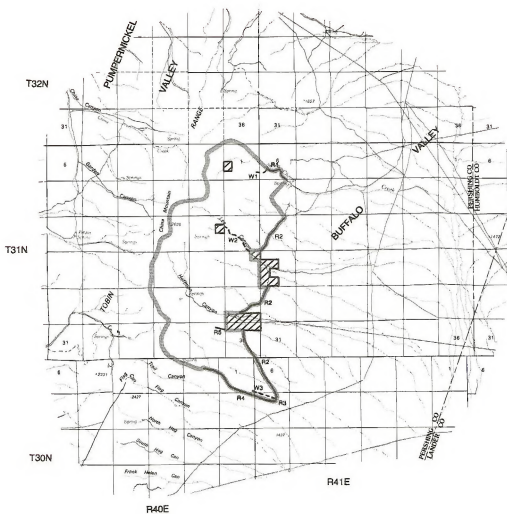
See District-wide Analysis, Chapter III





Quality Standard 5: Local and Regional Socioeconomic Effects

See District-wide Analysis, Chapter III

Quality Standard 6: Consistency With Other Plans

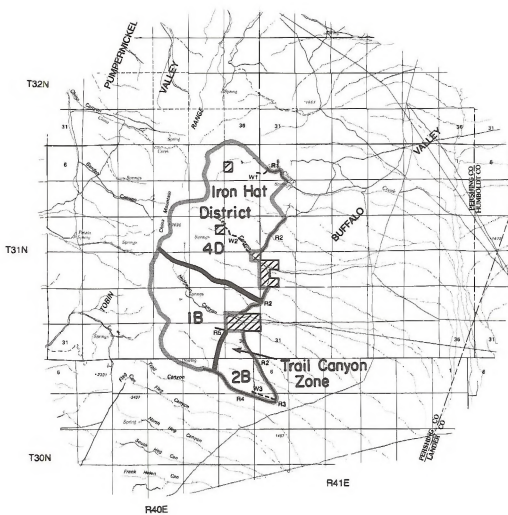
See District-wide Analysis, Chapter III



-  PRIVATE LAND (SURFACE & MINERALS)
-  W.S.A. BOUNDARY
-  ROAD
-  WAY



NV-020-406P TOBIN MTS. (CHINA MTN.)



- PRIVATE LAND (SURFACE & MINERALS)
- W.S.A. BOUNDARY
- ROAD
- WAY

FAVORABILITY

1. UNFAVORABLE POTENTIAL
2. LOW POTENTIAL
3. MODERATE POTENTIAL
4. HIGH POTENTIAL

LEVEL OF CONFIDENCE

- A. INSUFFICIENT DATA
- B. LOW CONFIDENCE (indirect evidence)
- C. MODERATE CONFIDENCE (Direct evidence)
- D. HIGH CONFIDENCE (Abundant direct evidence)



NV-020-406P TOBIN MTS. (CHINA MTN.)
MINERAL POTENTIAL

Wilderness Study Area 406Q: Tobin Range

DESCRIPTION

Location

- eastern Pershing County, Nevada, approximately 40 miles south of Winnemucca, Nevada
- four hour drive from Reno, the nearest Standard Metropolitan Statistical Area
- best access via Pershing County Road 113 (R1) on the western boundary

Configuration and Size

- bounded by roads (9.5 miles), private land (2.7 miles) topographic features (3.6 miles) and legal subdivisions (3.6 miles)
- about six miles north-south and from two to five miles east-west
- 13,107 acres of public land

Physical Environment

- altitude range: 4,640 feet to 9,775 feet
- Bailey-Kuchler ecosystems: Great Basin sagebrush (3130-32), west half; juniper-pinyon woodland (3130-21), east half
- Sonoma-Gerlach Grazing EIS vegetation communities: sagebrush, saltbush
- riparian vegetation along Bushee Creek (south boundary) and locally in Cottonwood Canyon
- located on the west slope of the Tobin Range within the Basin and Range Province
- three distinct landforms within 406Q: high elevation adjacent to Mount Tobin; lower elevation within Tobin Range; fringing desert piedmont
 - high elevation adjacent to Mount Tobin (two miles long and one and one-half miles wide):
 - ranges in elevation from 9,700 feet down to approximately 7,000 feet
 - contains smooth, dominant ridges separated by shallow drainages
 - lower elevation within Tobin Range (five miles north-south and one and one-half to three miles east-west)
 - contains roughly parallel (east-west) deeply cut drainages, including Siard and Cottonwood Canyons, Spring, Bushee and North Fork Bushee Creeks, and a small section of Shell Canyon
 - includes a dominant rock outcrop between Bushee and North Fork Bushee Creeks, and a small section of Shell Canyon
 - includes a dominant rock outcrop of jagged spires and colorful rock between Bushee Creek and Cottonwood Canyon
 - is bounded on the west by a prominent fault scarp 10 to 20 feet high, formed in 1915

- contains most of 406Q's juniper woodland
- fringing desert piedmont (five miles north-south and up to two miles east-west
- is a gently sloping alluvial slope on the east side of Pleasant Valley
- contains several parallel, east-west drainages separated by low ridges

STUDY POLICY CRITERIA

Criterion 1: Evaluation of Wilderness Values

Component A: Mandatory Wilderness Characteristics

SIZE

- 13,227 acres within boundary, including 120 acres of private land and 13,107 acres of public land

NATURALNESS

Developments within WSA

Range-related developments (see Table B-1 in Appendix B)

- one allotment (Pleasant Valley) (see Table B-2 in Appendix B)

Other man-made features

- six ways totalling 7.8 miles
- one abandoned mining area in Cottonwood Canyon
- one abandoned utility line parallel to the west boundary road (R1)
- one gravel pit immediately adjacent to west boundary road (R1)

Outside imprints

- two ranches immediately adjacent to 406Q visible from within unit
- several roads, most notably the Pleasant Valley Road (PE 113), visible from western part of 406Q
- impact of outside imprints minimal

Location and size of areas subject to imprints

- all of Tobin Range except Cottonwood Canyon free of substantial imprints
- fringing desert piedmont contains most of 406Q's imprints; includes roughly one-third of the WSA
- most imprints are visually insignificant except mining area which can be seen from lower Cottonwood Canyon and from the desert piedmont immediately adjacent

Rehabilitation potential

- mining area and gravel pit would require substantial mechanical manipulation to be rehabilitated

-all other imprints could be rehabilitated without substantial mechanical manipulation

Potential for separating areas in WSA subject to imprints

-mining area could not be separated without reducing wilderness values and manageability

-all other imprints could be separated without reducing wilderness values

Overall influence of imprints

-cumulative impacts high in desert piedmont area

-imprints in most of Tobin Range very minimal except near mining area in Cottonwood Creek, where impacts of man substantially noticeable

SOLITUDE

Solitude is defined as the opportunity to avoid the sights, sounds and evidence of other people

Influence of outside sights and sounds

Economic activity

-localized and seasonal ranching activities (roundups, salting and maintenance of range improvements near and within 406Q); impact on solitude minimal

Aircraft flights

-regular, low-level (1200' to 10,000' above ground level) military flights

-no known landing areas within 406Q

-State of Nevada Department of Wildlife conducts annual wildlife censuses

-deer and sage grouse tallies in November-December and March-April (helicopter); regular since mid-1970s

-BLM conducts livestock tallies as needed (fixed-wing)

Vehicular traffic

-periodic traffic on west boundary road (R1) visible from western one-third of 406Q

Physical factors influencing solitude

Topographic and vegetative screening

- high elevation adjacent to Mount Tobin
 - shrubs provide minimal vegetative screening
 - topographic screening fair to poor except in major drainages, where it is good
- lower elevation Tobin Range
 - juniper trees and small riparian areas offer good to excellent local vegetative screening
 - topographic screening excellent due to deeply cut drainages throughout area
- fringing desert piedmont
 - low shrubs provide minimal vegetative screening
 - poor topographic screening due to flat terrain; locally fair in small drainages

Size and configuration

- size is sufficient to provide solitude
- mining area in Cottonwood Canyon detracts from solitude
- although no area in 406Q is more than two miles from WSA boundary, visitors in the Mount Tobin area would be up to four miles from roads or other man-made features

Ability of user to find secluded spot

- easily locatable
 - in major drainages within the Tobin Range
 - locally in the higher elevations adjacent to Mount Tobin
- more difficult to find
 - throughout desert piedmont areas
 - in the smoother terrain near the summit of Mount Tobin

PRIMITIVE AND UNCONFINED RECREATION OPPORTUNITY

Access

- all areas within about four miles of a boundary road
- excellent year-round access from west boundary road (R1)
- access to higher elevations on east side of 406Q difficult, especially in winter and spring

Attractions (see also Special Features)

- Mount Tobin, highest peak within a WSA on the Winnemucca District
- fault scarp on west edge of Tobin Range
- rock formations between Bushee and Cottonwood Canyons

Challenge

- typical desert/steppe climate with associated challenges (hot, dry summers, cold winters)
- water scarce in summer except
 - six perennial springs located in the lower elevations within the Tobin Range
 - perennial streams along Bushee Creek and a small area of Cottonwood Canyon
 - snowbanks in the higher elevations commonly last into early summer
- steeper areas above major drainages and in vicinity of Mount Tobin offer excellent challenge

Scenic qualities

- Mount Tobin an impressive backdrop to 406Q, although mountain lacks textural and color variations common to other high peaks within Winnemucca District
- rock outcrops north of Bushee Creek offer locally high scenic qualities, steep cliffs, colorful rock walls, textural variations
- most major drainages lack sufficient variety for high scenic values

Activities

Dayhiking (water availability not critical)

- entire WSA accessible to dayhiking; backpacking may be more appropriate in vicinity of Mount Tobin
- most likely destinations include Bushee and North Fork Bushee Creeks, Siard and Cottonwood Canyons, rock outcrops north of Bushee Creek, and along fault scarp

Camping

- best along major drainages and adjacent to Mount Tobin; limited opportunity in steeper slopes areas above drainages
- limited opportunity in fringing desert piedmont due to poor screening

Backpacking

- best in higher elevations, vicinity Mount Tobin, where access by dayhikers unlikely
- scenic views and remoteness probably most attractive feature of 406Q to backpackers

Hunting

- a few mule deer and cougar, especially in the higher elevations
- sage grouse, chukar and valley quail all occur within 406Q

Horsepacking

- limited to desert piedmont and along major drainages; potential in higher elevations unknown

Rock climbing and scrambling, caving

- rock climbing good in rock outcrop areas north of Bushee Creek; limited opportunity elsewhere
- rock scrambling opportunity excellent throughout most of Tobin Range
- no caves are known

Nature study

- photography in main canyons, and vicinity Mount Tobin
- geology study along 1915 fault line

Fishing

- suitable fisheries habitat in Bushee Creek

Winter sports

- crosscountry skiing, winter camping possible in higher elevations
- Nevada State Comprehensive Outdoor Recreation Plan identifies Mount Tobin as a possible site for helicopter skiing; this would not be compatible with wilderness management policy

Rockhounding

- no known rockhounding areas

Component B: Special Features

CULTURAL

Prehistoric

- no known sites

Historic

- no recorded sites
- antiquities observation: cabin and windmill

ZOOLOGIC

Fisheries

- habitat in Bushee Creek along south boundary

Wild horses and burros

-within Tobin Range herd use area (horses only)

Other mammals

-deer and cougar are found in the higher elevations (eastern 2/3)

Birds

-sage grouse (east half)
-chukar; high density, south 1/4; medium density, north 3/4
-valley quail (entire unit)
-raptor cliff nesting areas

BOTANIC

-no threatened or endangered plants have been identified
-riparian vegetation along Bushee Creek and locally in Cottonwood Canyon
-extensive stands of juniper in lower elevations of Tobin Range

GEOLOGIC

-fault scarp along west edge of Tobin Range; created during 1915 earthquake and of unique scientific interest
-areas of locally interesting geologic formations, especially just north of Bushee Creek

PALEONTOLOGIC

-no known sites

SCENIC

-Mount Tobin

ACECs

-none

Component C: Multiple Resource Benefits

Wilderness designation of 406Q could restrict motorized vehicular traffic on approximately 7.8 miles of ways and about 4,000 acres of land which is now accessible to off-road vehicles. A vehicle closure would enhance opportunities for primitive and unconfined recreation within those areas of 406Q currently accessible to vehicles.

Long-term benefits from wilderness designation may accrue to those resources which would otherwise deteriorate should the area return to other multiple uses. Although current land-use plans essentially maintain the existing environment and resource commitments should 406Q not be designated wilderness, the federal land would remain accessible to mineral patenting, leasing, and other development. These potential developments could adversely impact water, soil, air, visual, cultural and other resources which benefit from the existing, non-developed environment. The extent of future development in 406Q is unknown.

Component D: Diversity in the National Wilderness Preservation System

ECOSYSTEM AND LANDFORM DIVERSITY

- Bailey-Kuchler ecosystems: Great Basin sagebrush (3130-32); juniper-pinyon woodland (3130-21)
- Sonoma-Gerlach Grazing E.I.S. vegetative communities; sagebrush, saltbush
- two areas totalling 7,020 acres with Great Basin sagebrush designated wilderness (California); six areas totalling 639,000 acres endorsed as suitable
- three areas totalling 43,168 acres with pinyon-juniper woodland designated wilderness (California); eight areas totalling 549,000 acres endorsed as suitable by the President and pending before Congress
- 406Q not a unique representation of either ecosystem within Winnemucca District
- unknown how 406Q compares with other WSAs with the same ecosystems outside the Winnemucca District
- 77 WSAs within Nevada, California and Utah with Great Basin sagebrush representation
- 92 WSAs within Nevada, California and Utah with juniper-pinyon woodland representation

RECREATION NEAR SMSAS

- approximately four-hour drive from Reno, the nearest SMSA
- twelve designated wilderness areas and numerous WSAs within a five-hour drive of Reno
- no designated wildernesses with these ecosystems within a five-hour drive of Reno

GEOGRAPHIC DISTRIBUTION OF WILDERNESS

- one designated wilderness in Nevada (Jarbridge, U.S. Forest Service)
- see Chapter III, Component D, for an analysis

Criterion 2: Manageability

Physical Factors Influencing Manageability

CONFIGURATION

- no substantial problems due to configuration; however, 406Q boundary relies heavily on legal subdivisions and topographic features which may be difficult to identify and manage as wilderness

ACCESS

- difficult to control off-road vehicle use from some boundary roads on west side (R1, R2, R5)
- difficult to control off-road vehicle use from the three ways within 406Q (W1, W2, W3)

LANDFORM

- desert piedmont landform conducive to off-road vehicle use and would be difficult to control

INTRUSIONS AND OUTSIDE INFLUENCES

- managing for solitude would be difficult in those areas described above where access is hard to control
- military flights and adjacent ranches most significant outside influences reducing manageability

Nonconforming But Accepted Uses

VALID EXISTING RIGHTS

Mining claims

- approximately 500 acres within 406Q have 23 registered mining claims
- located in one block near center of 406Q in Cottonwood Canyon area
- not possible to exclude areas containing claims without seriously impairing wilderness values
- wilderness manageability would be difficult should claimants further develop claims

Leases

- 5,125 acres of geothermal leases
- all leases concentrated on west half
- probability of leases being developed undetermined
- not possible to exclude most areas of leasing without substantially reducing wilderness values

Non-federal land

- 114 acres of private land located at west end of Siard Canyon
 - cattle grazing primary use and expected to continue
 - possible to exclude this area without substantially reducing wilderness values

ESTABLISHED AIRCRAFT AND MOTORBOAT USE

- low-level military flights over 406Q
- Nevada Department of Wildlife conducts animal censuses during winter and spring using helicopters
- BLM conducts livestock tallies using fixed-wing
- none of the established aircraft use would substantially reduce aircraft manageability
- see Influences of Outside Sights and Sounds for more detail (e.g., dates flying established)

EXISTING AND PROPOSED RESOURCE FACILITIES

- no non-range facilities except roads and the abandoned utility line near the west boundary
- no proposed resource facilities at this time

LIVESTOCK GRAZING

Present grazing activities

- one allotment (Pleasant Valley) within 406Q
- existing range facilities would not significantly impair wilderness manageability
- see NATURALNESS for details of existing facilities and seasons-of-use

Changes identified in Sonoma-Gerlach Grazing E.I.S.

- no range-related changes identified

STUDY POLICY QUALITY STANDARDS

Quality Standard 1: Energy and Critical Minerals

For background information and general description of the District see Appendix A.

General Geology

The Tobin Range USA is in the south-central portion of the Tobin Range, a north-south fault block mountain range. Rock types include volcanic and sedimentary rocks ranging in age from lower Pennsylvanian to lower Triassic, overlain by Tertiary volcanic rocks. These rocks include lower Pennsylvanian to lower Permian greenstone, chert and argillite of the Pumpnickel formation and middle Pennsylvanian and lower Permian heterogeneous sequence of quartzite, chert, argillite, limestone, sandstone and greenstone of the Havallah Formation. These two formations are lithologically similar and crop out together in generally complex structural settings of folding and thrusting. Rocks of the Pumpnickel Formation host the syngenetic manganese deposits in the Black Diablo and Jersey Valley districts, and massive sulfide deposits at the Big Mike Mine.

Overlying these rocks both in normal stratigraphic sequence and as thrust faults are lower Triassic volcanic and sedimentary rocks of the Koipato Group. The Triassic rocks are in turn overlain by Oligocene basalts, Caetano Tuff and andesites. Quaternary alluvium covers the lower valley areas.

According to Burke and McKee (1979) these Tertiary volcanic rocks have been deposited in east-west Oligocene and early Miocene volcano-tectonic troughs. Vent centers for the volcanics are believed to have been centered along trough-related faults. Burke (1974) has suggested that the mercury mineralization in the Mount Tobin District is also related to development of this trough. Rocks of the Koipato Group and Tertiary volcanics are mineralized within the boundaries of the Oligocene trough, and mineralization is localized near faults and hypabyssal andesite bodies emplaced during trough development. The mineralized rocks of the Koipato Group were clearly at or near the surface in the trough during early stages of faulting, intrusion, volcanism and mineralization.

Following is a discussion of the energy and mineral potential in the Tobin Range WSA. Please refer to the Mineral Potential Classification on Scheme, Figure 1 in Appendix A, for further explanation of alphanumeric classifications. Also see, in Appendix B, Tables B-10, B-11, B-12 and B-13 showing acreages for Metallic Mineral, Nonmetallic Mineral, Geothermal and Oil and Gas Potential; and Tables B-6, B-7 and B-8 showing acreages of Unpatented Mining Claims, and Geothermal and Oil and Gas Leases; as well as summary Tables B-14 and B-15 showing the Energy and Mineral Threshold Levels and Holdings affected by four of the alternatives proposed in the EIS (all except No Wilderness Alternative).

Metallic Mineral Potential

The Mount Tobin District is located on the southern boundary of the WSA.

"Cinnabar was discovered in the Mount Tobin District before 1918, and the Mount Tobin (originally Miner's Dream) Mine was discovered in 1929. There was some exploration between 1929 and 1938 but no mining. The mercury deposits in the northern part of the district were actively explored and developed between 1938 and 1943. The Mount Tobin Mine produced 1,491 flasks of mercury during this period; the Last Chance and North Fork Mines, located north of the Mount Tobin Mine, produced an unknown but small amount of mercury. The Mount Tobin Mine was worked again in late 1960's, producing at least 14 flasks of mercury.

The Eureka Mine in Miller Basin was active between 1955 and 1958 and 1968-70. During 1956, the Eureka Mine produced more than 100 flasks of mercury, but in other years, production was much less than 100 flasks. Total production from this mine is unknown but probably less than 500 flasks. The Silver Queen Mine, in sec. 29, T. 28 N., R. 39 E., produced three flasks of mercury in 1959. The Camera and Tip Top prospects, northeast of the Eureka Mine, were explored for mercury during the period of development of the Eureka; judging from the size of the mine workings and ore dumps, little or no production resulted from these deposits.

The Needle Peak fluorspar deposit was mined prior to 1961 and produced one carload of ore; development consists of a 125-foot drift, 5-foot pit, and a 75-foot bulldozer cut" (Johnson 1977).

Some zeolite production has also occurred in the Jersey Valley area (see nonmetallic minerals with Augusta Mountains WSA for more details).

The mercury deposits in the Mount Tobin Mine area are in a tuffaceous conglomerate composed of thick beds of subangular cherts, feldspars, quartzite, and quartz pebbles cemented by siliceous and argillaceous material. Three prominent fault sets and two prominent fracture sets are found in the mine area, and both the Koipato volcanic and sedimentary rocks, and the Tertiary volcanic rocks are extremely argillized throughout a zone about 1,000 feet long and 400 feet wide. The ore bodies are concentrated in conglomerate in the argillized zone, where they are localized along some of the prominent faults and fractures (Johnson 1977). This fault zone is part of the volcano-tectonic trough that Burke (1974) discussed earlier.

Following is a description of the mineralization taken from Johnson (1977).

"Cinnabar, the only mercury mineral observed, occurs as fillings in cavities in the conglomerate and to a lesser extent replaces the cement and pebbles. It also occurs as botryoidal encrustations on pebbles and as veinlets along fractures. At the Last Chance Mine, cinnabar occurs as platy films and veinlets associated with small amounts of pyrite in fractures and bedding planes in pebbly shale and sandstone.

Two ore bodies have been mined at the Mount Tobin Mine. The east workings consist of a glory hole 150 feet long, 40 feet wide, and 40 feet deep, and a 600-foot haulage level near the bottom of the glory hole. The ore was localized in the conglomerate along north-trending fractures that are bounded on the north by a steep east-striking fracture and on the east by a north-striking fault that dips 50° E. Most of the mercury produced by the Mount Tobin Mine was recovered from these workings, where ore averaged about seven pounds mercury per ton. The older alluvium at the west end of this glory hole locally contains enough detrital cinnabar to constitute furance ore. The west workings consist of a small glory hole 110 feet long, 60 feet wide, and 20 feet deep. The ore was localized in the conglomerate parallel to the bedding planes between two northeast-trending fault zones about 60 feet apart. The ore body was richer than that at the east workings and averaged about 12.5 pounds of mercury per ton but was narrow and discontinuous.

The Eureka Mine is developed by an adit driven along the bedding plane of a carbonate unit in the basal Natchez Pass Formation; the high-grade ore occurs as masses of cinnabar veinlets in a white matrix (either calcite or barite). Similar deposits are found at the Hot Group of prospects, south of the Eureka Mine. Here sparse

mercury mineralization is associated with antimony and barite along a north-trending, steeply dipping fault in limestone and dolomite of the Natchez Pass formation. Small grains and crystals of cinnabar are present in barite and in limestone adjoining the fault; stibnite occurs as sporadic pods along the fault and is commonly enclosed in barite. Barite veins are common in this part of the Tobin Range, and probably occur in association with mercury at other places" (Johnson 1977).

The fluor spar deposit at Needle Park is in a shear zone, cutting rhyolite and limestone (Johnson). The predominate rock types in this area are greenstones, cherts and argillites of the Pumpernickel Formation.

Barringer Resources (1982) indicated a moderate anomalous area termed "Mt. Tobin," covering the southern two-thirds of the WSA. This large area has been divided into smaller anomalous sub-zones to aid in discussion of the metallic mineral potential in a more site-specific manner. Please refer to the Mineral Potential Maps for locations of these anomalous sub-zones discussed below.

MOUNT TOBIN MINING DISTRICT. (4D) High Potential.

This district is in the southern portion of the WSA. Rock types within this portion of the WSA include the lower Triassic Koipata Group, Oligocene basalts, the Oligocene Caetano Tuff and Oligocene andesites.

Geochemical sampling and geostatistical modeling results show:

Response to Geostatistical Modeling

Moderate: mercury-antimony

Anomalous Values

High: mercury*, antimony*

Low: molybdenum

The Oligocene east-west volcanic trough and associated fault zones extend through this portion of the WSA. Although mining activities have not occurred in this zone of the WSA, a 1983 BLM field examination of the mineralized structures exposed in mining activities on the southeastern boundary indicated that these structures extend across Bushee Creek into the WSA. A small unmapped quart-mouzonite porphyry containing 5-10% disseminated sulfides (primarily pyrite) was found on the southeast boundary. This porphyry was intruding Koipata Group meta-silt stone which also contained sulfides (primarily pyrite and arsenopyrite) and quartz.

Several old claim posts were found within this portion of the WSA but none of these claims have been recorded with the county or BLM.

COTTONWOOD CANYON ANOMALOUS ZONE. (3C) Moderate Potential.

This zone is in the central portion of the WSA, centered on the Cottonwood Canyon drainage basin. Rock types include the lower Pennsylvanian to lower Permian Pumpernickel Formation, middle Pennsylvanian and lower Permian Havallah Formation, and the lower Triassic Koipata Group.

Geochemical sampling and geostatistical modeling results show:

Response to Geostatistical Modeling

Anomalous Values

High: tungsten*

Low: zinc*, barium

The high anomalous tungsten values in this zone are likely attributed to skarn mineralization and a propylitically altered feldspar porphyry found during a BLM field examination in 1983. The skarn zone, not in contact with the porphyry body located 500 feet east, contained pyrite mineralization. Prospect pits, adits and dozer trenches on mining claims also indicated argillic alteration, malachite staining and possibly cinnabar(?) along shear zones.

A block of 23 mining claims have been recorded with the county, but not with the BLM.

Nonmetallic Mineral Potential

The fluorspar deposits at Needle Peak discussed earlier are likely associated with the Pumpernickel Formation. Very little information is available on these deposits. Although this deposit is located three miles east of the WSA this formation occurs in the WSA and the WSA is considered to have potential for other fluorspar deposits.

Barite mineralization occurs with mercury mineralization in the Miller Basin five miles south of the WSA. Johnson (1977) says that barite veins are very common in this area and are likely associated with mercury mineralization in other parts of the Tobin District.

Pershing County maintains a few gravel pits along the western boundary of the WSA. They have indicated that good gravel sources are somewhat limited in this area.

The following portions of the WSA are considered to have nonmetallic mineral potential:

High (4D) - A 1 1/2-mile-wide strip inside the west boundary with sand and gravel pits

High (4D) - Production of fluorspar and reports of barite from Mount Tobin District adjacent to the WSA

Moderate (3C) - Remainder of WSA - fluorspar and barite

Geothermal Potential

Several warm springs and wells occur in Pleasant Valley east of the WSA. The Paris Ranch warm spring (68°F) and well (72°F) is located nine miles southwest of the WSA. Coyote Warm Springs (72°F) is located two and one-half miles northwest of the WSA.

Numerous 500' temperature gradient holes have been drilled throughout Pleasant Valley, with a few holes drilled in the WSA along the western flank of the Tobin Range.

Basically the western half of the WSA is covered with geothermal leases.

The following portion of the WSA is considered to have geothermal potential:

- Moderate (3C) - A 2-mile-wide strip inside the western boundary.
- Low (2B) - The remainder of the WSA.

Oil and Gas Potential

The Pennsylvanian, Permian and lower Triassic rocks are not known to be oil bearing in the WSA. Middle Triassic rocks, correlative with the oil bearing middle Triassic rocks of the Augusta Mountains, do crop out 10 miles south of the WSA. These same middle Triassic rocks may be down-dropped on the western valley portion of the WSA.

Oil and gas seismic lines have been run in Grass Valley several miles north of the WSA. One oil and gas lease covers a partial section in the extreme southwest tip of the WSA.

A two-mile-wide strip inside the western boundary is classified 2B, low potential, and the remainder of the WSA is classified as 1B unfavorable for oil and gas.

Quality Standard 2: Impacts on Other Resources

Recreation

- current recreational use of 406Q favors motorized and motorized-supported recreational activities (off-road vehicles)
- wilderness designation could restrict vehicular access on approximately 7.8 miles of ways and about 4,000 acres of land currently accessible to off-road recreational vehicles
- most significant impact to recreation from wilderness designation restricting vehicular traffic on W1, W2 and W3

Cultural Resources

- wilderness designation could indirectly add to the existing legal protection of cultural resources by limiting resource development and use
- wilderness designation could possibly curtail excavation and stabilization of historic, prehistoric or paleontological finds if action would impair wilderness values.
- excavation of known sites in 406Q unlikely
- inventory data for 406Q is sparse and sites may be identified in the future which would warrant excavation.

Energy and Mineral Resources

- wilderness designation imposes guidelines on all allowed mineral and energy development--potentially making development infeasible
- mining claims located after designation could not be developed
- see Quality Standard 1 for more detail

Livestock Grazing

- costs of maintaining range developments and livestock management would increase where permittee vehicular access is curtailed
- future beneficial range developments/treatments may be restricted

Other Resources

Current resource plans identify no other resources which would be adversely impacted by wilderness designation. However, wilderness management could impose additional constraints on future projects in these programs: fire; wildlife; wild horses and burros; lands; soil, water and air; aquatic habitat and visual resources.

LONG-TERM IMPACTS

- continued development of mineral and energy resources could eventually eliminate opportunities for naturalness, solitude, and primitive and unconfined recreation within 406Q; potential discussed in Quality Standard 1
- area would remain open for development of other resources which might impair wilderness values; extent speculative

Quality Standard 4: Public Comment

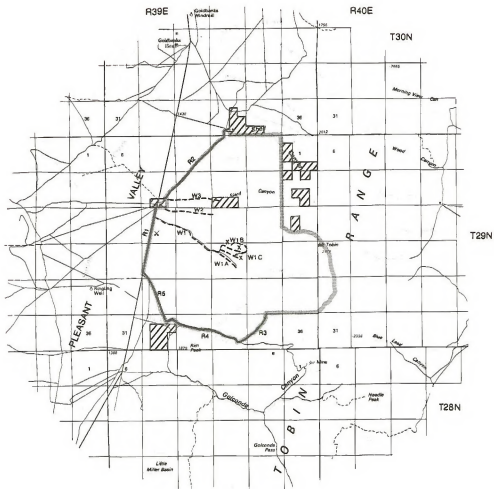
See District-wide Analysis, Chapter III

Quality Standard 5: Local and Regional Socioeconomic Effects

See District-wide Analysis, Chapter III

Quality Standard 6: Consistency with Other Plans

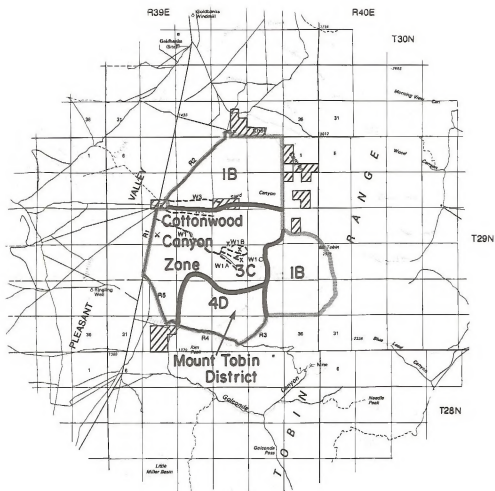
See District-wide Analysis, Chapter III









- PRIVATE LAND (SURFACE & MINERALS)
- W.S.A. BOUNDARY
- ROAD
- WAY
- GRAVEL PIT
- PROSPECT



NV-020-406Q TOBINS



-  PRIVATE LAND (SURFACE & MINERALS)
-  W.S.A. BOUNDARY
-  ROAD
-  WAY
-  GRAVEL PIT
-  PROSPECT



FAVORABILITY

1. UNFAVORABLE POTENTIAL
2. LOW POTENTIAL
3. MODERATE POTENTIAL
4. HIGH POTENTIAL

LEVEL OF CONFIDENCE

- A. INSUFFICIENT DATA
- B. LOW CONFIDENCE (Indirect evidence)
- C. MODERATE CONFIDENCE (Direct evidence)
- D. HIGH CONFIDENCE (Abundant direct evidence)

NV-020-406Q TOBINS
MINERAL POTENTIAL

Wilderness Study Area 600: Blue Lakes

DESCRIPTION

Location

- northern Humboldt County, Nevada, approximately 25 miles south of Denio, Nevada
- six-hour drive from Reno, the nearest Standard Metropolitan Statistical Area
- best access Alder Creek road (dirt) coming from Denio, 600's northern boundary

Configuration and Size

- bounded by roads (21.3 miles), private land (9.5 miles) and township and range legals (5.0) miles, and man-made features (.9 miles)
- about six miles north-south and from four to five miles east-west
- 20,508 acres of public land

Physical Environment

- altitude range: 5,800 feet to 9,100 feet
- Bailey-Kuchler ecosystem: sagebrush-steppe (3130-49)
- Paradise-Denio Grazing E.I.S. vegetation communities: conifers (Middle 1/3); sagebrush (2/3)
- extensive riparian vegetation
 - numerous drainages
 - glacial lake
- WSA straddles a north-south ridge of the Pine Forest mountain range; semi-alpine range of the great basin province
- one distinct landform within 600
 - north-south trending ridge of rugged high mountain granitic peaks
 - steep mountain slopes averaging 60 percent
 - valleys originate near summit and vary from broad mountain meadows to narrow steep draws
 - Blue Lakes: moraine-dammed stream formed by mountain glaciers
 - glacial canyons and morains

STUDY POLICY CRITERIA

Criterion 1: Evaluation of Wilderness Values

Component A: Mandatory Wilderness Characteristics

SIZE

- 20,508 acres of public land within boundary

NATURALNESS

Developments within WSA

Range-related developments (see Table B-1 in Appendix B)

-three grazing allotments (see Table B-2 in Appendix B)

Other man-made features

-three roads within 600 boundary totalling 2.3 miles (see Table B-3 in Appendix B)

-six ways totalling 10.8 miles

-line shack located along western boundary road and another located at Chicken Meadows; extreme southeast corner

Outside imprints

-old mining area near extreme northeast boundary; mill site (old buildings-Adams Mine)

-two man-made reservoirs (Little & Big Onion); do not detract from naturalness of area

-roads and ranches visible from the edge of 600; but impact is minimal

-motorized recreational use (boats); little impact

Location and size of areas subject to imprints

-middle section of 600 is virtually free of imprints

-Little and Big Onion Reservoirs are visible from boundary to ridgeline

-ways are visible within general vicinity

-mining areas are visible within general vicinity--affects extreme northeast and southern portion of 600

Rehabilitation potential

-most range developments could be rehabilitated without mechanical manipulation

-Leonard Creek Reservoir and the way into Blue Lakes would take major mechanical manipulation to rehabilitate

Potential for separating areas in WSA subject to imprints

-mining areas already separated; Adams mine area by roads, Snow Creek area by a legal boundary

-difficult to separate way into Blue Lakes without compromising significant portion of northeast corner of 600

-move western boundary back to visible topographic features, away from man-made features and disturbance (reservoirs, cabin, corral)

-move southern boundary to locatable on-the-ground boundary

Overall influence of imprints

- most areas within 600 substantially natural
- visitors would have little difficulty locating substantially natural landscapes in 600

SOLITUDE

Solitude is defined as the opportunity to avoid the sights, sounds and evidence of other people

Influence of outside sights and sounds

Economic activity

- sporadic mining near southern boundary can be seen from small areas within 600
- localized and seasonal ranching activities (roundups, salting, cultivating and maintenance of range improvements near and within 600)
- motorized recreational activities (boating, camping, biking) in and around Big and Little Onion Reservoirs

Aircraft flights

- regular, low-level (500' to 1,100' above ground level) military flights from Mtn. Home Air Force Base in Idaho (route IR 300)
- no known landing areas inside 600
- State of Nevada Department of Wildlife conducts annual Wildlife census:
 - antelope counts in January (fixed-wing); August (helicopter); regular since 1950s
 - deer counts November-December and March-April (helicopter); regular since mid-1970s
 - sage grouse counts in March (helicopter)
- BLM conducts occasional fixed-wing flights for livestock supervision

Vehicular traffic

- Periodic traffic on southeast boundary road (R-11) visible from east ridgeline
- light traffic on other boundary roads and cherrystem roads (R-1, R-12, R-5, R-10, R-7, R-8) visible from parts of 600 immediately adjacent and on ridgelines; impact is minimal

Physical factors influencing solitude

Topographic and vegetative screening

- excellent vegetative screening
 - numerous aspen lined drainages
 - thick stands of pine scattered throughout 600 (white and limber pine)
 - numerous stands of mountain mahogany
 - clumps of serviceberry, willow, snowberry

- excellent topographic screening
- granitic rock outcrop
- rugged-rocky peaks and ridges
- deep rocky drainages
- wide basins filled with granitic boulders
- glacial moraine slopes blanketed with pine trees

Size and Configuration

- size is sufficient to provide solitude
- elongated (north-south) configuration means visitors never more than three miles from 600 boundary
- two small appendages sandwiched between private land along eastern boundary; not conducive to solitude

Ability of user to find secluded spot

- easily locatable throughout 600
- ridges
- drainages
- rocky slopes
- basins

PRIMITIVE AND UNCONFINED RECREATION OPPORTUNITY

Access

- all areas in 600 within three miles of a boundary road
- accessible from early June to mid-November
- all boundary roads accessible with high clearance vehicle (Alder Creek Road R-7, Alta Creek Road R-7, R-1, R-5, R-9, R-11)
- vehicular access within 600 on three roads (R-8, R-10, R-12)
- majority of 600 is closed to vehicles under a BLM-administratively endorsed road closure

Attractions

Points of interest

- Blue Lakes, sub-alpine glacial lakes
- Leonard Creek Lake
- meadows
- granitic rock formations

Challenge

- rugged and steep rocky terrain
- steep glacial-moraine slopes

Scenic qualities

- Blue Lakes--deep azure blue color surrounded by steep rocky ridge w/glacial moraine slopes
- contrast of green vegetation in spring-summer, red and yellow vegetation in fall; against deep azure blue on the lakes
- aspen lined drainages; green in spring and summer; yellows and reds in fall
- granitic-boulder outcroppings
- surrounding vistas; west is high elongated plateau of the Sheldon Antelope Range

Activities

Dayhiking

- entire WSA accessible to dayhiking
- most likely destinations include Blue Lakes, Leonard Creek Lake, Hollywood Meadow, Outlaw Meadow, Hidden Meadow, Duffer Peak, Pine Peak, Bear Pass and along main ridgecrest

Camping

- best around Blue Lake, Leonard Creek Lake and numerous meadows
- most of 600 accessible to water

Backpacking

- numerous trips feasible throughout 600
- attractions scattered throughout 600; various trips available
- possible alternate route for Desert National Scenic Trail

Hunting

- large mule deer population; highest quality for Winnemucca District
- high density chukar population
- sage grouse in fair numbers
- a few antelope in the southern portion of 600
- access good for hunters

Fishing

- populations of brook trout in Leonard Creek Lake
- cutthroat trout, rainbow trout and brook trout in Blue Lakes (stocked by Nevada Department of Wildlife every two to three years)

Horsepacking

- constraints: occasional steep-talus slopes; some areas extremely rugged
- advantages: abundant forage and water, good access, favorable topography in most areas

Rock climbing and scrambling, caving

- rock climbing opportunities throughout 600 - granitic outcroppings
- possible instances of technical rock climbing expertise
- rock scrambling opportunities excellent throughout 600
- no caves are known

Nature study

- viewing/photographing wildlife, scenery, botanical specimens
- geologic study: excellent glacial geology

Water sports

- wading and swimming in Blue Lakes, Leonard Creek Lake
- water quality good

Winter sports

- winter camping
- access limited in winter months

Component B: Special Features

CULTURAL

Prehistoric

- total recorded sites: 170
 - S2 sites: five lithic scatters
 - test excavations have been performed
 - S3 sites: 113 isolated finds; 27 lithic scatters
 - S4 sites: 25 isolated finds
- most sites related to hunting and gathering activities
- temporary camp sites generally found in association with lakeshores and meadows
 - some include small amounts of groundstone indicating minor seed processing activities
- one major ambush site
- temporal range approximately 4000 B.C. to A.D. 500
 - greatest use 1500 B.C. to A.D. 500
- over 50% of this unit has been extensively inventoried
 - larger number of recorded sites for 600 partially due to more inventory having been done than in other WSAs

Historic

- total recorded sites: 69
- mainly Basque aspen carvings

ZOOLOGIC

Fisheries

- Blue Lakes supports cutthroat trout, rainbow trout, and brook trout (stocked)

Wild horses and burros

- none identified

Other mammals

- mule deer summer and winter range
- antelope migration route through southern portion of 600
- mountain lion range

Birds

- 600 is sage grouse distribution area
- sage grouse brooding area, center portion 600
- high density chukar distributions along southern and eastern boundaries

BOTANIC

- no threatened or endangered plants have been identified
- riparian habitat in the vicinity of Blue Lakes, Leonard Creek, Leonard Creek Basin, Alder Creek; Leonard Creek is at 57% habitat potential
- White bark pine (Pinus albiculis) and limber pine (Pinus flexilis) around Duffer Peak; unique in this part of the country
- Leonard Creek Basin has a boggy meadow in last stages of meadow succession
- identified "tree ring resources" in Pine Forest

GEOLOGIC

- glacial features
- cirques
- lateral and terminal moraines and glacial lakes
- granodiorite columns

PALEONTOLOGIC

- no known sites

ACECs

-none

SCENIC

- glacial lakes
- rugged granitic peaks
- variety of vegetation and color combinations
- distinctive landforms

Component C: Multiple Resource Benefits

Wilderness designation of 600 could restrict motorized vehicular traffic on approximately 13.1 miles of roads and ways and about 2,000 acres of land now accessible to off-road vehicles. A vehicle closure would enhance opportunities for primitive and unconfined recreation within those areas of 600 currently open to vehicles.

Long-term benefits from wilderness designation may accrue to those resources which would otherwise deteriorate should the area return to other multiple uses. Current land-use plans essentially maintain the existing environment and resource commitments. Should 600 not be designated wilderness, portions of the federal land would remain accessible to mineral patenting, leasing and other development. These potential developments could adversely impact water, soil, air, visual, cultural and other resources which benefit from the existing, non-developed environment. The extent of future development of 600 is unknown.

Component D: Diversity in the National Wilderness Preservation System

ECOSYSTEM AND LANDFORM DIVERSITY

- Bailey-Kuchler ecosystem: sagebrush-steppe (3130-49)
- Paradise-Denio Grazing E.I.S. vegetative communities: conifers (middle 1/3); sagebrush (2/3)
- Pinus albiculis (white bark pine) and Pinus flexilis (limber pine) habitat types
- 600 unique representation of the ecosystem
- unknown how 600 compares with other WSAs with the same ecosystem outside the Winnemucca District

RECREATION NEAR SMSAs

- approximately six-hour drive from Reno, the nearest SMSA

GEOGRAPHIC DISTRIBUTION OF WILDERNESS

- see Chapter III, Component D, for an analysis

CONFIGURATION

- eastern boundary somewhat erratic due to blocks of private land
- southern boundary difficult to distinguish because of legal, not physical, description
- manageability problems of eastern boundary: borders private land; two small narrow appendages sandwiched between private inholdings
- manageability of southern border: difficult to locate on the ground

ACCESS

- difficult to control off-road vehicle use from western boundary road, especially around Little and Big Onion Reservoirs
- existing roads provide sufficient access to WSA

LANDFORM

- landforms conducive to off-road vehicle use which would be difficult to control include
 - Little and Big Onion Basin along western boundary
 - meadows along west half of 600
- largest portion of 600 is steep and rugged landscape, providing sufficient natural barriers to off-road vehicle use

INTRUSIONS AND OUTSIDE INFLUENCES

- managing for solitude would be difficult in those areas described above where access is hard to control; around private land and mining activity
- military aircraft flights--potential for reduction of flights or rerouting unknown
- other influences would not significantly impede manageability

Nonconforming But Accepted Uses

VALID EXISTING RIGHTS

Mining claims

- approximately 860 acres of 600 have 38 registered mining claims
 - claims located along southern boundary in Snow Creek and in the extreme northeast corner of 600 near Adams Mine
- possible to eliminate most areas containing mining claims without substantially impairing wilderness values
- wilderness manageability could be difficult should mining claims be developed
- approximately 2,900 acres encompassing the northwest corner of 600 is closed to mineral entry as of June 1967

Leases

- no oil and gas or geothermal leases as of 3/83

Non-federal land

- 40 acres of private inholdings
- private land borders east and west boundary
 - cattle grazing primary use and expected to continue
 - subdividing of parcels for recreational sites (*west side*)

ESTABLISHED AIRCRAFT AND MOTORBOAT USE

- low-level military flights
- Nevada Department of Wildlife conducts animal censuses during winter and spring using fixed-wing and helicopter
- none of the established aircraft use would significantly reduce Wilderness manageability
- see Influence of Outside Sights and Sounds for more detail (i.e., dates flying established)

EXISTING AND PROPOSED RESOURCE FACILITIES

- proposed portable radio repeater to be located on Pine triangle (communication site)
- wildlife projects
 - Hollywood aspen rehabilitation - T. 43 N., R. 28 E., Section 15 SWNE and SENW (cut and fence)
 - Pine Forest HMP - calls for fencing of meadows, aspen rehabilitation, spring developments, gully plugs and meadow burning (see EAR NV-020-1-45)
- a number of the proposed actions could possibly impair wilderness values

LIVESTOCK GRAZING

Present grazing activities

- three allotments located within 600
- existing range facilities would not significantly impair wilderness manageability
- see NATURALNESS for details of existing facilities and seasons-of-use

Changes identified in Paradise-Denio Grazing E.I.S.

- two proposed fencelines
 - one running NW by SE long Duffer Peak
 - one running NW by SE in the vicinity of Big Creek
- one proposed vegetative manipulation along southern border (Pine Forest Allotment); might not be allowed under Wilderness Management policy
- area of proposed vegetative manipulation could easily be eliminated without significantly impairing wilderness values

STUDY POLICY QUALITY STANDARDS

Quality Standard 1: Energy and Critical Minerals

For background information and general description of the District see Appendix A.

General Geology

Blue Lakes and Alder Creek WSAs are located in the west-central portion of the Pine Forest Range, a north-south fault block mountain of the Basin and Range Province. Rock types within the WSA include Permian/Triassic- Jurassic(?) metavolcanic rocks correlated with the Happy Creek Volcanic Series(?) and Triassic(?) phyllite, quartzite, amphibolite that have been intruded by the Jurassic Theodore Quartz Diorite; the Cretaceous Duffer Peak Granodiorite; and Cretaceous alaskite-aplite dikes and plugs.

These crystalline basement rocks are in turn overlain unconformably by Miocene andesites, silicic tuffs (Ashdown Tuff), and the Steens basalt (Smith, 1973). Pleistocene glacial moraine material occupies the upper canyons surrounding Duffer Peak.

The Duffer Peak granodiorite occupies the central portion of the WSA with the metamorphic rocks rimming the eastern and northeastern sides and the volcanics rimming the western and northwestern sides.

Following is a discussion of the energy and mineral potential in the Blue Lakes and Alder Creek WSAs. Please refer to the Mineral Potential Classification Scheme, Figure 1 in Appendix A, for further explanation of alphanumeric classifications. Also see, in Appendix B, Tables B-10, B-11, B-12 and B-13 showing acreages for Metallic Mineral, Nonmetallic Mineral, Geothermal and Oil and Gas Potential; and Tables B-6, B-7 and B-8 showing acreages of Unpatented Mining Claims, and Geothermal and Oil and Gas Leases; as well as summary Tables B-14 and B-15 showing the Energy and Mineral Threshold Levels and Holdings affected by four of the alternatives proposed in the EIS (all except No Wilderness Alternative).

Metallic Mineral Potential

The Leonard Creek district on the southeastern boundary of the WSA has a reported production of about \$5,000 from placer gold deposits from the Tipperary Mine. These gold values appear to be related to Miocene waterlain and air fall tuff beds and older quaternary gravels (Willden 1964 and Smith 1973).

The Varyville district about six miles southwest of the WSA has produced about \$37,000 in gold and a small amount of copper (Willden 1964).

The Adams Mine (Homer Verne) at the northern tip of the WSA has also produced about \$27,000 in gold from quartz veins cutting the Triassic quartzites and amphibolites (Bennett 1973).

The Warm Springs district about six miles north of the WSA has been a past producer of gold, silver and tungsten, with an estimated production of \$371,000.

The Ashdown Mine within this district is presently being developed by American Copper and Nickel for molybdenum and gold values.

Prospecting activities for placer gold is also occurring on the southern boundary of the WSA at the head of Snow Creek. This site has produced placer gold values in the past. Also, a molybdenum-bearing quartz vein has been reported about one mile due east of these placer activities along Snow Creek (Cole 1982 and Bennett 1973).

The eastern edge of WSA along Leonard Creek Meadows and Snow Creek has been the site of active uranium exploration activities in the recent past. Exxon Minerals Corporation has been the most active, having drilled several holes. This activity has stopped, due largely to the depressed uranium market.

The central portion of the WSA was removed from the mining laws, but not the mineral leasing or material sale laws, on June 5, 1967, under the Blue Lake Land Classification and Mineral Segregation (see Federal Register notice of 6-13-67). A mineral survey and report conducted by Reb Bennett, 1973, for the Blue Lakes withdrawal covered an area much larger than the present segregated lands. The boundaries of that surveyed area were very close to the boundaries of the present WSA.

Bennett (1973) found numerous prospect pits, trenches and bulldozer cuts, mostly north of Big Creek on the north end of the WSA and along Snow Creek in the south end of the WSA. Most of these prospecting activities are in the metamorphic rocks, with some activity in the granodiorites near the metamorphic contacts.

Barringer Resources (1982) indicated a moderate anomalous area termed "Duffer Peak" covering most of the WSA. This large area has been divided into smaller anomalous sub-zones to aid in discussion of the metallic mineral potential in a more site-specific manner. Please refer to the Mineral Potential Maps for locations of these anomalous sub-zones discussed below.

BIG CREEK ANOMALOUS ZONE. (3C) Moderate Potential.

This zone covers the northeastern corner of the WSA along Big Creek. Big Creek marks the boundary between the metamorphic rocks to the north and the granodiorites to the south.

Geochemical sampling and geostatistical modeling results show:

Response to Geostatistical Modeling

Very low: gold-silver, antimony-mercury

Anomalous Values

High: mercury*, uranium

Sampling of some of the prospects at the headwaters of Big Creek by Bennett (1973) indicated gold and silver values ranging from 0.36 to 1.22 ounces per ton. Visible sulfide mineralization was lacking except for some minor pyrite. Lack of sample density in this area may be responsible for anomalous gold and silver values not indicated in the Barringer Report. A very weak response to gold-silver and antimony-mercury factor modeling, however, has indicated at least some associated chemical responses.

THE SNOW CREEK ANOMALOUS ZONE. (3C) Moderate Potential.

This zone is centered on Snow Creek at the southern tip of the WSA. Here again the contact between the metamorphic rocks to the south and the granodiorite rocks to the north occurs.

Geochemical sampling and geostatistical modeling results show:

Response to Geostatistical Modeling
Very Low; gold-silver
Anomalous Values
High: uranium

Bennett (1973) sampled one pyrite bearing, silicified breccia zone at the granodiorite-metamorphic rock contact in Snow Creek that assayed 0.20 ounces per ton silver and no trace of gold. Also in this general area Bennett (1982) observed scattered molybdenite crystals in a two foot wide quartz vein cutting the granodiorite. Here again, lack of sample density may be responsible for anomalous values in silver and molybdenum not indicated in the Barringer Survey. The anomalous uranium values are associated with the metamorphic rocks in the Snow Creek areas. Exxon has drilled several holes in this zone, evaluating the uranium potential. Many of the claims held by Exxon in this areas have since been dropped.

ALDER CREEK ANOMALOUS ZONE. (3B) Moderate Potential.

This zone is in the Alder Creek drainage on the extreme northwestern tip of the WSA. The only rocks cropping out are the Miocene Steens basalt flows.

Geochemical sampling and geostatistical modeling results show:

Response to Geostatistical Modeling
Low: volcanic uranium, mercury-antimony
Very low: gold-silver
Anomalous Values
High: uranium

Of the modeling responses indicated, only uranium appears anomalous. Other elements such as arsenic may be responsible for the mercury-antimony and gold-silver models. The uranium response appears related to the Steens basalt, as anomalous uranium values were not indicated from samples taken in the granodiorite terrain drained by Alder Creek.

No prospecting activities or mining claims are known in this zone.

KNOTT CREEK RESERVOIR ANOMALOUS ZONE. (2B) Low Potential.

This zone is centered about Knott Creek Reservoir in the western edge of the WSA. Rock types include the Duffer Peak granodiorite overlain in one area by a narrow capping of the Steens basalt.

Geochemical sampling and geostatistical modeling results show:

Response to Geostatistical Modeling

Low: mercury-antimony

Very Low: gold-silver

Anomalous Values

High: uranium

Low: mercury*

The uranium and mercury values, as in the Alder Creek zone, appear to be related to the narrow Steens basalt unit capping the granodiorite.

No prospecting activities or mining claims are known in this zone.

Nonmetallic Mineral Potential

Significant nonmetallic minerals were not reported by Bennett (1973) in the general area, therefore, potential is classified 1C, unfavorable, with moderate confidence.

Geothermal Resource Potential

Neither warm springs nor hot springs are known to occur in the Blue Lakes/Alder Creek WSA. Hot Spring activity does occur at Gridley Lake about five miles northwest of the WSA and at Dyke Hot Spring about eight miles east of the WSA at the base of the Pine Forest Range. There are no geothermal leases within the WSA boundaries. Numerous geothermal leases are in the valleys several miles east and west of the WSA. Numerous 500 foot temperature gradient holes have been drilled in the Gridley Lake area to the west and a few holes have been drilled in the Dyke Hot Spring area.

The geothermal potential of this WSA is classified 2B, low potential, low confidence.

Oil and Gas Potential

The Blue Lakes/Alder Creek WSA is not considered to have any oil and gas potential. Any hydrocarbons contained in the Pre-Tertiary sediments would have been driven off by the granitic intrusion. Some Tertiary volcanic and sedimentary rocks do occur on the west of the WSA, but accumulations of these rocks are too thin. There are no oil and gas leases within the WSA, however, there are extensive leases in the valleys to the east and west.

There have been no exploration activities associated with these oil and gas leases to date. Oil and gas potential of the WSA is classified 1D, unfavorable, high confidence level.

Quality Standard 2: Impacts on Other Resources

Recreation

- wilderness designation could restrict vehicular access on approximately 13.2 miles of roads and ways and about 2,000 acres of land currently accessible to off-road recreational vehicles
- most significant input to recreation from wilderness designation would be restricting vehicular traffic on R-8, R-10 and R-12

Cultural Resources

- wilderness designation could indirectly add to the existing legal protection of cultural resources by limiting resource development and use
- wilderness designation could possibly curtail excavation and stabilization of historic, prehistoric or paleontological finds if action would impair wilderness values.
- there is high potential for additional excavation of known sites in 600
- 600 is in an archeologically sensitive area and other sites may be identified in the future which warrant excavation

Energy and Mineral Resources

- Wilderness designation imposes strict guidelines on all allowed mineral and energy development--potentially making development infeasible
- mining claims located after designation could not be developed
- see Quality Standard 1 for more detail

Livestock Grazing

- costs of maintaining range developments and livestock management would increase where vehicular access is curtailed
- future beneficial range developments/treatments may be restricted; including proposed sagebrush control in southeast corner of 600

Wildlife

- Wilderness designation could curtail certain developments/treatments identified in the Pine Forest HMP

Other Resources

Current resource plans identify no other resources which would be adversely impacted by Wilderness designation. However, Wilderness management could impose additional constraints on future projects in these programs: fire, lands, soil, water and air, aquatic habitat and visual resources.

Quality Standard 3: Impact of Non-designation on Wilderness Values

SHORT-TERM IMPACTS

-reduced opportunities for primitive and unconfined recreation and solitude in those areas accessible to off-road vehicles

LONG-TERM IMPACTS

-continued development of mineral and energy resources could eventually eliminate opportunities for naturalness, solitude, and primitive and unconfined recreation within portions of 600; potential discussed in Quality Standard 1

-area would remain open for development of other resources which might impair wilderness values; extent speculative

Quality Standard 4: Public Comment

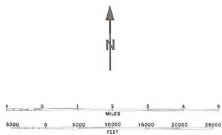
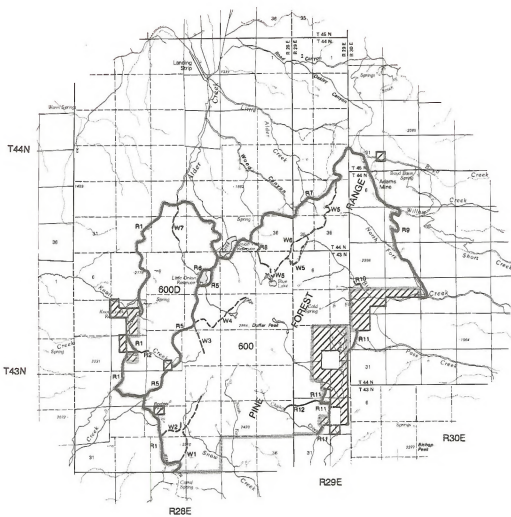
See District-wide Analysis, Chapter III





Quality Standard 5: Local and Regional Socioeconomic Effects

See District-wide Analysis, Chapter III

Quality Standard 6: Consistency With Other Plans

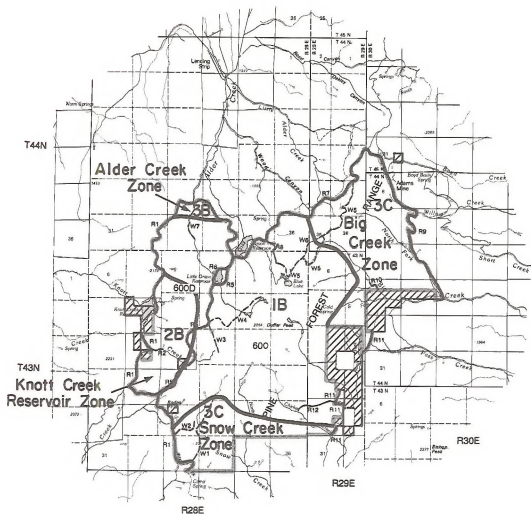
See District-wide Analysis, Chapter III



-  PRIVATE LAND (SURFACE & MINERALS)
-  W.S.A. BOUNDARY
-  ROAD
-  WAY



NV-020-600 BLUE LAKES
 NV-020-600D BLUE LAKES (ALDER CREEK)



- PRIVATE LAND (SURFACE & MINERALS)
- W.S.A. BOUNDARY
- ROAD
- WAY

FAVORABILITY

1. UNFAVORABLE POTENTIAL
2. LOW POTENTIAL
3. MODERATE POTENTIAL
4. HIGH POTENTIAL

LEVEL OF CONFIDENCE

- A. INSUFFICIENT DATA
- B. LOW CONFIDENCE (Indirect evidence)
- C. MODERATE CONFIDENCE (Direct evidence)
- D. HIGH CONFIDENCE (Abundant direct evidence)



NV-020-600 BLUE LAKES
 NV-020-600D BLUE LAKES (ALDER CREEK)
MINERAL POTENTIAL

Wilderness Study Area 600D: Alder Creek

DESCRIPTION

Location

- Northern Humboldt County, Nevada, approximately 25 miles south of Denio, Nevada
- six-hour drive from Reno, the nearest Standard Metropolitan Statistical Area
- best access Alder Creek road (dirt) coming from Denio, to northern boundary

Configuration and Size

- bounded by roads (17.4 miles), and private land (2.4 miles)
- about five miles north-south and two miles east-west
- 5,142 acres of public land

Physical Environment

- altitude range: 5,600 to 7,900 feet
- Bailey-Kuchler ecosystem: sagebrush-steppe (3130-49)
- Paradise-Denio grazing E.I.S. vegetation communities: sagebrush
- some riparian vegetation
 - around numerous drainages
 - 600D straddles a medium north-south ridge, which contains aspen and mountain mahogany
- one distinct landform within 600D
 - north-south trending ridge with west-facing steep granitic slope
 - granitic boulder-lined drainages
 - east portion contains open meadows

STUDY POLICY CRITERIA

Criterion 1: Evaluation of Wilderness Values

Component A: Mandatory Wilderness Characteristics

SIZE

- 5,142 acres of public land within boundary

NATURALNESS

Developments within WSA

Range-related developments (see Table B-1 in Appendix B)

- two grazing allotments (see Table B-2 in Appendix B)

Other man-made features

- one way within 600D boundary (1.0 mile)
- one road within 600D boundary (.2 mile)

Outside Imprints

- reservoir along western boundary- heavily used recreational area-noise is screened
- Knott Creek Ranch visible to the west but impact is minimal
- Little and Big Onion Reservoirs - motorized recreational use in and around lake; northeast boundary

Location and size of areas subject to imprints

- general vicinity of Little and Big Onion Reservoir; vegetation and topography of 600D screen recreational use
- general vicinity of Knott Creek Reservoir and along ridge; noise is sufficiently screened.
- way within 600D is well screened
- range developments are generally visible from a close proximity.

Rehabilitation potential

- most range developments could be rehabilitated without mechanical manipulation

Potential for separating areas in WSA subject to imprints

- more western boundary back to visible topographic feature away from private inholdings and imprints
- adjust north boundary away from Little Onion Reservoir

Overall influence of imprints

- majority of the area within 600D substantially natural
- visitors would have little difficulty locating substantially natural landscapes in 600D

SOLITUDE

Solitude is defined as the opportunity to avoid the sights, sounds and evidence of other people.

Influences of outside sights and sounds

Economic activity

- localized and seasonal ranching activities (roundups, salting, and maintenance of range improvements near and within 600D)

-motorized recreational activities (boating, camping, motorbiking) in and around Big and Little Onion and Knott Creek Reservoirs

Aircraft flights

- regular, low-level (500' to 1100' above ground level) military flights from Mountain Home Air Force Base in Idaho (route IR 300)
- no known landing areas inside 600D
- State of Nevada Department of Wildlife conducts annual wildlife censuses
 - antelope counts in January (fixed-wing); August (helicopter); regular since 1950s
 - deer counts November-December and March-April (helicopter); regular since mid-1970s
 - sage grouse counts in March (helicopter)
- BLM conducts occasional fixed-wing flights for livestock supervision

Vehicular traffic

- periodic traffic along southeast boundary; road visible from immediate vicinity to one mile away
- light to heavy traffic along western and northeast boundary roads (R-1, R-5, R-7) depends on time of year and recreational use; impact is minimal

Physical factors influencing solitude

Topographic and vegetative screening

- good vegetative screening
 - several aspen lined drainages
 - thick stands of mountain mahogany cover western slope
 - scattered clumps of serviceberry and snowberry
- excellent topographic screening
 - landscape scattered with granitic rock outcrops
 - western slopes give way to deep rocky drainages

Size and configuration

- size is sufficient to provide solitude
- elongated (north to south) configuration means visitors never more than one to two miles from 600D boundary

Ability of user to find secluded spot

- easily locatable throughout 600D
 - rock outcrops
 - drainages
 - clumps of vegetation
 - ridge line

PRIMITIVE AND UNCONFINED RECREATION OPPORTUNITY

Access

- all areas in 600D within one to two miles of a boundary road
- accessible from early June to mid-November
- all boundary roads accessible with high clearance vehicles (R-1, R-5, R-6, R-7)
- vehicle access within 600D on one way (W-7) and one road (R-2)
- rugged terrain limits off-road vehicle use (majority of use is trail bike)

Attractions

Points of interest

- unique granitic rock formations
- meadows
- aspen and mountain mahogany groves

Challenge

- rugged and steep rocky terrain

Scenic qualities

- contrasting landscape
 - vegetation - different types and color contrasts; wild flowers, mountain mahogany, aspens
 - rock formations and granitic white rock against green background of vegetation
 - back drop of deep blue of Knott Creek Reservoir
 - to the east rugged back drop of Pine Forest ridgeline and peaks

Activities

Dayhiking (some water available)

- entire WSA accessible to dayhiking
- explore drainages and rock-outcroppings, look for wildlife

Camping

- best around Knott Creek and Little Onion Reservoir
- these areas most accessible to water

Backpacking

- small size and narrow configuration restricts backpacking opportunities
- best suited if used in conjunction with Blue Lakes WSA (access-route)

Hunting

- large mule deer population; highest quality for Winnemucca District
- high density chukar population
- sage grouse in fair numbers
- a few antelope in southern portion of 600D
- access good for hunters

Fishing

- rainbow and brook trout in Alder Creek

Horsepacking

- constraints: occasional steep-talus slopes; some areas extremely rugged
- advantages: abundant forage and water, good access, favorable topography throughout most of 600D

Rock climbing and scrambling, caving

- rock climbing possible in certain portions of 600D; larger rock outcroppings and pinnacles .
- rock scrambling opportunities are excellent throughout most of 600D

Nature study

- viewing and photographing wildlife
- geologic study

Winter sports

- winter camping
- access limited in winter months

Component 3: Special Features

CULTURAL

Prehistoric

- total recorded sites: six
 - S3 sites: one lithic scatter, four isolated finds
 - S4 sites: one isolated find
- antiquities observations: four lithic scatters

Historic

- total recorded sites: two
 - S2 sites: one group of Basque aspen carvings
 - S3 sites: one group of Basque aspen carvings

ZOOLOGIC

Fisheries

- Alder Creek has populations of rainbow and brook trout
- fish populations in Onion Valley and Knott Creek Reservoirs; located outside 600D boundary, along periphery

Wild horses and burros

- none identified

Other mammals

- mule deer summer and winter range
- northern most sector of 600D; deer spring range
- mountain lion habitat throughout

Birds

- high density distribution of chukar
- sage grouse distribution throughout
- two sage grouse brooding areas
- sage grouse strutting ground within northern portion

BOTANIC

- no threatened or endangered plants have been identified
- riparian habitat along Alder Creek and periphery of Little Onion Reservoir
- additional vegetation include mountain mahogany, aspen, juniper and lush flowery meadows
- tree ring research done by representative of University of Arizona, Tucson

GEOLOGIC

- glacial features
 - cirques
 - lateral and terminal moraines
 - granodiorite columns

PALEONTOLOGIC

- none identified

ACECs

- none

SCENIC

- prominent features: meadows, small streams, granitic rock outcroppings
- variety of vegetation: mountain mahogany, juniper, aspen, wild flowers, low brush
- contrasting landscape: vegetation, landform, line, color

Component C: Multiple Resource Benefits

Wilderness designation of 600D could restrict motorized vehicular traffic on approximately 1.2 miles (W-1) of ways and roads and an undetermined acreage of land which is now accessible to off-road vehicles. A vehicle closure would enhance opportunities for primitive and unconfined recreation within those areas of 600D currently open to vehicles.

Long-term benefits from wilderness designation may accrue to those resources which would otherwise deteriorate should the area return to other multiple uses. Although current land-use plans essentially maintain the existing environment and resource commitments should 600D not be designated wilderness, portions of the federal land would remain accessible to mineral patenting, leasing and other development. These potential developments could adversely impact water, soil, air, visual, cultural and other resources which benefit from the existing, non-developed environment. The extent of future development of 600D is unknown.

Component D: Diversity in the National Wilderness Preservation System

ECOSYSTEM AND LANDFORM DIVERSITY

- Bailey-Kuchler ecosystem: sagebrush-steppe (3130-49)
- Paradise-Denio Grazing E.I.S. vegetative communities: sagebrush
- 600D unique representation of this ecosystem
- unknown how 600D compares with other WSAs with the same ecosystem outside the Winnemucca District

RECREATION NEAR SMSAs

- approximately six-hour drive from Reno, the nearest SMSA

GEOGRAPHIC DISTRIBUTION OF WILDERNESS

- one designated wilderness in Nevada (Jarbidge, U.S. Forest Service)
- see Chapter III, Component D, for an analysis

Criterion 2: Manageability

Physical Factors Influencing Manageability

CONFIGURATION

- eastern and western boundary somewhat erratic due to blocks of private land

- manageability problems with eastern boundary around Knott Creek Reservoir; large amount of motorized recreational use
- manageability with eastern border; close off portions of boundary road; area is contiguous with Blue Lakes WSA

ACCESS

- some difficulty in controlling off-road vehicle use in areas along boundary roads
- existing roads provide sufficient access

LANDFORM

- landform of portions conducive to off-road vehicle use which would be difficult to control include:
 - private property along western boundary
 - meadows along southeastern boundary road
 - immediate vicinity of Little Onion Reservoir
- greatest portion is of a steep and rugged landscape, providing sufficient natural barriers to off-road vehicle use

INTRUSIONS AND OUTSIDE INFLUENCES

- managing for solitude would be difficult in those areas described above where access is hard to control
- military aircraft flights--potential for reduction of flights or rerouting unknown
- other influences would not significantly impede manageability

Nonconforming But Accepted Uses

VALID EXISTING RIGHTS

Mining claims

- approximately 20 acres of 600D have one registered mining claim
- claim located along northern boundary

Leases

- no oil and gas or geothermal leases as of 3/83

Non-federal land

- no private land
- private land borders east and west boundary
- cattle grazing and recreation primary uses and expected to continue
- landowner of private adjacent holdings planning to subdivide parcels into recreational sites

ESTABLISHED AIRCRAFT AND MOTORBOAT USE

- low-level military flights
- Nevada Department of Wildlife conducts animal censuses during winter and spring using fixed-wing and helicopter
- none of the established aircraft use would significantly reduce wilderness manageability
- see Influence of Outside Sights and Sounds for more detail (i.e., dates flying established)

EXISTING AND PROPOSED RESOURCE FACILITIES

- Pine Forest Habitat Management Plan (HMP) calls for fencing of meadows, aspen rehabilitation, spring developments, gully plugs and meadow burning (see EAR NV-020-1-45)
- possibility of some of the proposed actions impairing wilderness manageability

LIVESTOCK GRAZING

Present grazing activities

- two grazing allotments
- existing range facilities would not significantly impair wilderness manageability
- see NATURALNESS for details of existing facilities and seasons-of-use

Changes identified in Paradise-Denio Grazing E.I.S.

- none identified

STUDY POLICY QUALITY STANDARDS

Quality Standard 1: Energy and Critical Minerals

Please refer to Quality Standard 1: Energy and Critical Minerals in Blue Lakes WSA for this discussion

Quality Standard 2: Impacts on Other Resources

Recreation

- Wilderness designation could restrict vehicular access approximately 1.2 miles of roads and ways and about 1,000 acres of land currently accessible to off-road recreational vehicles--most significant impact to recreation from wilderness designation would be restricting vehicular traffic on W-7

Cultural Resources

- wilderness designation could indirectly add to the existing legal protection of cultural resources by limiting resource development and use
- wilderness designation could possibly curtail excavation and stabilization of historic, prehistoric or paleontological finds if action would impair wilderness values
- although excavation of known sites is unlikely, other sites which would warrant excavation may be identified in the future

Energy and Mineral Resources

- wilderness designation imposes strict guidelines on all allowed mineral and energy development--potentially making development infeasible
- mining claims located after designation could not be developed
- see Quality Standard 1 for more detail

Livestock Grazing

- costs of maintaining range developments and livestock management would increase where vehicular access is curtailed
- future beneficial range developments/treatments may be restricted

Wildlife

- wilderness designation could curtail certain developments/treatments identified in the Pine Forest RMP

Other Resources

Current resource plans identify no other resources which would be adversely impacted by wilderness designation. However, wilderness management could impose additional constraints on future projects in these programs: fire; lands; soil, water and air; aquatic and visual resources.

Quality Standard 3: Impact of Non-designation on Wilderness Values

SHORT-TERM IMPACTS

- reduced opportunities for primitive and unconfined recreation and solitude in those areas accessible to off-road vehicles within 600D

LONG-TERM IMPACTS

- continued development of mineral and energy resources could eventually eliminate opportunities for naturalness, solitude, and primitive and unconfined recreation within portions of 600D; potential discussed in Quality Standard 1
- area would remain open for development of other resources which might impair wilderness values; extent speculative

Quality Standard 4: Public Comment

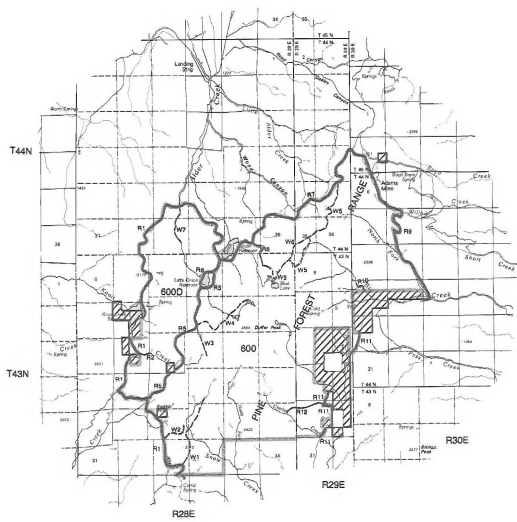
See District-wide Analysis, Chapter III





Quality Standard 5: Local and Regional Socioeconomic Effects

See District-wide Analysis, Chapter III

Quality Standard 6: Consistency with Other Plans

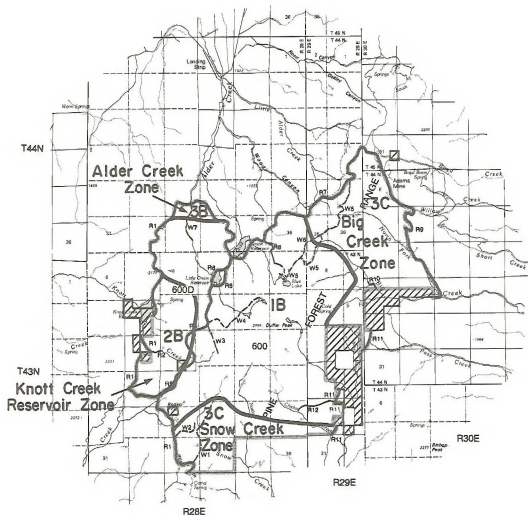
See District-wide Analysis, Chapter III







-  PRIVATE LAND (SURFACE & MINERALS)
-  W.S.A. BOUNDARY
-  ROAD
-  WAY



NV-020-600 BLUE LAKES
 NV-020-600D BLUE LAKES (ALDER CREEK)



-  PRIVATE LAND (SURFACE & MINERALS)
-  W.S.A. BOUNDARY
-  ROAD
-  WAY

FAVORABILITY

1. UNFAVORABLE POTENTIAL
2. LOW POTENTIAL
3. MODERATE POTENTIAL
4. HIGH POTENTIAL

LEVEL OF CONFIDENCE

- A. INSUFFICIENT DATA
- B. LOW CONFIDENCE (Indirect evidence)
- C. MODERATE CONFIDENCE (Direct evidence)
- D. HIGH CONFIDENCE (Abundant direct evidence)



NV-020-600 BLUE LAKES
 NV-020-600D BLUE LAKES (ALDER CREEK)
MINERAL POTENTIAL

Wilderness Study Area 603: South Jackson Mountains

DESCRIPTION

Location

- West Humboldt County, Nevada, approximately 60 miles due west of Winnemucca, Nevada
- four-hour drive from Reno, the nearest Standard Metropolitan Statistical Area
- best access is well maintained Jackson Creek road (BLM 2049) on western boundary or the Trout Creek Road (HU 312 and 313) on the eastern boundary

Configuration and Size

- bounded by county, BLM and privately maintained roads (43.3 miles) except small portions which abut against private land (11.5), topographic features (11.5 miles) and legal boundaries (5.5 miles)
- about 15 miles north-south and from two to 11 miles east-west
- 60,211 acres of public land

Physical Environment

- altitude range from 3,900 feet to 8,923 feet
- Bailey-Kuchler ecosystem: sagebrush steppe (3130-49), saltbush-greasewood (3130-34)
- Paradise-Denio Grazing EIS vegetation communities: juniper (center portion), saltbush and greasewood (periphery), barren (5%)
- extensive riparian vegetation along major drainages
- 603 straddles a north-south ridge of the Jackson Mountains; typical range of the Basin and Range Province
- three distinct landforms within 603: west of main ridgeline; east of main ridgeline; periphery
 - west of main ridgeline (14 miles long and one to three miles wide)
 - east-west running canyons from main ridgeline
 - canyons rugged and deeply dissected with rock outcrops and talus slopes
 - rugged majestic peaks make up ridgeline (Navajo, King Lear and unnamed peaks)
 - east of main ridgeline (15 miles long and two to three miles wide)
 - east-west running drainages and ridges
 - landscape less dramatic than west side
 - terrain more gentle and rolling
 - canyons less rugged and deeply cut
 - riparian vegetation is not abundant
 - periphery
 - sagebrush flat (one to two miles wide and 15 miles long)
 - alluvial fan of basalt surface rock
 - drainages wide and shallow
 - some greasewood along western edge
 - west side more prominent than east side

STUDY POLICY CRITERIA

Criterion 1: Evaluation of Wilderness Values

Component A: Mandatory Wilderness Characteristics

SIZE

-60,293 acres within boundary, including 82 acres of private land and 60,211 acres of public land

NATURALNESS

Developments within WSA

Range related developments (see Table B-1 in Appendix B)

-one grazing allotment (see Table B-2 in Appendix B)

Other man-made features

-six roads totalling 4.1 miles (see Table B-3 in Appendix B)

-19 short ways totalling 19.4 miles (see Table B-3 in Appendix B); the majority of the ways extend from the southern and eastern boundaries

-major known mining areas eliminated during Intensive Inventory except for old mining scars in Bliss Canyon and Cedar Creek; these old scars are naturally rehabilitating

Outside imprints

-mining areas along southern, eastern and northeastern boundaries; disturbance can be seen from adjacent areas within 603

-old cabins and mills in mining areas along south and southeast boundaries (Bonita Springs, Navajo Peak)

-several roads, including boundary roads are visible from parts of 603--traffic caused dust is particularly visible from extreme edge of 603

-fencelines, ranches, cultivated fields are visible from portions of 603; impact is most significant within eastern half of 603

Location and size of areas subject to imprints

-west half of 603 virtually free of imprints; those that exist are visually insignificant except within immediate vicinity of feature

-most apparent imprints are mining areas adjacent to southern and eastern boundary--affects approximately southeast portion of 603

Rehabilitation potential

-some developments and man-made features would require rehabilitation of major mechanical manipulation (roads)

Potential for separating areas in WSA subject to imprints

-mining areas already separated but create two artificial intrusions into WSA from east side

- major influences could be eliminated by adjusting boundary along major ridge to include west half of 603 only

Overall influence of imprints

- most areas within west half of 603 substantially natural
- imprints most significant on east side where topographic screening is limited and outside imprints are significant
- visitors would have little difficulty locating substantially natural landscapes in 603

SOLITUDE

Solitude is defined as the opportunity to avoid the sights, sounds and evidence of other people.

Influences of outside sights and sounds

Economic activity

- mining near southern boundary can be seen from small areas within WSA
- localized and seasonal ranching activities (roundups, salting and maintenance of range improvements near and within 603)

Aircraft flights

- military flights
 - military training routes (SR300, SR301 and SR353)
 - pass through southwest corner of 603
 - altitude ranges from 500 feet or below to 1,500 feet above ground level
 - routes 300 and 301 flown at night by C-130 aircraft and occasionally helicopter
 - 300 and 301 used five to six times monthly
 - aircraft generally fly 300 to 600 feet above ground level
- State of Nevada Department of Wildlife conducts annual wildlife censuses
 - deer counts in March and November (helicopter); regular since 1975
 - antelope counts in January (fixed-wing); August (helicopter); regular since 1950s
- BLM conducts livestock and wildhorse censuses/roundups
 - livestock tallies as needed (low-level with fixed-wing, occasional helicopter); regular since 1950s
 - wild horse inventories conducted every other year since 1976; last inventory 1980 (fixed-wing and helicopter)
 - wild horse roundups when needed (using helicopter), usually July through October
- permittee livestock supervision (fixed-wing and possibly helicopter)

Vehicular traffic

- frequent traffic on western boundary road (BLM 2049) and eastern and northern boundary roads (HU 312 and 313)
- occasional traffic along southern boundary road (R3 and R4); impact is occasional dust trail

Physical factors influencing solitude

Topographic and vegetative screening

- west of main ridgeline
 - deeply dissected and rugged canyons
 - numerous rock outcrops
 - canyons lined with lush riparian vegetation (cottonwoods and willows)
 - higher elevations support juniper, snowberry, gooseberry, wild grape and red osier dogwood
- east of main ridgeline
 - gradually sloping with gently rolling hills
 - ridgeline and crest have numerous rock outcrops
 - moderate drainages
 - vegetation consist mainly of sagebrush with some riparian vegetation in the drainages
 - screening is moderate
- periphery
 - area broadens from foot of mountains to boundary roads (alluvial fan)
 - wide shallow drainages
 - rocky surface
 - low-growing vegetation
 - poor topographic and vegetative screening

Size and Configuration

- size is sufficient to provide solitude
- two mining areas (deleted from 603 during inventory) on east side detracts from solitude within 603

Ability of user to find secluded spot

- easily locatable in main drainages; especially west half of 603
- easily locatable along major ridgelines; especially west half of 603
- more difficult to find
- along periphery of 603 (flats)
- east half

PRIMITIVE AND UNCONFINED RECREATION OPPORTUNITY

Access

- year-round access on eastern and western boundary roads (BLM 2049 and HU 312)
- less reliable during winter season on northern and southern boundary roads (use of high clearance vehicle)
- vehicular access on six roads and 19 ways (see Table B-1 in Appendix B)

Attractions

Points of interest

- King Lear Peak
- McGill Canyon
- Alaska Canyon
- Hobo Canyon
- variety of wildlife, including several game species

Challenge

- typical desert/steppe climate with associated challenges (hot, dry summers, cold winters)
- portions of 603 has extremely rugged terrain (talus slopes, overhangs, waterfalls, sheer rock faces)

Scenic qualities

- rugged majestic granitic buttress of King Lear Peak
- contrast of steep, rugged and deeply dissected mountain range against the stark plays on the Black Rock Desert
- views of the Black Rock Desert and nearby desert landforms give impression of isolation in a hostile environment
- color contrasts of vegetation and rock formation within 603

Activities

Dayhiking (water availability not critical)

- entire WSA accessible to dayhiking
- most likely destinations include King Lear Peak, and major canyons on west side (McGill, Hobo, Alaska and Bliss)
- King Lear Peak and McGill Canyon listed as possible dayhiking routes in the Sierra Club Totebook "Hiking the Great Basin" by John Hart (1977)

Camping

- best camping areas within major canyons identified above
- springs and creeks within most of the canyons (water must be treated before drinking)
- dry camping feasible throughout most of 603
- McGill Canyon recommended as an excellent camping spot in the Sierra Club Totebook "Hiking in the Great Basin" by John Hart (1977)

Backpacking

- numerous routes throughout 603; most attractive areas within western half of 603
- north-south oriented trip most feasible (e.g., along main ridgecrest)

Hunting

- deer hunting; accessibility is better within east half of 603
- medium concentration of chukar throughout 503

Horsepacking

- constraints: portions of 603 too rugged (higher elevations within major canyons on west side)

-advantages: generally available forage, good access, favorable topography in most areas

Rock climbing and scrambling, caving

-rock climbing good in upper portions of major drainages and along rim (near King Lear Peak)

-technical climbing opportunities possible near King Lear Peak

-rock scrambling opportunities available in major drainages (west half)

Scenic

-viewing/photographing wildlife and landscape

-geologic study

Fishing

-Brook trout in Jackson Creek (northern boundary)

Winter sports

-possibility of winter camping

-access limited during winter months

Water sports

-wading in perennial streams (water quality fair)

Rockhounding

-gold panning possible in major creeks (McGill)

Component B: Special Features

CULTURAL

Prehistoric

-total recorded sites: four

-S2 sites: one large lithic scatter

-S4 sites: one isolated find

-unrated sites: one lithic scatter, one rock shelter

Historic

-no recorded sites

ZOOLOGIC

Fisheries

-Brook trout in Jackson Creek

Wild horses and burros

-603 is in the Jackson Mountain Herd Management Area

Other mammals

- deer summer habitat in the central portion of 603; deer winter habitat in both the northern and central portions of 603
- cottontail rabbit habitat throughout most 603; except southeast and southwest portions
- mountain lion range throughout most of 603

Birds

- chukar habitat (medium concentration); except southeast and southwest portions of 603
- mourning dove habitat same as chukar
- waterfowl habitat throughout 603 except southeast corner
- numerous raptors

BOTANIC

- Astragalus pterocarpus (winged milk-vetch) found in extreme southwest corner of 603; listed as "sensitive plant" on Nevada Native Plant Society list, 1/19/82
- large quantities of riparian vegetation within most of the major drainages throughout

GEOLOGIC

- major rock formations of granitic and andesitic rock (King Lear Peak)

PALEONTOLOGIC

- one invertebrate locality in 603

ACECs

- none

SCENIC

- rugged peaks and severe surface variations
- King Lear Peak -- impressive rugged peak of near vertical rock slopes, reaching an elevation of 8,910 feet
- color variations in landscape from vegetation and rock
- view of the Black Rock Desert

Component C: Multiple Resource Benefits

Wilderness designation of 603 could restrict motorized vehicular traffic on approximately 29.5 miles of roads and ways and an undetermined acreage of land which is now accessible to off-road vehicles. A vehicle closure would enhance opportunities for primitive and unconfined recreation within those areas of 603 currently accessible to vehicles.

Long-term benefits from wilderness designation may accrue to those resources which would otherwise deteriorate should the area return to other multiple uses. Current land-use plans essentially maintain the existing environment and resource commitments should 603 not be designated wilderness, the federal land would remain accessible to mineral patenting, leasing, and other development. These potential developments could adversely impact water, soil, air, visual, cultural and other resources which benefit from the existing, non-developed environment. The extent of future development in 603 is unknown.

Component D: Diversity in the National Wilderness Preservation System

ECOSYSTEM AND LANDFORM DIVERSITY

- Bailey-Kuchler ecosystem: sagebrush-steppe w/juniper (3130-49), saltbush-greasewood (3130-34)
- Paradise-Denio Grazing E.I.S. vegetative communities: saltbush, greasewood,; barren and pinyon-juniper (only juniper)
- landform of 603 unique within Winnemucca District
- unknown how 603 compares with other WSAs with the same ecosystem outside the Winnemucca District

RECREATION NEAR SMSAs

- approximately a four-hour drive from Reno, the nearest SMSA

GEOGRAPHIC DISTRIBUTION OF WILDERNESS

- see Chapter III, Component D, for an analysis

Criterion 2: Manageability

Physical Factors Influencing Manageability

CONFIGURATION

- four mining areas detected during the Wilderness Intensive Inventory create artificial intrusions into 603 (south, east, and northwest portions); manageability could be difficult
- boundaries located along private property lines could be difficult to manage; especially when there is no visible markings (fenced)
- difficult to control off-road vehicle use off of most boundary roads (R1, R-2, R-4, R-6, R-7, R-11, R-12 and R-5)
- difficult to control off-road vehicle use from portions of most of the cherrystem roads and ways within 603 (see Table B-1 in Appendix B)

LANDFORM

- landforms conducive to off-road vehicle use which would be difficult to control include
 - western periphery (alluvial fan)
 - east half of 603; gently rolling hills

INTRUSIONS AND OUTSIDE INFLUENCES

- managing for solitude would be difficult in areas described above where access is hard to control
- military aircraft flights most significant outside influence
- ranching along eastern boundary somewhat of a significance on solitude and manageability
- mining areas deleted during inventory could become a significant manageability problem

Nonconforming But Accepted Uses

VALID EXISTING RIGHTS

Mining claims

- approximately 900 acres have 46 registered mining claims in several scattered blocks
- wilderness manageability difficult should mining claims be developed

Leases

- 5,332 acres of oil and gas leases located along western boundary
- probability of leases being developed undetermined
- possible to eliminate the majority of area leased without substantially reducing wilderness values

Non-federal land

- 80 acres of private land

ESTABLISHED AIRCRAFT USE

- low-level military flights
- Nevada Department of Wildlife conducts animal censuses during winter and spring using fixed-wing and helicopter
- BLM conducts wild horse censuses and roundups, and livestock tallies in 603 by fixed-wing and helicopter
- permittees conduct livestock operation with fixed-wing and helicopter
- none of the established aircraft use would significantly reduce wilderness manageability
- see Influence of Outside Sights and Sounds for more detail (i.e., dates flying established)

EXISTING AND PROPOSED RESOURCE FACILITIES

- fencing of Jackson Creek and Trout Creek under an aquatic HMP project calls for mechanical detouring of roads; prohibited under wilderness manageability guidelines

LIVESTOCK GRAZING

Present grazing activities

- one grazing allotment
- existing range facilities would not significantly reduce wilderness manageability
- see NATURALNESS for details of existing facilities and seasons-of-use

Changes identified in Paradise-Denio Grazing E.I.S.

- three separate areas along eastern boundary proposed for sagebrush control - major vegetative manipulation (total 1,680 acres); could eliminate areas without significantly reducing wilderness values

STUDY POLICY QUALITY STANDARDS

Quality Standard 1: Energy and Critical Minerals

For background information and general description of the District see Appendix A.

General Geology

The geologic history of the North Jackson and South Jackson Mountains WSAs is basically the same and will be treated as one unit under this section. Details of the anomalous zones, however, will be treated separately for each WSA.

The North and South Jackson Mountains WSAs include the major portion of the central Jackson Mountains. This mountain range is a typical north-south fault block mountain in the Basin and Range Province. The variety of rock types are numerous and in highly complex structural contacts one with another. Most of the rocks exposed in the Jackson Mountains represent a very complicated history of sedimentation, volcanism and deformation related to mobile continental plates, oceanic plates and volcanic island arcs that have collided with one another. Russell (1981) indicated that the Black Rock Desert region as a whole holds the key to an improved understanding of the Paleozoic and Mesozoic tectonic evolution of the central-western region of the North American continent. Within this area the Jackson Mountains contain the greatest amounts and best exposures of these rocks to help unravel this complex history. It is also this complex history that appears to have been the source of the significant known and potential mineralization throughout the mountain range.

The rock types, from oldest to youngest, in the two Jackson Mountains WSAs include the Devonian to Permian McGill Canyon succession and other possibly related units, Triassic sedimentary rocks, Late Triassic or Jurassic Boulder Creek Beds and other possibly related units, Late Triassic or Jurassic Happy Creek Igneous Complex and associated post intrusives, the Early Cretaceous King Lear Formation and the Cretaceous(?) Early Tertiary(?) Pansy Lee Conglomerate. These rocks in turn have been intruded by Cretaceous plutonic diorites and granodiorites, and Tertiary dacite intrusives(?).

Overlying these rocks are younger Tertiary volcanic and sedimentary units including Miocene dacite flows, younger silicic tuffs and conglomerates; Mid-Miocene to Early Pliocene basalts, sedimentary rocks and rhyolite flows (Russell 1981; Willden 1964). Quaternary alluvium covers the lower valley areas.

The Devonian to Permian McGill Canyon succession and other possible related units consist of slope and base-of-slope volcanogenic sedimentary terrigenous (quartzose) and carbonate rocks which have been derived in part and deposited on slopes of active volcanic island arc terranes originally located hundreds(?) of miles west of their present location. The quartzose rocks also indicate that continental source terranes were likely located to the east of the island arc complex. These rocks have been implaced to their present position through westward thrust faulting of unknown lateral extent (Russell 1981). Best exposures of this unit occur in the McGill Canyon area. These rocks have a high potential for stratabound sulfide deposits because of their association with a volcanic island-arc environment (Tourtelot and Vine 1976).

The Triassic sedimentary rocks consist of pelitic (shale) rocks, carbonate units, turbidites and chert beds that have been deposited in fairly flat, starved, deep-marine basins distant from any volcanic island arc terranes or continental land masses. These rock units have also been implaced to their present position through westward thrust faulting of unknown lateral extent (Russell 1981). These rocks are located along the western front of the range between Jackson Creek and Alaska Canyon.

The Late Triassic or Jurassic Boulder Creek Beds and other possible correlative units consist of lower pelagic (shale) deposits and turbidites with mixed cherts and carbonates, and minor volcanogenic sediments that have been deposited in starved, deep-marine basins. These deep basin rocks grade into coarse volcanogenic sedimentary rocks in the upper portions, derived from a developing volcanic island arc. Although the stratigraphic relationship with the older Triassic sedimentary rocks is unclear because of thrusting it is postulated that the Boulder Creek Beds conformably overlie the Triassic sedimentary rocks mentioned earlier. The upper portions of the Boulder Creek Beds grade into the Happy Creek Igneous Complex. As mentioned before the stratigraphic relationships within this unit are complicated by several thrust faults of unknown lateral extent. Rocks of the Boulder Creek Beds are distributed throughout the central Jackson Mountains (Russell 1981). These rocks also hold a high potential for strata-bound sulfide deposits because of their direct relationship to a volcanic island arc environment (Tourtelot and Vine 1976).

The Late Triassic or Jurassic Happy Creek Igneous Complex consists of basaltic andesites, andesites, diorites, quartz diorite, autobreccias and intrusives with minor amounts of volcanogenic sedimentary rocks. These rocks represent subaqueous and subaerial eruptions of a magmatic island arc with proximal volcanogenic deposits. The Happy Creek Complex is believed to have erupted above a thin oceanic plate. Magma for the complex is believed to have originated from the top of a subducting plate at a depth of 80 to 125 km, well within the mantle. Internal stratigraphic relationships of the Happy Creek Complex have been complicated by erosional unconformities, igneous contacts, high-angle faults and thrust faulting. It is still unclear whether the Happy Creek Complex represents an exotic island arc that is basically in place or whether it represents a remnant arc of other well-known island arc sequences in California, Oregon and Idaho, implaced to its present position by rifting, or whether it represents an arc which collided with the continental land mass with extensive overthrusting. Rocks of the Happy Creek Complex hold high potential for either massive, interbedded or disseminated volcanogenic type sulfide deposits. Many of the important ore bodies throughout the world are associated with island-arc environments (Tourtelot and Vine 1976).

Rocks of the Happy Creek Complex and older units have been intruded by four distinct types of intrusive rocks. These include felsite, hornblende porphyry of intermediate composition, diorite and gabbro. These igneous rocks were implaced before the sedimentary rocks of the King Lear Formation were laid down, therefore, they have been assigned a Jurassic to Cretaceous age. Concentrations of these intrusives are localized along the eastern slope of the Trout Creek Spur (Jackson Mountains) and in a zone extending from King Lear Peak to the mouth of Jackson Creek. These intrusive rocks have undergone some alteration resulting in the development of sericite, calcite, epidote, chlorite and serpentine, and also albization of the plagioclase is common (Russell 1981). These intrusive bodies show strong association with iron, copper, molybdenum and other types of metaliferous deposits of the Jackson Mountains (see Metallic Mineral Potential). These intrusive rocks hold high potential for island arc type, copper-gold porphyry deposits. Many of the important copper-gold porphyry deposits throughout the world are associated with island-arc environments and are well documented in the literature.

The Early Cretaceous King Lear Formation consists of lower volcanogenic gravels, conglomerates, sandstones and mudstones deposited on alluvial fans. These grade upward to volcanogenic and terrigenous conglomerates, sandstones and organic-rich mudstones (siltstones) and limestones deposited in a fluvial-lacustrine environment. The lower volcanogenic sediments have been derived from the Happy Creek arc complex. It is not clear whether the terrigenous sediments were derived locally or transported in from distant sources. This unit has also been cut by extensive thrust faulting. Most of these rocks crop out in the southern and along the eastern slope of the Jackson Mountains. Because of the organic-rich mudstone (siltstone) and limestone beds which may contain upwards of 41 percent of a complete section of the King Lear Formation, Willden (1979) considers the King Lear Formation to have good potential for accumulation of hydrocarbons.

The Cretaceous(?) Early Tertiary(?) Pansy Lee Conglomerate (Willden 1963) has been lumped with the King Lear Formation by Russell (1981). Because of an apparently different source terrain and structural relationships, however, the Pansy Lee Conglomerate should be treated as a separate unit.

The basal section of the Pansy Lee contains poorly sorted, locally derived andesitic to basaltic volcanic rocks, diorite and sparse slate feldspathic quartzite, and pebble to boulder conglomerate. Upwards the section grades into well sorted exotic chert and quartzite conglomerates with interbedded coarse-grained sandstone. Approximately two-thirds of the Pansy Lee contains these exotic chert and quartzite clasts which likely have been derived from a more distant continental terrain source. The King Lear Formation was evidently folded and in places completely eroded before deposition of the Pansy Lee Conglomerate (Willden 1963, 1979). It is not clear whether the deposition of the Pansy Lee was pre-syn- or post-batholithic intrusion. Although the Pansy Lee Conglomerate does not contain organic-rich beds exposed in the Jackson Mountains the top of the section has been eroded away and Willden (1979) feels a complete section likely contains such beds and, therefore, could have oil and gas potential.

Two periods of deformation and thrusting have occurred in the Jackson Mountains, probably beginning in Jurassic time and ending in Early Cretaceous time. The first event occurred prior to the deposition of the Early Cretaceous King Lear Formation and the second event after King Lear deposition but prior to intrusion of the Cretaceous batholithic rocks.

The intrusion of Cretaceous plutonic rocks brought to a close the major Sevier (Laramide) orogeny so well documented in the Jackson Mountains. Portions of these plutonic rocks which contain granodiorites and diorites crop out in the Navajo Peak and Parrot Peak areas. These igneous rocks are likely the source for some of the copper, gold, silver mineralization, etc., found in the Navajo Peak and Parrot Peak areas.

Major tectonic activity did not occur again until Late Miocene when extensional forces began pulling the continental land mass apart, causing extensive block faulting and volcanism. This event is also well represented in the Jackson Mountains. This geologic event has been responsible for the mercury mineralization and possibly some of the gold and silver mineralization within the Jackson Mountains.

Mining History Jackson Mountains

Three mining districts, the Red Butte, Jackson Creek and Bottle Creek, are in the Jackson Mountains. Several other mining and/or prospecting activities are found throughout the Jackson Mountains but have not been formally designated as mining districts. Total recorded production from these three districts has amounted to about \$4 million. The Jackson Creek District alone has produced some \$3 million in lump iron ore (Willden 1964).

The Red Butte District in the Navajo Peak area within the southern tip of the South Jackson Mountain WSA has produced some values in gold, silver, copper, lead, zinc, antimony and mercury. Total production reported includes five carloads of copper-lead-zinc-silver ore and 20 tons of antimony ore from the Red Butte Mine area. Here the metallic mineralization, including barite, is related to aplite dikes cutting the Cretaceous-Tertiary diorites, and the Happy Creek Complex (Willden 1963, 1964).

Some minor mercury values have been produced from small shear zones in igneous rocks(?) from the Rattlesnake Canyon area (Willden 1964).

The Low Copper Prospect located on the east flank of Navajo Peak consists of copper-bearing quartz veins cutting the King Lear Formation. This prospect is developed by an adit and inclined shaft but has no record of production. Willden (1963) has suggested that this mineralization is related to the plutonic diorite in contact with the King Lear Formation.

The Low Iron Prospect one mile to the north contains hematite-magnetite veins cutting the Happy Creek Complex. The rocks in this prospect have been bleached and altered. Willden (1963) has suggested that hydrothermal solutions from underlying plutonic diorites have simply leached the iron from the Happy Creek volcanic rocks and redeposited in joints. This prospect has been developed by dozer cuts but has no recorded production.

The Gilbert and Stroud Mine about seven miles southeast of Navajo Peak is reported to contain copper and gold values in the Happy Creek Complex. Nothing has been reported in the literature as to geologic nature of this mineralization.

Extensive prospecting for gold has also occurred just west of Navajo Peak. These prospecting activities are in silicified rhyolitic rocks cropping out at the base of the Jackson Mountains. Prospecting activities have also occurred for magnetic-hematite at the diorite-Happy Creek contact zone (BLM field examination in 1983).

The Jackson Creek District is in the central portion of the range at the head of Jackson Creek. This district lies within the southeast corner of the North Jackson Mountains WSA. Total production from the Jackson Creek District has been about \$3 million in lump iron ore mostly from the Iron King, Red Bird and Black Jack Mines. Most of the iron production was between 1952 and 1960.

The iron ore is principally magnetite with minor amounts of hematite and trace amounts of marcasite, pyrite and chalcopyrite. The ore occurs in veins cutting the Happy Creek Complex and intrusive diorites or in replacement bodies adjacent to faults near the intrusive diorites. Willden (1963) has suggested that these iron deposits have also formed by hydrothermal leaching of the iron from the Happy Creek Complex near the diorite contacts and then redeposited in fracture zones, as appears to be the case for the iron veins in the Red Butte District. However, there are three major differences between these two iron deposits. The iron veins in the Red Butte District are mostly hematite with minor magnetite, they occur as fracture filling, and the country rock is leached, indicating a lower temperature hydrothermal system. The iron deposits in the Jackson Creek District are mostly magnetite with minor hematite; they occur as veinlike replacement bodies and the country rocks are not hydrothermally leached but have instead undergone high temperature metasomatism as is expected to occur at the diorite contact. Russell (1981) has also indicated that the Jurassic-Cretaceous diorite about five miles south contains upwards of five percent primary magnetite, much higher than any of the other Jurassic-Cretaceous intrusives he studied. Iron content of the Happy Creek Complex averages about 5.3 percent with some samples as high as nine percent

(Willden 1963). It is suggested that both the Happy Creek Complex and the intrusive diorite have contributed to the iron deposits at or near the diorite contact zone in the Jackson Creek District.

Until more detailed work can be done on the high grade magnetite deposits in the Jackson Creek District it is suggested that all intrusive bodies cutting the Happy Creek Complex could have similar iron deposit near the contact zone. Intrusive bodies with high percentages of primary magnetite (upwards of five percent) should be looked at in detail.

The Bottle Creek District is on the northeastern side of the Jackson Mountains just east of the North Jackson Mountains WSA. Total production from the district has been about \$900,000 from 4,644 flasks of mercury. Cinnabar mineralization occurs in faulted north-south diabase dikes which cut pre-Tertiary and Tertiary tuffaceous sediments and basalts. Minor amounts of cinnabar also occur in north-south fault zones cutting the pre-Tertiary rocks and the Tertiary rhyolites (Willden 1964).

Active uranium exploration has occurred around the Buff Peak area just west of the Bottle Creek District. The uranium mineralization is scattered throughout the Tertiary rhyolitic flows centered around Buff Peak. One sample taken from dozer cuts on the east side of Buff Peak ran 0.02 percent U_3O_8 . Other opalized lenses in the rhyolite contain anomalous radio-activity values. American Copper and Nickel and Tennessee Valley Authority have done considerable drilling in the Buff Peak area recently.

Active gold exploration has occurred recently about two miles south of Buff Peak on claims owned by the DeLong family. Several tunnels, shafts, open cuts and dozer cuts may be seen on the property. The DeLong family has also done considerable drilling on the property recently. The gold values are in highly altered fault zones, both steeply dipping and flat lying (thrust?) cutting the Happy Creek Complex. George DeLong had indicated from the drilling that gold values cut-off at depth(?) when red shale beds(?) are encountered. There is nothing in the literature about the early mining operations or any records of production. George DeLong, however, had indicated some gold has been produced from the early workings (DeLong 1981).

A large block of contiguous claims has been staked, covering 16 sections between Big Creek and Bottle Creek on the northeast slope of the Jackson Mountains (Trout Creek Spur). Early mining activities have occurred in the Big Creek/Boulder Creek area, consisting of several tunnels, shafts and underground stopes. Mineralization consists of silver, gold(?), copper, lead and iron in east-west veins in the Boulder Creek Beds and intrusive rocks. Disseminated chalcopyrite (copper) has also been reported in intrusive rocks in this general area (CRIB Report Forms, Nevada Bureau of Mines). A BLM field examination (1983) of prospecting activities at the head of Boulder Creek indicated substantial amounts of disseminated pyrite and chalcopyrite in fine-grained intrusive(?) rocks in the Happy Creek Complex.

Russell (1981) indicated that these intrusives have undergone some alteration, resulting in the development of sericite, calcite, epidote, chlorite and serpentine, and also albittization of the plagioclase is common. A definite clustering of these intrusives shows along the eastern slope of the Trout Creek Spur.

Stream sediment samples taken by Barringer Resources (1982) have indicated isolated anomalous values for copper, molybdenum, tungsten, zinc and mercury in the Boulder Creek area. These anomalous values are very likely related to the intrusive rocks and indicate a potential for island arc copper porphyry type mineralization.

Numerous other prospects, mines and mineral occurrences can be found throughout the Jackson Mountains but little information is available about these areas. Some of these prospect areas and mines were visited by BLM geologists during the 1983 field season and will be addressed below.

Following is a discussion of the energy and mineral potential in the South Jackson Mountains WSA. Please refer to the Mineral Potential Classification on Scheme, Figure 1 in Appendix A, for further explanation of alpha-numeric classifications. Also see, in Appendix B, Tables B-10, B-11, B-12 and B-13 showing acreages for Metallic Mineral, Nonmetallic Mineral, Geothermal and Oil and Gas Potential; and Tables B-6, B-7 and B-8 showing acreages of Unpatented Mining Claims, and Geothermal and Oil and Gas Leases; as well as summary Tables B-14 and B-15 showing the Energy and Mineral Threshold Levels and Holdings affected by four of the alternatives proposed in the EIS (all except No Wilderness Alternative).

Metallic Mineral Potential

Barringer Resources (1982) indicated a very large and significant anomalous area termed "Southern Jackson Mountains" which covers most of the WSA. This large area has been divided into smaller anomalous sub-zones to aid in discussion of the metallic mineral potential in a more site-specific manner. Please refer to the Mineral Potential Maps for locations of these anomalous sub-zones discussed below.

RED BUTTE MINING DISTRICT. (4D) High Potential.

This district is on the south-central tip of the WSA in the Navajo Peak area. Rock types in this portion of the WSA include the Happy Creek Complex and the King Lear Formation which have been intruded by Cretaceous diorite. These dioritic rocks are considered to be part of a major batholith extending through western Nevada.

This district has produced some values in gold, silver, copper, lead, zinc, antimony and mercury. With the exception of gold and mercury most of this mineralization appears to be spatially related to the diorite batholithic rocks. The gold and mercury mineralization is likely related to a younger Tertiary event. See Mining Districts, Jackson Mountains, for more details.

Geochemical sampling and geostatistical modeling results show:

Response to Geostatistical Modeling

Moderate: gold-silver

Low: mercury-antimony

Anomalous Values

High: silver, antimony*, gold

Moderate: copper*, mercury*

Low: molybdenum

BULL CREEK ANOMALOUS ZONE. (3B) Moderate Potential.

This zone is in the southeast portion of the WSA, centered about Bull Creek. Rock types in this zone include Triassic sedimentary rocks, the Happy Creek Complex and the King Lear Formation which have been intruded by Cretaceous dioritic rocks. These rocks in turn have been overlain by Tertiary basalts and sedimentary rocks.

Geochemical sampling and geostatistical modeling results show:

Response to Geostatistical Modeling

Moderate: mafic copper-nickel

Anomalous Values

High: copper*

Moderate: zinc*, nickel*

The highest anomalous values are in the Shawnee Creek drainage on the southern boundary of the zone. These values gradually drop off northward. All rock types mentioned above except the King Lear Formation occur in the Shawnee Creek area. More detailed work would have to be done in this area to determine the source of the anomalous values.

A BLM field examination (1983) up the Shawnee Creek drainage indicated two millsite locations with some minor wood frame dwellings. One millsite claim had been located June 20, 1983. No other mining activities were noted along existing jeep trails in this zone.

BIG CEDAR CREEK ANOMALOUS ZONE. (3C) Moderate Potential.

This zone is in the east-central portion of the WSA between Bull Creek to the South and Clover Creek to the north. Rock types include the Boulder Creek Beds, the Happy Creek Complex and the King Lear Formation which have been intruded by Jurassic-Cretaceous quartz-hornblende porphyry bodies. These rocks have in turn been overlain by Tertiary basalts along the eastern base of the Jackson Mountains.

Geochemical sampling and geostatistical modeling results show:

Response to Geostatistical Modeling

Low: mafic copper-nickel, gold-silver

Anomalous Values

Moderate: copper*, lead*, molybdenum

Low: zinc*

The copper, lead and zinc values are somewhat downstream of the Red Boy Mine. The anomalous copper values in this area may be related to the Tertiary basalts cropping out.

The molybdenum value and the response to gold-silver modeling are in the Little Cedar Creek drainage basin near some of the prospecting activities.

The Red Boy Mine consists of a tunnel and some shafts developed in the Happy Creek Igneous Complex. Two small quartz-hornblende porphyry plugs have intruded the Happy Creek Complex about one mile west of the mine.

Hematite occurs in fractures of the Happy Creek Complex near these intrusive bodies. Also an igneous dike, similar to the intrusive body cutting the Happy Creek Complex, contained 2-3% disseminated pyrite (BLM field examination 1983). Pyrite with possible chalcopyrite was observed on the divide west of the Red Boy Mine in light-colored volcanic rocks of the Boulder Creek Beds. The Red Boy Mine was not examined and little else is known about the type of mineralizations sought.

Exploration activities at the head of Big Cedar Creek consisted of several bulldozer cuts, a few of which have exposed magnetite-hematite mineralization in a contact zone of the Happy Creek Complex, and a small greenish porphyritic intrusive rock (BLM field examination 1983). Two jeep trails lead into Little Cedar Creek from Big Cedar Creek but were not checked out during the BLM field examination.

KING LEAR PEAK ZONE. (3B) Moderate Potential.

This zone is in the southwest corner of the WSA, west of King Lear Peak. Rock types in this area consist wholly of the Happy Creek Igneous Complex.

Mining activities were previously unknown in this area until a tunnel, a small open stope and other prospect pits were discovered during a BLM field examination in 1983. These prospecting activities located two miles east of Buckbrush Spring in the SE $\frac{1}{4}$ NE $\frac{1}{4}$ of Sec. 11, T. 38 N., R. 30 E., exposed four separate vein systems over a 500-foot-wide zone. The veins ranged in width from one to four feet with either a north, northeast or east-west trend and near vertical dip. Visible mineralization in the veins consisted of a central zone of barite and hematite, with lesser amount of copper oxides along the outer sheared or fractured portions of the veins. The larger southern vein had been developed by a surface stope about 75 feet long, four feet wide and 10 feet deep. A tunnel had also been driven on this vein from a lower elevation. Based on the size of the dump, and not taking into account any ore that has been removed, at least 200 feet of underground workings are likely. Some 50 to 75 feet of the underground workings were visible from the entrance before the tunnel turned on the vein. No access road has ever been constructed to the workings.

These veins which cut the Happy Creek Complex appear to be similar to the barite-hematite and copper-bearing veins described by Willden (1963, 1964) in the Red Butte District to the south. The hematite veins in the Red Butte District are likely related to intrusions of the Cretaceous diorite. That same diorite body could be located at depth in the area of these workings. Also, the igneous rocks of the Happy Creek Complex have potential for either massive, interbedded or disseminated volcanogenic type sulfide deposits.

The Barringer Resources Report (1982) did not indicate any anomalous values in this zone. However, only four samples were taken near the base of the mountain, with spacing as much as a mile apart. The prospecting activities discussed above just happened to fall midway between the widest spaced samples.

Several mining claims are recorded, both with the county and BLM, however, the records do not agree. After contacting claim owners it was determined that claims recorded with the BLM contained the wrong legal descriptions and that claims were actually located south of this zone. The one remaining claim on county records has not been recorded with the BLM.

McGILL CANYON ANOMALOUS ZONE. (3C) Moderate Potential.

This zone is also located along the west-central portion of the WSA between Alaska Canyon to the north and Buckbrush Spring to the south. Rock types within this zone include the McGill Canyon Succession which has been intruded by several Jurassic-Cretaceous pyroxene-hornblende porphyry and quartz-hornblende porphyry bodies. This large section of the McGill Canyon Succession has been emplaced to its present position along a major thrust fault (Russell 1981).

Geochemical sampling and geostatistical modeling results show:

Response to Geostatistical Modeling

High: mafic copper-nickel

Low: base-precious metal

Anomalous Values

Moderate: copper*, nickel*

A one-day BLM field reconnaissance was made in 1983 up McGill Canyon and down the southern ridge to try to determine source or sources of these anomalous values and check the Jurassic-Cretaceous hornblende porphyry bodies mapped by Russell (1981) for evidence of mineralization. Several fault zones, both normal and thrust, contained calcite and silica veining, some of which contained sulfides (pyrite and chalcopyrite(?)). Only one of the three hornblende porphyry bodies had some very minor sulfides (pyrite) along the outer edges of the intrusive. One other small unmapped intrusive body unlike the horn- blende porphyry was noted in the McGill Canyon Succession. Evidence of prospecting activities were not noted.

The McGill Canyon sedimentary rocks have been derived from an island arc complex and are a logical candidate for stratabound massive sulfide deposits. The response to the mafic copper-nickel model in this area may represent this type of deposit.

No mining claims are known to occur in this zone.

BLISS CANYON ZONE. (3C) Moderate Potential

This zone is along the northwest side of the WSA, centered about Bliss Canyon. Rock types in this zone include the McGill Succession(?) metasediments, Triassic sedimentary rocks, the Boulder Creek Beds and the Happy Creek Complex. These have been intruded by several Jurassic-Cretaceous quartz felsites and quartz-hornblende porphyry bodies. One small Tertiary gabbro dike has also intruded along a thrust fault in the Alaska Canyon area.

Geochemical sampling and geostatistical modeling results show:

Response to Geostatistical Modeling

Very low: base-precious metal

Anomalous Values

Low: lead*, zinc*, molybdenum

A 1983 BLM field reconnaissance up Alaska Canyon indicated several gossan zones mostly in normal and thrust fault zones. A 15-foot adit driven on one vertical fault in the Boulder Creek Beds contained pyrite mineralization. Float rock found at two localities in the canyon contained malachite coatings. At the head of the canyon a nine-foot-wide fault zone cutting felsic intrusive rocks had been silicified. A nine- to 12-foot-wide zone adjacent to the fault zone contained disseminated pyrite and chalcopyrite with minor malachite staining.

A traverse up Bliss Canyon indicated several prospecting activities. One 15-foot-deep shaft had been driven in a five- to six-foot-wide zone cut by numerous quartz stringers. Some amethyst crystals were found in the veins. No other evidence of mineralization showed in the silicified zone. A small prospect in a fault zone cutting felsic intrusive rocks midway up the canyon did not contain any visible mineralization, alteration or silicification. The Copper Head mining claims located near the head of the canyon contained several adits and prospect pits along a north-south fault zone in the Happy Creek Complex. The fault zone contains malachite, azurite and chalcocite with minor hematite and iron oxides. It is possible that some ore may have been produced from the mine. A sizeable felsic intrusive body crops out just 500 feet west of the mine.

CHRISTIORSSON CANYON ANOMALOUS ZONE. (4D) High Potential.

This zone is in the northern tip of the WSA centered about Christiorsson Canyon. Rock types in this zone include the McGill Succession(?) meta-sediments, the Triassic sedimentary rocks, the Boulder Creek Beds and the Happy Creek Complex, which have been intruded by a Jurassic-Cretaceous pyroxene-hornblende porphyry intrusive.

Geochemical sampling and geostatistical modeling results show:

Response to Geostatistical Modeling

Low: mafic copper-nickel

Very low: gold-silver

Anomalous Values

High: copper*

Moderate: lead*, nickel*, silver

This zone has been the site of some significant prospecting activities including shallow shafts, short tunnels, prospect pits and dozer cuts, mostly in Christiorsson Canyon. Most of the activities are centered along a zone of marbleized limestone and small bodies of pyroxene-hornblende porphyry bodies in the Boulder Creek Beds. Copper mineralization in the form of chalcopyrite and various copper oxides occurs in north-south fault zones in the Boulder Creek Beds and intrusive rocks and in skarn zones with associated magnetite-hematite in the marble zone. Chalcopyrite content of the shear zones may be as high as 10 percent in zones up to 20-30 feet

wide. These mineralized shear zones also contain numerous quartz stringers containing chalcopyrite (BLM field examination 1983). Nothing has been reported in the literature about this activity. Bill DeLong, at the Jackson Creek Ranch, indicated that copper has been produced in this area but that most of the production came from the Harrison Grove Mine in Jackson Creek on the northern boundary of this zone.

A traverse up Hobo Canyon indicated a marble and skarn zone in contact with a small Jurassic-Cretaceous pyroxene-hornblende porphyry mapped by Russell (1981). The skarn zone contained tremolite, idocrase, garnet and hematite. Gossan development was common along the skarn zone. The upper drainage of Hobo Canyon was not covered in this traverse.

TROUT CREEK ZONE. (2B) Low Potential.

This zone is in the northeast corner of the WSA along the east side of Trout Creek. The rock types in this zone include the King Lear Formation overlain by Tertiary dacite flows.

Prospecting activities are not known in this zone, however, mining claims on the northeast boundary of the WSA have anomalous radioactive readings reported by owner Tim DeLong (1983).

These claims are located in an area where both the King Lear Formation and Tertiary dacite flows crop out. It is most likely that the anomalous radioactive readings are related to the dacite volcanic flows. However, more detailed work would have to be done on these rocks to determine the source of the anomalous readings.

No anomalous metal values were indicated in this zone by Barringer Resources (1982) sampling.

Nonmetallic Mineral Potential

Barite mineralization in veins has been reported in the King Lear Peak, Big Cedar Creek Zones and the Red Butte District. Several gravel pits are along the western boundary of the WSA. These pits were important sources of gravel for the recently drilled Sun Oil well.

The following portions of the WSA are considered to have nonmetallic mineral potential:

High (4D) -- A 1-mile-wide strip within the west boundary has sand and gravel

Moderate (3C) - Veins with barite mineralization in King Lear Peak and Big Cedar Creek zones and the Red Butte District

Low (2B) - The remainder of the WSA for barite only

Geothermal Resource Potential

McFarlan's Hot Spring is eight miles southwest of the South Jackson Mountains WSA. This hot spring has a recorded temperature of 171°F and is the sight of active geothermal leasing and exploration. There are no other known hot springs, warm springs or warm wells north of McFarlan's Hot Spring. One warm well (67°F) is located on the southeastern boundary of

the WSA in Desert Valley on the Roberts Ranch. This well, in the SE 1/4, Section 17, T. 38 N., R. 32 E., was drilled to a depth of 575 feet in Quaternary alluvium (USDI Denio URA 1978).

One large block of geothermal leases lies just outside the southwestern tip of the WSA.

The following portions of the WSA are considered to have geothermal potential:

Moderate - A 3 1/2-mile-wide strip inside the southwest boundary is 3D, also a 1-mile-wide strip inside the northwest boundary and a 4-mile-wide strip inside the southeast boundary are 3C.

Low (2B) - The remainder of the WSA

Oil and Gas Potential

Some structural traps for hydrocarbons could occur in the WSA especially in the Boulder Creek Beds, King Lear Formation and the Pansy Lee Conglomerate. Russell (1981) indicated that lush vegetative areas were present during deposition of the Boulder Creek Beds.

Willden (1979) also indicated that the King Lear Formation and possibly the Pansy Lee Conglomerate have organic-rich beds with a good potential for the accumulation of hydrocarbons (see Oil and Gas Potential Black Rock Desert WSA for more details). It is likely that much of the hydrocarbons would have been driven off by intrusion of the Navajo Peak diorite body or could have migrated down-dip due to uplift of the Jackson Mountains. However, structural traps within the Jackson Mountains containing hydrocarbon accumulations cannot be completely ruled out.

Numerous oil and gas geophysical lines have been run in the Black Rock Desert to the west and Desert Valley to the east and one dry well has been completed in the Black Rock Desert. To date no exploration activities have occurred in the WSA.

Numerous oil and gas lease blocks extend into the WSA all along the western side. Also, there is extensive leasing in Desert Valley to the east.

The following portions of the WSA are considered to have oil and gas potential:

Moderate - A 3 1/2-mile-wide strip inside the southwest boundary is 3B, also a 1-mile-wide strip inside the northwest and a 4-mile-wide strip inside the southeast boundaries are 3A.

Low (2B) - The remainder of the WSA

Quality Standard 2: Impacts on Other Resources

Recreation

-current recreational use of 603 favors motorized and motorized-supported recreational activities (off-road vehicles, hunting, rockhounding)

- wilderness designation could restrict vehicular access from 29.5 miles of roads and ways and about 19,000 acres of land currently accessible to off-road vehicles

Cultural Resources

- wilderness designation could indirectly add to the existing legal protection of cultural resources by limiting resource development and use
- wilderness designation could possibly curtail excavation and stabilization of historic, prehistoric or paleontological finds if action would impair wilderness values.
- there is potential for excavation of known sites
- proximity of 603 to recently excavated paleontological site increases likelihood of paleontological sites being identified in future which would warrant excavation

Energy and Mineral Resources

- wilderness designation imposes strict guidelines on all allowed mineral and energy development--potentially making development infeasible
- mining claims located after designation could not be developed
- see Quality Standard 1 for more details

Livestock Grazing

- costs of maintaining range developments and livestock management would increase where vehicular access curtailed
- future beneficial range/developments/treatments may be restricted

Aquatic

- proposed project for Jackson and Trout Creeks may be restricted

Other Resources

Current resource plans identify no other resources which could be adversely impacted by wilderness designation. However, wilderness management could impose additional constraints on future projects in these programs: fire, wildlife, wild horses and burros, lands, soil, water and air and visual resources.

Quality Standard 3: Impact of Non-designation on Wilderness Values

SHORT-TERM IMPACTS

- reduced opportunities for primitive and unconfined recreation and solitude in those areas accessible to off-road vehicles

LONG-TERM IMPACTS

- continued development of mineral and energy resources could eventually eliminate opportunities for naturalness solitude, and primitive and unconfined recreation within 603; potential discussed in Quality Standard 1

-area would remain open for development of other resources which might
impair wilderness values; extent speculative

Quality Standard 4: Public Comment

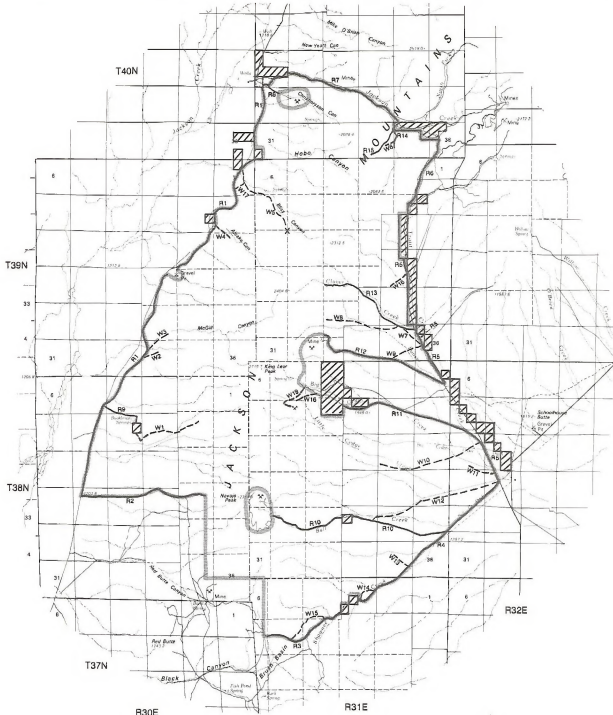
See District-wide Analysis, Chapter III


Quality Standard 5: Local and Regional Socioeconomic Effects

See District-wide Analysis, Chapter III

Quality Standard 6: Consistency With Other Plans

See District-wide Analysis, Chapter III



 PRIVATE LAND (SURFACE & MINERALS)

 PRIVATE SURFACE (PUBLIC MINERALS)

 W.S.A. BOUNDARY

 ROAD

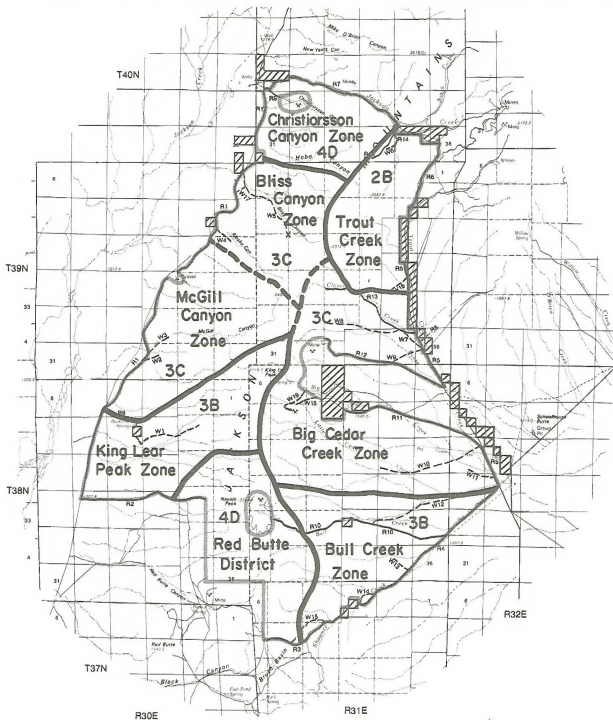
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

 PROSPECT

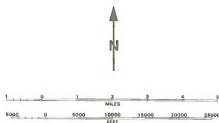
 MINE



NV-020-603 SOUTH JACKSON MTS.



-  BOUNDARY OF ZONES WITH APPROXIMATELY EQUIVALENT MINERAL POTENTIAL BUT WHICH CONTAIN DIFFERENT MINERALS (SEE TEXT).
-  PRIVATE LAND (SURFACE & MINERALS)
-  PRIVATE SURFACE (PUBLIC MINERALS)
-  W.S.A. BOUNDARY
-  ROAD
-  WAY
-  PROSPECT
-  MINE



FAVORABILITY

- 1 UNFAVORABLE POTENTIAL
2. LOW POTENTIAL
3. MODERATE POTENTIAL
4. HIGH POTENTIAL

LEVEL OF CONFIDENCE

- A. INSUFFICIENT DATA
- B. LOW CONFIDENCE (Indirect evidence)
- C. MODERATE CONFIDENCE (Direct evidence)
- D. HIGH CONFIDENCE (Abundant direct evidence)

NV-020-603 SOUTH JACKSON MTS.
MINERAL POTENTIAL

Wilderness Study Area 606: North Jackson Mountains

DESCRIPTION

Location

- West Humboldt County, Nevada, approximately 70 miles west of Winnemucca, Nevada
- four-hour drive from Reno, the nearest Standard Metropolitan Statistical Area
- best access well-maintained Jackson Creek road (BLM 2049) on western boundary or the Trout Creek Road (HU 312 and 313) on the southern boundary

Configuration and Size

- bounded by county, BLM and privately-maintained roads (20.5 miles) except for small portions which abut against private land (9.0 miles), topographic features (1.5 miles) legal boundaries (3.4 miles) and a powerline right-of-way (2.4 miles)
- about seven miles north-south and from six to seven miles east-west
- 26,457 acres of public land

Physical Environment

- altitude range 4,000 to 8,400 feet
- Bailey-Kuchler ecosystem: sagebrush steppe (3130-49), saltbush-greasewood (3130-34)
- Paradise-Denio Grazing E.I.S. vegetation communities: pinyon-juniper (center portion) saltbush (periphery), barren (20%)
- extensive riparian vegetation along major drainages
- 606 straddles a north-south ridge of the northern Jackson Mountain range; typical of the Basin and Range Province
- two distinct landforms within 606: major portion of 606; western periphery
 - major area:
 - north-south running ridgeline with two major peaks (Deer Creek Peak and Parrot Peak)
 - deep rugged canyons and drainages extend from the major ridgeline and peaks
 - area intermittently landscaped with upthrusting jagged rocky peaks and outcrops
 - drainages laden with aspen groves
 - canyons are lined with thick riparian vegetation
 - junipers cover the landscape in the higher elevations
 - western periphery
 - sagebrush flat (one mile wide and six miles long)
 - alluvial fan of basalt surface rock
 - drainages wide and shallow

STUDY POLICY CRITERIA

Criterion 1: Evaluation of Wilderness Values

Component A: Mandatory Wilderness Characteristics

SIZE

-27,138 acres within boundary, including 681 acres of private land and 26,457 acres of public land

NATURALNESS

Developments within WSA

Range-related developments (see Table B-1 in Appendix B)

-three grazing allotments (see Table B-2 in Appendix B)

Other man-made features

-six roads totalling 5.7 miles (see Table B-3 in Appendix B)

-nine short ways totalling 6.8 miles; the majority of the ways extend from the southern and western boundary

Outside imprints

-mining areas along southern, eastern and northern boundaries; disturbance can be seen from adjacent areas within 60

-one patented claim along southern boundary

-Iron King Mine most visible along southeastern boundary (old cabins and mill)

-several roads, including boundary roads are visible from parts of 606--traffic caused dust is particularly visible from extreme western edge of 606

-fencelines, ranches, cultivated fields are visible from portions of 606; impact most significant within west half of 606

-three separate gravel pits (Humboldt County free use permits) along western boundary

-T. 40 N., R. 31 E., Section 4 NW NW

-T. 40 N., R. 31 E., Section 19 NW NE

-T. 41 N., R. 31 E., Section 27 NE NW

-old mining disturbance along the northeastern and southwestern boundary

-patented mining claim along southern boundary: T. 40 N., R. 31 E., Section 27 NEL/4

Location and size of areas subject to imprints

-center portion of 606 virtually free of imprints; what do exist are visually insignificant except within immediate vicinity of feature

-most apparent imprints are located along the periphery of 606; most visually disturbing are the mining areas outside 606 along the southern and eastern boundaries

Rehabilitation potential

-some developments and man-made features would require rehabilitation of major mechanical manipulation (roads and mining disturbance)

Potential for separating areas in WSA subject to imprints

-some major influences could be eliminated by adjusting boundary along major drainages (south, east, north boundaries) and contour lines (western boundary)

Overall influence of imprints

-majority of 606 is substantially natural
-imprints most significant along periphery of 606 where topographic screening is limited
-visitors would have little difficulty locating substantially natural landscapes in 606

SOLITUDE

Solitude is defined as the opportunity to avoid the sights, sounds and evidence of other people.

Influence of outside sights and sounds

Economic activity

-mining along the WSA's boundaries can be seen from portions of 606
-localized and seasonal ranching activities (roundups, salting, cultivating and maintenance of range improvements near and within 606)
-oil and gas and geothermal exploration near and within 606

Aircraft flights

-military flights: no military flight routes
-State of Nevada Department of Wildlife conducts annual wildlife censuses
 -deer counts in March and November (helicopter), regular since 1975
 -antelope counts in January (fixed-wing); August (helicopter); regular since 1950s
-BLM conducts livestock and wild horse censuses/roundups on 606
 -livestock tallies as needed (low-level with fixed-wing, occasional helicopter); regular since 1950s
 -wild horse inventories conducted every other year since 1976; last inventory 1980 (fixed-wing and helicopter)
 -wild horse roundups when needed (using helicopter), usually July through October
-permittee livestock supervision (fixed-wing and possibly helicopter)
-fire detection flights by Winnemucca BLM, usually above 500'

Vehicular traffic

-frequent traffic on western (BLM 2049), eastern and southern (HU 313) boundary roads

- occasional traffic along northern boundary road; impact is occasional dust trail
- seasonal use along cherrystem roads and ways (cattle management, access for hunting and mining)

Physical factors influencing solitude

Topographic and vegetative screening

- 606 proper (majority of WSA)
 - two major rugged peaks
 - deeply dissected and rugged canyons
 - numerous rock outcrops
 - rugged upthrusting landscape
 - canyons lined with lush riparian vegetation (cottonwoods and willows)
 - wide drainages filled with aspen groves
 - higher elevations support juniper, snowberry, gooseberry, wild grape and red osier dogwood
- western border
 - area broadens from foot of mountain to boundary road (alluvial fan)
 - wide shallow drainages
 - rocky surface
 - low growing vegetation
 - poor topographic and vegetative screening

Size and Configuration

- present size is sufficient to provide solitude
- boundaries could be adjusted, eliminating unnatural features located along periphery of 606, and still be of a sufficient size to provide opportunities for solitude

Ability of user to find secluded spot

- easily locatable throughout most of 606; major drainages and canyons, ridgelines and around numerous rock outcrops
- more difficult to find along western border (alluvial fan)

PRIMITIVE AND UNCONFINED RECREATION OPPORTUNITY

Access

- year-round access on western boundary road (BLM 2049)
- less reliable during wet season on southern, northern and eastern boundary roads (use of high clearance vehicle)
- vehicular access on six roads and nine ways (see Table B-3 in Appendix B)

Attractions

Points of interest

- Deer Creek Peak
- Parrot Peak
- Mary Sloan Canyon
- Aspen groves
- Rocky outcrops
- Deer Creek Canyon
- Happy Creek
- Variety of wildlife, including several game species

Challenge

- typical desert/steppe climate with associated challenges (hot dry summers, cold winters)
- portions of 606 has extremely rugged terrain (talus slopes, overhangs, waterfalls, sheer rock faces)

Scenic qualities

- rugged peaks and rock formations
- contrast of steep rugged and deeply dissected mountain range against the stark playas of the Black Rock Desert
- views of the Black Rock Desert and nearly desert landforms give impression of isolation in a hostile environment
- color contrasts of vegetation and rock formation within 606

Activities

Dayhiking (water availability not critical)

- entire WSA accessible to dayhiking
- most likely destinations include Deer Creek and Parrot Peaks, Mary Sloan Canyon, Happy Creek, Deer Creek Canyon, Jackson Creek

Camping

- best camping areas within major canyons (Deer Creek, Mary Sloan, Happy Creek, Jackson Creek) and drainages
- springs and creeks within most of the canyons (water must be treated before drinking)
- dry camping feasible throughout
- most sites can be used as base camps for dayhiking trips

Backpacking

- several routes throughout 606; most attractive are through the major canyons
- two to three day trips
- most feasible to hike in and set up a base camp for day hikes

Hunting

- deer hunting; accessibility is difficult due to rugged terrain
- medium concentration of chukar throughout WSA

Horse packing

- constraints: portions of WSA too rugged (higher elevations and portions of major canyons)
- advantages: generally available forage, good access, favorable topography in most areas

Rock climbing and scrambling, caving

- rock climbing limited throughout WSA due to talus slopes and crumbling outcrops
- technical climbing opportunities possible near major peaks
- rock scrambling opportunities possible throughout 606
- various small caves along steep rocky slopes

Scenic

- viewing/photographing wildlife and landscape
- geologic study

Fishing

- small intermittent populations of brook trout in Jackson Creek (southern boundary) and Mary Sloan (western half)

Winter sports

- area too steep and rocky for cross-country skiing
- access limited during winter months

Water sports

- wading in perennial streams (water quality fair)

Rockhounding

- gold panning possible in major creeks (Mary Sloan)
- collecting along eastern boundary

Component B: Special Features

CULTURAL

Prehistoric

- no recorded sites
- antiquities observation: one lithic scatter

Historic

no recorded sites

ZOOLOGIC

Fisheries

- small populations of rainbow trout in the perennial streams in 606

Wild horses and burros

- 606 within Jackson Mountain Horse Management Area
 - isolated finds as 606 is northern-most range of Jackson Mountains Management Area

Other Mammals

- deer habitat throughout 606
- deer summer range east half of 606
- deer winter range throughout 606 except extreme western edge
- north end of 606 is a deer migration route
- mountain lion habitat throughout 606
- cottontail rabbit habitat throughout 606

Birds

- chukar and mourning doves present throughout 606
- quail along southern edge, center and mideastern edge of 606
- greentailed towhees around Parrot Peak

BOTANIC

- riparian habitat of willows, horsetail and other species
- Sloan Creek is at 55% habitat potential
- Deer Creek is at 59% habitat potential
- no threatened, endangered or rare plants identified in 606

GEOLOGIC

- rock collecting of magnetite, hematite and cinnabar along eastern boundary
- folded rock formations and caves near Parrot Peak

PALEONTOLOGIC

- no known sites

SCENIC

- rugged peaks and severe surface variations
- variety of color
- variety of vegetation and geologic features
- outside landscapes (Black Rock Desert, Black Rock Range, Calico Mountain Range)

Component C: Multiple Resource Benefits

Wilderness designation of 606 could restrict motorized vehicular traffic on approximately 12.5 miles of roads and ways and an undetermined acreage of

land which is now accessible to off-road vehicles. A vehicle closure would enhance opportunities for primitive and unconfined recreation within those areas currently accessible to vehicles.

Long-term benefits from wilderness designation may accrue to those resources which would otherwise deteriorate should the area return to other multiple uses. Current land-use plans essentially maintain the existing environment and resource commitments. Should 606 not be designated wilderness, the federal land would remain accessible to mineral patenting, leasing, and other development. These potential developments could adversely impact water, soil, air, visual, cultural and other resources which benefit from the existing, non-developed environment. The extent of future development in 606 is unknown.

Component D: Diversity in the National Wilderness Preservation System

ECOSYSTEM AND LANDFORM DIVERSITY

- Bailey-Kuchler ecosystem: sagebrush-steppe with juniper (3130-49), saltbush-greasewood (3130-34)
- Sonoma-Gerlach Grazing E.I.S. vegetative communities: saltbush, barren and pinyon-juniper
- landform of 606 unique within Winnemucca District
- unknown how 606 compares with other WSAs with the same ecosystem outside the Winnemucca District

RECREATION NEAR SMSs

- approximately four-hour drive from Reno, the nearest SMSA

GEOGRAPHIC DISTRIBUTION OF WILDERNESS

- see Chapter III, Component D for an analysis

Criterion 2: Manageability

Physical Factors Influencing Manageability

CONFIGURATION

- three mining areas detected during the Wilderness Intensive Inventory create artificial intrusions into 606 (north, west, southeast portions); manageability could be difficult with present boundary
- boundaries located along private property lines could be difficult to manage; especially when there are no visible markers (fences)
- difficult to control off-road vehicle use off of western and southern boundary roads (R1-R11)
- difficult to control off-road vehicle use from portions of most of the cherrystem road and ways within WSA (B-3 in Appendix B)

LANDFORM

- landforms conducive to off-road vehicle use which would be difficult to control include
 - western border (alluvial fan)

INTRUSIONS AND OUTSIDE INFLUENCES

- managing for solitude would be difficult in areas described above where access is hard to control
- ranching along eastern and southern boundaries some impact on solitude and manageability
- mining areas deleted during inventory could become a significant manageability problem

Nonconforming But Accepted Uses

VALID EXISTING RIGHTS

Mining claims

- approximately 500 acres of WSA have 19 registered mining claims
 - six separate blocks
 - three in southwest portion
 - two in southeast portion
 - one in the center portion
- wilderness manageability of WSA would be difficult should mining claimants develop claims

Leases

- 3,696 acres of oil and gas leases located along western boundary
- probability of leases being developed undetermined
- possible to eliminate the majority of area leased without substantially reducing wilderness values

Permits

- 122 acres under "free use permit" for Humboldt County (gravel pits)
- three separate blocks located along western boundary of 606
- possible to eliminate the areas under permit without substantially reducing wilderness values

Non-federal land

- 681 acres of private land within 606
- parcels located along southern boundary and in center portion of 606
- difficult to eliminate largest parcel from area without substantially reducing wilderness values

ESTABLISHED AIRCRAFT USE

- no direct military flights over WSA; aircrafts can be heard passing over areas close to WSA
- Nevada Department of Wildlife conducts animal censuses during winter and spring using fixed-wing and helicopter

- BLM conducts wildhorse censuses and roundups, and livestock tallies in 606 by fixed-wing and helicopter
- permittees conduct livestock operation with fixed-wing and helicopter
- none of the established aircraft use would significantly reduce wilderness manageability
- see Influence of Outside Sights and Sounds for more detail (i.e., dates flying established)

EXISTING AND PROPOSED RESOURCE FACILITIES

- fencing of Jackson Creek under an aquatic HMP
 - project calls for mechanical detouring of roads; prohibited under wilderness manageability guidelines

LIVESTOCK GRAZING

Present grazing activities

- three grazing allotments within WSA
- existing range facilities would not significantly reduce wilderness manageability
- see NATURALNESS for details of existing facilities and seasons-of-use

Changes identified in Paradise-Denio Grazing E.I.S.

- two separate areas (northeast and southwest) proposed for sagebrush--major vegetative manipulation (total 1,509 acres); could eliminate portions of areas without significantly reducing wilderness values

STUDY POLICY QUALITY STANDARDS

Quality Standard 1: Energy and Critical Minerals

For background information and general description of the District see Appendix A.

General Geology

The general geology and mining history for the North and South Jackson Mountains WSAs are discussed under the mineral section of the South Jackson Mountains WSA.

Following is a discussion of the energy and mineral potential in the North Jackson Mountains WSA. Please refer to the Mineral Potential Classification Scheme, Figure 1 in Appendix A, for further explanation of alphanumeric classifications. Also see, in Appendix B, Tables B-10, B-11, B-12 and B-13 showing acreages for Metallic Mineral, Nonmetallic Mineral, Geothermal and Oil and Gas Potential; and Tables B-6, B-7 and B-8 showing acreages of Unpatented Mining Claims, and Geothermal and Oil and Gas Leases; as well as summary Tables B-14 and B-15 showing the Energy and Mineral Threshold Levels and Holdings affected by four of the alternatives proposed in the EIS (all except No Wilderness Alternative).

Metallic Mineral Potential

Barringer Resources (1982) indicated a very large and significant anomalous area termed "Northern Jackson Mountains" which covers most of the WSA. This large area has been divided into smaller anomalous sub-zones to aid in discussion of the metallic mineral potential in a more site-specific manner. Please refer to the Mineral Potential Maps for locations of these anomalous sub-zones discussed below.

JACKSON CREEK MINING DISTRICT. (4D) High Potential.

This district is at the head of Jackson Creek in the southeast corner of the WSA. This district has produced \$3 million in lump iron ore from the Happy Creek Igneous Complex and an intrusive Cretaceous-Jurassic diorite body. The Happy Creek Complex has been thrust over the King Lear Formation which also crops out in this district. For more details refer to section on Mining History of the Jackson Mountains, South Jackson Mountain WSA.

Sampling by Barringer Resources in this area did not indicate any other anomalous metal values.

NEW YEARS CANYON ANOMALOUS ZONE. (4D) High Potential.

This zone is located in the southwest corner of the WSA between Jackson Creek and Blind Canyon. Rock types in this zone include the McGill Canyon Succession(?) metasediments, the Boulder Creek Beds and the Happy Creek Complex which have been intruded by Cretaceous granodiorite.

Geochemical sampling and geostatistical modeling results show:

Response to Geostatistical Modeling

Moderate: gold-silver, base-precious metal

Anomalous Values

High: silver

Moderate: copper*, lead*

Low: zinc*, molybdenum, barium

The Harrison Grove Mine, a patented claim block midway up Jackson Creek has produced unknown amounts of copper and silver (Bill DeLong 1983). The mine is at the Boulder Creek Beds and Happy Creek Complex contact just a few hundred feet south of the granodiorite contact. Russell's mapping (1981) did not indicate any faulting at the mine site; however, more detailed work would need to be done in this area to determine the source of the copper mineralization.

A BLM field traverse (1983) in the New Years Canyon indicated several short adits, shafts and prospects on north-south fault zones in metasediments (McGill Succession?) near the granodiorite contact. Many fault zones prospected were silicified and contained pyrite, chalcopryite, chalcocite, malachite and azurite. These mineralized fault zones are likely the source of the anomalous silver, lead and other metal values indicated in the Barringer report. It is not known if any production resulted from these prospecting activities.

HAPPY CREEK ANOMALOUS ZONE. (3C) Moderate Potential.

This zone is in the northeast corner of the WSA along the western drainage basin of Happy Creek. Rock types in this zone include the King Lear Formation and the Happy Creek Complex.

Geochemical sampling and geostatistical modeling results show:

Anomalous Value

Moderate: copper*, mercury*

Low: molybdenum

Two separate claims blocks are recorded in Section 17 and Section 6 within this zone, and also several large claim blocks on the eastern and southern boundaries. Nothing is known about the activity on the claims in Section 17. Dave DeLong, owner of the claims in Section 6, indicated that a two-foot-wide vein occurs on the claim block with visible barite and copper oxide mineralization in the King Lear Formation (DeLong 1983). Extensive prospecting activities for gold on the DeLong family claim block and for uranium at Buff Peak have occurred on the eastern boundary of the WSA. For more details about this activity see Mining History Jackson Mountains.

DEER CREEK PEAK ANOMALOUS ZONE. (3C) Moderate Potential.

This zone covers the northern one-third of the WSA and is centered around Deer Creek Peak. Rock types in this zone include the Happy Creek Complex, King Lear Formation and minor outcroppings of Tertiary basalt and rhyolite along the northern boundary of the WSA.

Geochemical sampling and geostatistical modeling results show:

Anomalous Values

Low: copper*, lead*, tungsten*

Significant prospecting activities have occurred on the DeLong family claim block on the northern boundary of the WSA one and one-half miles north of Deer Creek Peak. A tunnel has been driven, but no records of production are indicated in the literature. Dave DeLong has said the property contains silver, gold and copper values. Only one stream sediment sample was taken upstream of the apparent mineralized zone, with no indication of any anomalous values (Barringer Resources 1982).

The numerous trenches and a tunnel on the claim have exposed zones of argillic alteration up to six feet wide in the Happy Creek Volcanic Complex (BLM Field Examination 1983).

Prospecting activities in the form of a 50-foot-long trench may be found in Section 30. This trench exposed minor malachite coatings along fractures in volcanic rocks of the Happy Creek Complex (BLM Field Examination 1983). No mining claims are recorded in this section.

A BLM field traverse (1983) up Deer Creek indicated numerous prospect pits and short caved adits in the headwaters. Mineralized north-south shear zones exposed by the prospecting activities contained minor amounts of

malachite, azurite and possibly cinnabar(?). A few mining claims were recently located in May 1983, in this area.

Nonmetallic Mineral Potentials

Barite mineralization in veins has been reported on Dave DeLong's claims in Section 6 of the Happy Creek Zone (1983). Several county-maintained gravel pits are located along the western boundary of the WSA.

The following portions of the WSA are considered to have nonmetallic mineral potential:

High (4D) - A 1-mile-wide strip along the west boundary for sand and gravel

Moderate (3C) - Happy Creek Zone - veins containing barite mineralization

Low (2B) - The remainder of the WSA for barite mineralization

Geothermal Resource Potential

There are no known hot springs, warm springs or warm wells in or adjacent to the WSA. Several warm wells and one warm spring are found in the Quinn River Crossing area at the north tip of the Jackson Mountains. There are presently no geothermal leases in or adjacent to the North Jackson Mountains WSA, nor have there been any geothermal exploration activities within or adjacent to the WSA.

The following portions of the WSA are considered to have geothermal potential:

Moderate - A 1-mile-wide strip inside west boundary is 3C and a 1-mile-wide strip inside northeast boundary is 3B

Low (2B) - The remainder of the WSA

Oil and Gas Potential

Some structural traps for hydrocarbons could occur in the WSA, especially in the Boulder Creek Beds, King Lear Formation and the Pansy Lee Conglomerate. Russell (1981) said that lush vegetative areas were present during deposition of the Boulder Creek Beds. Willden (1979) also said that the King Lear Formation and possibly the Pansy Lee Conglomerate have organic-rich beds with a good potential for the accumulation of hydrocarbons (see Oil and Gas Potential Black Rock Desert WSA for more details). It is likely that much of the hydrocarbons would have been driven off by intrusion of the Parrot Peak granodiorite body or could have migrated down-dip due to uplift of the Jackson Mountains. However, structural traps occurring in the Jackson Mountains containing hydrocarbon accumulations cannot be completely ruled out.

Sun Oil indicated in their plan of operation for the oil well in the Black Rock Desert that they wish to test the Cretaceous sedimentary units (King Lear Formation?) in addition to stratigraphically younger units. Several oil and gas leases extend into the west and northeast sides of the WSA.

Quality Standard 3: Impact of Non-designation on Wilderness Values

SHORT-TERM IMPACTS

-reduced opportunities for primitive and unconfined recreation and solitude in those areas accessible to off-road vehicles

LONG-TERM IMPACTS

-continued development of mineral and energy resources could eventually eliminate opportunities for naturalness, solitude, and primitive and unconfined recreation within portions of WSA
-potential discussed in Quality Standard 1
-area would remain open for development of other resources which might impair wilderness values; extent speculative

Quality Standard 4: Public Comment

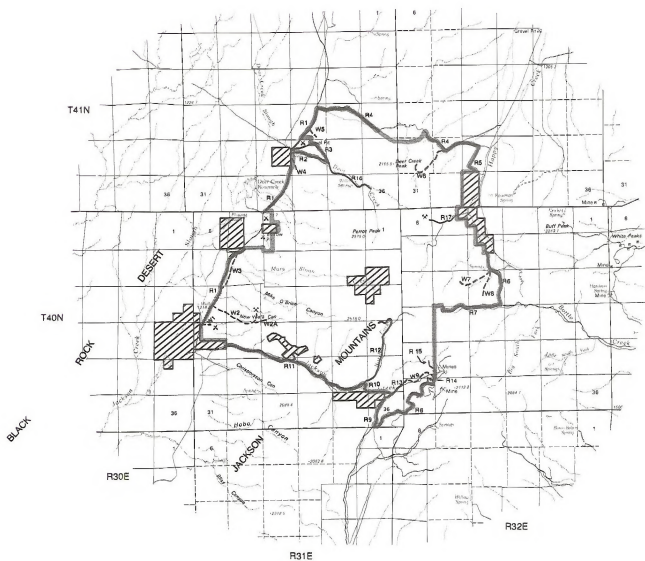
See District-wide Analysis, Chapter III

Quality Standard 5: Local and Regional Socioeconomic Effects








See District-wide Analysis, Chapter III

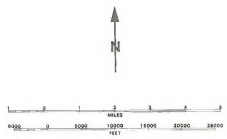
Quality Standard 6: Consistency With Other Plans

See District-wide Analysis, Chapter III



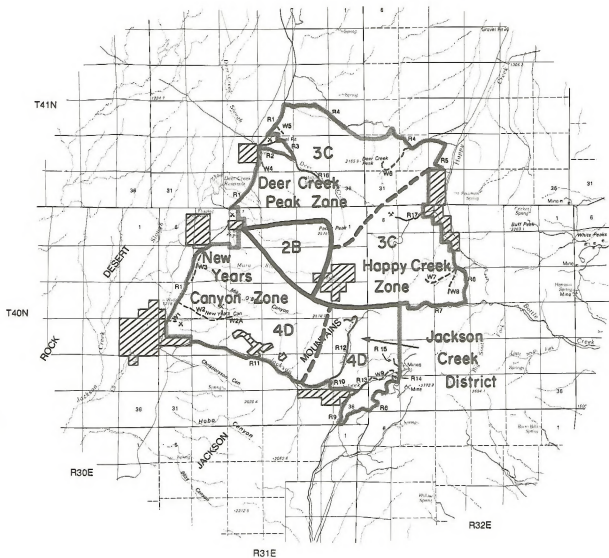
BLACK

-  PRIVATE LAND (SURFACE & MINERALS)
-  PRIVATE SURFACE (PUBLIC MINERALS)
-  W. S. A. BOUNDARY
-  ROAD
-  WAY
-  MINE
-  GRAVEL PIT



NV-020-606 NORTH JACKSON MTS.

BLACK



--- BOUNDARY OF ZONES WITH APPROXIMATELY EQUIVALENT MINERAL POTENTIAL BUT WHICH CONTAIN DIFFERENT MINERALS (SEE TEXT).

PRIVATE LAND (SURFACE & MINERALS)

PRIVATE SURFACE (PUBLIC MINERALS)

W.S.A. BOUNDARY

ROAD

WAY

MINE

GRAVEL PIT



FAVORABILITY

- 1 UNFAVORABLE POTENTIAL
- 2 LOW POTENTIAL
- 3 MODERATE POTENTIAL
- 4 HIGH POTENTIAL

LEVEL OF CONFIDENCE

- A. INSUFFICIENT DATA
- B. LOW CONFIDENCE (indirect evidence)
- C. MODERATE CONFIDENCE (Direct evidence)
- D. HIGH CONFIDENCE (Abundant direct evidence)

NV-020-606 NORTH JACKSON MTS.
MINERAL POTENTIAL

Wilderness Study Area 620: Black Rock Desert

DESCRIPTION

Location

- located in western half of Humboldt County, Nevada, approximately 60 miles west of Winnemucca, Nevada
- three hour drive from Reno, the nearest Standard Metropolitan Statistical Area
- best access is well-maintained BLM road #2049 on eastern boundary

Configuration and Size

- bounded by county, BLM and privately-maintained roads (85.4) except small portions which abut against private land (14) and topographic features (11.5)
- 620 is approximately 20 miles east-west and from 40 miles north-south
- 319,594 acres of public land

Physical Environment

- altitude range: 3,900 ft to 5,000 ft.
- Bailey-Kuchler ecosystem: desert (3130-39) saltbush, greasewood (3130-34)
- Paradise-Denio Grazing E.I.S. vegetation communities: saltbush, grass, greasewood, waste
- one major landform - large desert playa that is bordered by a high rugged mountain range to the east (Jackson Mountains) and a moderate mountain range to the west (Black Rock Range)
- periphery of playa is lined with sagebrush and greasewood hummocks
- three major drainages flow through 620
 - Quinn River is the major drainage which flows vertically through the center of the WSA. Most of the water source flows under ground. During the summer months the river is dry
 - Leonard Creek Slough flows into the WSA from the northwest, continuing vertically through 620's western half. Typical of this desert environment, surface water collects in the drainage channel in the wetter months and evaporates during the dry summer months
 - Jackson Creek Slough makes its way through the eastern sector of 620. This narrow channel also flows southward during the wet season, then dries to a barely visible drainage during the dry summer months
- the northwest portion of the WSA presents a different landform from the stark white desert playa
- several small low-lying basalt buttes line 620's northwest border. Northeast of these small buttes lies Pinto Mountain, a large reddish-black basalt mesa. Extending in a north-south direction across the desert, this mesa is approximately two miles in length and 3/4 of a mile in width. This feature is a visible landmark within the unit as it presents such a contrast against the stark desert playa.

STUDY POLICY CRITERIA

Criterion 1: Evaluation of Wilderness Values

Component A: Mandatory Wilderness Characteristics

SIZE

-319,624 acres within boundary, including 30 acres of private land and 319,594 acres of public land

NATURALNESS

Developments within WSA

Range related developments (see Table B-1 in Appendix B)

-fewer grazing allotments located in WSA (see Table B-2 in Appendix B)

Other man-made features

-eight ways totalling 8.3 miles extend from the east, west and northern boundaries (see Table B-3 in Appendix B)

-one road totalling .3 mile extends from the eastern boundary

-area was old bombing range, some debris still exists within the unit most of which is buried

-off-road vehicle tracks, most of which wash away each year during wet months

-oil and gas seismic lines, barely visible

Outside Imprints

-railroad tracks, parallel southern boundary

-ranches - periphery of unit

-mining areas in Jackson Mountains and Black Rock Range

-traffic along boundary roads

-old townsite of Sulphur

-*Two-mile telephone line paralleling northwest boundary road*

Location and size of areas subject to imprints

-the interior of 620 is almost free of imprints except for the vehicle tracks that cross it. These tracks are visually insignificant.

-the range improvements are visually insignificant, except within a mile or two of these features

-two mile telephone line paralleling northwest boundary road

-most apparent are the ranches and traffic along the unit's

boundaries. The influence of these imprints is one to two miles from the boundary. As one moves into the interior of the WSA the earth's curvature and flatness of the landscape provides adequate screening from these imprints.

Rehabilitation Potential

-most developments could be rehabilitated without mechanical manipulation

Potential for separating areas in WSA subject to imprints

- no need to separate areas from range improvements
- boundary adjustment away from boundary roads would be difficult as no distinct topographical features exist

Overall influence of imprints

- most of the WSA is substantially natural
- visitors would have little difficulty locating substantially natural landscapes

SOLITUDE

Solitude is defined as the opportunity to avoid the sights, sounds and evidence of other people

Influence of outside sights and sounds

Economic activity

- ranches are located along WSA's north, east and west borders
- Ranching activities can be seen within a mile to two miles of their occurrence
- the railroad crosses near the southern tip of WSA. Trains crossing this area can be seen from one to two miles within WSA
- geothermal and oil and gas exploration is taking place all along the southeast border. This activity is visible when in the immediate area of its occurrence

Aircraft flights

- daily military flights occur across WSA. These are low-level flights. Presence is a short period of time, having no real impact on solitude

Vehicular traffic

- eastern and western boundary roads which run the length of WSA are main access. Main artery for ranching activity and geothermal/oil and gas exploration. Traffic is visible from about two miles from the border
- traffic along the southern boundary road is less frequent than the other boundary roads. Visible from one to two miles
- nearly all is accessible to vehicular traffic due to the flat landscape

Physical factors

Topographic and vegetative screening

- greatest portion of WSA consists of a white desert playa. The periphery is lined with small low-lying mounds (hummocks), which

provides little if any amount of screening. Pinto Mountain and the small buttes around it offer some topographic diversity, which provides a small amount of screening
-vegetation is almost nonexistent except for the small salt bushes and greasewoods that make up the hummocks bordering WSA

Configuration

-620 is approximately 40 miles long and 20 miles wide. The immensity is what makes it so conducive to solitude

Secluded Spots

-vast emptiness offers seclusion

Proximity to unnatural features

-unnatural features exist mainly along WSA's boundaries. These features become unrecognizable from a short distance, within a mile to two miles inside WSA

RECREATION OPPORTUNITY

Access

-accessible from anywhere along its boundaries, except the portion of WSA bordered by private inholdings
-accessibility greatest from Sulphur to Jackson Creek Ranch

Attractions

Points of interest

-unique desert playa landscape and immensity of the playa

Challenge

-vastness and bleak terrain is a challenge; high vulnerability to the elements
-some surface water is available during the wetter months. Must be treated. Playa is not passable by foot at this time of year.

Scenic qualities

-playa is an open vista to the surrounding landscape, Jackson Mountains, Black Rock Range, Black Rock Point, Selenites

Activities

Dayhiking

-identified in Sierra Club totebook "Hiking the Great Basin" by John Hart (1981)
-day hikes in spring and fall out onto the playa

-extreme temperatures during the summer months is the greatest obstacle in hiking during the day

Camping

- few opportunities for camping. Campsites are limited to the periphery of the area
- topography and vegetation offer little in the way of screening or cover
- camping would most likely be overnight for those interested in making a day hike out onto the playa

Backpacking

- possibility exists, but is not that likely to occur, or be a prime interest for wilderness seekers
- environment and character is not typical of most areas suited for backpacking. Harsh environment, extreme temperatures, lack of water, exposure to the elements are all factors which provide little if any backpacking appeal
- best possibility of backpacking through 620 would be to cross at night. This would take an experienced person who is knowledgeable of this particular type of desert landscape and various outdoor survival techniques

Hunting

- the area does not support any type of game populations

Floating

- Quinn River offers floating (with small rubberized boats) opportunities during wet years
 - Reno Sierra Club excursion taken in spring of 1982, 1983
 - used single and two person rubberized boats
 - floated from Leonard Creek crossing through 620 on Quinn River; approximately 30 miles in two days

Horsepacking

- terrain and landscape not conducive to horse use
- lacks sufficient water and vegetation for animal consumption

Nature Study

- geology (dry bedlake from Lake Lahontan)
- unique desert ecosystem

Sailplaning

- flat dry lake bed (Playa) perfect for sailplaning in dry season (southern portion of WSA)

Hot Air Ballooning

Component B: Special features

CULTURAL

Prehistoric

- total recorded sites: 59
- S1 sites: woolly mammoth site
 - excavation and analysis of mammoth undertaken by archeologists and paleontologists
 - may be associated with early man site
 - has high scientific value
- S2 sites: one lithic scatter
- S3 sites: 13 isolated finds, 21 lithic scatters
- S4 sites: 20 isolated finds
- unrated sites: three lithic scatters

Historic

- none identified

ZOOLOGIC

Fisheries

- none identified

Wild Horses and Burros

- portion along eastern boundary in Jackson Mountains Herd Management Area

Other Mammals

- antelope: winter range located in two areas along the midwestern edge. Critical winter range in the northwest corner
- deer: eastern margin is deer habitat. Small area on west edge is deer range
- mountain lion: eastern edge is habitat

Birds

- sage grouse: western edge within a sage grouse distribution area
- chukar: low density populations found in small area along midwestern edge

BOTANIC

- two plants of a Special Concern are located just outside the periphery
 - Astragalus petrocarpus (winged milk-vetch) western slope of the Jackson Mountains

-Caulanthus barnebyi - (Barneby wild cabbage) border of the Black Rock Desert

GEOLOGIC

- Pinto Mountains
- rock collecting - common opal onyx, sulphur, travertine and hot springs deposits
- interesting geologic feature because of faulted and tilted beds, grandiorite outcroppings and hot springs

PALEONTOLOGIC

- skeletal remains of woolly mammoth and other Pleistocene mammals
- some sites have excavation potential

SCENIC

- vast, flat alkali plain
- scenic vista goes for miles--mirages can be seen off the desert floor
- late evening and early morning transforms the surrounding mountains into a brilliant colorful landscape

Component C: Multiple Resource Benefits

Wilderness designation would restrict motorized vehicular traffic from the entire WSA, as the area's flat open terrain allows for ORV use throughout most of the unit. A vehicle closure would enhance opportunities for primitive and unconfined recreation throughout most of the WSA.

Long-term benefits from wilderness designation may occur to those resources which would otherwise deteriorate should the area return to other multiple uses. Current land-use plans essentially maintain the existing environment and resource commitments. Should WSA not be designated wilderness, the federal land would remain accessible to mineral patenting, leasing and other development. These potential developments could adversely impact water, soil, air, visual, cultural and other resources which benefit from the existing, non-developed environment. The extent of future development in the WSA is unknown.

Component D: Diversity in the National Wilderness Preservation System

ECOSYSTEM AND LANDFORM DIVERSITY

- Bailey-Kuchler ecosystem: Desert, saltbush-greasewood
- Paradise-Denio Grazing E.I.S. vegetation communities: waste (90%) greasewood (periphery) grass and saltbush (lower southwest periphery)
- unknown how 620 compares with other WSAs with same landscape outside Winnemucca District

RECREATION NEAR SMSAs

- approximately three hours drive from Reno, the nearest SMSA

GEOGRAPHIC DISTRIBUTION OF WILDERNESS

-see Chapter III, Component D, for an analysis

Criterion 2: Manageability

Physical Factors Influencing Manageability

CONFIGURATION

- portions of eastern, western and northern boundary somewhat erratic, unnatural features and private land. Boundaries are identified by legal description (Township and Range) and location of disturbed surface area
- on the ground identification of boundary could present a problem

ACCESS

- difficult to control access from entire border
- difficult to control ORV use within WSA. Flat open landscape makes 620 open to all types of off-road vehicles

LANDFORM

- landform conducive to off-road vehicle use, which would be difficult to control include
 - the playa covers 90% of the WSA
 - portions of the hummock area located along 620's eastern and western border

INTRUSIONS AND OUTSIDE INFLUENCES

- managing for solitude
 - low-level frequent aircraft flights over WSA
 - ORV use
 - geothermal and oil and gas exploration

Nonconforming But Accepted Uses

VALID EXISTING RIGHTS

Mining Claims

- approximately 900 acres of 620 have 27 registered mining claims in three separate blocks

Leases

- oil and gas lease - 204,919 acres located at extreme southern tip of WSA and within western half
- geothermal leases - 26,853 acres located within the southern half
- geothermal simultaneous - 10,240 blocks located at the southern end
- oil and gas lease applications - 18,931 acres-scattered blocks throughout WSA

-for location of leases and applications see Wilderness E.I.S. overlays or Paradise/Denio Geothermal and Oil and Gas URA overlays
-DLE Application -323 acres located in T. 41 N., R. 28 E., Secs. 29 and 21

Non-federal Land

-35 acres of private inholdings located in 620

ESTABLISHED AIRCRAFT USE

-established military flights (see Influence of Outside Sights and Sounds for more detail)

LIVESTOCK GRAZING

Present Grazing Activities

-See Table B-2 in Appendix B for allotments in WSA and type of livestock use

Changes identified in Paradise-Denio Grazing E.I.S.

-none identified

STUDY POLICY QUALITY STANDARDS

Quality Standard 1: Energy and Critical Minerals

For background information and general description of the District see Appendix A.

General Geology

The part of the Black Rock Desert presently under wilderness consideration is the east arm located between the Black Rock Range to the west and the Jackson Mountains to the east. This valley is a down-dropped block of the Basin and Range Province. During the Pleistocene epoch this valley was covered by the ancient Lake Lahontan.

Geologic deposits and rock types within the WSA include Triassic-Jurassic phyllite, slate and fine-grained quartzite; Mesozoic quartz monzonite, located in Pinto Mountain; Oligocene-Miocene rhyolitic flows and intrusives, silicic ash-flow tuffs, air-fall tuffs and sedimentary rocks and Miocene-Pliocene basalts and silicic ash-flow tuffs, air-fall tuffs and sedimentary rocks along the east side of the Black Rock Range and Pinto Mountain; and Quaternary playa sediments and alluvial fan deposits located on the lowlands.

Following is a discussion of the energy and mineral potential in the Black Rock Desert WSA. Please refer to the Mineral Potential Classification Scheme, Figure 1 in Appendix A, for further explanation of alphanumeric classifications. Also see, in Appendix B, Tables B-10, B-11, B-12 and B-13 showing acreages for Metallic Mineral, Nonmetallic Mineral, Geothermal and Oil and Gas Potential; and Tables B-6, B-7 and B-8 showing acreages of Unpatented Mining Claims, and Geothermal and Oil and Gas Leases; as well as summary Tables B-14 and B-15 showing the Energy and Mineral Threshold Levels and Holdings affected by four of the alternatives proposed in the EIS (all except No Wilderness Alternative).

Metallic Mineral Potential

The Leonard Creek and Varyville Mining Districts are on the northwest boundary of the WSA in the Pine Forest Range. These two districts have been discussed under the Energy and Minerals section of the Blue Lakes/Alder Creek WSAs. The Red Butte Mining District and numerous other mining activities are along the eastern boundary of the WSA in the Jackson Mountains. Please refer to the Energy and Critical Minerals section in the North and South Jackson Mountains WSAs for discussion of these mining activities.

The Sulphur Mining District lies on the northwest slope of Kamma Mountains at the southern tip of the WSA. Bailey (1944) has indicated that the sulfur deposits were first shown to white men by Indians in the 1870s. In 1882 it was reported that some six tons of sulfur a day were produced from the district. The occurrence of cinnabar and alum was not recorded in the district until 1904. No attempt was made to recover mercury until 1941 when Hansen, Reed and Otto C. Miller erected a small two-pipe retort but failed to produce any mercury. Late in 1942 George Kellogg, Barnes and S. H. Beeten bought the property, and early in 1943 the ground was leased to C. D and J. D. Edmonson who, after recovering several flasks in the retort, began installing a 15-ton furnace. Little is known of the success of this operation.

The remnants of a mill on the patented claim block on a terrace above the floor of the Black Rock Desert indicates the very early attempts at producing elemental sulfur. A new mill was constructed at the base of the terrace just below the old mill site to process the sulfur ore as a soil conditioner. The present abandoned townsite of Sulphur adjacent to the Western Pacific Railroad track represents the more recent attempt at producing sulfur soil conditioners. Some larger open pit mines were developed with heavy equipment in the more recent sulfur mining attempts.

Total sulfur production is unknown; however, based on the size of the open pit mines and tailings piles at the old Sulphur mill site, several thousand tons of sulfur have been produced since 1870 (USDI Blue Wing URA 1979). Bailey (1944) said that 25 flasks of mercury had been produced by the end of 1943.

Following is an account of these early mining activities:

"The old sulfur mine consisted of several large glory holes and extensive underground workings driven for haulage and to explore the rock beneath the glory holes. Only a few crosscuts and shallow trenches were made by the quicksilver miners in order to better expose the cinnabar ore encountered during the sulfur mining.

The rocks consist of Tertiary interbedded rhyolite agglomerates and tuffs which are locally silicified and impregnated with sulfur and some alum, and still more locally coated and filled with cinnabar. The beds are nearly flat, but a short distance north of the mine they dip gently to the south. In the area containing the principal workings considerable alluvium mantles the "incipient opalite."

Finely crystalline cinnabar occurs as sugary coatings around fragments of both unsilicified and silicified tuff and agglomerate in several places. Only in a few small areas was the cinnabar seen to be disseminated through the silicified tuffs, forming typical opalite ore. That the cinnabar is later than the sulfur is indicated by thin coatings of cinnabar in small vertical tubules in the sulfur" (Bailey 1944).

The Sulphur District is presently the site of extensive precious metal exploration activities by several large companies.

Barringer Resources (1982) indicated two separate anomalous areas termed "Leonard Creek Slough" and "Pinto Mountain," both located in the northwest portion of the WSA. These two areas have been subdivided and other anomalous zones have been added to aid in discussion of the metallic mineral potential in a more site-specific manner. It should be noted that anomalous metal values occurred throughout the playa portion of the WSA; however, these metal values likely have been transported considerable distances. Only the following described anomalous zones are felt to be attributable to bedrock sources, either outcropping or buried at shallow depths or hot spring activity. Please refer to the Mineral Potential Maps for locations of the anomalous sub-zones discussed below.

PINTO MOUNTAIN ANOMALOUS ZONE. (3C) Moderate Potential.

This zone surrounds Pinto Mountain in the northwest corner of the WSA. Rock types include Triassic-Jurassic phyllite, slate and fine-grained quartzite; Mesozoic quartz monzonite, Oligocene-Miocene silicic ash-flow tuffs, air-fall tuffs, sedimentary rocks, Miocene-Pliocene basalts and silicic ash-flow tuffs, air-fall tuffs, sedimentary rocks and Quaternary playa sediments.

Geochemical sampling and geostatistical modeling results show:

Response to Geostatistical Modeling

Moderate: base-precious metal

Anomalous Values

High: tungsten*

Moderate: molybdenum, zinc*

Low: barium

The metal values in this zone could be related to three possible sources. One source could be related to hot spring activity as presently expressed by Pinto Hot Springs. Significant tungsten production occurred during World War II in the Golconda District where tungsten values were associated with surface hot spring deposits. A second source could be from skarn deposits associated with quartz monzonite and other metamorphic rocks, or possibly related to the volcanic rocks exposed in Pinto Mountain. A third source could be outwash from mineralized areas (Varyville and Leonard Creek Mining Districts) in the Black Rock Range to the west or Pine Forest Range to the north. More detailed work needs to be done in this area to isolate the source of the anomalous metal values.

Mercury mineralization in the form of cinnabar was observed during a BLM field exam (1983) in sinter deposits around Pinto Hot Springs. Twenty-one mining claims have been located in the hot springs area for mercury mineralization. Exploration activities on the claims have included some minor dozer cuts and a short adit driven into a quartz monzonite north of the springs. Inspections of the adit and dump did not indicate any visible evidence of mineralization or mineralized structures.

BARTLETT CREEK ANOMALOUS ZONE. (3B) Moderate Potential.

This zone is just north of Pinto Mountain where Bartlett Creek empties onto the Black Rock Desert. Rock types include Miocene-Pliocene basalt flows and Quaternary playa sediments.

Geochemical sampling and geostatistical modeling results show:

Anomalous Values

High: molybdenum

Moderate: mercury*, barium

These anomalous values could be related to hot spring activity associated with Pinto Hot Springs, isolated volcanic butts exposed in this area or outwash of the Bartlett Creek drainage basin in the Varyville Mining District just west of the WSA. More detailed work needs to be done in this area to determine the source of these anomalous metal values.

A field examination was conducted in June 1983 on a portion of 16 mining claims located in the SW corner of this zone. No surface-disturbing exploration activities have been conducted on the claims inspected, and visible evidence of mineralized rocks or structures were not readily apparent in the basaltic rocks cropping out in the area.

PAIUTE CREEK ANOMALOUS ZONE. (3B) Moderate Potential.

This zone is southwest of Pinto Mountain where Paiute Creek empties onto the Black Rock Desert. Rock types include Oligocene-Miocene silicic ash-flow tuffs, air-fall tuffs and sedimentary rocks, Miocene-Pliocene basalt flows and Quaternary playa sediments.

Geochemical sampling and geostatistical modeling results show:

Response to Geostatistical Modeling

Low: mafic copper-nickel

Very low: base-precious metal

Anomalous Values

Moderate: zinc*, nickel*, molybdenum

Low: tungsten*, barium

These metal values could be related to hot spring activity, Tertiary basalts and silicic ash-flow tuffs outcropping in the area, or outwash from the Paiute Creek drainage basin.

No prospecting activities or mining claims are known in this zone.

LEONARD CREEK SLOUGH ANOMALOUS ZONE. (2B) Low Potential.

This zone is just east of Pinto Mountain on the Quaternary playa surface of the Black Rock Desert.

Geochemical sampling and geostatistical modeling results show:

Response to Geostatistical Modeling

Moderate: base-precious metal

Low: mafic copper-nickel, gold-silver, mercury-antimony

Anomalous Values

High: molybdenum

Low: tungsten*, molybdenum

Very Low: zinc*

Here again these anomalous values could be related to hot spring activity or outwash from surrounding bedrock terrain.

No prospecting activities or mining claims are known in this zone.

ELEPHANT MOUNTAIN ANOMALOUS ZONE. (2B) Low Potential.

This zone is centered on Elephant Mountain along the west side of the WSA. Rock types include Oligocene-Miocene rhyolitic flows and shallow intrusives.

Geochemical sampling and geostatistical modeling results show:

Anomalous Values

Low: molybdenum

Very Low: tungsten*

The molybdenum values in this zone are an extension of the Central Molybdenum Zone described in the Energy and Critical Minerals section of the Pahute Peak WSA. These rhyolitic flows and intrusive rocks appear to contain high background values in molybdenum.

No prospecting activities or mining claims are known in this zone.

INDIAN CREEK ANOMALOUS ZONE. (2B) Low Potential.

This zone is along the west central boundary of the WSA drained by Indian Creek. This area is covered with playa sediments and bedrock outcroppings are not known to occur.

Geochemical sampling and geostatistical modeling results show:

Response to Geostatistical Modeling

Low: gold-silver

Very low: base-precious metal

Anomalous Values

High: tungsten*

Moderate: silver, molybdenum

Low: barium

These anomalous values could be related to outwash from the Black Rock Range or hot spring activity.

No prospecting activities or mining claims are known in this zone.

PIDGEON SPRING ANOMALOUS ZONE. (2B) Low Potential.

This zone is along the west-central boundary of the WSA and extends into the Pahute Peak WSA under the same name. Rock types include Miocene-Pliocene basalt flows and Quaternary playa sediments and alluvium.

Geochemical sampling and geostatistical modeling results show:

Anomalous Values

Low: tungsten*, zinc*, molybdenum
barium

These anomalous values may be related to the basalt flows, outwash from the Black Rock Range or hot spring activity.

No prospecting activities or mining claims are known in this zone.

McFARLAN'S HOT SPRING ANOMALOUS ZONE. (2B) Low Potential.

This zone is along the east-central boundary of the WSA adjacent to McFarlan's Hot Spring. Quaternary playa sediments cover this zone.

Geochemical sampling and geostatistical modeling results show:

Response to Geostatistical Modeling

Low: mafic copper-nickel

Anomalous values

Moderate: tungsten*

Low: mercury*, zinc*

These anomalous values may be related to hot spring activity, outwash from the Miocene-Pliocene andesites, basalts and tuffaceous sedimentary rocks cropping out just west of McFarlan's Hot Spring or outwash from the Red Butte Mining District in the Jackson Mountains.

No prospecting activities or mining claims known in this zone.

OTHER MINING CLAIM AREAS

Six mining claims are in the extreme southern tip of the WSA at Sulphur. Little or no work is known to have occurred on these claims which are located on fairly deep Quaternary alluvium and playa sedimentary. These claims likely represent speculative, peripheral staking to the precious metal exploration in the Sulphur district just south of the WSA.

Nonmetallic Mineral Potential

Clearly the desert climate of the Basin and Range Province affords the greatest opportunity for concentrations of lithium, sodium and potassium in playa areas similar to the Black Rock Desert. Lithium values are distinctly higher in the playa sediments of this area, running about 40-50 ppm compared to an average of about 20 ppm for bedrock terrain in the District's other WSAs. Lithium values of the Tertiary Fluviatile-lacustrine sediments of the McDermitt caldera contain between 0.01-0.1% lithium with some clay samples running as high as 0.65% lithium. All drainage systems of the lithium rich McDermitt Caldera area have emptied into the Black Rock Desert at least through the Pleistocene and may have contributed to concentrations of lithium in the Black Rock Desert.

"In the course of evaporation of a lake to dryness, and the subsequent lowering of the water table below the sediment surface, any concentrations of lithium in the Black Rock Desert. Vine (1980, p. 13) has stated: "In the course of evaporation of a lake to dryness, and the subsequent lowering of the water table below the sediment surface, any concentration of lithium in the waters is apparently leached from the surface sediment without having a significant trace. Common surface clays, carbonates, sulfates and chlorides do not necessarily retain enough lithium to show an anomaly. Stable lithium clays or other lithium minerals probably form only under special conditions not generally found at the surface of the plays." He also indicated that the only clearly satisfactory way to search for and to identify lithium deposits in sedimentary rocks or in the brines that might accompany buried evaporite sequences is by drilling. Davis (1976) has indicated that playa sediment samples containing 300 ppm lithium should be considered anomalous for exploration purposes. If lithium values have in fact been leached from the surface samples taken by Barringer Resources on the playa surface of the Black Rock Desert WSA, then values of depth could likely be much higher than the values presently indicated at the surface.

The playa clays in the WSA have potential for sealout uses in reservoirs, ditches, canals, etc., and gold cyanide leaching operations which require impervious pads and reservoirs.

The central playa surface of the WSA has the following nonmetallic mineral potential:

- High (4D) - extensive clay deposits
- Moderate (3C) - sodium, potassium, lithium either as salts, brines or clay deposits

Geothermal Resource Potential

Most of Pinto Hot Spring Known Geothermal Resource (KGRA) is within the WSA boundary. The KGRA covers all of Section 16 through 21 and Sections 27 through 34 of T. 40 N., R. 28 E., in the northwestern corner of the WSA. Reservoir temperatures have been estimated at 165°C and electrical generating capabilities are rated at 19 megawatts (Mariner 1974).

All of the KGRA has been leased and much of the Federal lands surrounding the KGRA have also been leased. To date no deep wells have been drilled in this area and very little shallow temperature gradient drilling has been done. This hot spring activity appears to continue southward from Pinto Hot Spring along the east flank of the Black Rock Range, as evidenced by warm springs and a reported hot well. Cain Spring, about nine and one-half miles southwest of Pinto Hot Springs, is only one of the many warm springs in this area that has been checked with a recorded temperature of 74°F. The reported warm well in the NE1/4 Sec. 5 T. 37 N., R. 27 E., about 5 1/2 miles south of Pidgeon Springs, had a recorded temperature of 60°F (Sinclair 1963). Basically the whole western boundary of the WSA, along the flank of the Black Rock Range has geothermal potential.

McFarlan's Hot Springs on the southeastern boundary of the WSA about 12-1/2 miles north of Sulphur has not been classified as a Known Geothermal Resource Area. However, extensive shallow temperature gradient drilling to depths of 2,000' have been done in this area and throughout the southern tip of the WSA. Temperatures of 171°F are recorded at the hot spring which issue from elevated tufa mounds (USDI Paradise URA 1979).

Some 26,853 acres are held under geothermal leases in the Black Rock Desert WSA in the Pinto Hot Springs and McFarlan's Hot Springs areas.

The following portions of the WSA are considered to have geothermal potential:

- High (4D) - A 4-mile-wide strip along the northern and northwestern boundaries
- Moderate - A 4-mile-wide strip along southwest boundary and a 4-mile-wide strip along the northeast boundary are 3C, also a 4-mile-wide strip along the southeast boundary is 3D
- Low (2B) - The remainder of the WSA

Oil and Gas Potential

The Black Rock Desert WSA has been an area of high interest for its oil and gas potential since 1979. The only portions of the WSA not containing oil and gas leases is a very narrow strip along the southwestern boundary and in the extreme northwestern corner around Pinto Mountain. The whole WSA has been the site of active seismic exploration in the past. One well completed to a depth of 7,931 feet by Sun Oil, 3 miles north of McFarlan's Hot Spring, has been reported as a dry hole (June 1983).

Work done by Russell (1981) indicated that abundant fossil plant life is recorded in the mid to late Triassic Boulder Creek sedimentary beds cropping out in the Jackson Mountains to the west. Considerable fossil plant life was also associated with the Late Triassic to Mid Jurassic, Happy Creek Volcanic island arc which developed in an oceanic basin west of the continental margin.

Willden (1979) said that organic-rich limestones and siltstones occur in the Cretaceous King Lear Formation exposed in the Jackson Mountains to the east. He considers these limestones and siltstones to likely contain enough organic material to have generated hydrocarbons where they are buried sufficiently deep in the Black Rock Desert and Desert Valley. The exposed thickness of the King Lear is about 1,119 feet, but Willden feels the unit is much thicker.

The thickest section of Pansy Lee conglomerate exposed in the Jackson Mountains measured 493 feet but is incomplete because it had an erosional top and the base was not exposed.

Organic-rich beds have not been seen in the Pansy Lee Conglomerate, but Willden (1979) feels such beds can be expected to occur in this unit because of its well-integrated fluvial depositional environment. A portion of the Pansy Lee Conglomerate is considered to be of sufficient permeability to have suitable reservoir rocks for the migration of hydrocarbons.

The King Lear Formation and Pansy Lee Conglomerate are likely overlain by extensively fractured or jointed densely welded ash-flow tuffs and other types of volcanic rocks also exposed in the Jackson Mountains. Willden (1979) also feels these volcanic rocks could be considered reservoir rocks for the migration of hydrocarbons much like the welded ash-flow tuff oil-bearing reservoir rocks in Railroad Valley, Nevada.

Some 204,919 acres are held under oil and gas leases in the Black Rock Desert WSA. Some of these leases will likely be dropped since completion of the dry well by Sun Oil.

The oil and gas potential of the entire WSA is classified (3B), moderate potential.

Quality Standard 2: Impact on Other Resources

Recreation

- wilderness designation would restrict motorized vehicle use on about 287,000 acres
- recreation opportunities within WSA shifted from motorized to non-motorized
- vehicle restrictions would adversely affect the use of motorized vehicles for recreational purposes currently occurring within WSA
- motorized vehicle use allowed to continue on existing boundary and cherrystem roads

Cultural Resources

- wilderness designation could indirectly add to the existing legal protection of cultural resources by limiting resource development and use
- wilderness designation could possibly curtail excavation and stabilization of historic, prehistoric or paleontological finds if action would impair wilderness values. (Example: excavation of woolly mammoth or any other finds of this nature)
- there is high potential for future excavation in the WSA particularly in the case of additional paleontological sites which have been identified

Lands

- 323 acres (N31801 T. 41 N., R. 28 E., Sections 20 and 21) identified for DLE application. Wilderness designation would not allow for this land to be patented
- Wilderness Management Policy would allow for some type of access (not necessarily motorized) to the 35-acre private inholding parcel

Minerals

- high potential for oil and gas and geothermal resources. Almost entire area has been leased or is under lease application
- wilderness designation could adversely impact exploration for and development of these resources.
- mining claims staked after designation of wilderness, cannot be developed

Domestic Livestock

- costs of maintaining range developments and livestock management would increase where vehicular access is curtailed
- although no future vegetation manipulation projects or range facilities are planned to increase livestock numbers, this option could be foregone if designated as wilderness. Periphery of northern, western and eastern portion of WSA has the greatest potential for vegetative manipulation projects.

Other Resources

Current resource plans identify no other resources which would be adversely impacted by wilderness designation. However, wilderness management could impose additional constraints on future projects in these programs" fire, wildlife, wild horses and burros, soil, water and air, aquatic habitat and visual resources.

Quality Standard 3: Impact of Non-designation on Wilderness Values

SHORT-TERM IMPACTS

-reduced opportunities for primitive and unconfined recreation and solitude in those areas accessible to off-road vehicles within 620

LONG-TERM IMPACTS

-continued development of mineral and energy resources could eventually eliminate opportunities for naturalness, solitude, and primitive and unconfined recreation within portions of 620; potential discussed in Quality Standard 1
-area would remain open for development of other resources which impair Wilderness Values; extent speculative

Quality Standard 4: Public Comment

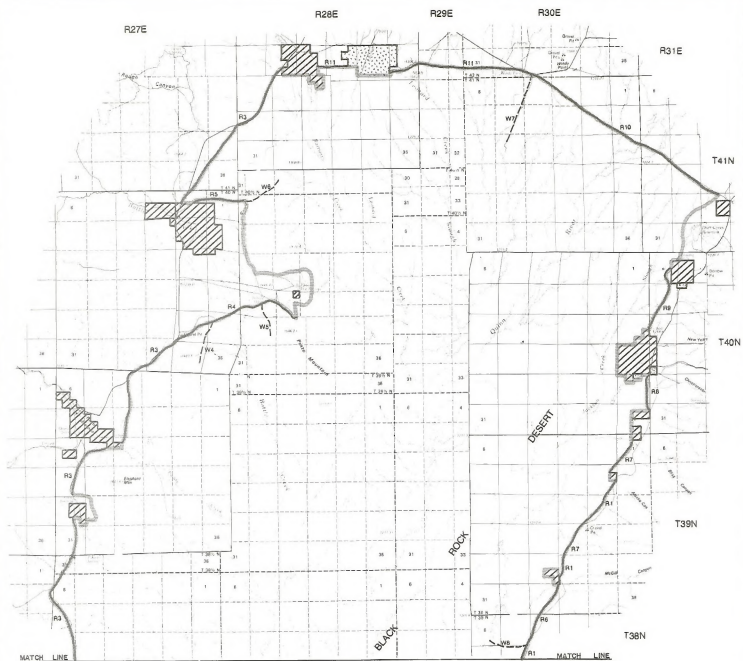
See District-wide Analysis, Chapter III

Quality Standard 5: Local and Regional Socioeconomic Effects

See District-wide Analysis, Chapter III

Quality Standard 6: Consistency With Other Plans

See District-wide Analysis, Chapter III



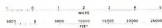
 PRIVATE LAND (SURFACE & MINERALS)

 PRIVATE SURFACE (PUBLIC MINERALS)

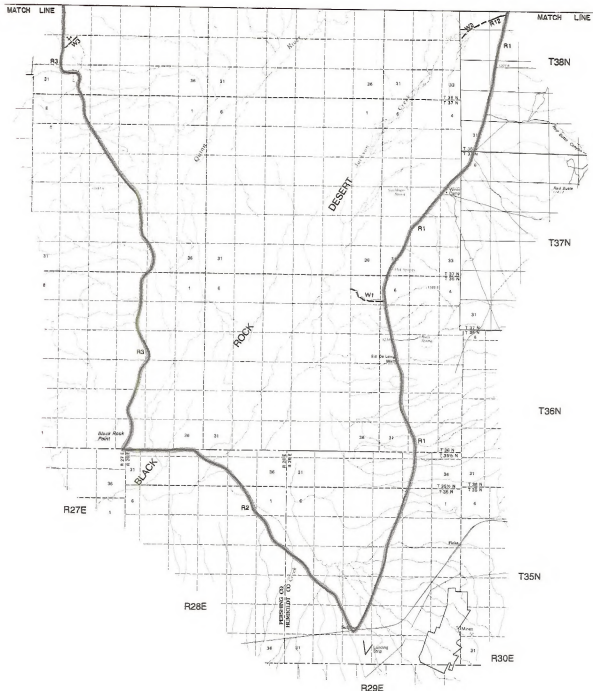
 W. S. A. BOUNDARY

 ROAD

 WAY



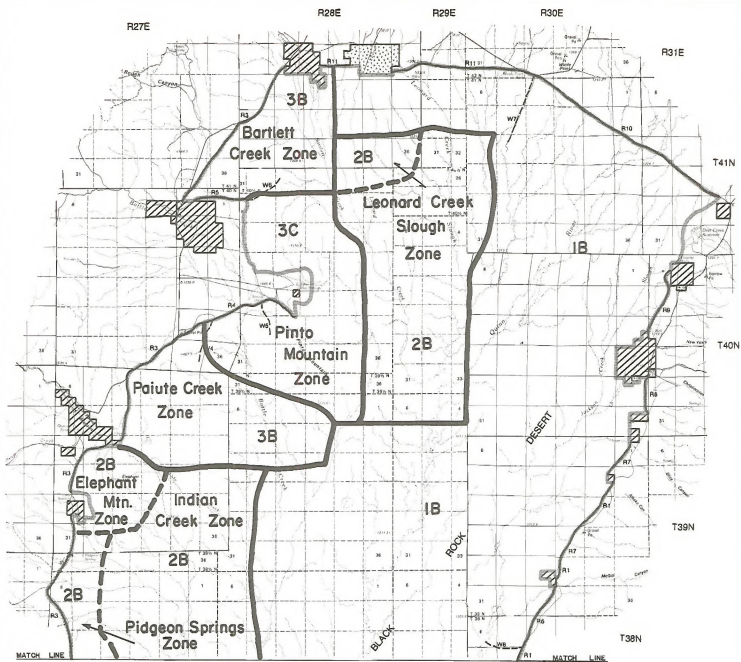
NV-020-620 BLACK ROCK DESERT - NORTH



- W. S. A. BOUNDARY
- ROAD
- WAY
- MINE



NV-020-620 BLACK ROCK DESERT - SOUTH



FAVORABILITY

- 1 UNFAVORABLE POTENTIAL
- 2 LOW POTENTIAL
- 3 MODERATE POTENTIAL
- 4 HIGH POTENTIAL

LEVEL OF CONFIDENCE

- A. INSUFFICIENT DATA
- B. LOW CONFIDENCE (Indirect evidence)
- C. MODERATE CONFIDENCE (Direct evidence)
- D. HIGH CONFIDENCE (Abundant direct evidence)

--- BOUNDARY OF ZONES WITH APPROXIMATELY EQUIVALENT MINERAL POTENTIAL BUT WHICH CONTAIN DIFFERENT MINERALS (SEE TEXT).

PRIVATE LAND (SURFACE & MINERALS)

PRIVATE SURFACE (PUBLIC MINERALS)

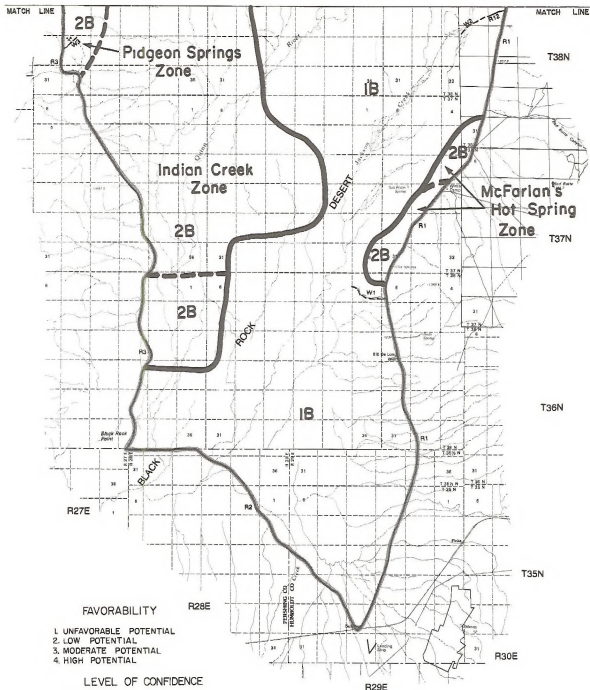
W. S. A. BOUNDARY

ROAD

WAY



NV-020-620 BLACK ROCK DESERT - NORTH
MINERAL POTENTIAL



NV-020-620 BLACK ROCK DESERT - SOUTH
MINERAL POTENTIAL

Wilderness Study Area 621: Pahute Peak

DESCRIPTION

Location

- western Humboldt County, Nevada, approximately 40 miles northeast of Gerlach, Nevada
- four-hour drive from Reno, the nearest Standard Metropolitan Statistical Area
- best access from the west via the Soldier Meadows County Road (HU 217) and other roads

Configuration and Size

- bounded by roads (47.1 miles) and private land (3.7 miles)
- about 14 miles northwest-southeast and from four to eleven miles eastwest -57,529 acres of public land

Physical Environment

- altitude range: 4,050 feet to 8,594 feet
- Bailey-Kuchler ecosystems: saltbush-greasewood (3130-34) and sagebrush-steppe (3130-49)
- Sonoma-Gerlach and Paradise-Denio Grazing E.I.S.'s vegetation communities: saltbush, greasewood and sagebrush
- some riparian vegetation, vicinity Pahute Peak
- 621 straddles a northwest-southeast trending ridge of the central Black Rock Range, flanked on east and west sides by the Black Rock Desert
- four distinct landforms within 621: high elevation ridgecrest, vicinity Pahute Peak; Black Rock Range, west side; Black Rock Range, east side; fringing desert piedmont
 - high elevation ridgecrest, vicinity Pahute Peak (two to three miles east-west and two to three miles north-south):
 - is an undulating highland with a few lightly cut drainages northeast to southeast
 - is markedly wetter than surrounding landforms, with two large aspen and mountain mahogany stands
 - includes the summit of Pahute Peak (Big Mountain), a nearly flat-topped mountain with a steep southwest facing slope
 - Black Rock Range, west side (from one to three miles east-west and 15 miles northwest-southeast)
 - characterized by numerous, highly dissected dendritic drainages running perpendicular to main ridge axis
 - contains several highly colored barren areas which resemble "badland" landscapes (very highly dissected drainages within soft sedimentary geology)
 - most rugged landform within 621, with cliff areas and steep canyons located throughout; many watercourses very difficult to traverse

- located entirely within viewshed of Applegate-Lassen Trail
- Black Rock Range east side (two to four miles east-west and 12 miles north-south)
 - is a rolling to moderately steep landform, markedly gentler than west side
 - contains several shallow dendritic drainages running perpendicular to main ridge axis
 - blends slowly toward the Black Rock Desert to east
- fringing desert piedmont (up to one mile wide, length of 621 west and east sides)
 - gently sloping from Black Rock Range; generally more distinct on west side
 - contains parallel drainages separated by low ridges
 - several alluvial fans (west side)

STUDY POLICY CRITERIA

Criterion 1: Evaluation of Wilderness Values

Component A: Mandatory Wilderness Characteristics

SIZE

- 57,995 acres within boundary including 80 acres of private land, 386 acres of public land deleted due to mining, and 57,529 acres of public land within WSA

NATURALNESS

Developments within WSA

- Range-related developments (see Table B-1 in Appendix B)
- three grazing allotments within 621 (see Table B-2 in Appendix B)

Other man-made features

- two roads totalling 1.5 miles
- 35 ways totalling 34.8 miles
- one mining area west of Pahute Peak in Copper Canyon and several prospects along west side
- communication site on Pahute Peak (small, portable building, temporary)

Outside imprints

- mining area, Clapper Creek, deleted during Intensive Inventory, can be seen from adjacent areas inside 621; surface disturbance minimal
- several roads can be seen from within 621; impact slight
- a few range-related developments and one ranch visible from within 621; little impact

Location and size of areas subject to imprints

- imprints concentrated along fringing desert piedmont and flatter parts of east side
- most ways within 621 are visually insignificant
- main ridgecrest from Pahute Peak south almost entirely free of imprints (about half of 621)

Rehabilitation potential

- most imprints could be rehabilitated without major mechanical manipulation except the Copper Canyon mining area

Potential for separating areas in WSA subject to imprints

- majority of ways on west and south sides could be separated without seriously impairing wilderness values, except upper part of W2
- most ways along northern part of 621 could not be separated without reducing wilderness values: W20, W19, W18, W17
- Most ways along eastern part of 621 could not be separated without reducing wilderness values: W16, W15, W14, W13, 13a and b, W12
- Copper Canyon mining area could be separated without substantially reducing wilderness values
- prospecting areas on west side could not be separated without reducing wilderness values

Overall influence of imprints

- most areas within 621 substantially natural
- Copper Canyon mine most significant imprint; however, its effect is mitigated due to 1), its location within a narrow canyon; and 2), its proximity to the WSA boundary
- cumulative impact of ways, particularly along southwest of 621, is moderate; however, most ways not visible except from above (e.g., from ridgecrest)
- affect of range improvements minimal
- 621 has a higher than average feeling of naturalness due to lack of development in the surrounding country

SOLITUDE

Solitude is defined as the opportunity to avoid the sights, sounds and evidence of other people.

Influence of outside sights and sounds

Economic activity

- localized and seasonal ranching activity visible from a distance

Aircraft flights

- regular low-level (500' to 11,000' above ground level) military flights from Mtn. Home Air Force Base in Idaho (route IR 300)
- no known landing areas within 621

- State of Nevada Department of Wildlife conducts annual wildlife censuses
 - antelope counts in January, July/August (fixed-wing); regular since 1950s
 - deer counts March and November (helicopter) regular since mid 1970s
 - sage grouse counts in March
- BLM conducts livestock and wild horse censuses and roundups on 621
 - livestock tallies as needed (usually fixed-wing)
 - wild horse inventories every other year, August-October; occasional checks as necessary
 - wild horse roundups as needed (using helicopter), usually July-October; high priority FY 1982-1983

Vehicular traffic

- periodic light traffic on boundary roads, esp. R1 and R2, north part of R3
- traffic from other roads do not substantially impact 621

Physical factors influencing solitude

Topographic and vegetative screening

- high elevation ridgecrest, vicinity Pahute Peak
 - low shrubs providing minimal vegetative screening except locally in aspen and mountain mahogany stands on east side of Pahute Peak
 - topographic screening fair except good in larger drainages on northeast and east sides
- Black Rock Range, west side
 - low shrubs provide minimal vegetative screening
 - excellent topographic screening throughout due to dissected landform
- Black Rock Range, east side
 - low shrubs provide minimal vegetative screening
 - topographic screening fair to good within major drainages, particularly from north and south ends of landform, fair to poor adjacent to desert and in shallow drainages (e.g., vicinity White Rock Springs)
- fringing desert piedmont
 - low shrubs provide minimal vegetative screening
 - fair to poor topographic screening

Size and configuration

- size is sufficient to provide solitude
- elongated (north to south) configuration means visitors never more than four miles from a boundary road
- mining area on west side (deleted from 621 during inventory) creates artificial intrusion into 621 and detracts slightly from solitude in that area

Ability of user to find secluded spot

- easily locatable
 - along entire west side of Black Rock Canyon
 - within major drainages, east side and vicinity Pahute Peak
- more difficult to find
 - within fringing desert piedmont
 - in flatter areas on east side and vicinity Pahute Peak

PRIMITIVE AND UNCONFINED RECREATION OPPORTUNITY

Access

- all areas in 621 within four miles of a boundary road
- all access requires high clearance vehicles; 4-WD also mandatory along southern and northern boundary roads (R2 and R6)
- vehicular access within 621 along numerous ways, many of which require 4-WD

Attractions (see also Special Features)

Points of interest

- viewshed of Applegate-Lassen Trail (west side)
- Lassen gravesite
- Pahute Peak
- "badland" landscape, west side
- White Rock Springs
- hot springs
- views of Black Rock Desert
- rockhounding areas
- aspen and mountain mahogany, vicinity Pahute Peak

Challenge

- typical desert/steppe climate with associated challenges (hot, dry summers, cold winters)
- water scarce in summer except
 - numerous cold springs concentrated in northern half
 - three hot springs, extreme southwest corner
- portions of 621 difficult to traverse due to steep, dissected landscape, particularly on west side

Scenic qualities

- views of Black Rock Desert which surrounds 621, are excellent and enhance perceptions of solitude and naturalness
- colorful dissected landform on the west side of 621 very scenic, offering diversity, color, texture and historical interest
- Pahute Peak an imposing landmark of the Black Rock Range
- White Rock on east side contrasts sharply to the surrounding buff-colored hills

Activities

Dayhiking (water availability not critical)

- entire WSA accessible to dayhiking; however, poor access particularly on south, east, and north sides may make much of 621 inaccessible to many dayhikers
- most likely destinations include Pahute Peak, the numerous canyons and dissected landscapes on the west side of the Black Rock Range, rockhounding areas, White Rock Springs, the hot springs on the southwest corner, and the historical sites associated with Applegate-Lassen Trail

Camping

- best in Black Rock Range, east side, and around Pahute Peak
- more limited on west side of Black Rock Range due to rough topography except locally in flatter areas (drainage bottoms)
- limited in fringing desert piedmont due to lack of screening

Backpacking

- although much of 621 accessible to dayhikers, backpacking feasible due to poor access on east side and variety of attractions scattered throughout
- best backpacking opportunity around Pahute Peak and along Black Rock Range ridgecrest
- one or two-night backpacking trips most likely
- on one route of proposed Desert National Scenic Trail

Hunting

- antelope, deer and cougar are found within 621
- four sage grouse brooding areas located within 621
- chukar within 621
- access fair to poor for hunters

Horsepacking

- topography on east side of Black Rock Range, vicinity Pahute Peak, and on fringing desert piedmont favorable to horsepacking; water and forage limited
- topography on west side of Black Rock Range less favorable for horsepacking due to steep, rugged terrain; a few feasible trail corridors possible

Rock climbing and scrambling, caving

- some rock climbing areas, mostly on west side of Black Rock Range
- rock scrambling opportunities excellent within "badland" areas on west side and locally near Pahute Peak
- caving opportunities within "badland" areas where intermittent streams have undercut the soft sediment; hazardous due to unstable ceilings
- one small cave on main ridgecrest just south of Pahute Peak

Nature study

- viewing/photographing wildlife, including wild horses, deer antelope and kit fox
- photography throughout 621, especially on west side of Black Rock Range and vicinity Pahute Peak
- geologic study, including rockhounding
- hot springs

Fishing

- no known fish populations

Winter sports

- winter camping feasible, especially vicinity Pahute Peak
- higher elevations receive moderate snowfalls, but generally not consistent for good crosscountry skiing, etc.

Rockhounding

- major rockhounding area for geodes, petrified wood; concentrated near Clapper Creek and along southern boundary road (R2, the "Slot")

Component B: Special Features

CULTURAL

Prehistoric

- total recorded sites: four
- S3 sites: two isolated finds, one hunting blind complex
- unrated sites: one lithic scatter
- antiquities observations: two lithic scatters

Historic

- S1 sites: Applegate-Lassen emigrant trail, possible Peter Lassen grave site
- Applegate-Lassen Trail route lies outside western boundary of 621 but part of one mile corridor of trail listed on National Register of Historic Places is included in 621
- western portion of 621 is within viewshed of Applegate-Lassen Trail
- Lassen's grave listed on National Register of Historic Places
- see Jones (1980) for more information
- S3 sites: 1877 survey party document

ZOOLOGIC

Fisheries

- no known fish populations

Wild horses and burros

- within Black Rock (west) wild horse use area (no burros); high concentration of horses

Other mammals

- antelope winter range (north-central and northeast 621)
- antelope summer range (northwest 621)
- deer summer and winter range (northeast quarter)
- kit fox, entire WSA
- mountain lion, northern third

Birds

- sage grouse range; four brooding areas within 621
- chukar range

BOTANIC

- no threatened or endangered plants have been identified
- small riparian areas, east side of Pahute Peak

GEOLOGIC

- eroded sedimentary landform ("badlands") on west side Black Rock Range
- known rockhounding areas
- complex geology throughout

PALEONTOLOGIC

- no known sites

ACECs

- none

SCENIC

- within viewshed of Applegate-Lassen Trail (west Black Rock Range)

Component C: Multiple Resource Benefits

Wilderness designation of 621 could restrict motorized vehicular traffic on approximately 34.8 miles of roads and ways and an undetermined acreage of land which is now accessible to offroad vehicles. A vehicle closure would enhance opportunities for primitive and unconfined recreation within those areas of 621 currently accessible to vehicles.

Long-term benefits from wilderness designation may accrue to those resources which would otherwise deteriorate should the area return to other multiple uses. Current land-use plans essentially maintain the existing environment and resource commitments. Should 621 not be designated wilderness, the federal land would remain accessible to mineral patenting, leasing and other development. These potential developments could

adversely impact water, soil, air, visual, cultural and other resources which benefit from the existing, non-developed environment. The extent of future development in 621 is unknown, but interest in geothermal development is high along the west side of 621. One of the most significant benefits would be to maintain the integrity of the Applegate-Lassen Trail viewshed along the west side of the Black Rock Range.

Component D: Diversity in the National Wilderness Preservation System

ECOSYSTEM AND LANDFORM DIVERSITY

- Bailey-Kuchler ecosystems: sagebrush-steppe (3130-49) and saltbush-greasewood (3130-34)
- Sonoma-Gerlach and Paradise-Denio Grazing E.I.S.'s vegetation communities: saltbush, greasewood and sagebrush

- 621 is a unique representation of the sagebrush-steppe ecosystem within Winnemucca District; not a unique representation of saltbush-greasewood
- unknown how 621 compares with other WSAs with the same ecosystem outside the Winnemucca District

RECREATION NEAR SMSAs

- approximately a four-hour drive from Reno, the nearest SMSA

GEOGRAPHIC DISTRIBUTION OF WILDERNESS

- see Chapter III, Component D, for an analysis

Criterion 2: Manageability

Physical Factors Influencing Manageability

CONFIGURATION

- western boundary somewhat erratic due to elimination of mining area at Clapper Creek during the Intensive Inventory
- no significant manageability problems due to configuration

ACCESS

- difficult to control off-road vehicle use from east and west boundary roads (R1 and R3)
- difficult to control off-road use from portions of the following roads and ways within 621: W1, W2, W3, W4, W6, W8, W12, W13, W15, W16, R5

LANDFORM

- landforms conducive to off-road vehicle use which would be difficult to control include:

- portions of the fringing desert piedmont, especially on the west side
- local areas within Black Rock Range, east side, particularly near White Rock Springs

INTRUSIONS AND OUTSIDE INFLUENCES

- managing for solitude would be difficult in those areas described above where access hard to control
- military aircraft flights most significant outside influence-- potential for reduction of flights or rerouting unknown
- other influences would not significantly impede manageability

Nonconforming But Accepted Uses

VALID EXISTING RIGHTS

Mining claims

- approximately 800 acres of WSA have 40 registered mining claims
- all claims located west of main divide
- in five large blocks located from Clapper Creek north
- possible that some claim areas are not mapped properly; seem to "miss" prospect areas and known mining spots
- not possible to eliminate mining areas without substantially impairing wilderness values
- wilderness manageability would be difficult should claimants develop claims

Leases

- 10,334 acres of oil and gas leases located on the east and west edge
- deleting areas of lease application would reduce wilderness values, especially in north and west

Non-federal land

- 80 acres of private land located southeast of Pahute Peak
- present land use range-related; expected to continue
- not possible to delete area with private land without substantially reducing wilderness values

ESTABLISHED AIRCRAFT AND MOTORBOAT USE

- low-level military flights
- Nevada Department of Wildlife conducts animal censuses during winter and spring using fixed-wing helicopter
- BLM conducts wild horse censuses and roundups, and livestock tallies over 621 by fixed-wing and helicopter
- none of the established aircraft use would significantly reduce wilderness manageability
- see Influences of Outside Sights and Sounds for more detail (e.g., dates flying established)

EXISTING AND PROPOSED RESOURCE FACILITIES

- one communication site on summit of Pahute Peak (temporary)
- numerous ways and two roads located within 621

LIVESTOCK GRAZING

Present grazing activities

- three allotments located within 621; one has no adjudicated grazing use (Old Gunnery Range)
- existing range facilities would not significantly impair wilderness manageability
- see NATURALNESS for details existing facilities and seasons-of-use

Changes identified in Sonoma-Gerlach and Paradise Denio Grazing EISs

- one fenceline running east-west, vicinity of Clapper Creek

STUDY POLICY QUALITY STANDARDS

Quality Standard 1: Energy and Critical Minerals

For background information and general description of the District see Appendix A.

General Geology

The Pahute Peak WSA is in the central portion of the Black Rock Range, a north-south fault block mountain of the Basin and Range Province which lies on the eastern edge of the Modoc Plateau.

Rock types include Cretaceous granodiorites and contact metasedimentary rocks (marble, phyllite) of unknown age west of Pahute Peak (Big Mountain); Eocene to Oligocene andesites just south of Pahute Peak; Oligocene to Miocene older basalts on the west face of Pahute Peak; Oligocene to Miocene rhyolitic flows and shallow intrusives; Oligocene to Miocene silicic ash-flow tuffs (Ashdown Tuff) and sedimentary rocks distributed throughout the central portion of the range; and Miocene to Pliocene basalt flows along the southern and eastern portion of the WSA. Quaternary alluvium covers the lower valley areas.

Very little detailed work has been done in the Black Rock Range to unravel some of these complicated volcanic units or to correlate them with other volcanic units in the general area.

Following is a discussion of the energy and mineral potential in the Pahute Peak WSA. Please refer to the Mineral Potential Classification Scheme, Figure 1 in Appendix A, for further explanation of alphanumeric classifications. Also see, in Appendix B, Tables B-10, B-11, B-12 and B-13 showing acreages for Metallic Mineral, Nonmetallic Mineral, Geothermal and Oil and Gas Potential; and Tables B-6, B-7 and B-8 showing acreages of Unpatented Mining Claims, and Geothermal and Oil and Gas Leases; as well as summary Tables B-14 and B-15 showing the Energy and Mineral Threshold

Levels and Holdings affected by four of the alternatives proposed in the EIS (all except No Wilderness Alternative).

Metallic Mineral Potential

Some mining activity has occurred in the Copper Canyon area at the base of the mountain west of Pahute Peak. Considerable underground workings explored skarn deposits at the granodiorite and metasedimentary contacts. There are no records of any production but the remains of an old mill and the considerable underground development suggest that some production has occurred (Willden 1964).

Laboratory analysis of skarn samples did not indicate any sheelite mineralization and Willden (1964) did not indicate from his observations any other types of possible mineralization to account for the extensive workings.

A BLM field examination in 1983 of Copper Canyon indicated zones of hydrothermal alteration, quartz veining and some minor evidence of malachite in shear zones of the granodiorite and metasedimentary rocks. Several trenches had also been cut in both rock types and at the granodiorite marble contact zones. Iron staining occurred along the contact zone, but other visible mineralization was not apparent.

Anomalous radioactive readings have also been reported from the Blackbird claim group in the Oligocene to Miocene older basalts just below the west face of Big Mountain. A sample of carbonized wood from the volcanic rocks contained 0.06 percent uranium oxide (Garside 1973). Very little development (?) has occurred on these claims located in T. 39 N., R. 25 E., Section 23 N 1/2 (USDI Buffalo Hills URA 1979).

Barringer Resources (1982) indicated a large moderate anomalous area termed "Central Black Rock Range" which covers most the WSA. This large area has been divided into smaller anomalous sub-zones to aid in discussion of the metallic mineral potential in a more site-specific manner. Please refer to the Mineral Potential Maps for locations of these anomalous sub-zones discussed below.

COPPER CANYON ANOMALOUS ZONE. (3C) Moderate Potential.

This zone is in the northwest corner of the WSA. Rock types include pre-Cretaceous contact metasedimentary rocks (marbles, phyllite) and Cretaceous granodiorite overlain by Oligocene-Miocene Older basalts.

Geochemical sampling and geostatistical modeling results show:

Response to Geostatistical Modeling

Low: mafic copper-nickel, gold-silver, base-precious metal
Anomalous Values

Moderate: nickel*

Low: zinc*, molybdenum, barium

These anomalous values are likely related to the mining activities along the granodiorite metasedimentary rock contact on the northern boundary of

this zone. Twenty mining claims are located on the northern and southern boundary of this zone.

PAHUTE PEAK ANOMALOUS ZONE. (3B) Moderate Potential.

This zone is in the northwest corner of the WSA. Rock types include pre-Cretaceous contact metasedimentary rocks (marble, phyllite) and Cretaceous granodiorite overlain by Oligocene-Miocene Older basalts.

Geochemical sampling and geostatistical modeling results show:

Anomalous Values

Moderate: nickel*

Low: molybdenum, barium

Minor prospecting activities for uranium and fluorspar occur on 12 mining claims in this zone. The uranium mineralization is on the Blackbird claim group in the Oligocene-Miocene Older basalts. See Nonmetallic Minerals (following section) for details of fluorspar mineralization.

CLAPPER CREEK ANOMALOUS ZONE. (3B) Moderate Potential.

This zone is in the west central portion of the WSA. Rock types include pre-Cretaceous metasediments (quartzite) and Eocene-Oligocene andesites and silicic ash flow tuffs.

Geochemical sampling and geostatistical modeling results show:

Response to Geostatistical Modeling

Low: base-precious metal, mafic copper-nickel

Anomalous Values

Moderate: nickel*, barium

A BLM field examination (1983) indicated small unmapped outcroppings of quartzite with one short five-foot adit and other prospect pits driven at the andesite/quartzite contact.

Visible evidence of alteration or mineralization was not apparent in these workings. Six mining claims are located in this zone--Some of which apparently are for opals. The mafic copper-nickel response is likely related to andesites outcropping.

CENTRAL MOLYBDENUM ANOMALOUS ZONE. (2B) Low Potential.

This zone covers most of the central portion of the WSA. Rock types include predominantly Oligocene-Miocene rhyolitic flows and shallow intrusions with a smaller amount of Oligocene-Miocene silicic ash-flow tuffs (Ashdown Tuffs) and sedimentary rocks.

Geochemical sampling and geostatistical modeling results show:

Anomalous Values

Low: molybdenum

The rhyolitic flows and shallow intrusives cropping out in this zone appear to contain an anomalously high background in molybdenum--warranting further evaluation.

No prospecting activities or mining claims are known in this zone.

PIDGEON SPRING ANOMALOUS ZONE. (2B/C) Low Potential.

This zone is along the eastern and southern boundary of the WSA and also extends into the Black Rock Desert WSA. Rock types include Miocene-Pliocene basalt flows and Quaternary alluvium.

Geochemical sampling and geostatistical modeling results show:

Response to Geostatistical Modeling

Low gold-silver

Anomalous Values

Moderate: silver, barium

Low: tungsten*, molybdenum, zinc*

The small sub-zone labeled 2C in this zone (see Mineral Potential Maps) is the sight of the gold-silver model response and anomalous silver values, but little else is known about this area. The other anomalous metal values in the remainder of the zone may be related to hot spring activity.

No prospecting activities or mining claims are known in this zone.

Nonmetallic Mineral Potential

Fluorspar mineralization occurs in the northwest portion of the WSA (Pahute Peak Zone) on the Sunset Prospect in portions of Sections 22, 23 and 27, T. 39 N., R. 25 E. The fluorspar is in an east-west vein up to two feet wide cutting granitic rocks. A minor amount of fluorspar is also present along a north-south fault 300 feet east of the main vein (Papke 1979).

Geodes and petrified wood have been reported by rockhounds in the southern part of Clapper Creek Zone. Opals have also been reported from unknown sources in the Clapper Creek Zone. It is not known whether the opals are the common or precious variety.

The following portions of the WSA are considered to have nonmetallic mineral potential:

Moderate (3C) - northwest side of the WSA including Copper Canyon and Pahute Peak Zone for fluorspar veins in granitic rocks and known geodes, petrified wood and suspected opals in southern part of Clapper Creek Zone. The remainder of the WSA is 1C for fluorspar and 2B for geodes, petrified wood and opal.

Geothermal Resources

The extreme southwestern boundary of the Pahute Peak WSA abuts the northeastern side of the Double Hot Springs Known Geothermal Resource Area (KGRA). Estimated reservoir temperature range from 125°C to 145°C,

according to various authors (Brook et al. 1978; White 1975; Mariner et al. 1974). Assuming that these reservoir temperatures are approximately correct, the Double Hot Spring KGRA lies in a marginal area for electrical generation potential, based on present-day technology. These ranges of temperatures hold high potential for industrial processing applications. No deep drilling has been allowed to date because of the KGRA's location in the Applegate-Lassen Trail viewshed.

There are several hot springs north of the Double Hot Spring KGRA, just outside the western boundary of the WSA. Spring temperatures do decline northward (USDI Buffalo Hills URA 1979). Geothermal potential along the eastern boundary of the WSA is also relatively high (see Black Rock WSA for more details).

There are no geothermal leases within or adjacent to the WSA. Leasing has not been allowed in the western half of the WSA because of historic values along the Applegate-Lassen Trail.

The following portions of the WSA are considered to have geothermal potential:

- High (4D) - A 2-mile-wide strip inside western boundary
- Moderate (3C) - A 2-mile-wide strip inside eastern boundary
- Low - (2B) - The remainder of the WSA.

Oil and Gas Potential

The possibility exists for early Tertiary (Eocene ?) sedimentary rocks to be buried at depth within the Black Rock Range. Oil and gas discoveries have been associated with Eocene sedimentary rocks elsewhere in the state. One large oil and gas lease block is on the southern tip of the WSA and a portion of a lease block extends into the Clapper Creek area from the west. To date these leases have shown no geophysical exploration or drilling activities. However, extensive geophysical exploration has been conducted and one dry well has been completed by Sun Oil in the Black Rock Desert to the west.

The following portions of the WSA are classified to have oil and gas potential:

- Moderate (3A) - A 2-mile-wide strip inside of eastern boundary.
- Low (2A) - The remainder of the WSA.

Quality Standard 2: Impacts on Other Resources

Recreation

- current recreational use of 621 partially oriented toward motorized and motorized-supported recreational activities (off-road vehicles, hunting, rockhounding)
- wilderness designation could restrict vehicular access on approximately 34.8 miles of roads and ways and about 17,000 acres of currently accessible to off-road recreational vehicles

- most significant impact from restricting vehicular traffic on W4, R5, W7, W9, W10, W13 due to use by rockhounds

Cultural Resources

- wilderness designation could indirectly add to the existing legal protection of cultural resources by limiting resource development and use
- wilderness designation could possibly curtail excavation and stabilization of historic, prehistoric or paleontological finds if action would impair wilderness values.
- excavation of known sites in 621 unlikely
- inventory data for 621 is sparse and sites which warrant excavation could be identified in the future

Energy and Mineral Resources

- wilderness designation imposes strict guidelines on all allowed mineral and energy development--potentially making development infeasible
- mining claims located after designation could not be developed
- see Quality Standard 1 for more detail

Livestock Grazing

- costs of maintaining range developments and livestock management would increase where vehicular access is curtailed
- future beneficial range developments/treatments may be restricted

Other Resources

Current resource plans identify no other resources which would be adversely impacted by wilderness designation. However, wilderness management could impose additional constraints on future projects in these programs: fire, wildlife, wild horses and burros, lands, soil, water and air, aquatic habitat and visual resources.

Quality Standard 3: Impact of Non-designation on Wilderness Values

SHORT-TERM IMPACTS

- reduced opportunities for primitive and unconfined recreation and solitude in those areas accessible to off-road vehicles

LONG-TERM IMPACTS

- continued development of mineral and energy resources could eventually eliminate opportunities for naturalness, solitude, and primitive and unconfined recreation within 621; potential discussed in Quality Standard 1
- area would remain open to development of other resources which might impair wilderness values; extent speculative

Quality Standard 4: Public Comment

See District-wide Analysis, Chapter III





Quality Standard 5: Local and Regional Socioeconomic Effects

See District-wide Analysis, Chapter III

Quality Standard 6: Consistency With Other Plans

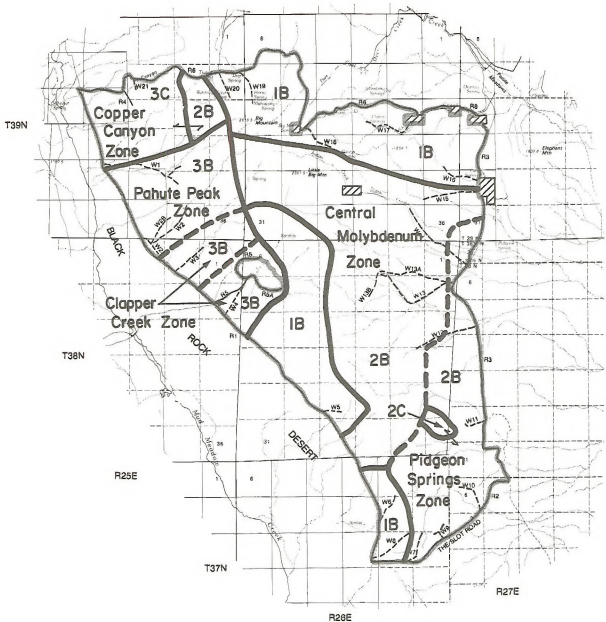
See District-wide Analysis, Chapter III



-  PRIVATE LAND(SURFACE & MINERALS)
-  W. S. A. BOUNDARY
-  ROAD
-  WAY



NV-020-621 PAHUTE PEAK (SOUTH BLACK ROCK)



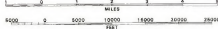
FAVORABILITY

- 1 UNFAVORABLE POTENTIAL
- 2 LOW POTENTIAL
- 3 MODERATE POTENTIAL
- 4 HIGH POTENTIAL

LEVEL OF CONFIDENCE

- A. INSUFFICIENT DATA
- B. LOW CONFIDENCE (Indirect evidence)
- C. MODERATE CONFIDENCE (Direct evidence)
- D. HIGH CONFIDENCE (Abundant direct evidence)

- BOUNDARY OF ZONES WITH APPROXIMATELY EQUIVALENT MINERAL POTENTIAL BUT WHICH CONTAIN DIFFERENT MINERALS (SEE TEXT).
- ▨ PRIVATE LAND (SURFACE & MINERALS)
- W. S. A. BOUNDARY
- ROAD
- - - WAY



NV-020-621 PAHUTE PEAK (SOUTH BLACK ROCK)
MINERAL POTENTIAL

Wilderness Study Area 622: North Black Rock Range

DESCRIPTION

Location

- northwestern Humboldt County, Nevada, approximately 50 miles from Gerlach, Nevada
- borders southern end of Summit Lake Indian Reservation
- four-hour drive from Reno, the nearest Standard Metropolitan Statistical Area
- best access well-maintained Soldier Meadows county road (HU217) to the Slumgullion road (622's southern boundary)

Configuration and Size

- bounded by BLM roads (32.1 miles), private property (15.4 miles) and Summit Lake Indian Reservation (4.3 miles)
- about seven miles north-south and two to eight miles east-west
- 30,791 acres of public land
- WSA includes 660 acres of the Lahontan Cutthroat Trout Natural Area

Physical Environment

- altitude range: 4,800 feet to 8,400 feet
- Bailey-Kuchler ecosystem: sagebrush steppe (3130-49)
- Sonoma-Gerlach and Paradise-Denio Grazing E.I.S. vegetation communities: sagebrush
- some riparian vegetation along Colman Creek (four miles) and Soldier Creek (three miles)
- WSA straddles a north-south ridge of the Black Rock Range; typical range of the Basin and Range Province
- three distinct landforms within 622: northeast quarter; southeast quarter; western edge
 - northeast quarter (four miles wide, five miles long)
 - straddles a north-south running ridge
 - east-west running ridge borders the north end
 - east-west flowing drainages
 - deep wide canyons with riparian vegetation
 - aspens line drainages in higher elevations
 - two perennial streams running in two separate canyons
 - southeast quarter (four miles wide and three miles long)
 - greatly dissected landscape of moderate basalt buttes and shallow drainages
 - little if any riparian vegetation
 - vegetation consist mainly of low-growing sagebrush
 - west half (two to three miles wide, seven miles long)
 - wide sagebrush flat (piedmont)
 - dissected by two separate creeks (Soldiers & Colman) with two perennial streams
 - low-lying sagebrush and some riparian growth along streams
 - little relief

STUDY POLICY CRITERIA

Criterion 1: Evaluation of Wilderness Values

Component A: Mandatory Wilderness Characteristics

SIZE

- 31,506 acres within boundary, including 715 acres of private land and 30,791 acres of public land

NATURALNESS

Developments within WSA

Range-related developments (see Table B-1 in Appendix B)

- two grazing allotments (see Table B-2 in Appendix B)

Other man-made features

- three roads totalling 1.9 miles; extending from northeast and southwest boundaries
- seven ways totalling 3.8 miles; extending from the southern, eastern and northern boundaries
- one line shack located on private property within center of 622 (Colman Canyon)

Outside imprints

- one line shack located on private property along eastern boundary
- several minor roads--traffic caused dust visible from extreme edges of 622
- a few range improvements (fences, windmills), ranches, cabins are visible from the edges of 622's boundaries but impacts are minimal

Location and size of areas subject to imprints

- most imprints are visually insignificant except within one mile or so from boundary
- most apparent imprints are the cherrystem roads and ways extending from the eastern boundary

Rehabilitation potential

- most of the developments could be rehabilitated with only minor mechanical manipulation

Potential for separating areas in WSA subject to imprints

- majority of imprints are located along the eastern and northeast boundary; move boundary from road to ridgeline

Overall influence of imprints

- most areas within 622 substantially natural
- imprints most significant along eastern boundary
- visitors would have little difficulty locating substantially natural landscapes in 622

SOLITUDE

Solitude is defined as the opportunity to avoid the sights, sounds and evidence of other people.

Influence of outside sights and sounds

Economic activity

- localized and seasonal ranching activities (roundups, salting and maintenance of range improvements near and within 622)

Aircraft flights

- military
 - military training routes SR 353, SR 301, SR 300 and UR 1353
 - pass through northeast portion of 622
 - 500 feet to 1,500 feet above ground level
 - Route SR 300 and SR 301 flown by C-130 aircraft and occasionally by helicopter
 - five to six times monthly
 - 300 feet to 600 feet above ground level
- State of Nevada Department of Wildlife conducts annual wildlife censuses
 - deer counts March and November (helicopter); regular since 1975
 - antelope counts in January (fixed-wing); August (helicopter); regular since 1950s
- BLM conducts livestock and wild horse censuses/roundups on 622
 - livestock tallies as needed (usually fixed-wing)
 - wild horse inventories started in 1971; conducted sporadically until 1976; every other year since 1976; last inventory 1980; usually August through October (fixed-wing and helicopter)
 - wild horse roundups when needed (using helicopter), usually July through October
 - 622 in Paiute Meadows and Soldier Meadows Capture Area
 - 622 is a priority for roundups in 1983
- BLM fire detection flights (usually above 500' ground level)
- Ranch management; private individuals doing livestock supervision with fixed-wing aircraft (Paiute and Soldier Meadows Ranches)

Vehicular traffic

- periodic traffic along northeast boundary road (HU 217)
- periodic traffic along southern boundary road (R4)
- occasional traffic on other boundary roads (R5, R3, R6, R7, R8); impact is occasional dust trail
- occasional traffic on cherrystem roads and ways into 622; impact is occasional dust trail

Physical factors influencing solitude

Topographic and vegetative screening

- northeast quarter
 - higher elevations have aspen lined drainages
 - deep, wide drainages
 - moderate ridgelines
 - eroded volcanic tufa outcrops
 - excellent screening
- southeast quarter
 - low topographic relief - moderate basalt buttes and shallow drainages
 - low growing vegetation of sagebrush
 - moderate screening provided
- west half
 - little topographic relief - area is made up of a sagebrush flat
 - shallow drainages
 - vegetation predominately low sagebrush
 - little vegetative or topographic screening provided

Size and Configuration

- size is sufficient to provide solitude
- blocked configuration

Ability of user to find secluded spot

- easily locatable in main drainages
 - both forks of Colman Creek
 - Soldiers Creek
 - drainage south of Red Mountain north-south running drainages paralleling northeast boundary
- more difficult to find:
 - in flat areas along western boundary
 - southern portion of 622; small basalt buttes and shallow drainages

PRIMITIVE AND UNCONFINED RECREATION OPPORTUNITY

Access

- vehicle access along cherrystem and boundary roads limited to dry months of year
- less reliable from east side except with high clearance vehicle
- vehicular access on three roads (R9, R10, R11) and seven ways (W1-W7)

Attractions (see also Special Features)

Points of interest

- Colman Canyon
- Soldier Creek

- numerous geologic features (volcanic tuff, waterfalls, stratifications)
- variety of wildlife, including several game species

Challenge

- typical desert/steppe climate with associated challenges (hot dry summers, cold winters)
- diverse, somewhat rugged topography

Scenic qualities

- wide open landscape within southern portion of 622
- contrast of green vegetation, red basalt rock and white volcanic tuff formations
- colorful stratified rock in cliffs
- angular formations of basalt rock slides
- dissected landscape of basalt buttes and shallow drainages

Activities

Dayhiking (water availability not critical)

- portions of 622 accessible to dayhiking
- most likely destinations include Colman Creek and Soldiers Creek and north-south running ridge paralleling eastern boundary

Camping

- best along Colman Creek and Soldiers Creek
- dry camping feasible throughout most of WSA

Backpacking

- 622 best suited for backpacking; features spread out and terrain is not too rugged
- trips feasible from anywhere in 622
- major attractions concentrated in northern portion of 622
- water is adequately available (would have to be purified for drinking)
- excellent opportunities

Hunting

- adequate deer population; herds most accessible from northern boundary
- fair antelope populations; located within southern portion of 622
- chukar, sage grouse, and valley quail in fair numbers
- access poor for hunters

Horsepacking

- constraints: water limited in southern portion of 622; some areas too rugged (upper forks of Colman Creek)
- advantages: generally available forage, water availability good throughout most of 622, favorable topography in most areas
- 622 well suited for horsepacking

Rock climbing and scrambling, caving

- rock climbing good along upper forks of Colman and Soldiers Creek
- rock scrambling opportunities excellent (basalt rock slides, eroded tufa areas)
- no known caves

Nature study

- viewing/photographing wild horses and wildlife
- geologic study
- viewing of archaeology sites

Fishing

- no known fish populations

Winter sports

- winter camping
- access limited during winter months

Water sports

- wading and swimming possible (best in spring) in Colman Creek
- water quality fair

Component B: Special Features

CULTURAL

Prehistoric

- total recorded sites: 38
- S1 sites: one large lithic scatter and buried site (test excavation); one group of hunting blinds with lithic scatter
- S3 sites: 16 lithic scatters, 12 isolated finds, five rockshelters
- S4 sites: two isolated finds
- unrated: one isolated find
- antiquities observations: one lithic scatter

Historic

- total recorded sites: one
- S3 sites: low stone windbreak with overhanging roof - possibly windbreak for deer hunter.

ZOOLOGIC

Fisheries

-no known fish populations

Wild horses and burros

-nearly the entire WSA is located within the Black Rock (east) wild horse and burro use area
-use area has no burros

Other mammals

-antelope summer range in northeast portion
-deer summer range in southeast portion
-extreme southeast corner of 622 is critical summer habitat for deer
-kit fox present throughout 622
-mountain lion throughout, except extreme northwest corner

Birds

-sage grouse present
-valley quail inhabit southwest portion

BOTANIC

-no known threatened or endangered plants
-riparian habitat along Soldier and Colman Creeks

GEOLOGIC

-eroded volcanic tuffs with unique colors and forms
-unique stratification in cliffs at head of Colman Canyon

PALEONTOLOGIC

-no known paleontologic deposits

ACECs

-none

SCENIC

-scenic landscapes provided throughout 622

OTHER

-600 acres of 622 is contiguous with the Lahontan Cutthroat Trout Natural Area

Component C: Multiple Resource Benefits

Wilderness designation of 622 could restrict motorized vehicular traffic on approximately 5.7 miles of roads and ways and an undetermined acreage of land which is now accessible to off-road vehicles. A vehicle closure would enhance opportunities for primitive and unconfined recreation within those areas of 622 currently accessible to vehicles.

Long-term benefits from wilderness designation may accrue to those resources which would otherwise deteriorate should the area return to other multiple uses. Current land-use plans essentially maintain the existing environment and resource commitments. Should 622 not be designated wilderness, the federal land would remain accessible to mineral patenting, leasing and other development. These potential developments could adversely impact water, soil, air, visual, cultural and other resources which benefit from the existing, non-developed environment. The extent of future development in 622 is unknown.

Component D: Diversity in the National Wilderness Preservation System

ECOSYSTEM AND LANDFORM DIVERSITY

- Bailey-Kuchler ecosystem: sagebrush-steppe (3130-49)
- Sonoma-Gerlach Grazing E.I.S. vegetative communities: sagebrush

RECREATION NEAR SMSAs

- approximately two- to four-hour drive from Reno, the nearest SMSA

GEOGRAPHIC DISTRIBUTION OF WILDERNESS

- see Chapter III, Component D, for an analysis

Criterion 2: Manageability

Physical Factors Influencing Manageability

CONFIGURATION

- eastern and western boundary somewhat erratic due to private property
- northern boundary follows Indian Reservation boundary
- significant management problems could occur where physical, on-the-ground boundaries are not visible (following private property and Indian Reservation boundaries)

ACCESS

- accessibility to area is poor because of remote location and physical barriers due to landform. Off-road vehicle use would not be difficult to control
- some difficulty in controlling off-road vehicle use on existing roads and ways within 622

LANDFORM

- landforms conducive to off-road vehicle use which would be difficult to control include
 - west half; flat open piedmont

INTRUSIONS AND OUTSIDE INFLUENCES

- managing for solitude would be difficult in those areas described above where access is hard to control
- military aircraft flights most significant outside influence--potential for reduction of flights or rerouting unknown
- other influence would not significantly impede manageability

Nonconforming But Accepted Uses

VALID EXISTING RIGHTS

Mining claims

- no recorded mining claims in 622 as of March 1983

Leases.

- no geothermal or oil and gas leases or lease application as of 3/83

Non-federal land

- 715 acres of private land located within east half of 622 (seven separate parcels)
 - cattle grazing primary use and expected to continue
 - line shack located on parcel within Colman Canyon
 - not possible to totally eliminate private land from 622 without substantially reducing wilderness values

ESTABLISHED AIRCRAFT AND MOTORBOAT

- low-level military flights
- Nevada Department of Wildlife conducts animal censuses during winter and spring using fixed-wing and helicopter
- BLM conducts wild horse censuses and roundups and livestock tallies in 622 by fixed-wing and helicopter
- none of the established aircraft use would significantly reduce wilderness manageability
- see Influence of Outside Sights and Sounds for more detail (i.e., dates flying established)

EXISTING AND PROPOSED RESOURCE FACILITIES

- no non-range facilities within 622 except roads and ways
- no proposed non-range facilities

LIVESTOCK GRAZING

Present grazing activities

- two grazing allotments located
- existing range facilities would not significantly impair wilderness values
- see NATURALNESS for details of existing facilities and seasons-of-use

Changes identified in Sonoma-Gerlach Grazing E.I.S.

- proposed sagebrush control and seeding (6,000 acres)
- proposed vegetation manipulation in southwest portion of 622 (Soldiers Creek Allotment); might not be allowed under wilderness management policy
- entire area of proposed vegetative manipulation could not be eliminated from 622 without significantly impairing wilderness values

STUDY POLICY QUALITY STANDARDS

Quality Standard 1: Energy and Critical Minerals

For background information and general description of the District see Appendix A.

General Geology

The Black Rock Range is a north-south fault block mountain of the Basin and Range Province and lies on the eastern edge of the Modoc Plateau.

Rock types in the North Black Rock Range WSA include Oligocene-Miocene older basalts, rhyolitic flows and intrusives, and silicic ash-flow units of the Ashdown Tuff and also Miocene-Pliocene basalt flows, rhyolitic flows and intrusives, and silicic ash-flow tuffs (Soldier Meadow and Trough Mountain Tuff). Quaternary alluvium is in the lowlands and landslide deposits on some of the steeper slopes. Very little detailed work has been done in this area to unravel some of the complicated volcanic units. Some detailed mapping has been done on the eastern boundary of the WSA by Korringa (1972). She identified several volcanic units which may also extend into this WSA. Greene and Plouff (1981) have correlated some of her work on a more regional basis and changed some of the nomenclature of the volcanic units. In the WSA the Miocene-Pliocene rhyolitic flows and intrusives may correlate with the Miocene Badger Mountain Rhyolite and the Miocene-Pliocene ash-flow tuffs may correlate with both the Miocene Soldier Meadow Tuff and the Trough Mountain Tuff of Greene and Plouff (1981) and Korringa (1972).

Noble et al. (1970) indicated that the Oligocene-Miocene Ashdown Tuff was erupted from a vent center about five miles east of Summit Lake just north of the WSA. Other vent centers and calderas have also been identified west and north of the WSA (Greene and Plouff 1981; Korringa 1972; Cathrall et al. 1978).

The edge of the postulated caldera structure identified by Greene and Plouff (1981) would lie three miles west of the WSA. One vent center identified by Korringa (1973) lies just two miles east of the caldera structure and may represent magmatic upwelling along the ring fracture or

other associated structures of the caldera. The southern edge of another larger caldera identified by Cathrall et al. (1978) is located 10 miles northwest of the WSA.

Following is a discussion of the energy and mineral potential in the North Black Rock Range WSA. Please refer to the Mineral Potential Classification Scheme, Figure 1 in Appendix A, for further explanation of alphanumeric classifications. Also see, in Appendix B, Tables B-10, B-11, B-12 and B-13 showing acreages for Metallic Mineral, Nonmetallic Mineral, Geothermal and Oil and Gas Potential; and Tables B-6, B-7 and B-8 showing acreages of Unpatented Mining Claims, and Geothermal and Oil and Gas Leases; as well as summary Tables B-14 and B-15 showing the Energy and Mineral Threshold Levels and Holdings affected by four of the alternatives proposed in the EIS (all except No Wilderness Alternative).

Metallic Mineral Potential

Some uranium exploration activity consisting of some bulldozer cuts occur in the vicinity of White Rock Canyon according to Garside (1973). He indicated that the anomalous uranium values were occurring in ash-flow tuffs. Some mining claims have been located one mile south of White Rock Canyon in Sections 3 and 10 of T. 40 N., R. 25 E. This claim block may have been the area of activity reported by Garside (1973).

Barringer Resources (1982) did not indicate any significant anomalous areas within the WSA, but some responses were indicated on modeling and elemental maps. Some areas of the WSA do contain anomalous values similar to the anomalous areas identified by Cathrall and others (1978) in the Charles Sheldon Wilderness Study Area eight miles north of the WSA. Please refer to the Mineral Potential Maps for locations of these anomalous zones discussed below.

COLMAN CREEK ANOMALOUS ZONE. (3C) Moderate Potential.

This zone is in the western half of the WSA. Rock types include Miocene-Pliocene basalt flows, rhyolitic flows and intrusives (Badger Mountain Rhyolite), and silicic ash-flow tuffs (Soldier Meadow and Trough Mountain Tuff).

Geochemical sampling and geostatistical modeling results show:

Response to Geostatistical Modeling

Low: mafic copper-nickel

Anomalous Values

High: zinc*, molybdenum

Moderate: copper*, nickel*, uranium

These anomalous responses are similar to those identified in a U.S. Geological Survey open file report by Cathrall et al. (1978) in the U.S. Fish and Wildlife's Charles Sheldon WSA. These values may be related to yet unidentified caldera structures or vent centers and related hot spring activity manifest at Soldier Meadows.

No prospecting activities or mining claims are known in this zone.

SLUMGULLION CREEK ANOMALOUS ZONE. (2C) Moderate Potential.

This zone is centered on the upper drainage basin of Slumgullion Creek in the southern tip of the WSA. Rock types include Oligocene-Miocene rhyolitic flows and intrusives and Miocene-Pliocene basalt flows and silicic ash-flow tuffs (Soldier Meadow and Trough Mountain Tuff).

Geochemical sampling and geostatistical modeling results show:

Response to Geostatistical Modeling

Low: mercury-antimony

Anomalous Values

Moderate: gold

Low: mercury*, zinc*

Here again these values may be related to unidentified caldera structures or vent centers and related hot spring activity manifest at Soldier Meadows.

No prospecting activities or mining claims are known in this zone.

RED MOUNTAIN AREA. (2A) Low Potential.

This area is in the northwest portion of the WSA, centered around Red Mountain. Rock types include Oligocene-Miocene silicic ash-flow tuffs of the Ashdown Tuff, overlain by rhyolitic flows and intrusives. These units are in turn overlain by Miocene-Pliocene basalt flows. Quaternary landslide deposits also occur on the west side of the area.

Only a few stream sediment samples were taken along the west side of Red Mountain by Barringer Resources (1982) and did not indicate any anomalous values. However, the drainages on the east side of Red Mountain were not sampled, therefore, this area is classified 2A, low favorability, but with insufficient data. Prospecting activities are known to occur one mile east of this area but the type of mineralization sought is not known.

Nonmetallic Mineral Potential

Nonmetallic minerals have not been reported or suspected in the WSA, therefore, potential is classified 1A, unfavorable, insufficient data.

Geothermal Potential

Several hot springs are located in the Soldier Meadows Known Geothermal Resource Area (KGRA) just one mile southwest of the WSA boundary. Hose and Taylor (1974) have indicated a prominent lineament extending in a northeast direction from the Soldier Meadows Hot Springs through Bog Hot Spring and Baltazor Hot Spring near Denio. This lineament termed the Soldier Meadows-Denio Lineament trends along the western boundary of the WSA. This lineament zone is postulated to have high geothermal potential. At present there are no geothermal leases within or adjacent to the WSA.

The following portions of the WSA are considered to have geothermal potential:

- High (4D) - Colman Creek Zone
- Low (2B) - The remainder of the WSA

Oil and Gas Potential

The geologic environment for accumulations of hydrocarbons in this WSA is similar to the High Rock Lake WSA. Please refer to Energy and Critical Minerals section of the High Rock Lake WSA for general discussion.

The nearest oil and gas leasing activities are six miles south in the central Black Rock Range.

Oil and gas potential of this WSA is classified 2A, low potential, insufficient data.

Quality Standard 2: Impacts on Other Resources

Recreation

- current recreational use of 622 favors motorized and motorized-supported recreational activities (off-road vehicles, hunting, rockhounding)
- wilderness designation could restrict vehicular access to 5.7 miles of roads and ways and about 9,000 acres of land currently accessible to off-road vehicles
- most significant impact to recreation from wilderness designation would be restricting access on W5

Cultural Resources

- wilderness designation could indirectly add to the existing legal protection of cultural resources by limiting resource development and use
- wilderness designation could possibly curtail excavation and stabilization of historic, prehistoric or paleontological finds if action would impair wilderness values
- excavation of known sites is possible
- inventory data for 622 is sparse and sites which would warrant excavation may be identified in the future

Energy and Mineral Resources

- wilderness designation imposes strict guidelines on all allowed mineral and energy development--potentially making development infeasible
- mining claims located after designation could not be developed
- see Quality Standard 1 for more details

Livestock Grazing

- costs of maintaining range developments and livestock management would increase where vehicular access curtailed
- future beneficial range developments/treatments may be restricted, sagebrush control and seed proposed

Other Resources

Current resource plans identify no other resources which could be adversely impacted by wilderness designation. However, wilderness management could impose additional constraints on future projects in these programs: fire, wildlife, wild horses and burros, lands, soil, water and air, aquatic habitat and visual resources.

Quality Standard 3: Impact of Non-designation on Wilderness Values

SHORT-TERM IMPACTS

- reduced opportunities for primitive and unconfined recreation and solitude in those areas accessible to off-road vehicles within 622

LONG-TERM IMPACTS

- continued development of mineral and energy resources could eventually eliminate opportunities for naturalness solitude, and primitive and unconfined recreation within 622; potential discussed in Quality Standard 1
- area would remain open for development of other resources which might impair wilderness values; extent speculative

Quality Standard 4: Public Comment

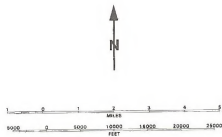
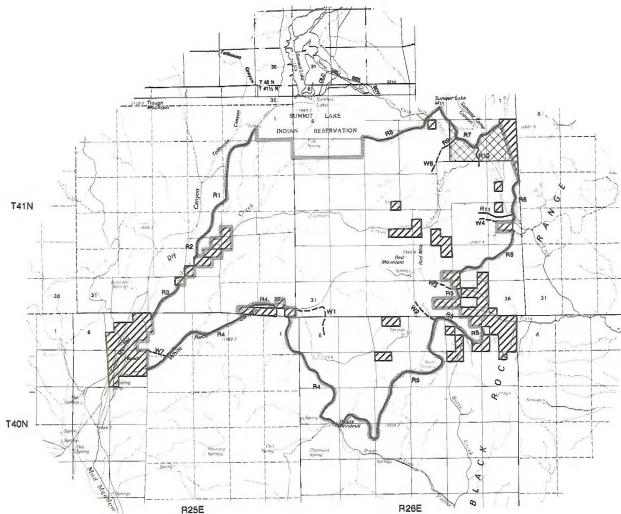
See District-wide Analysis, Chapter III






Quality Standard 5: Local and Regional Socioeconomic Effects

See District-wide Analysis, Chapter III

Quality Standard 6: Consistency With Other Plans

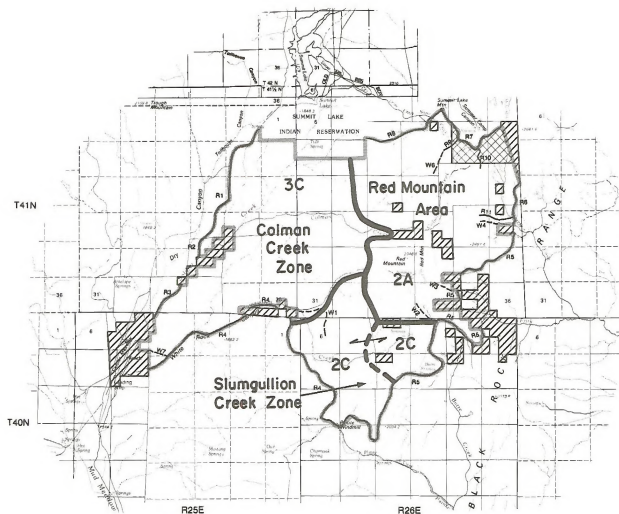
See District-wide Analysis, Chapter III



-  PORTION OF LAHONTAN CUTTHROAT TROUT INSTANT STUDY AREA WITHIN W.S.A.
-  PRIVATE LAND (SURFACE & MINERALS)
-  W.S.A. BOUNDARY
-  ROAD
-  WAY



NV-020-622 NORTH BLACK ROCK RANGE



FAVORABILITY

- 1 UNFAVORABLE POTENTIAL
- 2 LOW POTENTIAL
- 3 MODERATE POTENTIAL
- 4 HIGH POTENTIAL

LEVEL OF CONFIDENCE

- A INSUFFICIENT DATA
- B LOW CONFIDENCE (Indirect evidence)
- C MODERATE CONFIDENCE (Direct evidence)
- D HIGH CONFIDENCE (Abundant direct evidence)

--- BOUNDARY OF ZONES WITH APPROXIMATELY EQUIVALENT MINERAL POTENTIAL BUT WHICH CONTAIN DIFFERENT MINERALS (SEE TEXT).

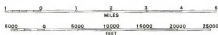
PORTION OF LAHONTAN CUTTHROAT TROUT INSTANT STUDY AREA WITHIN W.S.A.

PRIVATE LAND (SURFACE & MINERALS)

W.S.A. BOUNDARY

ROAD

WAY



NV-020-622 NORTH BLACK ROCK RANGE

MINERAL POTENTIAL

Wilderness Study Area 827: North Fork of the Little Humboldt

DESCRIPTION

Location

- northeastern Humboldt County, Nevada, approximately 80 miles northeast of Winnemucca, Nevada
- five-hour drive from Reno, nearest Standard Metropolitan Statistical Area
- best access well-maintained Little Owyhee road (BLM 2003), which enters 827 at its northern border

Configuration and Size

- bounded by a pipeline and BLM maintained roads (48.5 miles) and private land (19.6 miles)
- approximately 19 miles north-south and from 3 to 9 miles east-west
- 69,683 acres of public land

Physical Environment

- altitude range: 4,700 to 6,000 feet
- Bailey-Kuchler ecosystem: Sagebrush steppe (3130-49)
- Paradise-Denio Grazing E.I.S. vegetation communities: sagebrush and waste
- greatest percentage of riparian vegetation along North Fork of the Little Humboldt gorge
- 827 straddles a north-south running gorge of the North Fork of the Little Humboldt; surrounded by a high desert
- two distinct landforms within 827: high great basin desert; North Fork of the Little Humboldt gorge
 - gorge
 - 14 miles of a deep cut river gorge, of a basalt formation; north-south direction
 - desert
 - basaltic landscape from gently rolling to flat with shallow cut drainages and rounded ridge tops
 - sparse vegetation consisting mainly of sagebrush

STUDY POLICY CRITERIA

Criterion 1: Evaluation of Wilderness Values

Component A: Mandatory Wilderness Characteristics

SIZE

- 69,803 acres within boundary, including 0 acres of private land and 69,683 acres of public land

NATURALNESS

Developments within WSA

Range-related developments (see Table B-1 in Appendix B)

-two grazing allotments located within 827 (see Table B-2 in Appendix B)

Other man-made features

-five roads totalling 7.7 miles; one extending from the eastern boundary, the other four extending from the western boundary
-five ways totalling 8.9 miles (see Table B-3 in Appendix B)

Outside imprints

-a few fencelines, cattleguards, corrals and ranches are visible from the edge of 827, but the impact is minimal
-traffic caused dust visible from close proximity of boundary roads

Location and size of areas subject to imprints

-immediate vicinity of range improvements
-most imprints are insignificant

Rehabilitation potential

-most developments could be rehabilitated without major mechanical manipulation except for some of the larger reservoirs and cherrystem roads

Potential for separating areas in WSA subject to imprint

-the majority of the imprints could be eliminated by moving the boundary back closer to the gorge
-this would compromise a significant portion

Overall influence of imprints

-most areas within 827 substantially natural
-imprints most significant along periphery where topographic screening is limited
-visitors would have little difficulty locating substantially natural landscapes

SOLITUDE

Solitude is defined as the opportunity to avoid the sights, sounds and evidence of other people.

Influence of Outside Sights and Sounds

Economic activity

- localized and seasonal ranching activities (roundups, salting and maintenance of range improvements near and within 827)

Aircraft flights

- military
 - I.R. 303 - eastern edge
 - within five-mile corridor of departure route
 - regular low-level flights - 10,000 to 19,000 feet above sea level
 - I.R. 275 - western border
 - within 5 mile corridor of departure route
 - regular, low-level flights 13,500 feet above sea level
 - 1304 - northern end
 - alternate entry/exit
 - regular, low-level flights 10,000 feet above sea level
 - 1300 - northern border
 - alternate entry/exit point
 - regular, low-level flights 10,000 feet above sea level
 - Paradise Military Operation Area (MOA); daily flights between 0800 to 2100 hours
- no known landing areas
- State of Nevada Department of Wildlife conducts annual wildlife censuses
 - antelope counts in January (fixed-wing); August (helicopter); regular since 1950s
 - deer counts November-December and March-April (helicopter); regular since mid-1970s
- BLM conducts livestock and wild horse censuses/roundups
 - livestock tallies as needed (usually fixed-wing)
 - wild horse inventories with fixed-wing and helicopter
 - wild horse roundups conducted in 1977, 1981, 1982; will be conducted every three years; helicopter and vehicles

Vehicular traffic

- periodic traffic on west and north boundary roads (R-5 and R-4), visible within short distances
- occasional traffic on other boundary roads (R-1, R-2, R-3, R-6, R-7), visible within short distances; impact is occasional dust trail
- infrequent cross-country traffic; BLM (range management and wild horse roundups), recreational (ORV, hunting), and livestock operators; slight visual impact

Physical factors influencing solitude

Topographic and vegetative screening

- gorge
 - restricted basalt canyon running north-south direction
 - 600 to 2,700 feet wide from rim to rim; 130 to 600 feet deep
 - upper 1/3 portion of gorge (north end) is broader with less-steep slopes and straighter course
 - most of gorge is highly dissected with many wide oxbows; caves, basalt spires and precipices
 - several side canyons take off from gorge

- several areas along gorge where the canyon "opens-up" toward basalt flats
- vegetation provides excellent screening with red osier dogwood and willow lining the gorge bottom
- desert
 - west of gorge
 - flat to gently rolling basalt upland
 - several shallow canyons start in this portion of 827 and end in gorge
 - alternating broad, open vistas and low relief
 - minimal vegetation - few isolated sagebrush flats where shrubs exceed 5'
 - overall screening very poor
 - south end
 - flat to gently rolling basalt upland; rimrocks and small gorges in southeast portion
 - ridges tend to run north-south; east side steeper than west
 - open vistas
 - sparse vegetation of low-growing sagebrush; scattered big-sagebrush flats
 - outside influences evident from most of area
 - screening poor
 - northeast corner
 - flat to gently rolling terrain with shallow cut streams and rounded ridgetops
 - 1 or 2 small dry lake beds
 - sparse vegetation of low-growing sagebrush; big sagebrush along drainages
 - moderate screening

Size and Configuration

- size is sufficient to provide solitude
- elongated (north to south) configuration 15 miles long, 3 to 9 miles wide

Ability of user to find secluded spot

- easily locatable in gorge; less available within desert portion

PRIMITIVE AND UNCONFINED RECREATION OPPORTUNITY

Access

- most areas in 827 are within 3 miles of boundary road
- excellent access throughout most of year on Little Owyhee road (BLM 2003)
- less reliable from east side except with high clearance vehicles
- vehicular access within 827 on 5 roads (R 8, R 9, R 10, R 11, R 12) and 5 ways (W1, W2, W3, W4, W5)

Attractions (see also Special Features)

Points of interest

- North Fork of the Little Humboldt gorge
- variety of wildlife; including several game species

Challenge

- typical desert climate with associated challenges (hot dry summers, cold winters)
- potable water scarce; most available water limited to gorge

Scenic qualities

- contrast of deep colorful gorge to stark flat desert enhances perceptions of scale and grandeur

Activities

Dayhiking (water availability critical in portions)

- entire WSA accessible to dayhiking
- most likely destinations include North Fork of the Little Humboldt gorge, shallow basalt canyons located in southeast portion

Camping.

- best opportunities in vicinity of Button Lake and southern portion

Backpacking

- biggest attraction is North Fork of the Little Humboldt gorge; accessible to dayhikers
- north-south oriented two to three day trip through gorge
- biggest drawback is carry drinking water
- little advantage to backpacking in other portions of 827 except for access route to gorge

Hunting

- antelope throughout 827; greatest opportunity in vicinity of Button Lake (northeast corner of 827)
- small herd of mule deer

- chukar and sage grouse in fair numbers; best opportunity in southern portion
- California quail and ring neck pheasant located along southern border
- waterfowl (ducks) found along gorge and southwest boundary

Horsepacking

- constraints: limited water except along gorge
- advantages: forage generally available, good access, favorable topography in most areas, water plentiful along gorge

Rock climbing and scrambling, caving

- technical climbing possible within gorge
- rock scrambling good along gorge and other larger canyons along southeast boundary
- caving opportunities along gorge and other major canyons; most caves along gorge are bat infested

Nature study

- viewing and photographing wild horses and wildlife
- photography along gorge
- geologic study

Fishing

- no known fish populations but potential exists in gorge if habitat improved

Winter sports

good potential for winter camping along gorge

Water sports

- wading and swimming good in spring of year along gorge
- water quality poor in summer and fall

Component B: Special Features

CULTURAL

Prehistoric

- total recorded sites: five
- 51 sites: rockshelter
 - petroglyphs
 - U.C. Berkeley excavation and scientific investigation commenced in 1973 report by Bard, Busby and Kabor (1977)
 - probably occupied seasonally from 2100 B.C. through mid 1800s
 - burial excavated (dated between 2000 B.C. and 1080 A.D.)
- 53 sites; two lithic scatters

-North Fork lithic scatter associated with Ezra's Retreat rockshelter and also has been studied by U.C. Berkeley archeologists

unrated sites: two lithic scatters

-antiquities observations: one lithic scatter

-North Fork of the Little Humboldt was a favored hunting, gathering and seasonal occupation area used by Native Americans in historic and prehistoric times

Historic

-total recorded sites: one

-S3 sites: one stone fence

ZOOLOGIC

Fisheries

-isolated observations of brown trout, brook trout, cutthroat trout and rainbow trout

-potential for large fish populations along gorge if habitat improved

Wild horses and burros

-827 located within Little Owyhee Herd Management Area

Other Mammals

-spring range for mule deer in southwest portion

-year around antelope range in extreme northeast portion and along midwestern edge

-antelope winter range northeast and southeast portion

-beaver, muskrat, mink found along North Fork of the Little Humboldt River gorge and south end

-coyotes, bats, squirrels, raccoons, bobcats also found

Birds.

-sage grouse strutting ground located in northern portion

-sage grouse winter area in northwest portion

-waterfowl (mallard ducks and common merganser) found along southern boundary and North Fork Little Humboldt gorge

-California quail and ring-necked pheasant along southern border

-other birds observed

-turkey vultures, red-tailed hawks, rough-legged hawks, American kestrels, prairie falcons, chukar, great-horned owls, white-throated swifts, belted kingfishes, red-shafted flickers, violet green swallows, cliff swallows, black-billed magpies, common crows, canyon wren, American robin, western meadowlark, Brewers blackbird, northern oriole, sparrows, wrens, great blue herons and mourning doves

BOTANIC

Threatened and endangered plants

-Hackelia ophiobia (Owyhee River stickseed) found in T. 42 N., R. 43 E., listed as Sensitive Plant on Nevada Native Plant Society list, 1/19/82

-Artemisia packardiae (Packard sagebrush) found in T. 42 N., R. 43 E., and T. 43 N., R. 43 E., listed as "Sensitive Plants " on Nevada Native Plant Society list, 1/19/82

Riparian

-North Fork of the Little Humboldt and South Fork of the Little Humboldt contain riparian stream habitat

GEOLOGIC

- the North Fork of the Little Humboldt gorge is a dramatic, steep sided gorge
- eroded almost vertically out of the flat Owyhee Desert
- interesting basalt rock formation and caves

PALEONTOLOGIC

-no known sites in 827

ACECs

-none in 827

SCENIC

- vast panoramic landscape of the Owyhee Desert
- North Fork of the Little Humboldt River gorge

OTHER

-Button Lake, located in northeast corner of 827; dry lake bed that becomes lush meadow in spring of year

Component C: Multiple Resource Benefits

Wilderness designation of 827 could restrict motorized vehicular traffic on approximately 16.6 miles of roads and ways and an undetermined acreage of land which is now accessible to off-road vehicles. A vehicle closure would enhance opportunities for primitive and unconfined recreation within those areas currently accessible to vehicles.

Long-term benefits from wilderness designations may accrue to those resources which would otherwise deteriorate should the area return to other multiple uses. Current land-use plans essentially maintain the existing environment and resource commitments. Should WSA not be designated wilderness, the federal land would remain accessible to mineral patenting, leasing, and other development. These potential developments could adversely impact water, soil, air, visual, cultural, and other

resources which benefit from the existing, non-developed environment. The extent of future development in WSA is unknown.

Component D: Diversity in the National Wilderness Preservation System

ECOSYSTEM AND LANDFORM DIVERSITY

- Bailey-Kuchler ecosystem: sagebrush-steppe (3130-49)
- Paradise-Denio Grazing E.I.S. vegetation communities: sagebrush and waste
- 827 unique representation of this ecosystem in the Winnemucca District
- unknown how 827 compares with other WSAs with the same ecosystem outside the Winnemucca District

RECREATION NEAR SMSAs

- approximately five-hour drive from Reno, the nearest SMSA

GEOGRAPHIC DISTRIBUTION OF WILDERNESS

- see Chapter III, Component D, for an analysis

Criterion 2: Manageability

Physical Factors Influencing Manageability

CONFIGURATION

- southern boundary somewhat erratic and unidentifiable due to private property
- could be a significant manageability problem

ACCESS

- difficult to control off-road vehicle use off the majority of boundary roads
- difficult to control off-road vehicle use from portions of all the roads and ways within 827 borders

LANDFORM

- landform of the entire area (Owyhee Desert) is conducive to off-road vehicle use except for the gorge and the canyons and drainages adjacent to it

INTRUSIONS AND OUTSIDE INFLUENCES

- managing for solitude could be difficult in those areas described above where access is hard to control
- military aircraft flights most significant outside influence-- potential for reduction of flights or rerouting unknown
- other influences would not significantly impede manageability

Nonconforming But Accepted Uses

VALID EXISTING RIGHTS

Mining claims

-no known registered mining claim as of March 1983

Leases

- 498 acres of oil and gas leases
- probability of applications turning to leases undetermined
- possible to eliminate areas with oil and gas lease applications without substantially reducing wilderness values

Non-federal land

- 8⁺ acres of private land located along western boundary
- possible to eliminate areas of private land without substantially reducing wilderness values
- cattle grazing primary use and expected to continue

ESTABLISHED AIRCRAFT AND MOTORBOAT USE

- low-level military flights over 827
- Nevada Department of Wildlife conducts animal censuses during winter and spring using fixed-wing and helicopter
- BLM conducts wild horse censuses and roundups and livestock tallies in 827 by fixed-wing and helicopter
- none of the established aircraft use would significantly reduce wilderness manageability
- see Influence of Outside Sights and Sounds for more detail (i.e., dates flying established)

EXISTING AND PROPOSED RESOURCE FACILITIES

- approximately 4.5 miles of gap fencing along bottom of North Fork of the Little Humboldt gorge under an Aquatic Habitat Management Plan
- 80,000 gallon livestock/wildlife water catchment within the northeast portion of 827; proposed under CRMP
- none of the proposed changes would significantly impair wilderness values

LIVESTOCK GRAZING

Present grazing activities

- two grazing allotments
- existing range facilities would not significantly reduce wilderness manageability
- see NATURALNESS for details of existing facilities and seasons-of-use

Changes Identified in Paradise-Denio Grazing E.I.S.

-no proposed range facilities

STUDY POLICY QUALITY STANDARDS

Quality Standard 1: Energy and Critical Minerals

For background information and general description of the District see Appendix A.

General Geology

This WSA is on the southwestern portion of the Owyhee Volcanic Plateau centered about the North Fork of the Little Humboldt River. Rock types within the WSA include Miocene-Pliocene basalts, gravels and tuffaceous sediments of the Banbury Formation; Miocene-Pliocene rhyolitic flows and shallow intrusive; Miocene-Pliocene silicic ashflow tuffs and sedimentary rocks; and Miocene sedimentary rocks consisting of shale, conglomerate, sandstone, tuff and diatomaceous shale. Quaternary alluvium covers the low land areas. The older Miocene sedimentary rocks are exposed along the base of the faulted southern portion of the Owyhee Volcanic Plateau. The younger rhyolitic flows and silicic tuffs are exposed throughout the plateau area of the WSA and are in turn overlain by the Miocene-Pliocene Banbury Formation.

Detailed studies by LeMasurier (1965) in the Santa Rosa Range to the west have indicated that the volcanic rocks of the plateau area are locally derived via fissures and other centrally located vents. Several shallow rhyolitic intrusive centers are also exposed in this area. Other larger vent centers could be located at Capitol Peak 10 miles northwest of the WSA and at Coal Pit Peak in the Paradise Valley Mining District (Spring City) about 12 miles west of the WSA (Stewart 1975). LeMasurier (1965) has indicated a thickening and increase in the number of volcanic flow units eastward from the Santa Rosa Range.

These volcanic centers are related to a much larger geologic feature termed the "Oregon-Nevada Lineament" which trends in a north-northwest direction through north central Nevada and south-central Oregon.

This lineament is considered to be the surface expression of a deep-seated Fracture Zone that may have had a complex history of strike-slip and tensional movement (Stewart 1975). This lineament also terminates and forms the southern boundary of the Owyhee Plateau and the northern boundary of the Basin and Range Province.

Following is a discussion of the energy and mineral potential in the North Fork of the Little Humboldt River WSA. Please refer to the Mineral Potential Classification Scheme, Figure 1 in Appendix A, for further explanation of alphanumeric classifications. Also see, in Appendix B, Tables B-10, B-11, B-12 and B-13 showing acreages for Metallic Mineral, Nonmetallic Mineral, Geothermal and Oil and Gas Potential; and Tables B-6, B-7 and B-8 showing acreages of Unpatented Mining Claims, and Geothermal and Oil and Gas Leases; as well as summary Tables B-14 and B-15 showing the Energy and Mineral Threshold Levels and Holdings affected by four of the alternatives proposed in the EIS (all except No Wilderness Alternative).

Metallic Mineral Potential

There has been no recorded mineral production or any indication of known mineral occurrence in the WSA.

Gold, silver and mercury have been produced from Buckskin Mountain of the National District about 17 miles to the west in the Santa Rosa Range. This mineralization is related to a Miocene-Pliocene rhyolitic intrusive on Buckskin Mountain.

Gold, silver and copper have been produced from the Paradise Valley District (Spring City) about 12 miles west of the WSA. Very little detailed geologic information is available for this district other than the fact that most of the production has come from Triassic-Jurassic metamorphic rocks in contact with Cretaceous-Tertiary granitic rocks. Also prospecting activities and or productions (?) have occurred in the Tertiary rhyolitic intrusive in contact with the metamorphic rocks. The source of the mineralization in the metamorphic rocks could be related to any one of several older geologic events; it could be related to the younger rhyolitic intrusive or could represent several different ages of overlapping mineralization.

Gold, silver and lead have also been produced from volcanics of Owyhee Plateau in the Burner and Gold Circle (Midas) Districts 18 to 20 miles east of the WSA. This mineralization appears to be related to faulting extending into the plateau area.

All of these mining district mentioned are likely related to the Oregon-Nevada Lineament, a zone of complex faulting, volcanic activity and mineralization. Several other mining districts in Nevada also occur along this lineament.

Barringer Resources (1982) did not indicate any significant anomalous areas within the WSA but, some minor responses were indicated on modeling and elemental maps. A discussion of these anomalous zones follows. Please refer to the Mineral Potential Maps for locations.

GREELEY CROSSING ANOMALOUS ZONE. (2B) Low Potential.

This zone is along the northwest boundary of the WSA near Greeley Crossing.

Rock types include Miocene-Pliocene basalts, gravels and tuffaceous sediments of the Banbury Formation and Miocene-Pliocene rhyolitic flows.

Geochemical sampling and geostatistical modeling results show:

Anomalous Values

Moderate: mercury

More detailed work would have to be done to determine source of anomalous mercury values.

No prospecting activities or mining claims are known in this area. Recently there has been claim staking and drilling operations three miles west of this zone.

MILIGAN CREEK ANOMALOUS ZONE. (2B) Low Potential.

This zone is in the southeast portion of the WSA between Milligan Creek and the North Fork of the Little Humboldt River. Rock types include basalts, gravels and tuffaceous sediments of the Miocene-Pliocene Banbury Formation and Miocene-Pliocene rhyolitic flows that have been down dropped on the southern edge of the Owyhee Plateau.

Geochemical sampling and geostatistical modeling results show:

Response to Geostatistical Modeling

Low: mafic copper-nickel

Anomalous Values

Moderate: mercury

Low: nickel

These anomalous values may be related to younger basin and range faulting or the older movements along the Oregon-Nevada Lineament. The anomalous nickel values may also be related to a particular mafic unit in this zone.

No prospecting activities or mining claims are known in this zone. Staking activities, however, are expected in this general area as has occurred west of the WSA.

Nonmetallic Mineral Potential

Nonmetallic minerals have not been reported or suspected in the WSA, therefore, potential is classified 1A, unfavorable, insufficient data.

Geothermal Potential

Several hot springs and warm springs occur along the Nevada portion of the north-northwest trending Oregon-Nevada Lineament, which defines the northern boundary of the Basin and Range Province. Some of the hot springs and warm springs nearest the WSA include the Hot Springs and Martin Creek Warm Springs located 12 to 14 miles to the west. Warm Springs have also been reported along the Little Humboldt River just west of the WSA, but have not been confirmed in the Field (USDI Paradise URA 1979).

The southern one-quarter of the WSA along the edge of the Owyhee plateau has the greatest potential for geothermal resources. To date there are no geothermal leases within or adjacent to the WSA.

The following portions of the WSA are classified as having geothermal potential:

Moderate (3B) - A 3-mile-wide strip inside the southern boundary

Low (2B) - The remainder of the WSA.

Oil and Gas Potential

The possibility of potential oil and gas bearing, Early Tertiary sedimentary rocks buried beneath the plateau area is likely the cause of leasing activities in this area. Some oil and gas geophysical exploration activities have occurred along the southern base of the Owyhee plateau.

A small portion of the northwest corner of the WSA (six sections) is under an oil and gas lease. Extensive oil and gas leasing is also found along the western boundary of the WSA.

The oil and gas potential of this WSA is classified 2A, low potential.

Quality Standard 2: Impacts or Other Resources

Recreation

- current recreational use of 827 favors motorized and motorized-supported recreational activities (off-road vehicles, hunting, rockhounding)
- wilderness designation could restrict vehicular access to 16.6 miles of roads and ways and about 42,000 acres of land currently accessible to off-road vehicles

Cultural Resources

- wilderness designation could indirectly add to the existing legal protection of cultural resources by limiting resource development and use
- wilderness designation could possibly curtail excavation and stabilization of historic, prehistoric or paleontological finds if action would impair wilderness values.
- there is high potential for excavation of known sites
- there is high potential for additional sites which would warrant excavation being identified in the future

Energy and Mineral Resources

- wilderness designation imposes strict guidelines on all allowed mineral and energy development--potentially making development infeasible
- mining claims located after designation could not be developed
- see Quality Standard 1 for more details

Livestock Grazing

- costs of maintaining range developments and livestock management would increase where vehicular access curtailed
- future beneficial range developments/treatments may be restricted, none proposed in 827 at this time

Lands

- utility corridor - gas pipeline right-of-way northern boundary road

-no expansion of corridor after designation

Other Resources

Current resource plans identify no other resources which could be adversely impacted by wilderness designation. However, wilderness management could impose additional constraints on future projects in these programs: fire, wildlife, wild horse and burros, soil, water and air, aquatic habitat and visual resources.

Quality Standard 3: Impact of Non-designation on Wilderness Values

SHORT-TERM IMPACTS

-reduced opportunities for primitive and unconfined recreation and solitude in those areas accessible to off-road vehicles

LONG-TERM IMPACTS

-continued development of mineral and energy resources could eventually eliminate opportunities for naturalness, solitude, and primitive and unconfined recreation within 827; potential discussed in Quality Standard 1
-area would remain open for development of other resources which might impair wilderness values; extent speculative

Quality Standard 4: Public Comment

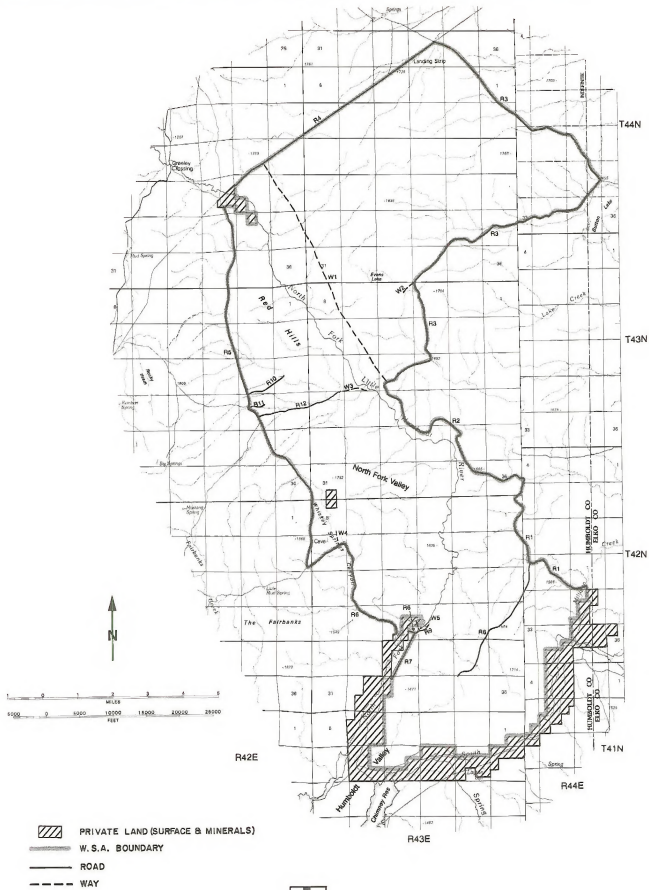
See District-wide Analysis, Chapter III

Quality Standard 5: Local and Regional Socioeconomic Effects

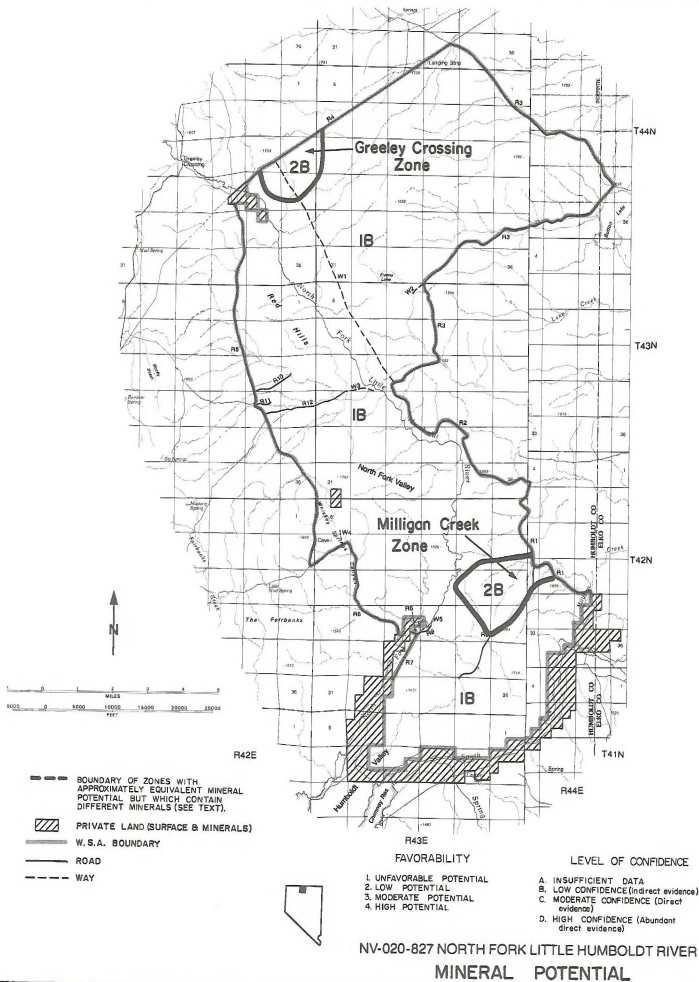
See District-wide Analysis, Chapter III

Quality Standard 6: Consistency With Other Plans

See District-wide Analysis, Chapter III



NV-020-827 NORTH FORK LITTLE HUMBOLDT RIVER



CHAPTER III. WINNEMUCCA DISTRICT-WIDE ANALYSIS

Study Policy Criteria

CRITERION 1: EVALUATION OF WILDERNESS VALUES

Component A: Mandatory Wilderness Characteristics

Size: All of the 18 Wilderness Study Areas meet the minimum size requirement of 5,000 acres. They are:

| <u>WSA NAME</u> | <u>ACRES</u> |
|-----------------------------------|--------------|
| High Rock Lake | 61,902 |
| Poodle Mountain | 142,050 |
| Fox Range | 75,404 |
| Pole Creek | 12,969 |
| Calico Mountains | 67,647 |
| Augusta Mountain | 89,372 |
| Selenite Mountains | 32,041 |
| Mount Limbo | 23,702 |
| China Mountain | 10,358 |
| Tobin Range | 13,107 |
| Blue Lakes | 20,508 |
| Alder Creek | 5,142 |
| South Jackson Mountains | 60,211 |
| North Jackson Mountains | 26,457 |
| Black Rock Desert | 319,594 |
| Pahute Peak | 57,529 |
| North Black Rock Range | 30,791 |
| North Fork of the Little Humboldt | 69,683 |

Naturalness

The wilderness inventory determined that all WSAs were primarily natural, even though most have man-made features within them including roads, ways, fencelines and other range developments. However, the wilderness inventory did not take into account the effects of outside sights and sounds, which does influence the apparent naturalness in parts of several WSAs. The Selenite Mountain WSA is the most heavily impacted by outside sights and sounds, including a railroad, state highway, two communities and one large operating mine. Other WSAs with outside mining areas influencing part of the WSA include High Rock Lake, Fox Range, Pole Creek, Calico Mountains, Augusta Mountain, China Mountain, Tobin Range, Blue Lakes, South and North Jackson Mountains, the Black Rock Desert and Pahute Peak. All WSAs are influenced by minor outside sights and sounds such as vehicular traffic.

The Poodle Mountain WSA is the most heavily influenced by interior man-made features, primarily vehicle ways and range improvements. Although all of the WSAs contain some man-made features, no WSA is so influenced by these interior imprints such that, as a whole, they would be considered unnatural.

See the WSA by WSA analysis in Chapter II and Appendix B Tables B-1, B-3, B-5 and B-9 for a more complete discussion of naturalness.

Solitude

The wilderness inventory determined that all WSAs, not considering outside sights and sounds, offered outstanding opportunities for solitude. However, certain portions of each WSA, primarily along the boundary, were found not to offer outstanding opportunities for solitude. None of these areas would disqualify an entire WSA from containing this criterion.

The most significant detractor from solitude within the Winnemucca District WSAs is military training flights, which occur with varying intensity over High Rock Lake, Fox Range, Pole Creek, Calico Mountains, Augusta Mountain, Blue Lakes, Alder Creek, South Jackson Mountains, Black Rock Desert, Pahute Peak, North Black Rock Range and North Fork of the Little Humboldt WSAs. Should any of these WSAs be designated as wilderness, the Wilderness Management Policy directs BLM to pursue mitigating measures to reduce this impact.

See the WSA by WSA analysis in Chapter II for a more complete discussion of solitude.

Recreation

All WSAs except the Black Rock Desert were determined to offer outstanding opportunities for primitive and unconfined recreation. The following is a discussion of all recreation use in the WSA, including those activities traditionally utilizing motors.

Overall, hunting, rockhounding and sightseeing are the most popular recreational activities in the WSAs, but the combination of poor access, low regional population density and competition with other recreational areas in the region keeps recreational use in the WSAs relatively low. However, popularity of the Black Rock Desert area (Black Rock Desert, South and North Jackson Mountains, Pahute Peak, Calico Mountains, High Rock Lake and North Black Rock Range) has grown significantly over the last decade. Motorized and motor-supported activities (e.g., hunting, off-road vehicles, rockhounding) are particularly important along the ways and roads concentrated on the periphery of many WSAs. Primitive recreation activities (e.g., backpacking, rock climbing, horsepacking), although gaining in popularity, are significant in only a few WSAs. This is, in part, a reflection of the traditional lifestyles of many rural Nevadans.

Table 3-1 estimates the relative importance of current recreation activities in each WSA. These estimates are based on (1) actual use data where available; (2) consultation with other agencies' use data or estimated, especially the Nevada Department of Wildlife and the Nevada Division of Parks and (3) professional judgment by the District Recreation Planner/Wilderness Specialist. Because available use data are rarely site-specific, these estimates should be considered only crude indications of actual use.

Table 3-1. Estimated Recreational Use in Wilderness Study Areas
Bureau of Land Management, Winnemucca District, Nevada

| WSA | 007 | 012 | 014 | 014A | 019 | 108 | 200 | 201 | 406P | 406Q | 600 | 600D | 603 | 606 | 620 | 621 | 622 | 827 | |
|----------------------|-----|-----|-----|------|-----|-----|-----|-----|------|------|-----|------|-----|-----|-----|-----|-----|-----|---|
| Recreational | | | | | | | | | | | | | | | | | | | |
| ORVs | M | H | L | L | L | L | L | L | L | L | L | L | L | L | L | H | M | L | L |
| Camping | M | M | M | L | M | L | L | M | L | L | H | H | M | M | M | M | L | L | L |
| Big Game Hunting | M | H | L | L | L | M | L | M | L | L | M | H | L | M | M | L | M | L | L |
| Small Game Hunting | M | H | M | L | M | L | M | H | L | M | M | L | M | M | L | M | L | M | M |
| Rockhounding | M | L | L | L | H | L | M | L | L | L | L | L | L | L | L | M | H | M | L |
| Horsepacking | L | L | L | L | L | L | L | L | L | L | M | M | M | M | L | L | L | L | L |
| Fishing | L | - | - | - | L | - | - | - | - | - | H | M | M | M | L | - | - | - | L |
| Hiking/Backpacking | M | L | L | L | M | L | L | L | L | L | H | M | M | L | L | M | L | L | L |
| Mountain Climbing | L | L | L | L | L | L | L | M | L | L | L | L | M | L | - | L | L | L | L |
| Cross-country Skiing | - | - | - | - | - | - | - | - | - | - | - | L | - | - | - | - | - | - | - |

a Big game hunting includes deer, antelope and cougar.

b Small game hunting includes chukar, quail, sage grouse and rabbit.

- Indicates negligible or no current use.

L Between 0-50 visitor days/year.

M Between 50-300 visitor days/year.

H Over 300 visitor days/year.

Source: Bureau of Land Management, Winnemucca District (Nevada) files, 1983.

Hunting accounts for the majority of recreational use in most WSAs. Humboldt and Washoe Counties are particularly noted for bird hunting, with chukar and sage grouse the most important. Poodle Mountain and Mount Limbo WSAs are estimated to receive 3,600 or more visitor hours per year of chukar, sage grouse and quail hunting. Other WSAs which support significant bird hunting are High Rock Lake, Fox Range, Calico Mountains, Selenite Mountains, Blue Lakes, North and South Jackson Mountains, Pahute Peak and Tobin Range. Other small game hunting such as dove, rabbit and Hungarian partridge occur within the WSAs but use is considered low.

Deer hunting accounts for the majority of big game hunting in the WSAs, with antelope hunting locally important. Poodle Mountain WSA is estimated to receive over 3,600 visitor hours of big game hunting, with antelope and deer hunting roughly equivalent in total use. Blue Lakes WSA also receives over 3,600 visitor-hours of big game hunting annually, mostly for deer. Significant big game hunting also occurs in the High Rock Lake, Fox Range, Calico Mountains, Mount Limbo, South and North Jackson Mountains and Pahute Peak WSAs.

The Black Rock Desert region in general, and the Black Rock Range in particular, has long been a major rock collecting area. Two WSAs currently estimated to receive in excess of 3,600 visitor-hours of rockhounding annually are Pahute Peak and the Calico Mountains. The Black Rock Desert, North Black Rock Range, High Rock Lake and the Selenite Mountains WSAs also have well-known rock collecting areas which receive considerable recreational use.

Sightseeing (historic and prehistoric, nature study and casual viewing) is a particularly important recreational pursuit in the Black Rock Desert region. The Applegate-Lassen Trail route which passes through the High Rock Lake and Pahute Peak WSAs is a major recreation attraction. Many recreationists combine trips along the Trail route with rockhounding, four-wheel driving, camping and hiking. The Black Rock Desert WSA also attracts a large number of sightseers and four-wheel drivers because of its unique beauty and challenges. Collection of archeological artifacts is an illegal, but nonetheless popular, recreational activity in many of the WSAs. Other WSAs which attract significant numbers of sightseers/nature viewers are Blue Lakes, Alder Creek, Calico Mountains, Pahute Peak, North Fork of the Little Humboldt and the North and South Jackson Mountains.

Primitive recreation activities (backpacking, dayhiking, mountain climbing, horsepacking and camping) are generally less popular than are motorized and motor-supported activities in the district WSAs. Dayhiking is considered the most popular primitive recreation activity, with Blue Lakes WSA receiving an estimated 3,600 visitor-hours or more annually. Although actual use figures are lacking, High Rock Lake, Calico Mountains, Alder Creek, South Jackson and Pahute Peak WSAs are estimated to each receive between 600 and 3,600 visitor-hours of dayhiking and backpacking annually. Much of this use is in association with other recreational pursuits, mainly sightseeing, rockhounding and camping. Mountain climbing is most popular in the Mount Limbo and South Jackson Mountains WSAs, but fewer than 3,600 visitor-hours annually are estimated to accrue in either WSA. Horsepacking is most popular in Blue Lakes, Alder Creek and the North and South Jackson Mountains WSAs, but with no one WSA receiving more than 3,600 visitor-hours annually.

Other recreational activities of note in certain WSAs include off-road vehicles (ORV) and fishing. Most ORV use occurs in support of other activities, especially hunting. The Black Rock Desert WSA, however, supports considerable ORV use, as does Pahute Peak, Poodle Mountain and High Rock Lake WSAs. Most ORV use is limited to the desert piedmonts which fringe many WSAs and the existing roads and ways. Fishing is an important recreational use in the Blue Lakes WSA, with the North and South Jackson Mountains WSAs also supporting modest recreational fishing.

Component B: Special Features

Cultural

Although each WSA contains some cultural sites, several stand out as being particularly significant. The Applegate-Lassen Trail, a mid-1800s emigrant trail of national significance, runs through portions of the High Rock Lake and Pahute Peak WSAs. The viewshed of this trail extends farther into the High Rock Lake and Pahute Peak WSAs, and onto the Calico Mountains WSA. The natural appearance of these WSAs contributes to the "integrity of setting" for the trail, which appears much the way it did during emigrant migrations.

Important historic sites, in addition to the Applegate-Lassen Trail, include numerous Basque sheepherder carvings in the Blue Lakes and Alder Creek WSAs and the gravesite of Peter Lassen in the Pahute Peak WSA.

The Black Rock Desert, Blue Lakes and Alder Creek WSAs contain numerous prehistoric sites, some which may have national significance. The North Fork of the Little Humboldt WSA contains one significant prehistoric site.

Zoologic

Significant zoologic features are limited to wild horses, certain big game species and fisheries. Wild horses are found in all WSAs except Blue Lakes and Alder Creek. Poodle Mountain WSA is a particularly important habitat for deer and antelope. The Blue Lakes and North Jackson Mountains are targeted for bighorn sheep reintroductions by the Nevada Department of Wildlife. Fisheries are found in High Rock Lake, Calico Mountains, Blue Lakes, Alder Creek, North and South Jacksons and North Fork of the Little Humboldt WSAs and possibly the Black Rock Desert WSA. About 660 acres of the Lahontan Cutthroat Trout Natural Area is included in the North Black Rock Range WSA.

Botanic

The North Fork of the Little Humboldt and the South Jackson Mountain WSAs are known to contain rare plants, although none are on the threatened or endangered species list. The Black Rock Desert WSA is also suspected of containing rare plants, although to date none have been found.

Other botanical features of note in the WSAs include riparian vegetation in High Rock Lake, Poodle Mountain, Fox Range, Calico Mountains, China Mountain, Tobin Range, Blue Lakes, Alder Creek, North and South Jackson

Mountains, Black Rock Desert, Pahute Peak, North Black Rock Range and North Fork of the Little Humboldt WSAs. The Blue Lakes and Alder Creek WSAs also contain whitebark and limber pine unique to northwestern Nevada, and Alder Creek WSA contains tree-ring research sites.

Physical

The most notable geologic features within the WSAs include the Fly Canyon Potholes in High Rock Lake, the 1915 earthquake fault scarp in the Tobin Range, the glacial landforms in Blue Lakes, and the gorge of the North Fork of the Little Humboldt River. The Black Rock Desert region as a whole, which includes High Rock Lake, Calico Mountains, North and South Jackson Mountains, Black Rock Desert, Pahute Peak and North Black Rock Desert WSAs, contains many features of geologic interest.

The Black Rock Desert WSA is especially noteworthy for its abundance of paleontologic sites, some which may be of national significance. Fossils are also known to occur in the High Rock Lake, Calico Mountains, Augusta Mountain and Pahute Peak WSAs.

Areas of Critical Environmental Concern (ACEC)

No ACECs are located in any of the WSAs. About 660 acres of the Lahontan Cutthroat Trout Natural Area is located on the North Black Rock Range WSA.

Scenic

See WSA by WSA analysis in Chapter II.

Component C: Multiple Resource Benefits

Wilderness designation provides short-term benefits to activities which are enhanced by the elimination of off-road vehicles, and long-term benefits to resources which would otherwise deteriorate should the area return to other multiple uses.

Short-term benefits are most significant in those WSAs receiving considerable off-road vehicle use. These include High Rock Lake, Poodle Mountain, Black Rock Desert and Pahute Peak WSAs. Elimination of off-road vehicle use would enhance opportunities for solitude and primitive and unconfined recreation, and also provide protection to wildlife and other resources (such as cultural) which are impacted by heavy ORV use. The cultural sites in the High Rock Lake, Blue Lakes, Alder Creek, Black Rock Desert and Pahute Peak are particularly prone to damage by ORVs and/or heavy human use. Wilderness designation of the Black Rock Desert WSA would theoretically reduce the heavy damage to paleontologic resources found there, but effective enforcement would be difficult.

Although current land-use plans essentially maintain the existing environment and resource commitments, should the WSAs not be designated wilderness the federal land would remain accessible to mineral and energy development, utility corridors, range improvements, road building and other developments. These potential developments could adversely impact recreation, water, soil, air, visual, cultural, wildlife and other

resources which benefit from the existing, nondeveloped environment. Although the extent of future development within the WSAs is speculative, a high probability that impairing development will occur on some or all of the WSAs appears certain.

Component D: Diversity in the National Wilderness Preservation System

Ecosystem and Landform Diversity

The following is an overview of the ecological diversity represented by the 18 WSAs according to the Bailey-Kuchler system. Because the Bailey-Kuchler system is highly generalized, a brief discussion of unique ecological features found in the WSAs will be found later in this section. Numbers refer to the Bailey-Kuchler system.

All 18 WSAs under study are in the Intermountain Sagebrush Province. This province contains 11 ecotypes, five of which are represented within the Winnemucca WSAs: sagebrush steppe (3130-49), desert (3130-39), saltbush-greasewood (3130-34), juniper-pinyon woodland (3130-21) and Great Basin sagebrush (3130-32). See Table 3-2.

The sagebrush steppe (3130-49) ecotype covers 635,000 acres in 14 WSAs, encompassing 57% of the Winnemucca District WSA acreage. This includes extensive stands of juniper in seven of the WSAs and a disjunct population of whitebark and limber pines which are unique to northwestern Nevada (Blue Lakes). Two statutory wildernesses totalling 35,000 acres contain sagebrush steppe: the Lava Beds National Monument in California and the Jarbidge Wilderness in Nevada. Three additional WSAs containing 343,000 acres of sagebrush steppe in Oregon, Nevada and California have been endorsed as suitable for wilderness by the President of the United States and are pending before Congress. An additional 143 WSAs totalling 4,264,000 acres within Nevada, California, Oregon, Utah and Idaho contain the sagebrush-steppe ecotype.

The desert ecotype (3130-39) is represented in one Winnemucca District WSA, the Black Rock Desert, and includes 224,000 acres (20%) of the District wilderness study acreage. To date, one area in Idaho with 43,000 acres of desert ecotype has been designated as wilderness, and 12 more areas with 856,000 acres are under wilderness study in Idaho and Nevada. These include several lava flows which are not ecologically comparable to the Black Rock Desert.

Portions of four WSAs totalling 148,000 acres (13% of district WSA acreage) are within the saltbush-greasewood ecotype (3130-34), including approximately one-third of the Black Rock Desert WSA. Two statutory wildernesses in California contain 20,000 acres of saltbush-greasewood, and one area in Oregon with 30,000 acres has been administratively endorsed as suitable for wilderness. Additionally, 57 areas encompassing 995,000 acres of this ecotype are under wilderness study in Nevada, Oregon, Idaho and Utah.

Table 3-2. Approximate Ecosystem Acreage
 According to the Bailey-Kuchler System
 For Winnemucca District (Nevada) Wilderness Study Areas

| WSA | Juniper- Pinyon Woodland (3130-21) | Great Basin Sagebrush (3130-32) | Saltbush- Greasewood (3130-34) | Desert (3130-39) | Sagebrush- Steppe (3130-49) |
|-------|---|---------------------------------------|--------------------------------------|---------------------|-----------------------------------|
| 007 | | | | | 62,000 |
| 012 | | | | | 142,000 |
| 014 | | | | | 75,000 |
| 014A | | | | | 13,000 |
| 019 | | | | | 68,000 |
| 108 | 70,000 | 19,000 | | | |
| 200 | | | | | 32,000 |
| 201 | | | | | 24,000 |
| 406P | 6,000 | 4,000 | | | |
| 406Q | 8,000 | 5,000 | | | |
| 600 | | | | | 21,000 |
| 600D | | | | | 5,000 |
| 603 | | | 24,000 | | 36,000 |
| 605 | | | 16,000 | | 10,000 |
| 620 | | | 96,000 | 224,000 | |
| 621 | | | 12,000 | | 46,000 |
| 622 | | | | | 31,000 |
| 827 | | | | | 70,000 |
| TOTAL | 84,000 | 28,000 | 148,000 | 224,000 | 630,000 |
| (%) | (8%) | (2%) | (13%) | (20%) | (57%) |

Source: Bureau of Land Management, Nevada State Office, Reno, Nevada, in REX 2 computer files (1983).

Juniper-pinyon woodland (3130-21) covers 84,000 acres in three Winnemucca District WSAs, representing 8% of the total WSA acreage. Three statutory wildernesses in California contain 43,000 acres of this ecotype, and eight additional areas with 550,000 acres are administratively endorsed as suitable for wilderness and pending before Congress. Ninety-two wilderness study areas including 2,691,000 acres in Nevada, California and Utah are potential sources of representation in the National Wilderness Preservation System for this ecotype.

The Great Basin sagebrush ecotype (3130-32) is represented in portions of three Winnemucca District WSAs totalling 28,000 acres, or 2% of the total district WSA acreage. Two statutory wildernesses in California contain this ecotype (32,000 acres), and six study areas totalling 638,000 acres in California and Nevada have been administratively endorsed as suitable. Seventy-seven WSAs with 1,315,000 acres of Great Basin sagebrush are in Nevada, California and Utah.

Overall, four of the District WSAs contain unique landforms and/or vegetation not acknowledged by the Bailey-Kuchler system. The Black Rock Desert is one of the largest undeveloped valley floors within the Great Basin and includes an intermittent river system. The North Fork of the Little Humboldt includes a dramatic gorge in the Owyhee Plateau. Blue Lakes and Alder Creek WSAs encompass a glacially altered landform with a

disjunct population of whitebark and limber pines not found elsewhere in northwestern Nevada. In addition, the Black Rock Desert complex is an aggregate of seven WSAs containing varied landscape of desert and steppevegetation of considerable natural interest (High Rock Lake, Calico Mountains, South Jackson Mountains, North Jackson Mountains, Black Rock Desert, Pahute Peak, North Black Rock Range).

Three urban areas, all of which are standard metropolitan statistical areas (SMSAs) as defined by the Bureau of Census (1980) are within a five-hour drive of one or more WSA. Reno, with a population of 100,747 and a county population of 193,623, is within a five-hour drive of all WSAs except Blue Lakes and Alder Creek. Sacramento (city: 275,741; SMSA: 1,014,002) is within a five-hour drive of eight WSAs in the Black Rock area (High Rock Lake, Poodle Mountain, Fox Range, Pole Creek, Calico Mountains, Selenite Mountains, Mount Limbo, North Black Rock Range). One WSA (North Fork of the Little Humboldt) can be reached in five hours from Boise, Idaho, with a SMSA population of 173,036. Population density within the Winnemucca District is low, with population centers in Lovelock (1,680) and Winnemucca (4,140).

Sacramento, Reno and Boise are all within a five-hour drive of numerous statutory wildernesses. Fourteen wilderness areas totalling 1,323,065 acres are within a day's drive of Sacramento. Similarly, Reno is within five hours' drive of 12 statutory wilderness areas containing 1,139,560 acres. Boise residents live within five hours' drive of eight wilderness areas totalling 3,141,553 acres. However, the majority of these designated wildernesses are located in significantly different ecological habitats than the WSAs under study, and recreation use-seasons are also dissimilar. Table 3-3 lists the available existing and potential wilderness opportunities within 250 miles of Sacramento, Reno and Boise.

Table 3-3. Wilderness Opportunities*
From Reno, Nevada; Sacramento, California; and Boise, Idaho

| | Reno, Nevada | | Sacramento, CA | | Boise, Idaho | |
|---|--------------|-----------|----------------|-----------|--------------|-----------|
| | No. of Areas | Acreage | No. of Areas | Acreage | No. of Areas | Acreage |
| Statutory Wilderness | 14 | 1,323,065 | 12 | 1,139,560 | 8 | 3,141,553 |
| Administratively Endorsed As Suitable | 24 | 1,762,461 | 32 | 575,870 | 12 | 800,601 |
| Under Study As Wilderness (Including Winnemucca BLM WSAs) | 105 | 2,375,086 | 144 | 4,201,375 | 145 | 4,489,390 |
| Under Study As Wilderness (Excluding Winnemucca BLM WSAs) | 97 | 1,639,283 | 128 | 3,108,064 | 144 | 4,419,707 |

* Within 250 miles.

Source: Bureau of Land Management, Nevada State Office, Reno, Nevada, in REX 2 computer files (1983).

CRITERION 2: MANAGEABILITY

Physical Factors Influencing Manageability

Configuration

No WSAs have such awkward configurations that the majority of each could not be managed effectively as wilderness; however, manageability of nearly every WSA could be enhanced with minor boundary adjustments. See WSA by WSA analysis, Chapter II, for more details.

Access

See WSA by WSA analysis, Chapter II.

Landform

All WSAs have some areas where the landform would make controlling ORV use difficult. Most WSAs center on mountain ranges flanked by desert piedmonts. These piedmonts, along with certain other landforms, are generally conducive to off-road vehicle use. Percentages of each WSA theoretically accessible to ORVs range from 10% on the Blue Lakes and China Mountain WSAs to 90% on the Black Rock Desert WSA. The average percentage for all WSAs is about half the areas (52%) accessible to ORVs. Appendix Table B-3 lists all WSAs and the percentage accessible to ORVs.

Intrusions and Outside Influences

Four WSAs (Fox Range, Calico Mountains, South Jackson Mountains and Pahute Peak) have "cherry systems," or areas within the WSA boundary which were deleted due to mining and/or prospecting. All WSAs are influenced somewhat by outside sights and sounds, but the Selenite Mountains WSA is the most heavily impacted (see the Naturalness discussion, this chapter, and the WSA by WSA analysis, Chapter II). These intrusions and outside influences do reduce manageability of portions of the WSAs, particularly in the Selenite Mountains.

Nonconforming But Accepted Uses

Valid Existing Rights

MINING CLAIMS

Nearly 13,000 acres representing approximately 1% of the WSA acreage have registered, unpatented mining claims. These claims can, under certain circumstances, become "valid existing rights" should the areas be designated as wilderness. Because this determination would require a validity exam, it is impossible to judge at this time whether any or all of these claims meet the criteria. Four WSAs (Selenite Mountains, Mount Limbo, North Black Rock Range and North Fork of the Little Humboldt) have no registered mining claims. Other WSAs range from 20 acres (Alder Creek) to 2,100 acres (Fox Range) of registered claims. Table B-6 in Appendix B lists all WSA acreages with unpatented mining claims.

LEASES

Approximately 51,000 acres of geothermal leases and 278,000 acres of oil and gas leases cover 5 and 25 percent of the total WSA acreage, respectively. Most of these leases have a wilderness stipulation written in them which restricts or mitigates activities which would impair wilderness values. Geothermal leases are located on the Fox Range, Calico Mountains, Augusta Mountain, Tobin Range and Black Rock Desert WSAs, and range from one percent of the WSA acreage on the Fox Range and Calico Mountains to 39 percent on the Tobin Range (see Table B-7 in Appendix B). Oil and gas leases are located on the High Rock Lake, Fox Range, Calico Mountains, Augusta Mountain, China Mountain, South and North Jackson Mountains, Black Rock Desert, Pahute Peak and North Fork of the Little Humboldt WSAs. They cover from less than one percent of the Calico Mountain WSA to 64% of the Black Rock Desert WSA. Table B-8 in Appendix B contains a complete summary of all oil and gas leasing in the WSAs.

NON-FEDERAL LAND

About 6,800 acres of private land are found within 14 of 18 WSAs (High Rock Lake, Poodle Mountain, Fox Range, Selenite Mountains, Mount Limbo, China Mountain, Tobin Range, Blue Lakes, South Jackson Mountains, North Jackson Mountains, Black Rock Desert, Pahute Peak, North Black Rock Range and North Fork of the Little Humboldt). Totals range from 35 acres in the Black Rock Desert WSA to 3,706 acres in the Poodle Mountain WSA. Although access to private inholdings must be permitted (with restrictions) should the surrounding area be designated as wilderness, the probability of this occurring or development on private land which would impair adjacent wilderness values is speculative. The WSAs most affected by private inholdings are Poodle Mountain, North Jackson Mountains, and the North Black Rock Range. Table B-9 in Appendix B lists all the private inholdings within the WSAs.

Established Aircraft and Motorboat Use

The BLM's Wilderness Management Policy allows for aircraft and motorboat use to continue where established prior to designation wilderness. All WSAs experience some aircraft flights, including both fixed-wing and helicopter, for wildlife inventories by the Nevada Department of Wildlife and various resource inventories by the BLM. In addition, most WSAs have established military training flights over them (see the Solitude section in this chapter). Military flights are the only established aircraft use which detracts significantly from wilderness manageability at this time. No motorboat use has been established in any WSA.

Existing and Proposed Resource Facilities

See the WSA by WSA analysis, Chapter II.

Livestock Grazing

There are a total of 114 allotments used by 118 permittees in the entire Winnemucca District. Of this total, 23 allotments and 40 permittees or 20 percent and 34 percent, respectively, are affected by the 18 WSAs (see

Table B-2 in Appendix B, Present Grazing Management Situation in WSAs). Livestock licensed use consists of cattle and sheep.

Periods-of-use vary, ranging from as little as two weeks for some sheep operations to year-round for some cattle operations. In the Augusta Mountain WSA, the only sheep use is in spring for trailing purposes.

Four of the affected allotments have existing Allotment Management Plans (AMPs) while three others are in various stages of developing Coordinated Resource Management Plans (CRMP). The remaining affected allotments will likely go through the coordination and consultation process as soon as it can be organized.

Designation of a WSA as wilderness would not be grounds for changing the number of animal unit months (AUMs) permitted inside these areas. The Final Wilderness Management Policy prohibits using wilderness status or wilderness designation as a sole means of decreasing or increasing AUMs in an allotment. Any change in existing AUMs in a WSA must be based on the results of monitoring the needs of competing uses.

Nearly all livestock users employ motorized vehicles on public land in the day-to-day conduct of their operation. Uses are for surveillance, salting, project maintenance and, in some instances, transporting livestock. A very few of the permittees use fixed-wing aircraft or helicopters for surveillance purposes.

QUALITY STANDARD NO. 1: ENERGY AND CRITICAL MINERALS

Wilderness designation of areas containing energy and mineral potential becomes a significant impact because these resources would not then be immediately available for exploration and/or production. This impact of unavailability becomes even more significant for those mineral commodities which are currently on the Strategic and Critical Materials Stockpile List because this nation is critically short of these materials and must depend on foreign sources.

Many minerals known or suspected to be present in WSAs are on the critical and strategic minerals stockpile list. The amount of land available for future exploration for these critical minerals would decrease significantly if the study areas are designated as wilderness.

METALLIC AND NONMETALLIC MINERALS

About 83 formally designated mining districts in the Winnemucca District have reported mineral production; however, numerous prospected areas have not been designated as mining districts because of no documentation of production. A wide variety of commodities (base, ferrous and precious metals and nonmetallic minerals) have been and are being produced from these mining districts and prospecting areas. Thirteen of the mining districts are partially in or immediately adjacent to WSAs, and in most WSAs there has been prospecting activity in other than designated mining districts.

Thirteen of the 83 mining districts (where the potential is high--4D under the classification system shown in Figure 2-1) are in or immediately adjacent to WSAs. Sixteen percent of the designated mining districts are in or adjacent to WSAs.

Exploration and prospecting activities have been and will be high in the Winnemucca District. Much attention is presently being focused on the somewhat overlooked lands within the district's WSAs. Almost all of the WSAs have potential for some mineral occurrences and several have very high potential for significant mineral occurrences.

Most of the WSAs have also been identified as containing high to moderate potential for strategic and critical minerals. The nation is critically undersupplied with these minerals and requires them for national security and economic stability.

GEOTHERMAL RESOURCES

The Winnemucca District has 15 "Known Geothermal Resource Areas" (KGRA) totaling 235,564 acres (about three percent of the district). About 120,000 acres inside and another 560,000 outside these KGRAs are presently under lease. Most of the remainder of the district has been classified as "Prospectively Valuable For Geothermal Resources" by the U.S. Geological Survey. Six of these KGRAs are partially within or immediately adjacent to WSAs. Geothermal exploration, including deep production well drilling, has continued at a high level in the district since 1973. A modern geothermal food-processing plant (unique in the U.S.) was opened in 1979 at Brady's Hot Springs in the Brady-Hazen KGRA of the Winnemucca District. Wells in several other geothermal fields are capable of electrical generation but are presently shut in (inactive.)

Comparison of geothermal potential in the entire district with potential in the WSAs can be made most easily for the areas with high potential, i.e., KGRAs. Forty-six percent of these KGRAs are partially in or immediately adjacent to WSAs. However, most of the land outside the KGRAs is classified as "Prospectively Valuable For Geothermal Resources" (moderate geothermal potential).

OIL AND GAS POTENTIAL

There are no designated "Known Geologic Structures" (KGS) in the Winnemucca District, and only the valley areas and volcanic plateau areas of the northern half of the district have been classified as "Prospectively Valuable For Oil and Gas" by the U.S. Geological Survey. However, since 1980 there have been about 540 oil and gas leases issued, covering about 500,000 acres. About 278,000 acres of these oil and gas leases are in WSAs. A few shallow (about 1,000 feet) oil and gas wildcat wells have been drilled in the past. A 7,931-foot test well on federal land was completed by Sun Oil in the Black Rock Desert WSA and has been reported as a dry hole (June 1983). Most of the WSAs have oil and gas leases, with a few WSAs almost completely blanketed by them.

Because the oil and gas potential of the district is highly speculative at this time and will not be known until the first few wells are drilled, it is difficult to rate the entire district's potential. Although leasing activities cannot be used to rank oil and gas potential, they do indicate the areas of high interest. About 56 percent (278,000 acres) of the oil and gas lease acreage is in WSAs, mostly in the Black Rock Desert WSA--the site of the only deep oil and gas test well in the district.

Following are those WSAs containing energy and mineral potential and the acreages involved. Also see, in Appendix B, Tables B-10, B-11, B-12 and B-13 showing acreages for Metallic Mineral, Nonmetallic Mineral, Geothermal and Oil and Gas Potential; and Tables B-6, B-7 and B-8 showing acreages of Unpatented Mining Claims, and Geothermal and Oil and Gas Leases; as well as summary Tables B-14 and B-15 showing the Energy and Mineral Threshold Levels and Holdings affected by four of the alternatives proposed in the EIS (all except No Wilderness Alternative).

An adverse impact could occur because the following energy and mineral resources would not be immediately available. There is high potential for geothermal resources (193,100 acres), metallic minerals (48,800 acres) and nonmetallic minerals (59,400 acres) in the following WSAs: High Rock Lake, Poodle Mountain, Fox Range/Pole Creek, Calico Mountains, Augusta Mountain, Selenite Mountains, China Mountain, Tobin Range, South Jackson Mountains, North Jackson Mountains, Black Rock Desert, Pahute Peak and North Black Rock Range; and moderate potential for oil and gas (389,694 acres), geothermal resources (320,900 acres), metallic mineral (301,569 acres) and nonmetallic mineral (692,026 acres) in the following WSAs: Augusta Mountain, Mount Limbo, Blue Lakes/Alder Creek, North Fork of the Little Humboldt.

Potential adverse impact to lessees holding 277,750 acres of oil and gas leases, 51,315 acres of geothermal leases, and claimants holding 12,680 acres of unpatented mining claims in all WSAs except Selenite Mountains, Mount Limbo and the North Black Rock Range WSAs.

QUALITY STANDARD 2: IMPACT ON OTHER RESOURCES

Please refer to Chapter II, Wilderness Study Area Analyses

QUALITY STANDARD 3: IMPACT ON NON-DESIGNATION ON WILDERNESS VALUES

Please refer to Chapter II, Wilderness Study Area Analyses

QUALITY STANDARD 4: PUBLIC COMMENT

Please refer to Winnemucca District Draft Environmental Impact Statement, pp. 2-36 through 2-39, 3-2, 3-7 and 3-8.

QUALITY STANDARD 5: LOCAL AND REGIONAL SOCIOECONOMIC EFFECTS

Economic interest in the WSAs derives from their use for grazing, recreation, forest products, mineral production and taxable assets. Analysis of these productive uses of the potential wilderness resource indicates that no significant alteration of the area economy may be expected to occur due to formal wilderness designations. While there may be some minor tradeoffs in income and employment impacts, with particular industries such as recreation being enhanced and mineral extraction being discouraged, the basic structure of the local economy will remain intact. Impacts at the state and national levels, exclusive of intangible wilderness preservation values and the state and county share of mineral leasing revenues, will be unnoticed.

Wilderness designation would not have any significant impact on range use because of the lack of restrictive grazing stipulations following designation. Extremely limited demand exists for forest products within the WSAs and enough of these products are available in nearby areas to cover present and foreseeable demand.

There is no conclusive evidence that significant increases in recreation use will occur or that the average annual rate of increase in recreation use will be accelerated due to designation. However, initial but temporary changes may be expected due to publicity and increased public awareness. Such changes as may occur do not hold the promise of either important economic benefits or disruptive impacts. The retail trade and services industries, particularly hotels and lodging places, eating and drinking places and recreation services, would benefit moderately from any increased recreation use. Any additional demand, however, is expected to be insufficient to encourage the entry of new businesses, but would most likely be manifested in increased sales.

Presently, there is no mineral production within the WSAs. Analysis for economic significance of potential is not feasible now because of lack of data.

Wilderness designation will have no significant effect on the tax structure itself or the amount of revenues received. The Bureau of Land Management Payments In Lieu of Tax funds for Humboldt and Pershing Counties in Fiscal Year 1981 amounted to \$512,000. Unless there is a change in this program, these funds will continue.

The State of Nevada receives 50 percent of all mineral leasing revenues, a percentage of grazing revenue, and four percent of all revenues from sale of lands and materials. Portions of these funds are then redistributed on a pro-rata basis to the counties. Grazing revenues should remain the same, suffering only from the loss of development of potential additional animal unit months (AUMs). Revenues from sale of lands and material will be unchanged. Losses in mineral leasing revenues, while of estimable value, are insufficient to be considered significant.

Income and Employment

Income and employment associated with WSAs comes from livestock grazing, mineral exploration and some unquantifiable recreation-generated income and employment.

Income and employment in the livestock industry will remain within its present levels and trend, suffering only the loss deriving from foregone development of additional grazing lands.

While there is no current mineral production within the WSAs, and therefore no income, there is some unidentified explorative employment. This would be foregone along with any potential employment associated with mineral development.

Income and employment in the recreation-related trades and services sectors are expected to be moderately enhanced. The degree of enhancement will depend entirely on the tastes of the recreation public and the level of desirability and challenge which is attached to particular wilderness areas.

Grazing

Cattle and sheep graze in the WSAs, with grazing quality varying from poor to good. On the whole, the value of livestock production the WSAs is insignificant on a regional or national level.

Wilderness designation would not result in the reduction of present AUM preferences. However, there will be some loss of potential additional forage due to the preclusion of vegetative manipulation projects. Restrictions may also be imposed on the number and type of range improvements that may be implemented under present Allotment Management Plans (AMPs). However, if the required benefit/cost analysis should show such improvements to be uneconomic, their restriction would not involve economic losses. Water developments, such as catchments, springs and pipelines that create no conflict with wilderness values would be allowed.

Wilderness designation would prevent the Bureau from carrying out vegetative manipulation projects. The loss of potential forage would result in a loss of potential revenue for ranchers. Ranch budget analysis for the Sonoma-Geolach EIS indicated a weighted average net ranch income per AUM of \$3.93. This is based on total AUMs required from all sources and includes public land, deeded and leased range, irrigated pasture, crop residue and hay. Net ranch income per AUM is computed by deducting fixed cash costs, a charge for family labor and a charge for depreciation from net of variable cash costs. The remaining revenue (net ranch income) is

available to service long-term debt and to provide a return to risk and management. Table 3-4 shows the potential additional net revenue ranchers Wilderness designation is expected to have no impact on the loan value of ranches other than the above discussed loss of increased value due to additional forage foregone. Discussion with the Federal Land Bank in Reno affirms that their loans are based on estimated ranch values with present grazing preference (AUMs). They do not consider "future" AUMs, either positively or negatively and, whether an area is designated wilderness or not, the present number of AUMs is the determining factor.

would lose from a loss of potential AUMs under wilderness designation. The existing net revenues within the WSAs are displayed for informational purposes. These existing net revenues will not be affected.

TABLE 3-4
 POTENTIAL NET REVENUE INCREASES FOREGONE
 DUE TO WILDERNESS DESIGNATION
 Bureau of Land Management, Winnemucca District, Nevada

| WSA | ALLOTMENT | Existing Net Revenue in WSA | ALTERNATIVES | | |
|--------|-----------------|-----------------------------------|-------------------|-----------------------|------------------------|
| | | | All Wilderness | MFP Recommendation | Wilderness Emphasis |
| 007 | Calico | \$405 | \$931 | \$126 | \$43 |
| 014 | Rodeo Creek | 9,652 | 393 | 0 | 393 |
| 200 | Blue Wing | 2,869 | 2,350 | 0 | 0 |
| 210 | Blue Wing | 1,914 | 4,484 | 4,484 | 1,038 |
| 600 | Pine Forest | 2,668 | 641 | 47 | 47 |
| 622 | Soldier Meadows | 924 | 8,760 | 0 | 1,372 |
| TOTALS | | \$18,432 | \$17,559 | \$4,657 | \$2,893 |

Source: Bureau of Land Management files in Nevada State Office, Reno.

A loss of potential forage would have an additional impact on ranch values, since ranch values are partially based on the forage grazing capacities of private, State and Federal lands that make up the ranch. While BLM does not recognize the right to treat grazing privileges as real property, grazing permits can be bought or sold and used as collateral for loans. These grazing permits have become an integral element in the capital and credit structure of ranches. Currently, market value averages about \$50 per AUM in northern Nevada (Falk 1980). Table 3-5 shows projected increases in individual ranch values that would not occur under wilderness designation. That portion of existing ranch values deriving from allotments within the WSAs is also displayed. These current ranch values will remain unaffected.

TABLE 3-5

POTENTIAL RANCH VALUE INCREASES FOREGONE
DUE TO WILDERNESS DESIGNATION

Bureau of Land Management, Winnemucca District, Nevada

| WSA | Allotment | Existing BLM AUMS in WSA | Existing Allotment Values in WSA | ALTERNATIVES | | |
|--------|--------------------|-----------------------------------|---|-------------------|-------------------------|------------------------|
| | | | | All Wilderness | MFP Recom- mendation | Wilderness Emphasis |
| 007 | Calico | \$ 103 | \$ 5,150 | \$ 11,850 | \$ 1,600 | \$ 500 |
| 014 | Rodeo Creek | 2,456 | 122,800 | 5,000 | 0 | 5,000 |
| 200 | Blue Wing | 730 | 36,500 | 29,900 | 0 | 0 |
| 210 | Blue Wing | 487 | 24,350 | 57,050 | 57,050 | 13,200 |
| 600 | Pine Forest | 679 | 33,950 | 8,150 | 600 | 600 |
| 622 | Soldier Meadows | 235 | 11,750 | 111,450 | 0 | 17,450 |
| TOTALS | | | \$234,500 | \$223,400 | \$59,250 | \$36,800 |

Source: Bureau of Land Management files in Nevada State Office, Reno.

There may be slight additional costs to some ranch operations due to limitations on motor vehicle access for range improvement maintenance, water hauling, salting, and surveillance. These costs do not appear to be significant. A previous study (unpublished research report, BLM, Oregon State Office, 1982) estimated the average increase in costs to be on the order of \$1.32 per vehicle mile for one horse and rider, plus \$0.39 for each packhorse, or \$0.07 per AUM.

Minerals

The major problem underlying economic evaluation of minerals is the great uncertainty regarding the existence of mineral deposits in sufficient quantity and quality to be commercially feasible. At present, mineral potential is unknown or indeterminate. In addition, long-range mineral resource evaluation and market demand estimates are at best speculative. Both mineral resource evaluation and development are directly dependent upon market demands that may be regional, national or worldwide in scope.

Locatable minerals include the precious and base metals. Gold, silver, mercury, copper, tungsten, antimony, iron ore, uranium, diatomite, gypsum, lead and barite have all been or are currently being produced in the district. However, no mineable quantities of ore have been located in the WSAs. Nevertheless, numerous mining claims and leases and an unknown potential for precious and base metal production do exist.

The district contains identified and inferred submarginal deposits of various metallic and nonmetallic minerals, but knowledge of reliable reserve estimates for these commodities and their locations is lacking. Some of the deposits of gold, silver, lead, mercury and uranium may prove economically viable. However, it is nearly impossible with existing information, and beyond the scope of this study, to estimate the impact that extraction of these and other mineral commodities would have on the local economy and work force.

Wilderness designation would prohibit mineral entry in the WSAs after December 31, 1983, or following designation, whichever comes last. Further, development of all valid mineral rights established prior to that date will be subject to reasonable regulations of access and reclamation in order to protect wilderness values. This may result in additional costs to potential operators and, therefore, discourage development.

Leasable minerals are oil and gas, sodium, potassium and geothermal steam. Much of the resource areas is classified by the U.S. Geological Survey as prospectively valuable for oil and gas. Though a number of oil and gas leases have been established, no production has yet occurred. Potential reserves cannot be estimated. Oil and gas leases will expire as a result of wilderness designation if there is no production within the 10-year life of the lease.

Table 3-6 lists existing leasing activities and mining claims in each of the WSAs. Annual lease revenues are received for (1) oil and gas leases (competitive and noncompetitive), (2) geothermal leases (competitive and noncompetitive), and (3) simultaneous geothermal leases. Mining claims and lease applications are subject to filing fees only. Average annual lease revenues are estimated at \$1.50 per acre for oil and gas leases, \$2.00 per acre for simultaneous geothermal leases, and \$3.00 per acre for geothermal leases. Based on these estimates, \$276,182 is paid to the State of Nevada as its share of current lease revenues within the WSAs.

Total revenues from all sources for Humboldt County (\$3,921,936) and Pershing County (\$2,036,503) in fiscal year 1981-1982 ended June 1982, totalled \$5,958,519. These mineral leasing revenues represent less than five percent of total revenues available and, while certainly of noticeable value, cannot be considered significant.

Many of the valleys in the area have been classified as prospectively valuable for sodium and potassium. While there has been some limited production of potassium in the past, there are no operations in existence at the present time.

TABLE 3-6
CURRENT MINING AND LEASING ACTIVITY

| WSAs | Oil & Gas Leases (Acres) | Geothermal Leases (Acres) | Simultaneous Geothermal Leases (Acres) | Oil & Gas Lease Applications (Acres) | Geothermal Lease Applications (Acres) | Mining Claims (Acres) |
|-------------|--------------------------------|---------------------------------|---|---|--|-----------------------------|
| 007 | | 813 | | 17,181 | | 409 |
| 012 | | | | 25,530 | | 720 |
| 014 | | 1,512 | 2,162 | 2,520 | 1,187 | 2,325 |
| 014A | | | | | | 118 |
| 019 | | 480 | 593 | | | 318 |
| 108 | 19,566 | 4,600 | | | | 3,205 |
| 200 | | | | | 271 | |
| 201 | | | | | | |
| 406P | | | | 186 | | 403 |
| 406Q | 3,780 | 4,117 | | | 3,445 | 602 |
| 600 | | | | | | 1,447 |
| 600D | | | | | | |
| 603 | 6,566 | | | | | 1,041 |
| 606 | 3,075 | | | | | 557 |
| 620 | 214,073 | 45,526 | 2,560 | 2,763 | 1,360 | 1,740 |
| 621 | | | | 11,016 | | 646 |
| 622 | | | | | | |
| 827 | | | | 5,508 | | |
| Total Acres | | | | | | |
| | 247,060 | 57,048 | 5,315 | 64,704 | 6,263 | 13,531 |

Only one geothermal resource has been developed. However, broad areas have been classified as prospectively valuable for geothermal resources. Sixteen Known Geothermal Resource Areas (KGRAs) have been designated. Of this total, four extend into four WSAs.

Salable minerals include sand, gravel and topsoil. The State of Nevada and Humboldt County each have Free-Use Permits within one WSA. However, these commodities can be made available in sufficient quantity in adjacent areas. The extraction and potential of salable minerals within the WSAs are insignificant.

Recreation

Recreation use in the WSAs has been insufficient for documentation. Thus, estimates of the level of its contribution to the local economy are unavailable. However, hunting and wildlife-associated recreation are important activities in the District and are considered, particularly in the Gerlach township area, to be of some economic significance. Current estimates of expenditures for hunting and wildlife-associated recreation, per person, per day, are as follows:

| | |
|---------------------------------------|---------|
| Big game (deer and antelope) | \$49.56 |
| Small game (including upland birds) | \$17.62 |
| Migratory birds (including waterfowl) | \$29.17 |
| Other animals | \$29.46 |
| Freshwater fishing | \$15.95 |
| Nonconsumptive wildlife use | \$14.93 |

These expenditure estimates can be used to determine the relative importance of wildlife-associated recreation activities. For instance, 300 activity days of big game hunting result in expenditures totalling \$14,868 and contribute approximately \$4,400 to the local economy.

The restriction of vehicle use in the WSAs will tend to reduce the number of recreation visitor days associated with hunting, off-road vehicle use and other vehicle-supported recreation such as rockhounding and vehicle camping. However, vehicle-dependent recreation which may be excluded from WSAs would not simply cease to occur but instead, would be displaced to adjacent public land areas which surround the WSAs in abundance. The biggest impact of restricting off-road vehicles would be in the Black Rock Desert (629) and the Poodle Mountain (012) WSAs where off-road vehicle use and hunting are the most important recreational activities. Thus, it is expected that any net impact on the area economy due to restriction of vehicle access will not be significant.

At the same time, it has been documented that wilderness areas tend to attract recreation use by virtue of the publicity associated with formal wilderness designation. It is expected that primitive and unconfined recreation activities such as nature study, dayhiking, camping, backpacking, horse packing, mountain climbing and rock climbing will increase in some small measure. This increased visitation should result in a comparable increase in recreation expenditures and recreation-related local income and employment.

An additional benefit will be realized by the increase in intangible values enjoyed by recreationists, which may be considered to accrue to the National Economic Development account. This account measures the national value of goods and services and includes the "willingness-to-pay" value of recreation.

None of these effects are sufficient to be considered significant.

Forest Products

No economic impact is anticipated as a result of wilderness restrictions on the gathering and harvesting of forest products. No timber production occurs on any lands within the Winnemucca District. Production of forest products is limited to informal cutting of firewood, poles, posts, and Christmas trees, and some pinenut gathering. None of these products are available in sufficient quantity to support commercial exploitation.

Production of juniper is ample to provide low quality posts and firewood for private use at the local level. The demand for posts is low due to the remoteness of the juniper stands from which the posts are obtained, as well as the presence of outside commercial sources. Local demand for fuelwood is higher than for posts; however, between 1974 and 1979 only three permits

for a total of nine cords of firewood, and three permits for a total of 180 juniper posts were issued within the Winnemucca District.

All of these products are available in sufficient quantities outside the WSAs to meet all foreseeable demands.

Lands

There are 13 WSAs which contain a total of 6,095 acres of private inholdings, most of it without vehicle access. These private lands are predominantly range lands and have been utilized for the establishment of water rights or base property for grazing privileges. This existing use will be continued. No impacts on land values, or the income and employment which derives from their use, are anticipated due to wilderness designation.

The potential for development of these lands for recreation services does exist, but appears to be improbable. Present recreation use is sporadic, limited, dispersed and insufficient to be documented.

QUALITY STANDARD 6: CONSISTENCY WITH OTHER PLANS

State of Nevada

The State of Nevada has not officially adopted any plans which would be either consistent or inconsistent with wilderness designations on the Winnemucca District.

Humboldt County

The Humboldt County, Nevada, land-use plan goals address wilderness designation specifically under Goal 5: "To prevent commonly used areas of Humboldt County from being erroneously designated as 'wilderness' or roadless areas." In addition, Goal 6 states: "To maintain the existing roads and access necessary to the continued economic well being of Humboldt County including the agriculture, livestock, mining and tourist industries as well as to maintain the quality of life in Humboldt County by ensuring access to recreational lands of all kinds including fishing, wildlife, rock-hounding, sight-seeing, off road vehicle use, horseback and back packing use and general enjoyment of the [sic] Nevada's traditional wide open spaces."

Because the terms "commonly used areas" and "erroneously designated as wilderness" are not defined, it is difficult to determine whether wilderness designation is consistent or inconsistent with Goal 5. Wilderness designation could be both consistent and inconsistent with Goal 6 since wilderness designation would both ensure public access for most recreation activities mentioned and close areas to off-road vehicle use.

The High Rock Lake, Calico Mountains, Blue Lakes, Alder Creek, South Jackson Mountains, North Jackson Mountains, Black Rock Desert, Pahute Peak, North Black Rock Range and North Fork of the Little Humboldt WSAs are wholly or partially within Humboldt County.

Pershing County

The Pershing County land-use plan places all WSAs in a "general land-use category" which promotes existing land uses, particularly mining and ranching. Therefore, wilderness designations (within Pershing County) which inhibit these uses would generally be inconsistent with the adopted plan.

The Calico Mountains, Selenite Mountains, Mount Limbo, China Mountain, Mount Tobin, Augusta Mountain and Black Rock Desert WSAs are wholly or partially within Pershing County.

Washoe County

Washoe County has not adopted any plans which would be consistent or inconsistent with wilderness designations.

The Poodle Mountain, Fox Range, Pole Creek and Selenite Mountains WSAs are wholly or partially within Washoe County.

APPENDIX A

This Energy and Mineral Technical Report represents a compilation of geologic data to aid in determining the energy and mineral potential of the Wilderness Study Areas (WSA) of the Winnemucca District and some adjoining Bureau Districts.

The Bureau contracted with Barringer Resources Inc. of Golden, Colorado, to conduct a stream sediment geochemical survey and geostatistical analysis of mineral potential of these WSAs. This survey began September 1981 with the final report submitted November 1982. Some follow-up field inspections were conducted by Bureau geologists during the summer of 1983 of the anomalous areas indicated by the Barringer Resources survey. The results of their field inspections and a literature search indicated that certain geologic environments had not been analyzed in the Barringer data set. Additional stream sediment samples were then taken by Bureau geologists in the Big Mike Mine area, Pershing County, Nevada, to construct a new massive sulphide model. The chemical results from these samples are presently being analyzed by Barringer Resources.

In addition, a new model for island arc copper porphyries is being prepared and compared with the Barringer geochemical data set. The results of this additional analysis are not yet available.

The results of the Barringer Resources survey, a literature search, some minor consultation with local prospectors and mining companies and field inspections have been summarized in this technical report. The energy and mineral potential for each WSA has been ranked, using the Classification Scheme and Level of Confidence Scheme shown in Figure 1.

The reader is also referred to the Barringer Resources Report, Winnemucca District (1982) for more information about mineral potential in the WSAs.

Figure 1
CLASSIFICATION AND LEVEL OF CONFIDENCE SCHEMES

| CLASSIFICATION SCHEME | LEVEL OF CONFIDENCE SCHEME |
|--|---|
| 1. The geologic environment and the inferred geologic processes do not indicate favorability for accumulation of mineral resources. | A. The available data are either insufficient and/or cannot be considered as direct evidence to support or refute the possible existence of mineral resources within the respective area (no confidence). |
| 2. The geologic environment and the inferred geologic processes indicate low favorability for accumulation of mineral resources. | B. The available data provide indirect evidence to support or refute the possible existence of mineral resources (low). |
| 3. The geologic environment, the inferred geologic processes, the reported mineral occurrences and the geochemical and geophysical anomalies indicate moderate favorability for accumulation of mineral resources. | C. The available data provide direct evidence, but are quantitatively minimal, to support or refute the possible existence of mineral resources (moderate). |
| 4. The geologic environment, the inferred geologic processes, the reported mineral occurrences and the known mines or deposits indicate high favorability for accumulation of mineral resources. | D. The available data provide abundant direct and indirect evidence to support or refute the possible existence of mineral resources (high). |

9-81-82: Bureau of Land Management, Denver Service Center and Winnemucca District, 1982.

General Geologic History

The Winnemucca District is located within the Basin and Range Geomorphic Province and is bounded on the north and northwest by the Columbia River Plateau and on the southwest by the Sierra Nevada uplift. Within the geomorphic province are evidences of a long and complex geologic history that includes major events of sedimentation, igneous activity, orogenic deformation and continental rifting that have set the stage for the development of significant energy and mineral resources within the Winnemucca District.

The oldest rocks in Nevada are located in the southernmost tip of the state and consist of metamorphic and intrusive rocks of Precambrian age, dated as 1,740 million years (m.y.) old. The oldest rocks exposed in the Winnemucca District consist of Cambrian sedimentary rocks deposited during the Paleozoic Era some 600 m.y. ago. Sedimentation continued through Ordovician, Silurian and Devonian periods with the accumulation of thick sequences of western deep-water shales, radiolarian cherts, quartzites, mafic pillow lavas (greenstones) and an eastern clastic and carbonate sequence.

During the Devonian and Early Mississippian periods, orogenic activity of the Antler orogeny resulted in the emplacement of the Roberts Mountains thrust. This thrust moved the western deep-water shales, siliceous and volcanic assemblages eastward as much as 90 miles and placed them above the continental shelf, clastic and carbonate rocks.

This event produced the north-northeast Antler highland through central Nevada. Erosion of this highland then provided the coarse clastic sediments that were deposited in basins on either side during the late Mississippian, Pennsylvanian and Permian periods.

Various tectonic models have been proposed to explain the Antler orogeny but the most widely accepted is the plate tectonic model.

Under this model the continental plates and oceanic plates are constantly moving, resulting in the developed volcanic island arc systems where continental plates and oceanic plates begin to interfere with one another. As these two plates continue to move towards one another the oceanic plates begin to subduct beneath the continental plates, which causes oceanic basin subsidence and continued development of volcanic island arc systems. Eventually the volcanic island arc mass collides with the continental margin causing compressional forces (thrusting) and the deep subduction of the oceanic plate beneath the continental mass. This deep subduction of the oceanic plate downward then ruptures the upper mantle, causing vast volumes of molten rock to begin migrating to the surface and resulting in emplacement of extensive plutonic rocks (batholiths) and surface volcanic activity.

Evidence of the development of an earlier Paleozoic volcanic island arc as a forerunner of the Antler orogeny has been identified in northern California (Churkin 1974), as expected under this model.

Beginning in the Early Permian Period a volcanic island arc system again developed, signalling the coming of another major orogeny termed the Sonoma orogeny. This orogeny continued into the Late Permian and Early Triassic, resulting in ocean-floor sediments and volcanics again being thrust eastward (Golconda thrust) as much as 60 miles over shallow water deposits of the Antler highland.

Minor post-Sonoma folding and thrusting began again in Late Triassic and by Middle Jurassic resulted in another major orogeny termed the Sevier orogeny. This orogeny continued through the Cretaceous and resulted in large-scale eastward overthrusting of from 20 to 75 miles. A major strike-slip fault termed the Walker Lane began moving, possibly in Early Jurassic, and has prevailed ever since. This 50-mile-wide zone of right-lateral movement extends from the Las Vegas area through the Pyramid Lake area and on into California. Right-lateral displacement along the Walker Lane could be on the order of 80 to 120 miles. Extensive volcanism and sedimentation continued from the Triassic through the Cretaceous and eventually culminated in the emplacement of large-scale granitic plutonic rocks during the Jurassic and Cretaceous and into the early Tertiary.

The ending of the Sevier orogeny brought to a close the extensive large-scale thrusting and folding, and left the state of Nevada a continental land mass never again to be submerged by the oceans.

During the Early Tertiary this continental land mass was undergoing erosion which resulted in the deposition of continental sediments in scattered and isolated basins. These Early Tertiary sedimentary rocks of the Paleocene to Middle Eocene Epochs are very sparsely preserved in Nevada. Very little tectonic activity occurred during this time except for some minor volcanic eruptions and related subsidence with the development of caldera structures.

Beginning in the Oligocene Epoch continental sedimentation increased and became very widespread throughout Nevada during the Miocene and Pliocene Epochs.

Also, during the Oligocene major igneous activity began between 43 and 34 m.y. ago in northeastern Nevada. About 34 m.y. ago this volcanic activity shifted to a northwest trending band through central and northwestern Nevada and continued through the Miocene Epoch to about 17 m.y. ago.

A major change occurred in the tectonic setting of Nevada about 17 m.y. ago in the Late Miocene Epoch. Extensional forces began pulling the continental land mass apart causing extensive block faulting which produced the present-day basin and range structure of Nevada. Extensive volcanic activity was also associated with the block faulting. This volcanic activity was limited to broad bands along the southern, western and northern borders of the state and continued until about six m.y. ago.

The extensive Miocene block faulting decreased significantly about six m.y. ago, as did the volcanic activity. Some minor volcanic eruptions have occurred in the last six m.y., consisting mostly of localized basaltic

cinder cones and lava flows. Minor block faulting has continued to the present and several historic fault ruptures have occurred in central Nevada.

Development of the north-south basin and range structure created interior basins that received unconsolidated sedimentation during the Pliocene, which has continued to the present. Valley fill in some areas has reached a thickness of over 10,000 feet. One significant event during the Quaternary period was the filling of many of these valleys by the ancient Lake Lahontan during the Pleistocene Epoch. This lake has since subsided leaving behind vast playa areas in the state of Nevada (Stewart 1980).

Energy and Mineral Potential - Unit Analyses By WSA

The WSA unit analyses in the Quality Standard 1: Energy and Critical Minerals section show energy and mineral potential, based on a ranking classification and level of confidence, for each WSA. For metallic minerals, each WSA is divided into anomalous zones or subareas, based on the findings of the Barringer Report and other data. These anomalous zones and/or subareas have been named after local place names, e.g., canyons or creeks, for identification and are not found in the geologic literature. Some formally designated mining district names, however, have been adopted as names where these districts lie immediately adjacent to or in a WSA. After the name of each zone or subarea is the mineral potential classification level. The ranking classification for the nonmetallic minerals, oil, gas and geothermal potential are more broadly defined and less detailed than the metallic minerals, therefore a map for those commodities was not prepared.

NOTE: Asterisks indicate strategic and critical materials.

Table . . 2

Present Grazing Management Situation in WSAs
in the Winnemucca District

| WSA No. | WSA Name | Allotment | Number of Permittees | Management Category * | Percent of Allotment in WSA | Kind of Stock | Period-of-Use | Present ALMs in WSA |
|---------|-------------------------|-------------------|----------------------|-----------------------|-----------------------------|---------------|----------------------------|---------------------|
| 007 | High Rock Lake | Soldier Meadows | 1 | I | 15 | cattle | year-round | 2,411 |
| | | Leadville | 1 | M | 17 | cattle | 04-01/11-30 | 436 |
| 012 | Boodle Mountain | Buffalo Hills | 3 | I | 28 | cattle | 03-01/01-01 | 3,338 |
| | | Coyote | 2 | M | 14 | cattle | 04-01/12-01 | 427 |
| | | | | | | sheep | 04-15/05-20 | |
| 014 | Fox Range | Rodeo Creek | 2 | I | 38 | cattle | year-round | 2,456 |
| | | | | | | sheep | 03-01/03-16 12-06/02-28 | |
| 014A | Pole Creek | Pole | 1 | C | 88 | cattle | 05-01/09-03 | 407 |
| | | Rodeo Creek | 1 | I | 1 | cattle | year-round | 26 |
| | | | | | | sheep | 12-06/03-16 | |
| 019 | Calico Mountains | Calico | 1 | I | 53 | cattle | 04-01/10-15 | 1,370 |
| 108 | Augusta Mountain | Jersey Valley | 2 | C | 37 | cattle | year-round | 585 |
| | | Hole-in-the-wall | 1 | I | 56 | cattle | 11-01/04-30 | 1,498 |
| | | Fish Creek | 3 | C | 16 | cattle | year-round | 2,163 |
| | | | | | | sheep | Spring trail | |
| 200 | Selenite Mountains | Blue Wing | 3 | I | 3 | cattle | 03-01/02-28 12-12/03-25 | 730 |
| | | | | | | sheep | 12-07/03-17 | |
| 201 | Mount Limbo | Blue Wing | 3 | I | 2 | cattle | 03-01/02-28 | 487 |
| | | | | | | sheep | 12-07/03-25 | |
| 406P | China Mountain | South Buffalo | 2 | M | 4 | cattle | year-round | 513 |
| 406Q | Tobin Range | Pleasant Valley | 4 | C | 7 | cattle | 03-01/12-31 | 877 |
| 600 | Blue Lakes | Alder Creek | 2 | I | 6 | cattle | year-round | 707 |
| | | Knott Creek | 2 | I | 7 | cattle | year-round | 422 |
| | | Pine Forest | 1 | I | 7 | cattle | 04-11/12-31 | 679 |
| 600D | Alder Creek | Knott Creek | 2 | I | 9 | cattle | year-round | 543 |
| 603 | South Jackson Mountains | Jackson Mountains | 1 | M | 12 | cattle | year-round | 1,472 |

Table B-2
(Continued)
Present Grazing Management Situation in WSAs
in the Winnemucca District

| WSA No. | WSA Name | Allotment | Number of Permits | Management Category * | Percent of | Kind of Stock | Period of Use | Present AUMs in WSA |
|---------|-----------------------------------|-------------------|-------------------|-----------------------|------------------|-----------------|----------------------------|---------------------|
| | | | | | Allotment in WSA | | | |
| 606 | North Jackson Mountains | Happy Creek | 1 | C | 7 | cattle | 04-01/12-31 | 261 |
| | | Jackson Creek | 1 | M | 2 | cattle | year-round | 245 |
| | | Deer Creek | 1 | C | 17 | cattle sheep | 04-01/07-31 11-01/11-30 | 128 |
| 620 | Black Rock Desert | Pine Forest | 1 | I | 2 | cattle | 04-11/12-31 | 194 |
| | | Paiute Meadows | 2 | I | 23 | cattle | 03-22/11-31 | 1,800 |
| | | Jackson Mountains | 1 | M | 15 | cattle | year-round | 1,840 |
| | | Old Gunnery Range | -0- | C | 80 | -0- | Non- adjudicated | -0- |
| | | Deer Creek | 1 | C | 12 | cattle sheep | 04-01/07-31 11-01/11-30 | 91 |
| 621 | Paiute Peak | Soldier Meadows | 1 | I | 7 | cattle | year-round | 1,125 |
| | | Paiute Meadows | 2 | I | 17 | cattle | 03-22/11-31 | 1,331 |
| | | Old Gunnery Range | -0- | C | 1 | -0- | Non- adjudicated | -0- |
| 622 | North Black Rock Range | Soldier Meadows | 1 | I | 7 | cattle | year-round | 235 |
| | | Paiute Meadows | 2 | I | 3 | cattle | 03-22/11-31 | 1,125 |
| 827 | North Fork of the Little Humboldt | Little Owyhee | 2 | I | 12 | cattle | 04-11/09-05 | 5,386 |
| | | Bullhead | 1 | I | 1 | cattle | 04-26/09-30 | 1 |

* M - Maintenance; I - Intensive; C - Custodial

Source: From Information in the Winnemucca District Office Files, Bureau of Land Management, Winnemucca, Nevada, 1983.

Appendix Table B-3
Roads and Ways
Mileage For Each WSA

Under All Wilderness, MFP II Recommendation, Wilderness Emphasis and Preferred Alternatives
Winnemucca District, Bureau of Land Management

| | | ALTERNATIVES | | | | | | | | | |
|--------------------------------------|-----------|-------------------|------------|--------------------------|--------------|---------------|------------------------|---------------|--------------|--------------------------|--|
| WSA Name/ Acreage | | ALL WILDERNESS | | MFP II RECOMMENDATION | | | WILDERNESS EMPHASIS | | | PREFERRED ALTERNATIVE | |
| | | Roads/ % | Ways/ % | Roads/ 1 % | Ways/ 1 % | Roads/ 1 % | Ways/ 1 % | Roads/ 1 % | Ways/ 1 % | | |
| | | | | | | | | | | | |
| High Rock Lake | 61,902 | 2.3 | 13.4 | 2.3/ 100% | 11.5/ 86% | 0 | 7.8/ 58% | 0 | .9/ 7% | | |
| Boodle Mountain | 142,050 | 19.2 | 76.9 | *NS | *NS | 0 | 23.0/ 30% | *NS | *NS | | |
| Fox Range | 75,404 | 8.5 | 18.4 | *NS | *NS | 0 | 4.5/ 24% | *NS | *NS | | |
| Pole Creek | 12,969 | 0 | 2.4 | *NS | *NS | 0 | 0 | *NS | *NS | | |
| Calico Mountains | 67,647 | 1.0 | 18.5 | *NS | *NS | 1.0/ 100% | 11.2/ 61% | 1.0/ 100% | 11.2/ 61% | | |
| Augusta Mountain | 89,372 | 15.5 | 4.4 | *NS | *NS | 0 | 1.5/ 34% | *NS | *NS | | |
| Selenite Mountains | 32,041 | 2.1 | 9.8 | *NS | *NS | *NS | *NS | *NS | *NS | | |
| Mount Limbo | 23,702 | 0 | 16.9 | 0 | 5.6/ 32% | 0 | 3.9/ 23% | 0 | 3.9/ 23% | | |
| China Mountain | 10,358 | 0.2 | 1.8 | *NS | *NS | 0 | 1.1/ 61% | *NS | *NS | | |
| Tobin Range | 13,107 | 0 | 7.8 | *NS | *NS | *NS | *NS | *NS | *NS | | |
| Blue Lakes | 20,508 | 2.3 | 10.8 | 1.6/ 70% | 9.6/ 89% | 1.6/ 70% | 9.6/ 89% | 1.6/ 70% | 9.6/ 89% | | |
| Aldier Creek | 5,142 | 0.2 | 1.0 | 0 | 1.0/ 100% | 0.2/ 100% | 1.0/ 100% | 0 | 1.0/ 100% | | |
| South Jackson Mountains | 60,211 | 10.1 | 19.4 | 0 | 0.1/ 1% | 0 | 3.3/ 17% | 0 | 3.3/ 17% | | |
| North Jackson Mountains | 26,457 | 5.7 | 6.8 | *NS | *NS | 1.0/ 18% | 0 | *NS | *NS | | |
| Black Rock Desert | 319,594 | 0.3 | 8.3 | *NS | *NS | 0 | 8.1/ 98% | 0 | 3.3/ 40% | | |
| Pahute Peak | 57,529 | 1.5 | 34.8 | 1.5/ 100% | 15.5/ 47% | 0 | 4.2/ 12% | 0 | 2.4/ 7% | | |
| North Black Rock Range | 30,791 | 1.9 | 3.8 | *NS | *NS | 0 | 0.6/ 15% | *NS | *NS | | |
| North Fork of the Little Humboldt | 69,683 | 7.7 | 8.9 | 0 | 0.9/ 10% | 0 | 0.9/ 10% | 0 | 0.9/ 10% | | |
| TOTALS | 1,118,467 | 79.5 | 264.1 | 5.4 | 45.2 | 3.8 | 80.7 | 2.6 | 33.2 | | |

1 Percentage of total roads or ways (the All Wilderness figures).

*NS Not Suitable—area recommended as unsuitable for wilderness.

Source: Winnemucca District Files, Bureau of Land Management, Winnemucca, Nevada.

Appendix Table B-4
 Known Cultural Resource Sites and Inventory Information
 Minnetonka District, Bureau of Land Management

| USA | Known Prehistoric Sites | | | Total | S1, S2 sites | Excavation Potential | Known Historic Sites | | National Register | Inventory Status |
|------|-------------------------|----------------|---------------|-------|---|----------------------|---|---|-------------------|------------------|
| | Lithic Scatters | Isolated Finds | Rock Shelters | | | | Other | Applegate-Jessen Trail, Fly Canyon Wagon Slide, John C. Fremont 1843-44 | | |
| 007 | 3 | 1 | 3 | 7 | 1 Rockshelter (S2) | Rockshelters | Applegate-Jessen Trail, Fly Canyon Wagon Slide, John C. Fremont 1843-44 | 2 | 1 | 1 |
| 012 | 1 | 0 | 0 | 1 | | | Exploring Route | | 5 | 0 |
| 014 | 0 | 15 | 0 | 15 | | | 1852 Nobles' Route | | 3 | 0 |
| 014A | 0 | 0 | 0 | 0 | | | John C. Fremont | | 4 | 0 |
| 019 | 4 | 9 | 0 | 13 | 1 Spring associated lithic scatter (S2) | S2 lithic scatter | None identified | | 11 | 0 |
| 108 | 2 | 1 | 0 | 3 | Spring associated lithic scatter (S1) | S1 lithic scatter | Line shack | | 13 | 0 |
| 200 | 6 | 0 | 0 | 7 | Pebble mounds (S2) | Pebble mounds | One site including old bottles, cans | | 2 | 1 |
| 201 | 7 | 0 | 1 | 8 | | Rockshelter | | | 6 | 0 |
| 406P | 0 | 0 | 0 | 0 | | | None identified | | 0 | 0 |
| 406Q | 0 | 0 | 0 | 0 | | | Cabin and windmill | | 8 | 0 |
| 600 | 32 | 138 | 0 | 170 | 5 lithic scatters (S2) * | S2 lithic scatters | 69 sites predominantly Basque aspen carvings | | 57% of USA | 48A |

Appendix Table B-4
 Known Cultural Resource Sites and Inventory Information
 Winnemucca District, Bureau of Land Management
 (Continued)

| WSA | Known Prehistoric Sites | | | | Known Historic Sites | | | Inventory Status | |
|-------|-------------------------|----------------|---------------|-------|----------------------|--|---------------------------------|--|---------------------|
| | Lithic Scatterers | Isolated Finds | Rock Shelters | Other | Total | Excavation Potential | Register | | Intensive/Extensive |
| 6000 | 1 | 5 | 0 | | 6 | | | | |
| 603 | 2 | 1 | 1 | | 4 | 1 lithic scatter | S2 lithic scatter | 2 Rescue aspen carving sites None identified | |
| 606 | 0 | 0 | 0 | | 0 | (S2)* | | | |
| 620 | 26 | 33 | 0 | | 59 | 1 Paleontological site (S1)* | Paleontological site | None identified None identified | |
| 621 | 1 | 2 | 0 | | 4 | 1 hunting blind | | Applegate-Lassen Trail corridor, Peter Lassen's grave, 1970's survey party document | |
| 624 | 18 | 15 | 5 | | 38 | 1 Spring associat- ed lithic scatter (S1)* | S1 lithic scatter | Stone windbreak | |
| 627 | 4 | 0 | 1 | | 5 | 1 lithic scatter w/rock-shelter (S2) | S2 lithic scatter & rockshelter | 1 stone fence | |
| TOTAL | 107 | 220 | 11 | 2 | 340 | 14 | 17 | 80 | 2 |

* Test excavation.
 ** May be historic.

Source: Winnemucca District files, Bureau of Land Management, Winnemucca, Nevada.

Appendix Table B-5
 Approximate Acres Accessible to ORVs
 Acreage For Each WSA

Under All Wilderness, MFP II Recommendation, Wilderness Emphasis and Preferred Alternatives
 Winnemucca District, Bureau of Land Management

| WSA Name/ Acreage | ALTERNATIVES | | | |
|--|----------------------|--------------------------|------------------------|--------------------------|
| | ALL WILDERNESS | MFP II RECOMMENDATION | WILDERNESS EMPHASIS | PREFERRED ALTERNATIVE |
| | Acres/% ¹ | Acres/% ² | Acres/% ² | Acres/% ² |
| High Rock Lake 61,902 | 20,000/32% | 18,000/90% | 15,000/75% | 3,000/15% |
| Poodle Mountain 142,050 | 44,000/31% | *NS | 10,000/23% | *NS |
| Fox Range 75,404 | 13,000/17% | *NS | 1,000/ 8% | *NS |
| Pole Creek 12,969 | 3,000/23% | *NS | 0 | *NS |
| Calico Mountains 67,647 | 26,000/38% | *NS | 22,000/85% | 22,000/85% |
| Augusta Mountain 89,372 | 65,000/73% | *NS | 1,000/ 2% | *NS |
| Selenite Mountains 32,041 | 14,000/44% | *NS | *NS | *NS |
| Mount Limbo 23,702 | 8,000/34% | 3,000/37% | 1,000/12% | 1,000/12% |
| China Mountain 10,358 | 1,000/10% | *NS | 0 | *NS |
| Tohlin Range 13,107 | 4,000/31% | *NS | *NS | *NS |
| Blue Lakes 20,508 | 2,000/10% | 1,000/50% | 1,000/50% | 1,000/50% |
| Alder Creek 5,142 | 1,000/19% | 0 | 1,000/100% | 0 |
| South Jackson Mountains 60,211 | 19,000/32% | 0 | 2,000/11% | 2,000/11% |
| North Jackson Mountains 26,457 | 5,000/19% | *NS | 0 | *NS |
| Black Rock Desert 319,594 | 287,000/90% | *NS | 285,000/99% | 172,000/66% |
| Pahute Peak 57,529 | 17,000/30% | 10,000/59% | 3,000/18% | 9,000/53% |
| North Black Rock Range 30,791 | 9,000/29% | *NS | 1,000/11% | *NS |
| North Fork of the Little Humboldt 69,683 | 42,000/60% | 3,000/ 7% | 3,000/ 7% | 3,000/ 7% |
| TOTALS 1,118,467 | 580,000 | 35,000 | 346,000 | 213,000 |
| Total % of All WSAs Under Each Alternative | 52% | 6% | 60% | 37% |

1 Percentage of total WSA acreage.

2 Percentage of total acreage accessible to ORV use (the All Wilderness figures).

*NS Not Suitable—area recommended as unsuitable for wilderness.

Source: Winnemucca District Files, Bureau of Land Management, Winnemucca, Nevada.

Appendix Table B-6
Unpatented Mining Claims
Acreage For Each WSA

Under All Wilderness, MFP II Recommendation, Wilderness Emphasis and Preferred Alternatives
Winnemucca District, Bureau of Land Management

| WSA Name/ Acreage | ALTERNATIVES | | | |
|---|----------------------|--------------------------|------------------------|--------------------------|
| | ALL WILDERNESS | MFP II RECOMMENDATION | WILDERNESS EMPHASIS | PREFERRED ALTERNATIVE |
| | Acres/% ¹ | Acres/% ² | Acres/% ² | Acres/% ² |
| High Rock Lake 61,902 | 600/<1% | 600/100% | 500/83% | 120/20% |
| Poodle Mountain 142,050 | 1,400/<1% | *NS | 1,400/100% | *NS |
| Fox Range 75,404 | 2,100/ 3% | *NS | 130/6% | *NS |
| Pole Creek 12,969 | 100/<1% | *NS | 100/100% | *NS |
| Calico Mountains 67,647 | 1,500/ 2% | *NS | 1,500/100% | 1,500/100% |
| Augusta Mountain 89,372 | 2,000/ 2% | *NS | 0 | *NS |
| Selenite Mountains 32,041 | 0 | *NS | *NS | *NS |
| Mount Limbo 23,702 | 0 | 0 | 0 | 0 |
| China Mountain 10,358 | 500/ 5% | *NS | 500/100% | *NS |
| Tobin Range 13,107 | 500/ 4% | *NS | *NS | *NS |
| Blue Lakes 20,508 | 860/ 4% | 380/44% | 380/44% | 380/44% |
| Alder Creek 5,142 | 20/<1% | 20/100% | 20/100% | 20/100% |
| South Jackson Mountains 60,211 | 900/ 1% | 100/11% | 400/45% | 400/45% |
| North Jackson Mountains 26,457 | 500/ 2% | *NS | 300/60% | *NS |
| Black Rock Desert 319,594 | 900/<1% | *NS | 200/26% | 0 |
| Pahute Peak 57,529 | 800/ 1% | 800/100% | 600/75% | 800/100% |
| North Black Rock Range 30,791 | 0 | *NS | 0 | *NS |
| North Fork of the Little Humboldt 69,683 | 0 | 0 | 0 | 0 |
| TOTALS | 1,118,467 | 12,680 | 1,900 | 6,030 |
| Total % of All WSAs Under Each Alternative | | 1% | 15% | 48% |
| | | | | 25% |

1 Percentage of total WSA acreage.

2 Percentage of total mining claim acreage (the All Wilderness figures).

*NS Not Suitable—area recommended as unsuitable for wilderness.

Source: Winnemucca District Files, Bureau of Land Management, Winnemucca, Nevada.

Appendix Table B-7
Geothermal Leases
Acreage For Each WSA
Under All Wilderness, MFP II Recommendation, Wilderness Emphasis and Preferred Alternatives
Winnemucca District, Bureau of Land Management

| WSA Name/ Acreage | ALTERNATIVES | | | |
|---|----------------------|--------------------------|------------------------|--------------------------|
| | ALL WILDERNESS | MFP II RECOMMENDATION | WILDERNESS EMPHASIS | PREFERRED ALTERNATIVE |
| | Acres/% ¹ | Acres/% ² | Acres/% ² | Acres/% ² |
| High Rock Lake 61,902 | 0 | 0 | 0 | 0 |
| Poodle Mountain 142,050 | 0 | *NS | 0 | *NS |
| Fox Range 75,404 | 867/ 1% | *NS | 867/100% | *NS |
| Pole Creek 12,969 | 0 | *NS | 0 | *NS |
| Calico Mountains 67,647 | 369/ 1% | *NS | 119/32% | 119/32% |
| Augusta Mountain 89,372 | 18,101/20% | *NS | 215/ 1% | *NS |
| Selenite Mountains 32,041 | 0 | *NS | *NS | *NS |
| Mount Limbo 23,702 | 0 | 0 | 0 | 0 |
| China Mountain 10,358 | 0 | *NS | 0 | *NS |
| Tobin Range 13,107 | 5,125/39% | *NS | *NS | *NS |
| Blue Lakes 20,508 | 0 | 0 | 0 | 0 |
| Alder Creek 5,142 | 0 | 0 | 0 | 0 |
| South Jackson Mountains 60,211 | 0 | 0 | 0 | 0 |
| North Jackson Mountains 26,457 | 0 | *NS | 0 | *NS |
| Black Rock Desert 319,594 | 26,853/ 8% | *NS | 26,853/100% | 15,007/56% |
| Pahute Peak 57,529 | 0 | 0 | 0 | 0 |
| North Black Rock Range 30,791 | 0 | *NS | 0 | *NS |
| North Fork of the Little Humboldt 69,683 | 0 | 0 | 0 | 0 |
| TOTALS 1,118,467 | 51,315 | 0 | 28,054 | 15,126 |
| Total % of All WSAs Under Each Alternative | 5% | 0% | 55% | 29% |

1 Percentage of total WSA acreage.

2 Percentage of total lease acreage (the All Wilderness figures).

*NS Not Suitable—area recommended as unsuitable for wilderness.

Source: Winnemucca District Files, Bureau of Land Management, Winnemucca, Nevada.

Appendix Table B-8
Oil and Gas Leases
Acreage For Each WSA
Under All Wilderness, MFP II Recommendation, Wilderness Emphasis and Preferred Alternatives
Winnemucca District, Bureau of Land Management

| WSA Name/ Acreage | ALTERNATIVES | | | |
|---|----------------------|---------------------------|------------------------|--------------------------|
| | ALL WILDERNESS | MFP II, RECOMMENDATION | WILDERNESS EMPHASIS | PREFERRED ALTERNATIVE |
| | Acres/% ¹ | Acres/% ² | Acres/% ² | Acres/% ² |
| High Rock Lake 61,902 | 5,935/10% | 5,935/100% | 5,935/100% | 0 |
| Poodle Mountain 142,050 | 0 | *NS | 0 | *NS |
| Fox Range 75,404 | 2,267/ 3% | *NS | 1,298/57% | *NS |
| Pole Creek 12,969 | 0 | *NS | 0 | *NS |
| Calico Mountains 67,647 | 271/<1% | *NS | 271/100% | 271/100% |
| Augusta Mountain 89,372 | 44,266/50% | *NS | 2,875/ 6% | *NS |
| Selenite Mountains 32,041 | 0 | *NS | *NS | *NS |
| Mount Limbo 23,702 | 0 | 0 | 0 | 0 |
| China Mountain 10,358 | 232/ 2% | *NS | 0 | *NS |
| Tobin Range 13,107 | 0 | *NS | *NS | *NS |
| Blue Lakes 20,508 | 0 | 0 | 0 | 0 |
| Alder Creek 5,142 | 0 | 0 | 0 | 0 |
| South Jackson Mountains 60,211 | 5,332/ 9% | 0 | 815/15% | 815/15% |
| North Jackson Mountains 26,457 | 3,696/14% | *NS | 524/14% | *NS |
| Black Rock Desert 319,594 | 204,919/64% | *NS | 203,531/99% | 142,050/69% |
| Pahute Peak 57,529 | 10,334/18% | 1,220/12% | 461/ 4% | 1,220/12% |
| North Black Rock Range 30,791 | 0 | *NS | 0 | *NS |
| North Fork of the Little Humboldt 69,683 | 498/ 1% | 0 | 0 | 0 |
| TOTALS 1,118,467 | 277,750 | 7,155 | 215,710 | 144,356 |
| Total % of All WSAs Under Each Alternative | 25% | 3% | 78% | 53% |

1 Percentage of total WSA acreage.

2 Percentage of total lease acreage (the All Wilderness figures).

*NS Not Suitable—area recommended as unsuitable for wilderness.

Source: Winnemucca District Files, Bureau of Land Management, Winnemucca, Nevada.

Appendix Table B-9
Private Inholdings
(Acreages Not Included in WSA Totals)
Acreage For Each WSA

Under All Wilderness, MFP II Recommendation, Wilderness Emphasis and Preferred Alternatives
Winnemucca District, Bureau of Land Management

ALTERNATIVES

| WSA Name/ Acreage | ALL WILDERNESS | MFP II RECOMMENDATION | WILDERNESS EMPHASIS | PREFERRED ALTERNATIVE | |
|---|------------------------|--------------------------|------------------------|--------------------------|----|
| | Acres/% ¹ | Acres/% ² | Acres/% ² | Acres/% ² | |
| High Rock Lake 61,902 | a 560/⟨1% ₁ | 0 | 0 | 0 | |
| Roodle Mountain 142,050 | b 3,706/3% | *NS | 1,146/31% | *NS | |
| Fox Range 75,404 | 400/ 1% | *NS | 160/40% | *NS | |
| Fole Creek 12,969 | 0 | *NS | 0 | *NS | |
| Calico Mountains 67,647 | 0 | *NS | 0 | 0 | |
| Augusta Mountain 89,372 | 0 | *NS | 0 | *NS | |
| Selenite Mountains 32,041 | 167/ 1% | *NS | *NS | *NS | |
| Mount Limbo 23,702 | 81/⟨1% | 41/50% | 41/50% | 41/50% | |
| China Mountain 10,358 | 80/ 1% | *NS | 80/100% | *NS | |
| Tobin Range 13,107 | 120/⟨1% | *NS | *NS | *NS | |
| Blue Lakes 20,508 | 40/⟨1% | 0 | 0 | 0 | |
| Alder Creek 5,142 | 0 | 0 | 0 | 0 | |
| South Jackson Mountains 60,211 | 80/⟨1% | 0 | 0 | 0 | |
| North Jackson Mountains 26,457 | 681/ 3% | *NS | 480/70% | *NS | |
| Black Rock Desert 319,594 | 35/⟨1% | *NS | 35/100% | 35/100% | |
| Pahute Peak 57,529 | 80/⟨1% | 0 | 0 | 0 | |
| North Black Rock Range 30,791 | 715/ 2% | *NS | 433/61% | *NS | |
| North Fork of the Little Humboldt 69,683 | 80/⟨1% | 0 | 0 | 0 | |
| TOTALS | 1,118,467 | 6,825 | 41 | 2,375 | 76 |
| Total % of All WSAs Under Each Alternative | 1% | ⟨1% | 35% | ⟨1% | |

1 Percentage of total WSA acreage.

2 Percentage of total private inholdings (the All Wilderness figures).

*NS Not Suitable—area recommended as unsuitable for wilderness.

a Of the 560 acres, 480 are publicly-owned surface but privately-owned minerals (split estate).

b Of the 3,706 acres, 480 are privately-owned surface and publicly-owned minerals.

Source: Winnemucca District Files, Bureau of Land Management, Winnemucca, Nevada.

Appendix Table B-10
Metallic Mineral Potential

Acres For Each WSA
Under All Wilderness, MFP II Recommendation, Wilderness Emphasis and Preferred Alternatives
Winnemucca District, Bureau of Land Management

| ALTERNATIVES | ALL WILDERNESS | | MFP II RECOMMENDATION | | WILDERNESS EMPHASIS | | PREFERRED ALTERNATIVE | |
|---|-------------------------|-------------------|-----------------------|---------------|---------------------|----------------|-----------------------|---------------|
| | High | Moderate | High | Moderate | High | Moderate | High | Moderate |
| Potential Level | | | | | | | | |
| WSA Name/ Acres | Acres/ 1 | Acres/ 1 | Acres/ 2 | Acres/ 2 | Acres/ 2 | Acres/ 2 | Acres/ 2 | Acres/ 2 |
| | % | % | % | % | % | % | % | % |
| High Rock Lake | 0 | 26,200 42% | 0 | 24,700 94% | 0 | 22,200 85% | 0 | 7,200 27% |
| Roodle Mountain | 0 | 28,300 20% | *NS | *NS | 0 | 24,100 85% | *NS | *NS |
| Fox Range | 9,800 13% | 25,600 34% | *NS | *NS | 7,700 79% | 15,800 62% | *NS | *NS |
| Fole Creek | 3,400 12,969 26% | 9,569 74% | *NS | *NS | 2,800 82% | 8,000 84% | *NS | *NS |
| Calico Mountains | 6,100 67,647 9% | 9,500 14% | *NS | *NS | 5,500 90% | 8,700 92% | 5,500 90% | 8,700 92% |
| Augusta Mountain | 0 | 37,400 42% | *NS | *NS | 0 | 8,800 24% | *NS | *NS |
| Selenite Mountains | 0 | 14,400 45% | *NS | *NS | *NS | *NS | *NS | *NS |
| Mount Limbo | 0 | 8,500 36% | 0 | 7,500 88% | 0 | 5,100 60% | 0 | 5,100 60% |
| China Mountain | 5,500 10,358 53% | 0 | *NS | *NS | 5,200 95% | 0 | *NS | *NS |
| Tobin Range | 2,200 13,107 17% | 5,200 40% | *NS | *NS | *NS | *NS | *NS | *NS |
| Blue Lakes | 0 | 8,100 39% | 0 | 5,600 69% | 0 | 5,600 69% | 0 | 5,600 69% |
| Alder Creek | 0 | 200 4% | 0 | 200 100% | 0 | 200 100% | 0 | 200 100% |
| South Jackson Mountains | 11,500 60,211 19% | 47,300 79% | 100 1% | 9,100 19% | 2,300 20% | 16,300 34% | 2,300 20% | 16,300 34% |
| North Jackson Mountains | 10,300 26,457 39% | 13,100 50% | *NS | *NS | 2,400 23% | 6,700 51% | *NS | *NS |
| Black Rock Desert | 0 | 41,500 13% | *NS | *NS | 0 | 41,500 100% | 0 | 5,000 12% |
| Pahute Peak | 0 | 13,400 23% | 0 | 12,400 93% | 0 | 6,600 49% | 0 | 12,400 93% |
| North Black Rock Range | 0 | 13,300 43% | *NS | *NS | 0 | 3,700 28% | *NS | *NS |
| North Fork of the Little Humboldt | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOTALS | 1,118,467 | 48,800 301,569 | 100 | 59,500 | 25,900 | 173,300 | 7,800 | 60,500 |
| Total % of all WSAs Under Each Alternative | | 4% 27% | <1% | 20% | 53% | 58% | 16% | 20% |

1 Percentage of total WSA acreage.

2 Percentage of total potential (the All Wilderness figures).

*NS Not Suitable—area recommended as unsuitable for wilderness.

Source: Winnemucca District Files, Bureau of Land Management, Winnemucca, Nevada.

Appendix Table B-11
 Nonmetallic Mineral Potential
 Acreage For Each WSA

Under All Wilderness, MFP II Recommendation, Wilderness Emphasis and Preferred Alternatives
 Winnemucca District, Bureau of Land Management

| ALTERNATIVES | ALL WILDERNESS | | MFP II RECOMMENDATION | | WILDERNESS EMPHASIS | | PREFERRED ALTERNATIVE | | |
|--------------------------------------|----------------|----------|-----------------------|----------|---------------------|----------|-----------------------|----------|---------|
| | High | Moderate | High | Moderate | High | Moderate | High | Moderate | |
| Potential Level | Acres/ 1 | Acres/ 1 | Acres/ 2 | Acres/ 2 | Acres/ 2 | Acres/ 2 | Acres/ 2 | Acres/ 2 | |
| WSA Name/ Acreage | % | % | % | % | % | % | % | % | |
| High Rock Lake | 18,900 | 43,496 | 18,900 | 39,500 | 16,200 | 38,200 | 0 | 14,000 | |
| 61,902 | 31% | 70% | 100% | 91% | 86% | 88% | | 32% | |
| Boodie Mountain | 20,000 | 122,000 | *NS | *NS | 18,300 | 69,600 | *NS | *NS | |
| 142,050 | 14% | 86% | | | 91% | 57% | | | |
| Fox Range | 0 | 0 | *NS | *NS | 0 | 0 | *NS | *NS | |
| 75,404 | | | | | | | | | |
| Pole Creek | 0 | 0 | *NS | *NS | 0 | 0 | *NS | *NS | |
| 12,969 | | | | | | | | | |
| Calico Mountains | 1,000 | 66,600 | *NS | *NS | 600 | 58,200 | 600 | 58,200 | |
| 67,647 | 1% | 98% | | | 60% | 87% | 60% | 87% | |
| Augusta Mountain | 0 | 89,372 | *NS | *NS | 0 | 12,800 | *NS | *NS | |
| 89,372 | | 100% | | | | 14% | | | |
| Selenite Mountains | 0 | 0 | *NS | *NS | *NS | *NS | *NS | *NS | |
| 32,041 | | | | | | | | | |
| Mount Limbo | 0 | 19,300 | 0 | 16,700 | 0 | 12,900 | 0 | 12,900 | |
| 23,702 | | 81% | | 87% | | 67% | | 67% | |
| China Mountain | 0 | 10,358 | *NS | *NS | 0 | 8,900 | *NS | *NS | |
| 10,358 | | 100% | | | | 86% | | | |
| Tobin Range | 3,700 | 9,400 | *NS | *NS | *NS | *NS | *NS | *NS | |
| 13,107 | 28% | 72% | | | | | | | |
| Blue Lakes | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 20,508 | | | | | | | | | |
| Alder Creek | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 5,142 | | | | | | | | | |
| South Jackson Mountains | 11,700 | 15,800 | 900 | 1,700 | 3,500 | 6,300 | 3,500 | 6,300 | |
| 60,211 | 19% | 26% | 8% | 11% | 30% | 40% | 30% | 40% | |
| North Jackson Mountains | 4,100 | 6,000 | *NS | *NS | 200 | 4,700 | *NS | *NS | |
| 26,457 | 15% | 23% | | | 5% | 78% | | | |
| Black Rock Desert | 0 | 295,900 | *NS | *NS | 0 | 294,000 | 0 | 182,400 | |
| 319,594 | | 93% | | | | 99% | | 63% | |
| Pahute Peak | 0 | 13,800 | 0 | 13,800 | 0 | 8,000 | 0 | 13,800 | |
| 57,529 | | 24% | | 100% | | 58% | | 100% | |
| North Black Rock Range | 0 | 0 | *NS | *NS | 0 | 0 | *NS | *NS | |
| 30,791 | | | | | | | | | |
| North Fork of the Little Humboldt | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 69,683 | | | | | | | | | |
| TOTALS | 1,118,467 | 59,400 | 692,026 | 19,800 | 71,700 | 38,800 | 513,600 | 4,100 | 287,600 |
| Total % of All WSAs | | | | | | | | | |
| Under Each Alternative | | 5% | 62% | 33% | 10% | 65% | 74% | 7% | 42% |

1 Percentage of total WSA acreage.

2 Percentage of total potential (the All Wilderness figures).

*NS Not Suitable—area recommended as unsuitable for wilderness.

Source: Winnemucca District Files, Bureau of Land Management, Winnemucca, Nevada.

Appendix Table B-12
Geothermal Potential
Acreage For Each WSA

Under All Wilderness, MFP II Recommendation, Wilderness Emphasis and Preferred Alternatives
Winnemucca District, Bureau of Land Management

| ALTERNATIVES Potential Level WSA Name/ Acreage | ALL WILDERNESS | | MFP II RECOMMENDATION | | WILDERNESS EMPHASIS | | PREFERRED ALTERNATIVE | | |
|---|-----------------------|---------------------------|--------------------------|---------------------------|------------------------|---------------------------|--------------------------|---------------------------|--------|
| | High Acres/ 1 % | Moderate Acres/ 1 % | High Acres/ 2 % | Moderate Acres/ 2 % | High Acres/ 2 % | Moderate Acres/ 2 % | High Acres/ 2 % | Moderate Acres/ 2 % | |
| High Rock Lake 61,902 | 18,800 30% | 6,300 10% | 16,500 88% | 5,800 92% | 14,200 76% | 5,500 87% | 6,800 36% | 0 0% | |
| Boodle Mountain 142,050 | 0 | 24,600 17% | *NS | *NS | 0 | 18,700 76% | *NS | *NS | |
| Fox Range 75,404 | 14,000 19% | 11,800 16% | *NS | *NS | 0 | 2,400 20% | *NS | *NS | |
| Pole Creek 12,969 | 0 | 3,700 29% | *NS | *NS | 0 | 1,700 46% | *NS | *NS | |
| Calico Mountains 67,647 | 25,900 38% | 6,500 10% | *NS | *NS | 21,800 84% | 5,900 91% | 21,800 84% | 5,900 91% | |
| Augusta Mountain 89,372 | 31,000 35% | 21,300 24% | *NS | *NS | 2,200 7% | 0 | *NS | *NS | |
| Selenite Mountains 32,041 | 8,400 26% | 9,500 30% | *NS | *NS | *NS | *NS | *NS | *NS | |
| Mount Limbo 23,702 | 0 | 6,400 27% | 0 | 3,900 61% | 0 | 1,400 22% | 0 | 1,400 22% | |
| China Mountain 10,358 | 0 | 2,000 19% | *NS | *NS | 0 | 600 30% | *NS | *NS | |
| Tobin Range 13,107 | 0 | 5,100 39% | *NS | *NS | *NS | *NS | *NS | *NS | |
| Blue Lakes 20,508 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Alder Creek 5,142 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| South Jackson Mountains 60,211 | 0 | 24,300 40% | 0 | 900 4% | 0 | 3,500 14% | 0 | 3,500 14% | |
| North Jackson Mountains 26,457 | 0 | 7,100 27% | *NS | *NS | 0 | 1,500 21% | *NS | *NS | |
| Black Rock Desert 319,594 | 62,500 20% | 154,600 48% | *NS | *NS | 62,500 100% | 152,700 99% | 12,700 20% | 68,900 45% | |
| Pahute Peak 57,529 | 19,200 33% | 10,700 19% | 17,900 93% | 0 | 10,000 52% | 0 | 17,900 93% | 0 | |
| North Black Rock Range 30,791 | 13,300 43% | 0 | *NS | *NS | 3,500 26% | 0 | *NS | *NS | |
| North Fork of the Little Humboldt 69,683 | 0 | 9,000 13% | 0 | 0 | 0 | 0 | 0 | 0 | |
| TOTALS | 1,118,467 | 193,100 | 302,900 | 34,400 | 10,600 | 114,200 | 193,900 | 59,200 | 79,700 |
| Total % of All WSAs Under Each Alternative | | 17% | 27% | 18% | 4% | 59% | 64% | 31% | 23% |

1 Percentage of total WSA acreage.

2 Percentage of total potential (the All Wilderness figures).

*NS Not Suitable—area recommended as unsuitable for wilderness.

Source: Winnemucca District Files, Bureau of Land Management, Winnemucca, Nevada.

Appendix Table B-13
Oil and Gas Potential
Acreage For Each WSA

Under All Wilderness, MFP II Recommendation, Wilderness Emphasis and Preferred Alternatives
Winnemucca District, Bureau of Land Management

| ALTERNATIVES | ALL WILDERNESS | | MFP II RECOMMENDATION | | WILDERNESS EMPHASIS | | PREFERRED ALTERNATIVE | |
|--|----------------|-----------------|-----------------------|---------------|---------------------|----------------|-----------------------|----------------|
| | High | Moderate | High | Moderate | High | Moderate | High | Moderate |
| WSA Name/ Acreage | Acres/ 1 % | Acres/ 1 % | Acres/ 2 % | Acres/ 2 % | Acres/ 2 % | Acres/ 2 % | Acres/ 2 % | Acres/ 2 % |
| High Rock Lake, Pooble Mountain, Fox Range, Pole Creek, Calico Mountains, Selenite Mountains, Mount Limbo, China Mountain, Tobin Range, Blue Lakes, Alder Creek, North Black Rock Range, North Fork of the Little Humboldt have low potential for oil and gas. | | | | | | | | |
| Augusta Mountains 89,372 | 0 | 31,000 35% | *NS | *NS | 0 | 2,200 7% | *NS | *NS |
| South Jackson Mountains 60,211 | 0 | 24,300 40% | 0 | 900 4% | 0 | 3,500 14% | 0 | 3,500 14% |
| North Jackson Mountains 26,457 | 0 | 4,100 15% | *NS | *NS | 0 | 200 5% | *NS | *NS |
| Black Rock Desert 319,594 | 0 | 319,594 100% | *NS | *NS | 0 | 317,734 99% | 0 | 174,300 55% |
| Pahute Peak 57,529 | 0 | 10,700 19% | 0 | 0 | 0 | 0 | 0 | 0 |
| TOTALS | 1,118,467 | 0 389,694 | 0 | 900 | 0 | 323,634 | 0 | 177,800 |
| Total % of All WSAs Under Each Alternative | | 0% 35% | 0% | <1% | 0% | 83% | 0% | 46% |

1 Percentage of total WSA acreage.

2 Percentage of total potential (the All Wilderness figures).

*NS Not Suitable—area recommended as unsuitable for wilderness.

Source: Winnemucca District Files, Bureau of Land Management, Winnemucca, Nevada.

Appendix Table B-14
 Energy and Mineral Threshold Levels Affected By Wilderness Alternatives
 Winnemucca District, Bureau of Land Management

| Threshold Level | | ALTERNATIVES | | | | | | | |
|----------------------|---------|-------------------------------|----------|-----------------------|----------|---------------------|----------|-----------------------|----------|
| | | ALL WILDERNESS | | MFP II RECOMMENDATION | | WILDERNESS EMPHASIS | | PREFERRED ALTERNATIVE | |
| | | High | Moderate | High | Moderate | High | Moderate | High | Moderate |
| | | (% OF ALL WILDERNESS FIGURES) | | | | | | | |
| Oil/Gas | Acres | 0 | 389,694 | 0 | 900 | 0 | 323,634 | 0 | 177,800 |
| | Percent | 0% | 35% | 0% | <1% | 0% | 29% | 0% | 46% |
| Geothermal | Acres | 193,100 | 302,900 | 34,400 | 10,600 | 114,200 | 193,900 | 59,200 | 79,700 |
| | Percent | 17% | 27% | 18% | 4% | 59% | 64% | 31% | 26% |
| Metallic Minerals | Acres | 48,800 | 301,569 | 100 | 59,500 | 25,900 | 173,300 | 7,800 | 60,500 |
| | Percent | 4% | 27% | <1% | 20% | 53% | 58% | 16% | 20% |
| Nonmetallic Minerals | Acres | 59,400 | 692,026 | 19,800 | 71,700 | 38,800 | 513,600 | 4,100 | 287,600 |
| | Percent | 5% | 62% | 33% | 10% | 65% | 74% | 7% | 42% |

Source: Wilderness Technical Report (1983).

Appendix Table B-15
 Energy and Mineral Holdings Affected By Wilderness Alternatives
 Winnemucca District, Bureau of Land Management

| | | ALTERNATIVES | | | |
|--------------------------|---------|------------------|-----------------------|-------------------------------|-----------------------|
| | | ALL WILDERNESS | MFP II RECOMMENDATION | WILDERNESS EMPHASIS | PREFERRED ALTERNATIVE |
| | | (% OF WSA LANDS) | | (% OF ALL WILDERNESS FIGURES) | |
| Oil/Gas Leases | Acres | 277,750 | 7,155 | 215,710 | 144,356 |
| | Percent | 25% | 3% | 78% | 52% |
| Geothermal Leases | Acres | 51,315 | 0 | 28,054 | 15,126 |
| | Percent | 5% | 0% | 55% | 29% |
| Unpatented Mining Claims | Acres | 12,680 | 1,900 | 6,030 | 3,220 |
| | Percent | 1% | 15% | 48% | 25% |

Threshold level significantly impacted by wilderness—one mining claimant or one mineral lessee—anything greater than 0%.

Source: Wilderness Technical Report (1983).

Appendix Table B-15
 Manmade Features Within the WSAs
 Winnemucca District, Bureau of Land Management

Manmade features within the WSAs were compiled by (1) consultation with appropriate URA overlays (primarily range), (2) map and field checks (primarily for roads, ways, and mining areas), and (3) public input during the Wilderness Inventory and Wilderness Study processes, and represents the best available data.

MANMADE FEATURES IN THE HIGH ROCK LAKE WSA (007)

| <u>Feature</u> | <u>Legal Description</u> | <u>Location Within WSA</u> | <u>Length</u> |
|-------------------|---|----------------------------------|---------------|
| Reservoirs | | | |
| 1 | T. 37 N., R. 25 E. Sec. 8 SENW | Southeast portion | |
| Pipelines | | | |
| 1 | T. 38 N., R. 24 E. Sec. 17, 18, 20, 29 | West-central portion | |
| Water troughs | | | |
| 1 | T. 38 N., R. 24 E. Sec. 18 NWNE | West-central portion | |
| 2 | T. 38 N., R. 24 E. Sec. 18 SENE | West-central portion | |
| Developed Springs | | | |
| 1 | T. 38 N., R. 24 E. Sec. 28 NW | Southwest portion | |
| 2 | T. 38 N., R. 24 E. Sec. 28 NWNW | Southwest portion | |
| Fences | | | |
| 1 | T. 39 N., R. 25 E. Sec. 18, 19 | Northeast portion | 1.5 miles |
| 2 | T. 38 N., R. 24 Sec. 17, 18 | West-central portion | 1 mile |
| 3 | T. 38 N., R. 24 E. Sec. 4, 9, 16, 20, 28, 29, 33 T. 37 N., R. 24 E. Sec. 4, 3, 14, 23 | West-central portion | 6 miles |
| Vehicle Ways | | | |
| W-1 | T. 38 N., R. 24 E. Sec. 22, 27, 33, and 34 | Leads from southwest boundary | 3.5 miles |
| W-2 | T. 37 N., R. 24 E. Sec. 3 and 10 | Leads from southwest boundary | .4 mile |
| W-3 | T. 37 N., R. 25 E. Sec. 21 | Leads from southeast boundary | .5 mile |

MANMADE FEATURES IN THE HIGH ROCK LAKE WSA (007)
(continued)

| <u>Feature</u> | <u>Legal Description</u> | <u>Location Within WSA</u> | <u>Length</u> |
|------------------|--|----------------------------------|---------------|
| Vehicle Ways | | | |
| W-4 | T. 37 N., R. 25 E. Sec. 8 | Extends from cherrystem road | .2 mile |
| W-6 | T. 38 N., R. 25 E. Sec. 28 and 29 | Leads from eastern boundary | 1.6 miles |
| W-7 | T. 39 N., R. 25 E. Sec. 30 T. 39 N., R. 24 E. Sec. 25 | Leads from eastern boundary | 1.4 miles |
| W-8 | T. 40 N., R. 24 E. Sec. 34 and 35 | Leads from northwest boundary | 1.3 miles |
| W-8a | T. 39 N., R. 24 E. Sec. 2 | Leads from W-8 | .6 mile |
| W-9 | T. 40 N., R. 24 E. Sec. 34 & 35 | Leads from northeast boundary | 1.6 miles |
| W-10 | T. 37 N., R. 25 E. Sec. 8 & 9 | Leads from southeast boundary | 1 mile |
| W-11 | T. 37 N., R. 25 E. Sec. 7 T. 37 N., R. 24 E. Sec. 12 | Extends from cherrystem road | 1.3 miles |
| Cherrystem Roads | | | |
| R-5 | T. 37 N., R. 25 E. Sec. 8 & 9 | Leads from southeast boundary | 1.8 miles |
| R-8 | T. 38 N., R. 24 E. Sec. 28 | Leads from western boundary | 0.5 mile |

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MANMADE FEATURES IN THE POODLE MOUNTAIN WSA (012)

| <u>Feature</u> | <u>Legal Description</u> | <u>Location Within WSA</u> | <u>Length</u> |
|-------------------|------------------------------------|----------------------------|---------------|
| Developed Springs | | | |
| 1 | T. 35 N., R. 20 E. Sec. 35 SENW | Northern portion | |
| 2 | T. 35 N., R. 20 E. Sec. 35 NWSE | Northern portion | |
| 3 | T. 34 N., R. 20 E. Sec. 18 NESE | Northwest border | |
| 4 | T. 34 N., R. 20 E. Sec. 19 SWSE | Northwest border | |
| 5 | T. 34 N., R. 20 E. Sec. 10 NESW | Northern portion | |
| 6 | T. 34 N., R. 21 E. Sec. 17 SENW | North-central portion | |
| 7 | T. 34 N., R. 21 E. Sec. 29 NWNE | North-central portion | |
| 8 | T. 34 N., R. 20 E. Sec. 29 NWNE | West-central portion | |

MANMADE FEATURES IN THE POODLE MOUNTAIN WSA (012)
(Continued)

| <u>Feature</u> | <u>Legal Description</u> | <u>Location Within WSA</u> | <u>Length</u> |
|--------------------------|------------------------------------|----------------------------|---------------|
| Developed Springs | | | |
| 9 | T. 34 N., R. 20 E. Sec. 27 NWSE | North-central portion | |
| 10 | T. 33 N., R. 21 E. Sec. 6 NWNW | Central portion | |
| 11 | T. 35 N., R. 21 E. Sec. 33 NWSW | Northeast border | |
| 12 | T. 34 N., R. 21 E. Sec. 9 NESW | Northeast corner | |
| 13 | T. 34 N., R. 21 E. Sec. 15 NENE | Northeast portion | |
| 14 | T. 32 N., R. 21 E. Sec. 33 SWNW | Southwest portion | |
| Water Troughs | | | |
| 1 | T. 35 N., R. 20 E. Sec. 29 | Northwest corner | |
| Pipelines | | | |
| 1 | T. 35 N., R. 20 E. Sec. 28 & 29 | Northwest corner | .5 mile |
| Reservoirs | | | |
| 1 | T. 34 N., R. 20 E. Sec. 2 NENE | North-central portion | |
| 2 | T. 34 N., R. 21 E. Sec. 6 NENE | North-central border | |
| 3 | T. 34 N., R. 21 E. Sec. 6 NESW | North-central border | |
| 4 | T. 34 N., R. 20 E. Sec. 7 NWNW | Northwest border | |
| 5 | T. 34 N., R. 20 E. Sec. 17 SWSE | Northwest portion | |
| 6 | T. 34 N., R. 21 E. Sec. 29 NWNW | North-central portion | |
| 7 | T. 34 N., R. 20 E. Sec. 24 SWSW | North-central portion | |
| 8 | T. 34 N., R. 20 E. Sec. 29 SESE | West-central portion | |
| 9 | T. 34 N., R. 20 E. Sec. 25 SESE | North-central portion | |
| 10 | T. 34 N., R. 20 E. Sec. 34 NESE | Central portion | |
| 11 | T. 34 N., R. 20 E. Sec. 35 SWSW | Central portion | |
| 12 | T. 33 N., R. 21 E. Sec. 5 SENE | Central portion | |
| 13 | T. 35 N., R. 21 E. Sec. 33 NWSW | Northeast corner | |

MANMADE FEATURES IN THE POODLE MOUNTAIN WSA (012)
(Continued)

| <u>Feature</u> | <u>Legal Description</u> | <u>Location Within WSA</u> | <u>Length</u> |
|-------------------|--|----------------------------|---------------|
| Reservoirs | | | |
| 14 | T. 34 N., R. 21 E. Sec. 4 NESW | Northeast corner | |
| 15 | T. 34 N., R. 21 E. Sec. 3 NENE | Northeast corner | |
| 16 | T. 34 N., R. 21 E. Sec. 2 SWNE | Northeast corner | |
| 17 | T. 34 N., R. 21 E. Sec. 3 NWSE | Northeast corner | |
| 18 | T. 34 N., R. 21 E. Sec. 10 SWSW | Northeast corner | |
| 19 | T. 34 N., R. 21 E. Sec. 9 NESW | Northeast corner | |
| 20 | T. 34 N., R. 21 E. Sec. 25 NWNW | North-central portion | |
| 21 | T. 34 N., R. 21 E. Sec. 25 NWNW | North-central portion | |
| 22 | T. 33 N., R. 21 E. Sec. 17 SWNW | Central portion | |
| 23 | T. 33 N., R. 21 E. Sec. 19 NESW | Central portion | |
| Fences | | | |
| 1 | T. 35 N., R. 20 E. Sec. 23, 26, 35 | Northern border | 1.5 miles |
| 2 | T. 34 N., R. 20 E. Sec. 6 | Northwest corner | 5.75 miles |
| | T. 35 N., R. 20 E. Sec. 32, 33, 34, 35 and 36 | Northern portion | |
| | T. 35 N., R. 21 E. Sec. 31 | North-central border | |
| 3 | T. 34 N., R. 20 E. Sec. 33 and 34 | Central portion | 1.2 miles |
| 4 | T. 33 N., R. 20 E. Sec. 2 and 3 | Central portion | 1.7 miles |
| 5 | T. 32 N., R. 20 E. Sec. 6, 7, 8 | Southwest border | 2 miles |
| 6 | T. 34 N., R. 19 E. Sec. 24 and 25 | West half | 15 miles |
| | T. 34 N., R. 20 E. Sec. 30 and 31 | | |
| | T. 33 N., R. 20 E. Sec. 5, 9, 16, 21, 22, 27, 33, 34 | | |
| | T. 32 N., R. 20 E. Sec. 4, 9, 16, 21, and 29 | | |

MANMADE FEATURES IN THE POODLE MOUNTAIN WSA (012)
(Continued)

| <u>Feature</u> | <u>Legal Description</u> | <u>Location Within WSA</u> | <u>Length</u> |
|---------------------|---------------------------------------|----------------------------|---------------|
| Corrals | | | |
| 1 | T. 35 N., R. 20 E. Sec. 21 SWSW | Northern border | |
| 2 | T. 32 N., R. 20 E. Sec. 6 NESW | Southwest border | |
| Study Plot | | | |
| 1 | T. 34 N., R. 21 E. Sec. 12 NW | Northeast border | |
| Vehicle Ways | | | |
| W-1 | T. 33 N., R. 22 E. Sec. 20 and 21 | Southeast corner | 1 mile |
| W-2 | T. 34 N., R. 21 Sec. 26, 27, 28 | East-central portion | 3.2 miles |
| W-2a | T. 34 N., R. 21 E. Sec. 26 | East-central portion | .4 mile |
| W-2b | T. 34 N., R. 21 E. Sec. 34 and 35 | East-central portion | 1.1 miles |
| W-3 | T. 34 N., R. 21 E. Sec. 13 and 24 | Eastern boundary | 1.4 miles |
| W-3a | T. 34 N., R. 21 E. Sec. 13 | Eastern boundary | .3 mile |
| W-3b | T. 34 N., R. 21 E. Sec. 13 and 24 | Eastern boundary | .9 mile |
| W-4 | T. 34 N., R. 21 E. Sec. 3 | Northeast boundary | 1.1 miles |
| W-4a | T. 34 N., R. 21 E. Sec. 3 and 10 | Northeast boundary | 1 mile |
| W-5 | T. 35 N., R. 21 E. Sec. 33 | Northeast boundary | .5 mile |
| W-5a | T. 35 N., R. 21 E. Sec. 33 | Northeast boundary | .2 mile |
| W-6 | T. 34 N., R. 21 E. Sec. 18 | North-central portion | 1 mile |
| W-6a | T. 34 N., R. 21 E. Sec. 18 | North-central portion | .3 mile |
| W-7 | T. 34 N., R. 20 E. Sec. 24 | North-central portion | 1.8 miles |
| W-7a | T. 34 N., R. 21 E. Sec. 17, 18, 19 | | |
| | T. 34 N., R. 20 E. Sec. 24 | North-central portion | .7 mile |
| | T. 34 N., R. 21 E. Sec. 19 | | |
| W-7b | T. 34 N., R. 21 E. Sec. 17, 20 | North-central portion | 1 mile |
| W-8 | T. 34 N., R. 20 E. Sec. 13, 24, 25 | North-central portion | 1.9 miles |

MANMADE FEATURES IN THE POODLE MOUNTAIN WSA (012)
(Continued)

| <u>Feature</u> | <u>Legal Description</u> | <u>Location Within WSA</u> | <u>Length</u> |
|----------------|--|----------------------------|---------------|
| Vehicle Ways | | | |
| W-9 | T. 34 N., R. 20 E. Sec. 25 T. 34 N., R. 21 E. Sec. 30, 31 T. 33 N., R. 21 E. Sec. 6 | Central portion | 4.9 miles |
| W-9a | T. 34 N., R. 21 E. Sec. 30, 31 | Central portion | .7 mile |
| W-9b | T. 34 N., R. 20 E. Sec. 25 | Central portion | .7 mile |
| W-10 | T. 34 N., R. 20 E. Sec. 36 | Central portion | 1.6 miles |
| W-11 | T. 33 N., R. 20 E. Sec. 1, 2, 12 T. 33 N., R. 21 E. Sec. 7, 18 | Central portion | 3.8 miles |
| W-11a | T. 33 N., R. 20 E. Sec. 2 | Central portion | .6 mile |
| W-12 | T. 33 N., R. 20 E. Sec. 12, 13, 24 | Central portion | 3.0 miles |
| W-13 | T. 33 N., R. 20 E. Sec. 14 | Central portion | .6 mile |
| W-14 | T. 33 N., R. 20 E. Sec. 15, 22 | Central portion | 1 mile |
| W-15 | T. 33 N., R. 20 E. Sec. 3, 4, 9, 10, 15, 16 | Central portion | 3.8 miles |
| W-16 | T. 33 N., R. 20 E. Sec. 2 T. 34 N., R. 20 E. Sec. 34 | Central portion | 1 mile |
| W-17 | T. 34 N., R. 20 E. Sec. 26, 23, 22 | Central portion | 1.8 miles |
| W-17a | T. 34 N., R. 20 E. Sec. 26 | Central portion | .2 mile |
| W-17b | T. 34 N., R. 20 E. Sec. 26 | Central portion | .7 mile |
| W-18 | T. 34 N., R. 21 E. Sec. 6 T. 34 N., R. 20 E. Sec. 1 T. 35 N., R. 20 E. Sec. 36 | North-central boundary | 2.4 miles |
| W-18a | T. 34 N., R. 21 E. Sec. 6 | North-central boundary | .4 mile |
| W-19 | T. 35 N., R. 20 E. Sec. 25, 26, 35 | North-central boundary | 1.4 mile |

MANMADE FEATURES IN THE POODLE MOUNTAIN WSA (012)
(Continued)

| <u>Feature</u> | <u>Legal Description</u> | <u>Location Within WSA</u> | <u>Length</u> |
|---------------------|---|----------------------------|---------------|
| W-19a | T. 35 N., R. 20 E. Sec. 25 | North-central boundary | .1 mile |
| W-20 | T. 35 N., R. 20 E. Sec. 25, 26 | North-central boundary | .8 mile |
| W-21 | T. 35 N., R. 20 E. Sec. 28 | Northwest boundary | .9 mile |
| W-22 | T. 35 N., R. 20 E. Sec. 31, 32 | Northwest boundary | 1.2 miles |
| W-23 | T. 34 N., R. 19 E. Sec. 1, 12, 13, 24 | Western boundary | 2.2 miles |
| W-23a | T. 34 N., R. 20 E. Sec. 7 | Western boundary | .5 mile |
| W-23b | T. 34 N., R. 20 E. Sec. 7 | Western boundary | .2 mile |
| W-23c | T. 34 N., R. 20 E. Sec. 7 | Western boundary | .4 mile |
| W-23d | T. 34 N., R. 19 E. Sec. 13 | Western boundary | .4 mile |
| Vehicle Ways | | | |
| W-24 | T. 33 N., R. 19 E. Sec. 4, 10 | Western boundary | .9 miles |
| W-25 | T. 33 N., R. 19 E. Sec. 15, 14, 13 | Western boundary | 2.8 miles |
| W-26 | T. 33 N., R. 19 E. Sec. 24 | Western boundary | 1.2 miles |
| W-27 | T. 33 N., R. 19 E. Sec. 25, 36 | Southwest boundary | .8 mile |
| W-28 | T. 32 N., R. 20 E. Sec. 4, 5, 7, 8 | Southwest boundary | 3.1 miles |
| W-29 | T. 32 N., R. 20 E. Sec. 14, 22, 23, 25 26, 27, 34, 35, 36 | Southwest boundary | 6.3 miles |
| W-30 | T. 32 N., R. 20 E. Sec. 33, 34 | Southern boundary | 1.1 miles |
| W-30a | T. 32 N., R. 20 E. Sec. 34 | Southern boundary | .2 mile |
| W-31 | T. 32 N., R. 21 E. Sec. 30 | Southern boundary | .4 mile |
| W-31a | T. 32 N., R. 21 E. Sec. 29 | Southern boundary | .2 mile |
| W-32 | T. 32 N., R. 21 E. Sec. 17 | Southwest boundary | .5 mile |
| W-32a | T. 32 N., R. 21 E. Sec. 17 | Southwest boundary | .4 mile |
| W-33 | T. 32 N., R. 21 E. Sec. 3 T. 33 N., R. 21 E. Sec. 34 | Eastern boundary | 1.2 miles |

MANMADE FEATURES IN THE POODLE MOUNTAIN WSA (012)
(Continued)

| <u>Feature</u> | <u>Legal Description</u> | <u>Location Within WSA</u> | <u>Length</u> |
|------------------|--|----------------------------|---------------|
| W-33a | T. 32 N., R. 21 E. Sec. 3 | Eastern boundary | .5 mile |
| | T. 33 N., R. 21 E. Sec. 34 | | |
| W-33b | T. 32 N., R. 21 E. Sec. 3 | Eastern boundary | .1 mile |
| W-34 | T. 33 N., R. 21 E. Sec. 34, 35 | Eastern boundary | .4 mile |
| W-35 | T. 33 N., R. 21 E. Sec. 23, 24 | Eastern boundary | 1.6 miles |
| W-36 | T. 33 N., R. 21 E. Sec. 23, 24 | Eastern boundary | .7 mile |
| W-37 | T. 34 N., R. 21 E. Sec. 6 | North-central boundary | .4 mile |
| | T. 34 N., R. 20 E. Sec. 1 | | |
| W-38 | T. 34 N., R. 21 E. Sec. 7 | North-central boundary | .8 mile |
| W-38a | T. 34 N., R. 21 E. Sec. 7 | North-central boundary | .2 mile |
| Cherrystem Roads | | | |
| R-6 | T. 34 N., R. 21 E. Sec. 6, 7 | North-central portion | 8.3 miles |
| | T. 34 N., R. 20 E. Sec. 13, 24, 26, 35 | | |
| | T. 33 N., R. 20 E. Sec. 2 | | |
| R-6a | T. 34 N., R. 21 E. Sec. 6 | Northern boundary | .5 mile |
| R-7 | T. 34 N., R. 22 E. Sec. 29, 30 | East-central portion | 3.6 miles |
| | T. 34 N., R. 21 E. Sec. 25 | | |
| R-7a | T. 34 N., R. 22 E. Sec. 30 | Eastern boundary | .4 mile |
| R-8 | T. 32 N., R. 21 E. Sec. 9 | Southeast boundary | .4 mile |
| R-9 | T. 32 N., R. 21 E. Sec. 17 | Southeast boundary | .6 mile |
| R-10 | T. 34 N., R. 20 E. Sec. 6, 7, 8 | Northwest boundary | 2 miles |
| R-11 | T. 35 N., R. 21 E. Sec. 34 | Northeast corner | 3 miles |
| | T. 34 N., R. 21 E. Sec. 3, 4, 9 | | |
| R-11a | T. 34 N., R. 21 E. Sec. 4 | Northeast corner | .4 mile |

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MANMADE FEATURES IN THE FOX RANGE WSA (014)

| <u>Feature</u> | <u>Legal Description</u> | <u>Location Within WSA</u> | <u>Length</u> |
|--------------------------|---|--------------------------------|---------------|
| Developed Springs | | | |
| 1 | T. 29 N., R. 21 E. Sec. 11 NESE | Southwest border | |
| 2 | T. 29 N., R. 22 E. Sec. 19 NESW | Southern boundary | |
| 3 | T. 30 N., R. 21 E. Sec. 36 SWSW | Southwest portion | |
| 4 | T. 29 N., R. 22 E. Sec. 3 SENE | Southwest portion | |
| 5 | T. 30 N., R. 22 E. Sec. 29 NENE | Central portion | |
| 6 | T. 30 N., R. 22 E. Sec. 19 NESE | Central portion | |
| Reservoirs | | | |
| 1 | T. 30 N., R. 22 E. Sec. 30 NWNW | Central portion | |
| Corrals | | | |
| 1 | T. 30 N., R. 21 E. Sec. 29 SESE | Southwest border | |
| 2 | T. 30 N., R. 21 E. Sec. 33 NENE | Southwest border | |
| Study Plots | | | |
| 1 | T. 29 N., R. 22 E. Sec. 14 SESW | Southeast corner | |
| 2 | T. 30 N., R. 22 E. Sec. 32 SWNE | Southeast portion | |
| Fences | | | |
| 1 | T. 30 N., R. 22 E. Secs. 33 & 34 | Southeast portion | 1.5 miles |
| Vehicle Ways | | | |
| W-1 | T. 32 N., R. 22 E. Sec. 35 | Leads from eastern boundary | .4 mile |
| W-2 | T. 31 N., R. 22 E. Sec. 15 | Leads from eastern boundary | .4 mile |
| W-2a | T. 31 N., R. 22 E. Sec. 15 | Leads from eastern boundary | .2 mile |
| W-3 | T. 31 N., R. 22 E. Sec. 16 | Leads from cherry-stem portion | .7 mile |
| W-3a | T. 31 N., R. 22 E. Sec. 16 | Leads from cherry-stem portion | .3 mile |
| W-3b | T. 31 N., R. 22 E. Sec. 20 | Leads from cherry-stem portion | .2 mile |
| W-4 | T. 30 N., R. 22 E. Sec. 1, 2 | Leads from eastern boundary | .6 mile |
| W-5 | T. 30 N., R. 22 E. Sec. 14, 15, 23, 4 | Leads from eastern boundary | 1.8 miles |

MANMADE FEATURES IN THE FOX RANGE WSA (014)
(Continued)

| <u>Feature</u> | <u>Legal Description</u> | <u>Location Within WSA</u> | <u>Length</u> |
|--------------------------|--|-----------------------------------|---------------|
| Vehicle Ways | | | |
| W-6 | T. 29 N., R. 22 E. Sec. 4, 5 | Leads from eastern boundary | 1.8 miles |
| W-7 | T. 30 N., R. 22 E. Sec. 18, 19, 29, 30 | Extends from cherry- stem road | 2.3 miles |
| W-8 | T. 29 N., R. 22 E. Sec. 7, 8 | Extends from cherry- stem road | .8 mile |
| W-9 | T. 29 N., R. 22 E. Sec. 35, 37 | Leads from southwest boundary | 1.4 miles |
| W-9a | T. 29 N., R. 22 E. Sec. 26, 27, 35 | Leads from southeast boundary | 2.1 miles |
| W-13 | T. 30 N., R. 21 E. Sec. 4, 9, 10 | Leads from western boundary | 1.6 miles |
| W-13a | T. 30 N., R. 21 E. Sec. 4 | Leads from western boundary | .3 mile |
| W-14 | T. 31 N., R. 21 E. Sec. 13, 23, 24 | Leads from western boundary | 1.6 miles |
| W14a | T. 31 N., R. 21 E. Sec. 24 T. 31 N., R. 22 E. Sec. 19, 30 | Leads from W14 | 1.9 miles |
| Cherrystem Roads | | | |
| R-7 | T. 29 N., R. 22 E. Sec. 8, 9, 10, 11 | Leads from eastern boundary | 3.3 miles |
| R-7a | T. 29 N., R. 22 E. Sec. 16 | Extends from R-7 | .6 mile |
| R-8 | T. 31 N., R. 22 E. Sec. 16, 22 | Leads from eastern boundary | 1.6 miles |
| R-9 | T. 30 N., R. 22 E. Sec. 29, 32, 33, 34 | Leads from eastern boundary | 3 miles |
| Developed Springs | | | |
| 1 | T. 29 N., R. 21 E. Sec. 8 SWSW | Southwest portion | |
| 2 | T. 29 N., R. 21 E. Sec. 24 SENW | Southeast corner | |
| Fences | | | |
| 1 | T. 30 N., R. 21 E. Sec. 29, 33 T. 29 N., R. 21 E. Sec. 2, 3, 11, 12 13, 24 | North and east half | 7 miles |

MANMADE FEATURES IN THE FOX RANGE WSA (014)
(Continued)

| <u>Feature</u> | <u>Legal Description</u> | <u>Location Within WSA</u> | <u>Length</u> |
|----------------|---------------------------------|--------------------------------|---------------|
| Vehicle Ways | | | |
| W-1 | T. 29 N., R. 20 E. Sec. 12 | Leads from western boundary | 1.7 miles |
| | T. 29 N., R. 21 E. Sec. 7, 8 | | |
| W-2 | T. 30 N., R. 21 E. Sec. 29 | Leads from western boundary | .7 mile |

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MANMADE FEATURES IN THE CALICO MOUNTAINS WSA (019)

| <u>Feature</u> | <u>Legal Description</u> | <u>Location Within WSA</u> | <u>Length</u> |
|-------------------|------------------------------------|----------------------------|---------------|
| Developed Springs | | | |
| 1 | T. 37 N., R. 24 E. Sec. 9 SESE | Northern portion | |
| 2 | T. 37 N., R. 24 E. Sec. 23 SESE | Northern portion | |
| 3 | T. 37 N., R. 24 E. Sec. 24 SESE | Northern portion | |
| 4 | T. 37 N., R. 24 E. Sec. 8 SWSE | Northern portion | |
| 5 | T. 37 N., R. 24 E. Sec. 17 NESW | Northern portion | |
| 6 | T. 37 N., R. 24 E. Sec. 16 NESW | Northern portion | |
| 7 | T. 36 N., R. 24 E. Sec. 1 NWNE | Central portion | |
| 8 | T. 36 N., R. 25 E. Sec. 5 SENW | East-central border | |
| 9 | T. 36 N., R. 25 E. Sec. 5 SWSW | East-central border | |
| 10 | T. 36 N., R. 25 E. Sec. 18 SENE | East-central border | |
| Reservoirs | | | |
| 1 | T. 36 N., R. 25 E. Sec. 9 NWNW | East-central portion | |
| 2 | T. 37 N., R. 25 E. Sec. 29 NENE | Northeast corner | |
| Corrals | | | |
| 1 | T. 37 E., R. 24 E. Sec. 16 NWSE | Northern portion | |
| Pipelines | | | |
| 1 | T. 36 N., R. 25 E. Sec. 9 | East-central border | .4 mile |

MANMADE FEATURES IN THE CALICO MOUNTAINS WSA (019)
(Continued)

| <u>Feature</u> | <u>Legal Description</u> | <u>Location Within WSA</u> | <u>Length</u> |
|----------------|---|---|---------------|
| Water troughs | | | |
| 1 | T. 36 N., R. 25 E. Sec. 9 NWNW | East-central border | |
| 2 | T. 36 N., R. 25 E. Sec. 9 NWNE | East-central border | |
| Horse Traps | | | |
| 1 | T. 37 N., R. 24 E. Sec. 8 SWSE | Northern portion | |
| Exclosures | | | |
| 1 | T. 37 N., R. 24 E. Sec. 4 S1/2 | Northern portion | |
| 2 | T. 37 N., R. 24 E. Sec. 9 W1/2 | Northern portion | |
| Fences | | | |
| 1 | T. 38 N., R. 24 E. Sec. 33 T. 37 N., R. 24 E. Sec. 10, 11, 25 T. 37 N., R. 25 E. Sec. 31 T. 36 N., R. 25 E. Sec. 5, 6, 9 | East half | 6 miles |
| Vehicle Ways | | | |
| W-1 | T. 35 N., R. 24 E. Sec. 15, 16, 17, 22 | Connects southeast and southwest boundaries | 2.7 miles |
| W-2 | T. 35 N., R. 25 E. Sec. 27, 28 | Leads from southeast boundary | .8 mile |
| W-3 | T. 36 N., R. 25 E. Sec. 29, 30 | Leads from eastern boundary | 1.1 miles |
| W-4 | T. 36 N., R. 25 E. Sec. 17, 21 | Leads from eastern boundary | 1.5 miles |
| W-4a | T. 36 N., R. 25 E. Sec. 17 | Extends from W-4 | .2 mile |
| W-5 | T. 36 N., R. 25 E. Sec. 6, 8 | Leads from eastern boundary | 2.1 miles |
| W-5a | T. 36 N., R. 25 E. Sec. 8 | Extends from W-5 | .2 mile |
| W-7 | T. 36 N., R. 25 E. Sec. 5 | Leads from eastern boundary | .3 mile |
| W-9 | T. 37 N., R. 25 E. Sec. 19, 30 | Leads from northern boundary | 1.2 miles |
| W-10 | T. 37 N., R. 24 E. Sec. 24 | Leads from northern boundary | .4 mile |
| W-11 | T. 37 N., R. 24 E. Sec. 23, 25 | Leads from northern boundary | .3 mile |
| W-12 | T. 37 N., R. 24 E. Sec. 3, 4, 9, 16, 21 | Leads from northern boundary | 3.8 miles |

MANMADE FEATURES IN THE CALICO MOUNTAINS WSA (019)
(Continued)

| <u>Feature</u> | <u>Legal Description</u> | <u>Location Within WSA</u> | <u>Length</u> |
|-------------------|--|----------------------------------|---------------|
| Vehicle Ways | | | |
| W-13 | T. 38 N., R. 24 E. Sec. 29 | Leads from northeast boundary | .2 mile |
| W-14 | T. 35 N., R. 24 E. Secs. 4, 5, 8 T. 36 N., R. 24 E. Sec. 33 | Leads from southwest boundary | 2.8 miles |
| W-15a, b, c, d | T. 35 N., R. 24 E. Sec. 13, 24 | Leads from southeast boundary | .9 mile |
| Cherrystem Roads | | | |
| R-7 | T. 35 N., R. 25 E. Secs. 27, 28 | Leads from eastern boundary | .8 mile |
| R-7a | T. 35 N., R. 25 E. Sec. 27 | Leads from eastern boundary | .2 mile |

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MANMADE FEATURES IN THE AUGUSTA MOUNTAINS WSA (108)

| <u>Feature</u> | <u>Legal Description</u> | <u>Location Within WSA</u> | <u>Length</u> |
|--------------------|--|----------------------------|---------------|
| Developed Springs | | | |
| 1 | T. 25 N., R. 40 E. Sec. 7 SESE | Eastern portion | |
| 2 | T. 25 N., R. 40 E. Sec. 19 NESW | Eastern portion | |
| Wells | | | |
| 1 | T. 23 N., R. 39 E. Sec. 2 SWNE | Southern boundary | |
| Corrals | | | |
| 1 | T. 25 N., R. 40 E. Sec. 19 NESW | Eastern portion | |
| 2 | T. 25 N., R. 40 E. Sec. 17 NWSW | Eastern portion | |
| 3 | T. 23 N., R. 39 E. Sec. 2 SWNE | Southern boundary | |
| Fences | | | |
| 1 | T. 24 N., R. 40 E. Sec. 6, 7, 8, 17 | Eastern boundary | 3 miles |
| 2 | T. 25 N., R. 40 E. Sec. 3, 9, 10 | Northeast boundary | 2 miles |
| Cabins and Corrals | | | |
| 1 | T. 26 N., R. 40 E. Sec. 21 NWSE | Northeast boundary | |

MANMADE FEATURES IN THE AUGUSTA MOUNTAINS WSA (108)
(Continued)

| <u>Feature</u> | <u>Legal Description</u> | <u>Location Within WSA</u> | <u>Length</u> |
|--------------------|--|----------------------------|---------------|
| Vehicle Ways | | | |
| W-1 | T. 25 N., R. 39 E. Sec. 2 | Western boundary | .5 mile |
| W-2 | T. 25 N., R. 39 E. Sec. 15, 16 | Western boundary | 1.3 miles |
| W-3 | T. 24 N., R. 40 E. Sec. 4 | Eastern boundary | .8 mile |
| | T. 25 N., R. 40 E. Sec. 33 | | |
| W-4 | T. 25 N., R. 40 E. Sec. 15, 22 | Eastern boundary | 1.1 miles |
| W-5 | T. 25 N., R. 40 E. Sec. 15 | Eastern boundary | .4 mile |
| W-6 | T. 26 N., R. 40 E. Sec. 34 | Northeast boundary | .3 mile |
| | T. 25 N., R. 40 E. Sec. 3 | | |
| Cherrystream Roads | | | |
| R-12 | T. 25 N., R. 40 E. Sec. 27, 28, 29, 30 | Eastern portion | 2.9 miles |
| R-13 | T. 25 N., R. 40 E. Sec. 29 | Eastern portion | .7 mile |
| R-14 | T. 25 N., R. 40 E. Sec. 14, 15, 16, 17 | Eastern portion | 2.3 miles |
| R-15 | T. 25 N., R. 40 E. Sec. 16, 17 | Eastern portion | 1.5 miles |
| R-16 | T. 25 N., R. 40 E. Sec. 3, 8, 9, 10 | Eastern portion | 2.7 miles |
| R-17 | T. 26 N., R. 40 E. Sec. 8 | Northwest boundary | .6 mile |
| R-18 | T. 25 N., R. 39 E. Sec. 16 | Western boundary | .6 mile |
| R-19 | T. 25 N., R. 39 E. Sec. 17, 20 | Western boundary | .7 mile |
| R-20 | T. 25 N., R. 39 E. Sec. 19, 20, 21, 27, 28 | Western portion | 2.7 miles |
| R-21 | T. 25 N., R. 39 E. Sec. 19, 29, 30 | Western boundary | 1.2 miles |
| R-22 | T. 25 N., R. 39 E. Sec. 30, 31 | Western boundary | .4 mile |
| R-23 | T. 26 N., R. 40 E. Sec. 21 | Northeast boundary | .2 mile |

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MANMADE FEATURES IN THE SELENITE MOUNTAINS WSA (200)

| <u>Feature</u> | <u>Legal Description</u> | <u>Location Within WSA</u> | <u>Length</u> |
|------------------|---------------------------------------|----------------------------|---------------|
| Corrals | | | |
| 1 | T. 32 N., R. 24 E. Sec. 22 | Center portion | |
| Vehicle Ways | | | |
| W-2 | T. 32 N., R. 23 E. Sec. 36 | Northwest corner | .7 mile |
| W-2a | T. 36 N., R. 23 E. Sec. 36 | Northwest corner | .1 mile |
| W-3 | T. 32 N., R. 23 E. Sec. 25 | Northwest boundary | .2 mile |
| W-4 | T. 32 N., R. 24 E. Sec. 7 | Northwest boundary | .2 mile |
| W-4a | T. 32 N., R. 24 E. Sec. 7 | Northwest boundary | .1 mile |
| W-5 | T. 32 N., R. 24 E. Sec. 4, 5 | Northern boundary | .4 mile |
| W-6 | T. 32 N., R. 24 E. Sec. 5, 8 | Northern boundary | 1.3 mile |
| W-7 | T. 33 N., R. 24 E. Sec. 33 | Northern boundary | .3 mile |
| W-8 | T. 33 N., R. 24 E. Sec. 22 | Northeast boundary | .4 mile |
| W-9 | T. 33 N., R. 25 E. Sec. 21 | Northeast boundary | 1.7 miles |
| | T. 33 N., R. 24 E. Sec. 24 | | |
| W-10 | T. 32 N., R. 25 E. Sec. 4 | Eastern boundary | .3 mile |
| W-11 | T. 32 N., R. 25 E. Sec. 9 | Eastern boundary | 2.7 miles |
| | T. 32 N., R. 24 E. Sec. 11, 12 | | |
| W-12 | T. 32 N., R. 24 E. Sec. 34, 35 | Southeast boundary | 1.4 miles |
| Cherrystem Roads | | | |
| R-5 | T. 32 N., R. 23 E. Sec. 25, 36 | Northwest corner | .5 mile |
| R-6 | T. 32 N., R. 24 E. Sec. 7, 18 | Northwest boundary | .8 mile |
| R-7 | T. 33 N., R. 24 E. Sec. 22, 23, 26 | Northeast boundary | .6 mile |
| R-8 | T. 32 N., R. 24 E. Sec. 22 | Eastern boundary | .2 mile |

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MANMADE FEATURES IN THE MOUNT LIMBO WSA (201)

| <u>Feature</u> | <u>Legal Description</u> | <u>Location Within WSA</u> | <u>Length</u> |
|-------------------|---|--------------------------------|---------------|
| Developed Springs | | | |
| 1 | T. 30 N., R. 24 E. Sec. 35 SWNE | Northeast corner | |
| 2 | T. 29 N., R. 24 E. Sec. 21 SWSW | West-central border | |
| Reservoirs | | | |
| 1 | T. 30 N., R. 24 E. Sec. 38 SWSE | Northwest corner | |
| Corrals | | | |
| 1 | T. 29 N., R. 24 E. Sec. 2 NESW | Northeast border | |
| Vehicle Ways | | | |
| W-3 | T. 30 N., R. 24 E. Sec. 32 | Northern boundary | .3 mile |
| W-4 | T. 30 N., R. 24 E. Sec. 35 | Northeast boundary | .3 mile |
| W-5 | T. 29 N., R. 24 E. Sec. 2, 3 | Northeast boundary | .6 mile |
| W-6 | T. 29 N., R. 24 E. Sec. 13 | Eastern boundary | .4 mile |
| W-7 | T. 29 N., R. 24 E. Sec. 14, 23 | Eastern boundary | 1 mile |
| W-8 | T. 29 N., R. 24 E. Sec. 23 | Eastern boundary | .6 mile |
| W-9 | T. 29 N., R. 24 E. Sec. 22, 23 | Eastern boundary | .9 mile |
| W-10 | T. 29 N., R. 24 E. Sec. 26 | Eastern boundary | .7 mile |
| W-11 | T. 29 N., R. 24 E. Sec. 26 | Eastern boundary | .3 mile |
| W-12 | T. 29 N., R. 24 E. Sec. 35 T. 28 N., R. 24 E. Sec. 3, 10, 15, 16 | Eastern and western portion | 3.5 miles |
| W-12a | T. 29 N., R. 24 E. Secs. 34, 35 | Eastern portion | .4 mile |
| W-13 | T. 29 N., R. 24 E. Sec. 35, 36 T. 28 N., R. 24 E. Sec. 1, 12, 13 | Eastern portion | 3.5 miles |
| W-14 | T. 29 N., R. 24 E. Sec. 1, 12, 13 | Eastern portion | 2.8 miles |
| W-15 | T. 29 N., R. 24 E. Sec. 8, 9, 38 | Northwest boundary | 1.6 miles |

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MANMADE FEATURES IN THE CHINA MOUNTAIN WSA (406P)

| <u>Feature</u> | <u>Legal Description</u> | <u>Location Within WSA</u> | <u>Length</u> |
|-------------------|--|----------------------------------|---------------|
| Developed Springs | | | |
| 1 | T. 31 N., R. 41 E. Sec. 7 NENE | Northern border | |
| 2 | T. 31 N., R. 40 E. Sec. 25 NWSE | East-central border | |
| 3 | T. 31 N., R. 41 E. Sec. 18 SWSW | East-central border | |
| 4 | T. 31 N., R. 40 E. Sec. 35 SESW | South-central border | |
| Reservoirs | | | |
| 1 | T. 31 N., R. 41 E. Sec. 18 SWSW | South-central border | |
| 2 | T. 30 N., R. 40 E. Sec. 2 NENE | Southern border | |
| 3 | T. 30 N., R. 40 E. Sec. 1 NWSE | Southeast border | |
| Water Troughs | | | |
| 1 | T. 30 N., R. 40 E. Sec. 2 NENE | Southern border | |
| 2 | T. 30 N., R. 40 E. Sec. 1 NWSE | Southeast border | |
| Pipelines | | | |
| 1 | T. 30 N., R. 40 E. Sec. 1 & 2 T. 30 N., R. 41 E. Sec. 7 | Southeast corner | 2 miles |
| Fence | | | |
| 1 | T. 31 N., R. 40 E. Sec. 27 & 34 | Northwest corner | .5 mile |
| Vehicle Ways | | | |
| W-1 | T. 31 N., R. 41 E. Sec. 6 | Leads from northern boundary | .2 mile |
| W-2 | T. 31 N., R. 40 E. Sec. 13 & 24 | Leads from eastern boundary | 1.1 miles |
| W-3 | T. 30 N., R. 41 E. Sec. 7 | Leads from southeast boundary | .5 mile |
| Cherrystem Roads | | | |
| R-5 | T. 31 N., R. 40 E. Sec. 35 | Leads from eastern boundary | .2 mile |

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MANMADE FEATURES IN THE TOBIN RANGE WSA (406Q)

| <u>Feature</u> | <u>Legal Description</u> | <u>Location Within WSA</u> | <u>Length</u> |
|-------------------|---|--------------------------------|---------------|
| Developed Springs | | | |
| 1 | T. 29 N., R. 39 E. Sec. 3 NWSW | Northwest corner | |
| Fences | | | |
| 1 | T. 29 N., R. 39 E. Sec. 33 | Southwest corner | .25 mile |
| 2 | T. 29 N., R. 39 E. Sec. 2 | Northeast border | 1 mile |
| Vehicle Ways | | | |
| W-1 | T. 29 N., R. 39 E. Sec. 16, 17, 21, 22 | Leads from western boundary | 1.5 miles |
| W-1a | T. 29 N., R. 39 E. Sec. 22 | Extends from W-1 | .9 mile |
| W-1b | T. 29 N., R. 39 E. Sec. 15 & 22 | Extends from W-1 | 1.6 miles |
| W-1c | T. 29 N., R. 39 E. Sec. 22 | Extends from W-1 | .7 mile |
| W-2 | T. 29 N., R. 39 E. Sec. 15, 16, 17 | Leads from western boundary | 1.5 miles |
| W-3 | T. 29 N., R. 39 E. Sec. 8, 9, 10 | Leads from western boundary | 1.6 miles |

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MANMADE FEATURES IN THE BLUE LAKES WSA (600)

| <u>Feature</u> | <u>Legal Description</u> | <u>Location Within WSA</u> | <u>Length</u> |
|-------------------------|------------------------------------|----------------------------|---------------|
| Reservoirs | | | |
| 1 | T. 43 N., R. 28 E. Sec. 12 SESE | Central portion of unit | |
| Developed Springs | | | |
| 1 | T. 43 N., R. 28 E. Sec. 15 NWSE | East-central portion | |
| 2 | T. 44 N., R. 29 E. Sec. 35 SESE | Northeast corner | |
| 3 | T. 44 N., R. 29 E. Sec. 25 SESW | Northeast corner | |
| Cattleguards | | | |
| 1 | T. 43 N., R. 29 E. Sec. 6 NW | North-central | |
| 2 | T. 44 N., R. 29 E. Sec. 25 NWSE | Northeast boundary | |
| Corrals and Line Cabins | | | |
| 1 | T. 43 N., R. 28 E. Sec. 25 SENE | Southeast corner | |
| 2 | T. 43 N., R. 28 E. Sec. 3 NESE | Northwest border | |
| 3 | T. 43 N., R. 28 E. Sec. 3 NWSE | Northwest border | |

MANMADE FEATURES IN THE BLUE LAKES WSA (600)
(Continued)

| <u>Feature</u> | <u>Legal Description</u> | <u>Location Within WSA</u> | <u>Length</u> |
|-------------------------|--|-------------------------------------|---------------|
| Fences | | | |
| 1 | T. 44 N., 29 E. Sec. 25, 26 & 35 T. 44 N., R. 30 E. Sec. 6 T. 45 N., R. 30 E. Sec. 31 | Northeast corner | 5.25 miles |
| 2 | T. 43 N., R. 28 E. Sec. 3 | Northwest corner | .8 mile |
| 3 | T. 43 N., R. 28 E. Sec. 2 | Northwest corner | .5 mile |
| 4 | T. 43 N., R. 28 E. Sec. 21, 22 & 28 | Southwest portion | 2.3 miles |
| 5 | T. 43 N., R. 28 E. Sec. 3 & 10 | Northwest boundary | 1.1 miles |
| 6 | T. 44 N., R. 30 E. Sec. 17 & 20 | East-central portion | 1.5 miles |
| 7 | T. 43 N., R. 29 E. Sec. 8 | East-central portion | .2 mile |
| Radio Repeaters | | | |
| 1 | T. 43 N., R. 28 E. Sec. 1 SESE | North-central | |
| Foot Trails | | | |
| 1 | T. 43 N., R. 28 E. Sec. 1 | Leads to Blue Lakes | .75 mile |
| CherrySTEM Roads | | | |
| R-8 | T. 44 N., R. 28 E. Sec. 35 & 36 T. 43 N., R. 28 E. Sec. 1 | Leads from northern boundary | 1.1 miles |
| R-10 | T. 44 N., R. 30 E. Sec. 19 | Leads from east-central border | .2 mile |
| R-12 | T. 43 N., R. 29 E. Sec. 30 T. 43 N., R. 28 E. Sec. 25 | Leads from southeast border | 1 mile |
| Vehicle Ways | | | |
| W-1 | T. 43 N., R. 28 E. Sec. 22, 27, 28, & 33 | Leads from southwest boundary | 2.2 miles |
| W-2 | T. 43 N., R. 28 E. Sec. 28 | Leads from southwest boundary | .9 mile |
| W-3 | T. 43 N., R. 28 E. Sec. 10 & 15 | Leads from west-central boundary | .7 mile |
| W-4 | T. 43 N., R. 28 E. Sec. 10 & 11 | Leads from west-central boundary | 1.9 miles |

MANMADE FEATURES IN THE BLUE LAKES WSA (600)
(Continued)

| <u>Feature</u> | <u>Legal Description</u> | <u>Location Within WSA</u> | <u>Length</u> |
|----------------|--|----------------------------------|---------------|
| W-5 | T. 44 N., R. 29 E. Sec. 25, 35 & 36 T. 43 N., R. 29 E. Sec. 6 T. 43 N., R. 28 E. Sec. 1 | Leads from northeast boundary | 4.2 miles |
| W-6 | T. 44 N., R. 29 E. Sec. 35 T. 44 N., R. 28 E. Sec. 36 T. 43 N., R. 28 E. Sec. 1 | Extension of W-5 | .9 mile |

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MANMADE FEATURES IN THE ALDER CREEK WSA (600D)

| <u>Feature</u> | <u>Legal Description</u> | <u>Location Within WSA</u> | <u>Length</u> |
|------------------|------------------------------------|---------------------------------|---------------|
| Fences | | | |
| 1 | T. 43 N., R. 28 E. Sec. 17 | Southwest portion | .3 mile |
| 2 | T. 43 N., R. 28 E. Sec. 8 | West-central | .1 mile |
| 3 | T. 43 N., R. 28 E. Sec. 3 | Northeast portion | 1 mile |
| Cattleguards | | | |
| 1 | T. 43 N., R. 28 E. Sec. 5 SESE | Northwest boundary road | |
| Vehicle Ways | | | |
| W-7 | T. 44 N., R. 28 E. Sec. 28 & 33 | Leads from northern boundary | 1 mile |
| Cherrystem Roads | | | |
| R-2 | T. 43 N., R. 28 E. Sec. 17 | Leads from western boundary | .2 mile |

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MANMADE FEATURES IN THE SOUTH JACKSON MOUNTAINS WSA (603)

| <u>Feature</u> | <u>Legal Description</u> | <u>Location Within WSA</u> | <u>Length</u> |
|----------------|------------------------------------|----------------------------|---------------|
| Wells | | | |
| 1 | T. 38 N., R. 32 E. Sec. 20 NENW | Southeast corner | |

MANMADE FEATURES IN THE SOUTH JACKSON MOUNTAINS WSA (603)
(Continued)

| <u>Feature</u> | <u>Legal Description</u> | <u>Location Within WSA</u> | <u>Length</u> |
|--------------------------|---|---|---------------|
| Ditches | | | |
| 1 | T. 38 N., R. 31 E. Sec. 19, 20 & 24 | Southeast portion | 2 miles |
| 2 | T. 38 N., R. 31 E. Sec. 19, 20, 26, 30 | Southeast portion | 2 miles |
| 3 | T. 38 N., R. 31 E. Sec. 13 & 18 | Southeast portion | 2 miles |
| Developed Springs | | | |
| 1 | T. 38 N., R. 30 E. Sec. 16 SWNE | Southwest corner | |
| Vehicle Ways | | | |
| W-1 | T. 38 N., R. 30 E. Sec. 9, 10 & 11 | Leads from private property, southwest corner | 2 miles |
| W-2 | T. 39 N., R. 30 E. Sec. 34 | Leads from western boundary | .2 mile |
| W-3 | T. 39 N., R. 30 E. Sec. 27 & 34 | Leads from western boundary | .5 mile |
| W-4 | T. 39 N., R. 30 E. Sec. 12 | Leads from western boundary | .3 mile |
| W-5 | T. 39 N., R. 30 E. Sec. 1 | Leads from western boundary | 2.4 miles |
| W-6 | T. 39 N., R. 31 E. Sec. 6, 7, 8 | Leads from cherry-stem road | .2 mile |
| W-7 | T. 40 N., R. 31 E. Sec. 34 | Leads from eastern boundary | .6 mile |
| W-8 | T. 39 N., R. 31 E. Sec. 27, 28, 34, 35 | Leads from cherry-stem road | 1.7 miles |
| W-9 | T. 39 N., R. 31 E. Sec. 35 & 36 | Leads from eastern boundary | .7 mile |
| W-10 | T. 38 N., R. 32 E. Sec. 18 | Leads from eastern boundary | 2.7 miles |
| W-11 | T. 38 N., R. 31 E. Sec. 13 & 14 | | |
| W-11 | T. 38 N., R. 32 E. Sec. 19 & 20 | Leads from eastern boundary | .4 mile |
| W-12 | T. 38 N., R. 32 E. Sec. 19 & 20 | Leads from southeast boundary | 3.7 miles |
| W-13 | T. 38 N., R. 31 E. Sec. 24, 26, & 27 | | |
| W-13 | T. 38 N., R. 31 E. Sec. 35 | Leads from southern boundary | .3 mile |
| W-14 | T. 37 N., R. 31 E. Sec. 3 | Leads from southern boundary | .4 mile |
| W-15 | T. 37 N., R. 31 E. Sec. 4, 8, and 9 | Leads from | 1.3 miles |

MANMADE FEATURES IN THE SOUTH JACKSON MOUNTAINS WSA (603)
(Continued)

| <u>Feature</u> | <u>Legal Description</u> | <u>Location Within WSA</u> | <u>Length</u> |
|------------------|--|----------------------------------|---------------|
| Vehicle Ways | | | |
| | southern boundary | | |
| W-16 | T. 39 N., R. 31 E. Sec. 23 | Leads from eastern boundary | .2 mile |
| W-17 | T. 39 N., R. 30 E. Sec. 1 | Leads from western boundary | .4 mile |
| W-18 | T. 38 N., R. 31 E. Sec. 4 and 5 | East-central portion | .4 mile |
| W-19 | T. 38 N., R. 31 E. Sec. 5 and 8 | East-central portion | 1 mile |
| Cherrystem Roads | | | |
| R-8 | T. 40 N., R. 31 E. Sec. 30 | Leads from northwest boundary | .2 mile |
| R-9 | T. 38 N., R. 30 E. Sec. 4, 5, & 9 | Leads from southwest boundary | 1 mile |
| R-10 | T. 38 N., R. 31 E. Sec. 25, 26, 27, 28, & 29 | Leads from southeast boundary | 4.8 miles |
| R-13 | T. 39 N., R. 31 E. Sec. 21, 26, 27, 35 35 | Leads from eastern boundary | 3 miles |
| R-14 | T. 40 N., R. 31 E. Sec. 35 | Leads from northern boundary | .2 mile |
| R-15 | T. 40 N., R. 31 E. Sec. 34 | Leads from northern boundary | .9 mile |

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MANMADE FEATURES IN THE NORTH JACKSON MOUNTAINS WSA (606)

| <u>Feature</u> | <u>Legal Description</u> | <u>Location Within WSA</u> | <u>Length</u> |
|-------------------|------------------------------------|-------------------------------|---------------|
| Fences | | | |
| 1 | T. 41 N., R. 31 E. Sec. 27 | Northwest corner | .8 mile |
| 2 | T. 40 N., R. 31 E. Sec. 4 | West-central | .6 mile |
| 3 | T. 41 N., R. 32 E. Sec. 19 & 30 | Northeast corner | .5 mile |
| 4 | T. 40 N., R. 32 E. Sec. 16 & 17 | East-central border | 1.2 miles |
| Developed Springs | | | |
| 1 | T. 40 N., R. 32 E. Sec. 8 NWSE | East-central border | |
| Vehicle Ways | | | |
| W-1 | T. 40 N., R. 31 E. Sec. 19 | Lead from western boundary | .2 mile |

MANMADE FEATURES IN THE NORTH JACKSON MOUNTAINS WSA (606)
(Continued)

| <u>Feature</u> | <u>Legal Description</u> | <u>Location Within WSA</u> | <u>Length</u> |
|-------------------------|---|---|---------------|
| Vehicle Ways | | | |
| W-2 | T. 40 N., R. 31 E. Sec. 17 & 18 | Lead from western boundary | 1.6 miles |
| W-3 | T. 40 N., R. 31 E. Sec. 7, 8 & 18 | Lead from western boundary | 1.1 miles |
| W-4 | T. 41 N., R. 31 E. Sec. 27 | Lead from western boundary | .2 mile |
| W-5 | T. 41 N., R. 31 E. Sec. 22 | Leads from northwest boundary | .1 mile |
| W-6 | T. 41 N., R. 32 E. Sec. 29 & 30 | Leads from northern boundary | 1.2 miles |
| W-7 | T. 40 N., R. 32 E. Sec. 16 | Leads from eastern boundary | .7 mile |
| W-8 | T. 40 N., R. 32 E. Sec. 16 | Leads from the eastern boundary | .8 mile |
| W-9 | T. 40 N., R. 31 E. Sec. 25 T. 40 N., R. 32 E. Sec. 30 & 31 | Extends from a southern cherrystem road | .9 mile |
| Cherrystem Roads | | | |
| R-12 | T. 40 N., R. 31 E. Sec. 24, 25 & 26 | Lead from southern boundary | 2.5 miles |
| R-13 | T. 40 N., R. 31 E. Sec. 25 & 36 | Lead from southern boundary | .4 mile |
| R-14 | T. 40 N., R. 32 E. Sec. 31 | Lead from southeast boundary | .1 mile |
| R-15 | T. 40 N., R. 32 E. Sec. 30 | Lead from southeast boundary | .2 mile |
| R-16 | T. 41 N., R. 31 E. Sec. 26, 35, & 36 | Lead from northwest boundary | 1.7 miles |
| R-17 | T. 40 N., R. 32 E. Sec. 5 & 6 | Lead from northeast boundary | .75 mile |

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MANMADE FEATURES IN THE BLACK ROCK DESERT WSA (620)

| <u>Feature</u> | <u>Legal Description</u> | <u>Location Within WSA</u> | <u>Length</u> |
|------------------|------------------------------------|----------------------------|---------------|
| Windmills | | | |
| 1 | T. 41 N., R. 28 E. Sec. 22 NESE | Northwest corner | |
| 2 | T. 41 N., R. 30 E. Sec. 13 NWNE | Northeast corner | |
| 3 | T. 41 N., R. 30 E. Sec. 5 NWNE | Northeast corner | |
| 4 | T. 42 N., R. 30 E. Sec. 33 SWSW | Northeast corner | |

MANMADE FEATURES IN THE BLACK ROCK DESERT WSA (620)
(Continued)

| <u>Feature</u> | <u>Legal Description</u> | <u>Location Within WSA</u> | <u>Length</u> |
|--------------------------|--|------------------------------|---------------|
| Windmills | | | |
| 5 | T. 40 N., R. 30 E. Sec. 29 NWNE | Northeast portion | |
| 6 | T. 40 N., R. 27 E. Sec. 36 SENE | Northwest portion | |
| 7 | T. 37 N., R. 27 E. Sec. 5 SENE | West-central border | |
| Wells | | | |
| 1 | T. 42 N., R. 30 E. Sec. 32 SESE | Northeast corner | |
| 2 | T. 41 N., R. 28 E. Sec. 23 SWSE | Northern border | |
| 3 | T. 36 N., R. 29 E. Sec. 18 SESW | Southeast border | |
| Developed Springs | | | |
| 1 | T. 38 1/2 N., R. 27 E. Sec. 32 NENW | West-central border | |
| Pipelines | | | |
| 1 | T. 38 N., R. 27 E. Sec. 4 | West-central border | |
| Vehicle Ways | | | |
| W-1 | T. 36 N., R. 29 E. Sec. 6 T. 36 N., R. 28 E. Sec. 1 | Leads from eastern boundary | 1.2 miles |
| W-2 | T. 38 N., R. 30 E. Sec. 7 & 8 | Leads from eastern boundary | .4 mile |
| W-3 | T. 38 N., R. 27 E. Sec. 29 | Leads from western boundary | .2 mile |
| W-4 | T. 40 N., R. 27 E. Sec. 24, 25, & 35 | Lead from western boundary | 1.5 miles |
| W-5 | T. 40 N., R. 28 E. Sec. 19 & 30 | Lead from western boundary | 1 mile |
| W-6 | T. 40 1/2 N., R. 28 E. Sec. 32 & 33 | Lead from northeast boundary | 1.2 miles |
| W-7 | T. 41 N., R. 30 E. Sec. 4 & 8 | Leads from northern boundary | 1.8 miles |
| W-8 | T. 38 N., R. 30 E. Sec. 6 & 8 | Leads from eastern boundary | 1 mile |
| Cherrystem Roads | | | |
| R-12 | T. 38 N., R. 30 E. Sec. 8 | Leads from eastern boundary | .3 mile |

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MANMADE FEATURES IN THE PAHUTE PEAK WSA (621)

| <u>Feature</u> | <u>Legal Description</u> | <u>Location Within WSA</u> | <u>Length</u> |
|--------------------------|---------------------------------------|----------------------------|---------------|
| Reservoirs | | | |
| 1 | T. 39 N., R. 25 E. Sec. 22 NESW | Northwest corner | |
| 2 | T. 39 N., R. 25 E. Sec. 22 SWSE | Northwest corner | |
| 3 | T. 39 N., R. 25 E. Sec. 26 NENW | Northwest corner | |
| 4 | T. 39 N., R. 26 E. Sec. 8 SENW | Northern border | |
| 5 | T. 39 N., R. 26 E. Sec. 22 SWNW | Northern border | |
| 6 | T. 39 N., R. 26 E. Sec. 26 NESW | Northeast portion | |
| 7 | T. 39 N., R. 25 E. Sec. 35 NENW | Northwest portion | |
| 8 | T. 38 N., R. 26 E. Sec. 3 SESE | Central portion | |
| Developed Springs | | | |
| 1 | T. 39 N., R. 25 E. Sec. 12 SENE | North-central border | |
| 2 | T. 39 N., R. 25 E. Sec. 12 SWSE | North-central border | |
| 3 | T. 39 N., R. 25 E. Sec. 13 NESE | North-central border | |
| 4 | T. 39 N., R. 26 E. Sec. 7 SWNW | North-central border | |
| 5 | T. 39 N., R. 26 E. Sec. 18 NENW | North-central border | |
| 6 | T. 39 N., R. 26 E. Sec. 18 SENE | North-central border | |
| 7 | T. 39 N., R. 26 E. Sec. 15 NESW | Northeast border | |
| 8 | T. 39 N., R. 26 E. Sec. 34 SESW | North-central portion | |
| 9 | T. 38 N., R. 26 E. Sec. 11 SWSE | East-central portion | |
| Pipelines | | | |
| 1 | T. 39 N., R. 25 E. Sec. 12 & 13 | North-central border | 1.4 miles |
| 2 | T. 38 N., R. 26 E. Sec. 3, 10 & 11 | East-central portion | |
| Study Plots | | | |
| 1 | T. 39 N., R. 26 E. Sec. 13 NWSE | Northeast border | |
| Radio Repeaters | | | |
| 1 | T. 39 N., R. 26 E. Sec. 18 NESW | North-central portion | |

MANMADE FEATURES IN THE PAHUTE PEAK WSA (621)
(Continued)

| <u>Feature</u> | <u>Legal Description</u> | <u>Location Within WSA</u> | <u>Length</u> |
|----------------|--|----------------------------------|---------------|
| Vehicle Ways | | | |
| W-1 | T. 39 N., R. 25 E. Sec. 22, 26, 27, 28 | Leads from northwest border | 2.2 miles |
| W-1a | T. 39 N., R. 25 E. Sec. 23 & 26 | Leads from W-1 | .5 mile |
| W-1b | T. 39 N., R. 25 E. Sec. 27 & 28 | Leads from W-1 | .8 mile |
| W-2 | T. 39 N., R. 25 E. Sec. 34 & 35 T. 38 N., R. 25 E. Sec. 3 | Leads from northwest boundary | 1.7 miles |
| W-2a | T. 38 N., R. 25 E. Sec. 3 | Leads from W-2 | .9 mile |
| W-2b | T. 39 N., R. 25 E. Sec. 34 | Leads from W-2 | .7 mile |
| W-3 | T. 38 N., R. 25 E. Sec. 2 | Leads from western boundary | .9 mile |
| W-4 | T. 38 N., R. 25 E. Sec. 12 | Leads from western boundary | .9 mile |
| W-5 | T. 38 N., R. 26 E. Sec. 28 | Leads from western boundary | .3 mile |
| W-5a | T. 38 N., R. 26 E. Sec. 33 | Leads from western boundary | .1 mile |
| W-5b | T. 38 N., R. 26 E. Sec. 33 | Leads from western boundary | .1 mile |
| W-6 | T. 37 N., R. 26 E. Sec. 11 | Leads from southwest boundary | .7 mile |
| W-6a | T. 37 N., R. 26 E. Sec. 2, 3 & 11 | Leads from W-6 | 1.6 miles |
| W-7 | T. 37 N., R. 26 E. Sec. 13 & 14 | Leads from southern boundary | .9 mile |
| W-7a | T. 37 N., R. 26 E. Sec. 13 | Leads from W-7 | .2 mile |
| W-8 | T. 37 N., R. 26 E. Sec. 14 | Leads from southwest boundary | 1.3 miles |
| W-8a | T. 37 N., R. 26 E. Sec. 11 & 14 | Leads from southwest boundary | 1.1 miles |
| W-9 | T. 37 N., R. 26 E. Sec. 13 | Leads from southern boundary | .4 mile |
| W-10 | T. 37 N., R. 27 E. Sec. 6 | Leads from southern boundary | .8 mile |
| W-10a | T. 37 N., R. 27 E. Sec. 6 | Leads from southern boundary | .2 mile |
| W-10b | T. 37 N., R. 27 E. Sec. 7 | Leads from southern boundary | .2 mile |
| W-11 | T. 38 N., R. 27 E. Sec. 30 | Leads from southeast boundary | .5 mile |
| W-12 | T. 38 N., R. 27 E. Sec. 7 T. 38 N., R. 26 E. Sec. 13 & 14 | Leads from eastern boundary | 1.9 miles |

MANMADE FEATURES IN THE PAHUTE PEAK WSA (621)
(Continued)

| <u>Feature</u> | <u>Legal Description</u> | <u>Location Within WSA</u> | <u>Length</u> |
|------------------|--|----------------------------------|---------------|
| Vehicle Ways | | | |
| W-13 | T. 38 N., R. 26 E. Sec. 3, 11 & 12 | Leads from eastern boundary | 2.9 miles |
| W-13a | T. 38 N., R. 26 E. Sec. 2, 3, & 12 | Leads from eastern boundary | 2.1 miles |
| W-13b | T. 38 N., R. 26 E. Sec. 3 & 10 | Leads from W-13 | .7 mile |
| W-14 | T. 38 N., R. 26 E. Sec. 1 T. 39 N., R. 26 E. Sec. 35 & 36 | Leads from eastern boundary | 2.2 miles |
| W-15 | T. 39 N., R. 27 E. Sec. 30 T. 39 N., R. 26 E. Sec. 25 | Leads from northeast boundary | 1.5 miles |
| W-16 | T. 39 N., R. 27 E. Sec. 30 T. 39 N., R. 26 E. Sec. 25 | Leads from northeast boundary | .9 mile |
| W-17 | T. 39 N., R. 26 E. Sec. 14 & 15 | Leads from northern boundary | 1.8 miles |
| W-18 | T. 39 N., R. 26 E. Sec. 17 & 21 | Leads from northern boundary | 1.7 miles |
| W-19 | T. 39 N., R. 26 E. Sec. 7 T. 39 N., R. 25 E. Sec. 12 | Leads from northern boundary | .8 mile |
| W-19a | T. 39 N., R. 25 E. Sec. 12 T. 39 N., R. 26 E. Sec. 7 | Leads from northern boundary | .5 mile |
| W-20 | T. 39 N., R. 25 E. Sec. 12 | Leads from northern boundary | .6 mile |
| W-21 | T. 39 N., R. 25 E. Sec. 10 | Leads from northwest boundary | .2 mile |
| CherrySTEM Roads | | | |
| R-4 | T. 39 N., R. 25 E. Sec. 10 | Leads from northwest boundary | .3 mile |
| R-5 | T. 38 N., R. 25 E. Sec. 12 T. 38 N., R. 26 E. Sec. 7 | Leads from western boundary | 1.2 mile |

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MANMADE FEATURES IN THE NORTH BLACK ROCK RANGE WSA (622)

| <u>Feature</u> | <u>Legal Description</u> | <u>Location Within WSA</u> | <u>Length</u> |
|-------------------|-------------------------------------|----------------------------------|---------------|
| Reservoirs | | | |
| 1 | T. 40 N., R. 26 E. Sec. 17 SENE | Southern border | |
| Developed Springs | | | |
| 1 | T. 40 N., R. 26 E. Sec. 3 SWSW | Southeast border | |
| 2 | T. 41 N., R. 26 E. Sec. 14 NWNE | Northeast border | |
| Charcos | | | |
| 1 | T. 40 N., R. 26 E. Sec. 5 SWNW | South-central portion | |
| 2 | T. 41 N., R. 26 E. Sec. 29 NWNE | Center portion | |
| Vehicle Ways | | | |
| W-1 | T. 41 N., R. 26 E. Sec. 31 | Leads from southern boundary | 1.4 miles |
| | T. 40 N., R. 26 E. Sec. 6 | | |
| W-2 | T. 40 N., R. 26 E. Sec. 3 | Leads from eastern boundary | .6 mile |
| | T. 41 N., R. 26 E. Sec. 34 | | |
| W-3 | T. 41 N., R. 26 E. Sec. 34 | Leads from eastern boundary | .3 mile |
| W-4 | T. 41 N., R. 26 E. Sec. 23 & 24 | Leads from eastern boundary | .2 mile |
| W-5 | T. 41 N., R. 26 E. Sec. 24 | Leads from northeast boundary | .1 mile |
| W-6 | T. 41 N., R. 26 E. Sec. 10 | Leads from northern boundary | .6 mile |
| W-7 | T. 40 N., R. 25 E. Sec. 4 | Leads from southwest boundary | .6 mile |
| Cherrystem Roads | | | |
| R-9 | T. 41 N., R. 26 E. Secs. 10 & 11 | Leads from northeast boundary | .5 mile |
| R-10 | T. 41 N., R. 26 E. Sec. 11 | Leads from northeast boundary | .5 mile |
| R-11 | T. 41 N., R. 26 E. Secs. 23 & 24 | Leads from northeast boundary | .9 mile |
| Fences | | | |
| 1 | T. 41 N., R. 26 E. Sec. 25 | Northeast portion | .3 mile |

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MANMADE FEATURES IN THE NORTH FORK OF THE LITTLE HUMBOLDT WSA (827)

| <u>Feature</u> | <u>Legal Description</u> | <u>Location Within WSA</u> | <u>Length</u> |
|---------------------|---|--------------------------------|---------------|
| Reservoirs | | | |
| 1 | T. 44 N., R. 44 E. Sec. 34 NESW | Northeast portion | |
| 2 | T. 44 N., R. 43 E. Sec. 12 SWSW | Northeast border | |
| 3 | T. 43 N., R. 42 E. Sec. 13 SENW | West-central border | |
| 4 | T. 44 N., R. 43 E. Sec. 25 NWNE | Northeast portion | |
| 5 | T. 43 N., R. 43 E. Sec. 9 NENE | East-central border | |
| 6 | T. 42 N., R. 44 E. Sec. 21 NE | Southeast border | |
| 7 | T. 42 N., R. 43 E. Sec. 23 SESE | South-central portion | |
| 8 | T. 42 N., R. 43 E. Sec. 35 NWNW | Southern portion | |
| Fences | | | |
| 1 | T. 44 N., R. 42 E. Sec. 13, 24, 25, 26 | Northwest corner | 3 miles |
| 2 | T. 44 N., R. 42 E. Sec. 7, 13 & 14 | Northern border | 2.5 miles |
| 3 | T. 44 N., R. 43 E. Sec. 5, 8, 16, 21, 28 & 34 | Northeast portion | 3.5 miles |
| Corrals | | | |
| 1 | T. 44 N., R. 43 E. Sec. 7 NWSE | Northern border | |
| 2 | T. 44 N., R. 43 E. Sec. 25 NENE | Northeast portion | |
| Vehicle Ways | | | |
| W-1 | T. 43 N., R. 43 E. Sec. 5, 6, 8, 16, 17 T. 44 N., R. 43 E. Sec. 30 & 31 T. 44 N., R. 42 E. Sec. 13, 24, 25 | North half | 7.1 miles |
| W-2 | T. 43 N., R. 43 E. Sec. 4 | Leads from eastern boundary | .4 mile |
| W-3 | T. 43 N., R. 43 E. Sec. 20 | Leads from cherrystem road | .9 mile |
| W-4 | T. 42 N., R. 43 E. Sec. 7 | Leads from western boundary | .2 mile |
| W-5 | T. 42 N., R. 43 E. Sec. 22 | Leads from cherrystem road | .3 mile |

MANMADE FEATURES IN THE NORTH FORK OF THE LITTLE HUMBOLDT WSA (827)

| <u>Feature</u> | <u>Legal Description</u> | <u>Location Within WSA</u> | <u>Length</u> |
|------------------|--|----------------------------------|---------------|
| Cherrystem Roads | | | |
| R-8 | T. 42 N., R. 44 E. Sec. 21 & 28 | Leads from eastern boundary | 4 miles |
| | T. 42 N., R. 43 E. Sec. 24, 25 & 26 | | |
| R-9 | T. 42 N., R. 43 E. Sec. 22 | Leads from southwest boundary | .5 mile |
| R-10 | T. 43 N., R. 42 E. Sec. 13 & 14 | Leads from western boundary | 1 mile |
| R-11 | T. 43 N., R. 42 E. Sec. 23 | Leads from western boundary | .2 mile |
| R-12 | T. 43 N., R. 42 E. Sec. 23 & 24 | Leads from western boundary | 2 miles |
| | T. 43 N., R. 43 E. Sec. 19 | | |

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Source: Winnemucca District files, Bureau of Land Management,
Winnemucca, Nevada.

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