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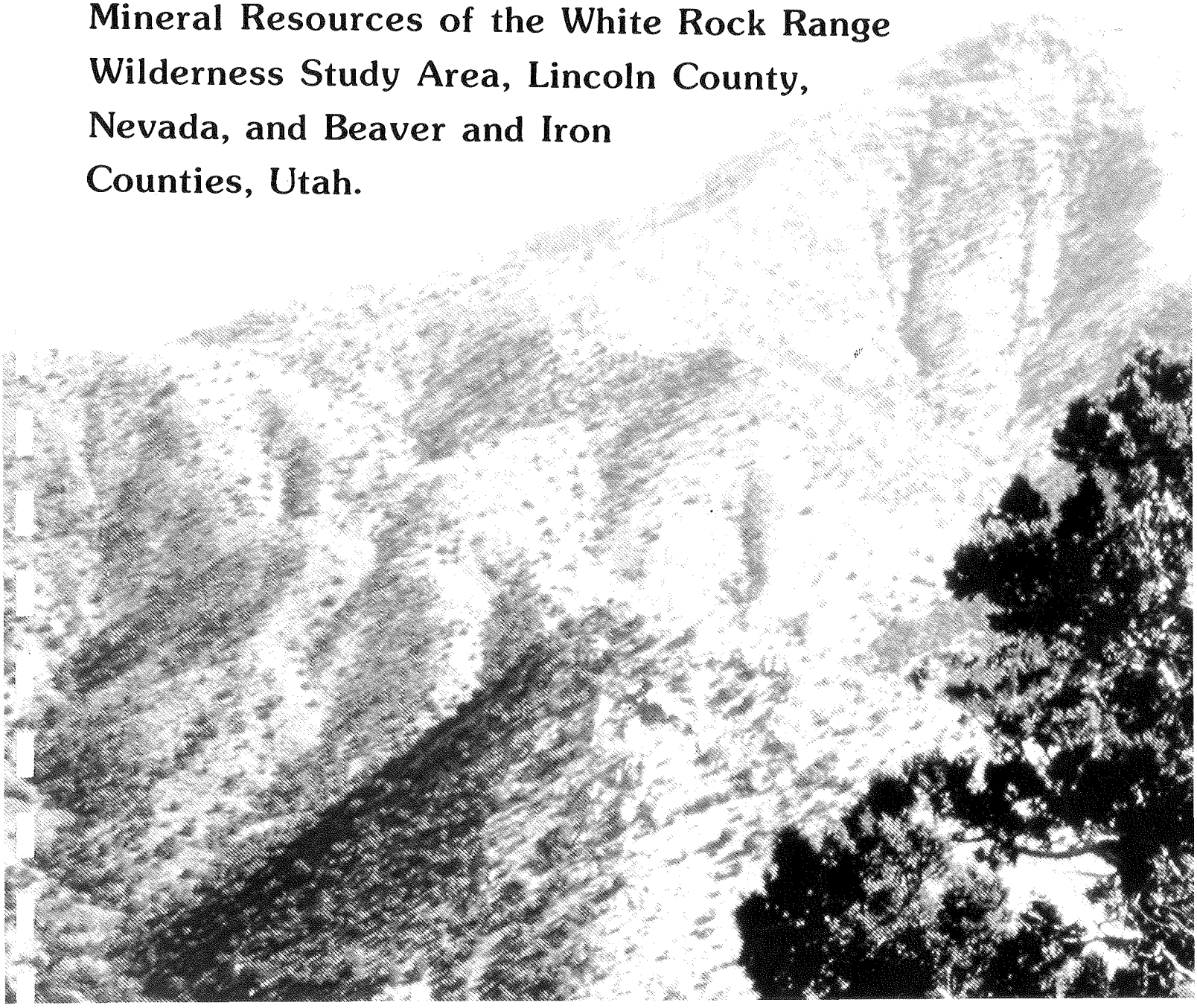
Mineral Resources of the White Rock Range Wilderness Study Area, Lincoln County, Nevada, and Beaver and Iron Counties, Utah.



BUREAU OF MINES
UNITED STATES DEPARTMENT OF THE INTERIOR

MINERAL RESOURCES OF THE WHITE ROCK RANGE WILDERNESS STUDY AREA (NV-040-202) LINCOLN COUNTY, NEVADA, AND BEAVER AND IRON COUNTIES, UTAH

by
Diann D. Gese

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Intermountain Field Operations Center, Denver, Colorado

UNITED STATES DEPARTMENT OF THE INTERIOR
Donald P. Hodel, Secretary

Bureau of Mines
Robert C. Horton

STUDIES RELATED TO WILDERNESS

Bureau of Land Management Wilderness Study Areas

The Federal Land Policy and Management Act (Public Law 94-579, October 21, 1976) requires the U.S. Geological Survey and the U.S. Bureau of Mines to conduct mineral surveys on certain areas to determine mineral values, if any, that may be present. Results must be made available to the public and be submitted to the President and the Congress. This report presents the results of a Bureau of Mines mineral survey of the White Rock Range Wilderness Study Area (NV-040-202), Lincoln County, Nevada, and Beaver and Iron Counties, Utah.

This open file report summarizes the results of a Bureau of Mines wilderness study and will be incorporated in a joint report with the Geological Survey. The report is preliminary and has not been edited or reviewed for conformity with the Bureau of Mines editorial standards. Work on this study was conducted by personnel from Intermountain Field Operations Center, Building 20, Denver Federal Center, Denver, CO 80225

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By Diann D. Gese

SUMMARY

In accordance with Public Law 94-579, a mineral survey was conducted in July 1984, to appraise the mineral resources in the White Rock Range Wilderness Study Area. The study area consists of 23,625 acres in Lincoln County, Nevada, and Beaver and Iron Counties, Utah.

Mineralized fissure veins are not known to occur within the study area, but small gold- and silver-bearing breccia veins along faults in rhyolite are exposed in a cluster of workings approximately 500 ft east of the study area. Samples taken from these veins contained from a trace to 0.10 oz gold per ton and from 0.1 to 0.2 oz silver per ton. Similar faults in the same rhyolite unit occur in the study area and similar mineral occurrences may exist along these faults. No developable resource was identified at the mineralized sites.

Oil and gas leases cover part of the study area; however, no test wells are known to have been drilled for oil and gas within or near the area. The area has been rated as having zero petroleum potential.

INTRODUCTION

In July 1984, the Bureau of Mines, in conjunction with the U.S. Geological Survey, conducted a mineral survey to investigate the mineral resources within the White Rock Range Wilderness Study Area (WSA) in southeastern Nevada and southwestern Utah. The Bureau surveys and studies mines, prospects, and mineralized areas to identify and evaluate resources. The Geological Survey studies and assesses undiscovered mineral resources based on regional geological, geochemical, and geophysical surveys. This report presents the results of the Bureau's study.

Geographic and geologic setting

The White Rock Range WSA, encompassing 23,625 acres in east-central Lincoln County, Nevada, and southwest Beaver County and northwest Iron County, Utah (fig. 1), is in the northwest-trending White Rock Mountains in the Basin and Range physiographic province. Elevations here range from over 9,000 ft at the crest of the White Rock Range to approximately 6,200 ft in Meadow Valley Wash. Access to the area is by improved and unimproved dirt roads; access within the study area is by foot and jeep trails. Ursine, Nevada, the nearest town, is approximately 12 mi southwest of the WSA.

Tertiary volcanic rocks, mostly Miocene and Oligocene welded ash-flow tuffs that have been offset by numerous northeast trending normal faults, form the bedrock in the area. Tertiary lake sediments and Quaternary alluvium and conglomerate deposits flank the volcanic rocks (Ekren and others, 1977; Toth, 1985).

Methods of investigation

Prior to the field investigation, Bureau personnel reviewed pertinent published and unpublished literature. Files at the BLM State Offices in Reno, Nevada, and Salt Lake City, Utah, were reviewed for mining claim locations, patented mining claims, and oil and gas and geothermal leases and lease applications. Lessees, mine owners, and persons having knowledge of mineral occurrences and mining activities near or in the area of the WSA were contacted.

Bureau field studies included surveying, mapping, and sampling known mines, prospects, and mineralized areas in and within 1 mi of the WSA. Several foot traverses were made within the study area in areas of known faulting and an aerial reconnaissance of the WSA was made by helicopter.

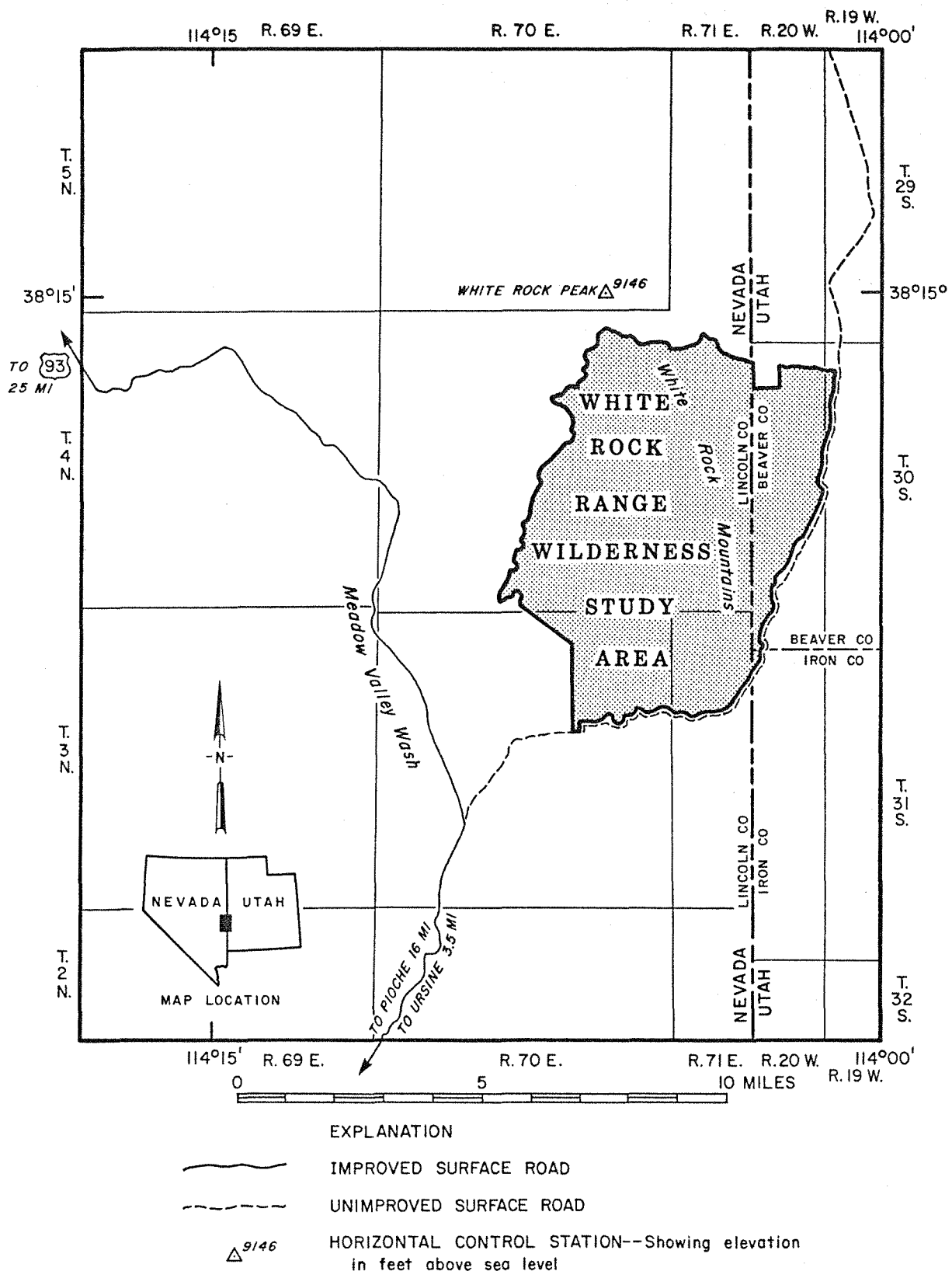


Figure 1.--Index map of the White Rock Range Wilderness Study Area, Lincoln County, Nevada, and Beaver and Iron Counties, Utah.

Fifteen chip, grab, and select samples were taken. All samples were fire assayed for gold and silver and analyzed by semiquantitative optical emission spectrographic methods for 40 elements (see appendix). Results of the assays are shown on Table 1 and complete analytical results for all samples are available for public inspection at the Bureau of Mines, Intermountain Field Operations Center, Building 20, Denver Federal Center, Denver, Colorado 80225.

Mining Activity

As of July 1984, no mining activity had taken place within the WSA and there were neither lode nor placer mining claims present. Approximately one mile south of the WSA in Iron County, Utah, gold and silver in large shear zones in the volcanic rocks were being recovered at a small cyanide heap-leach operation. The operation is known as the Bargain Mine, sec. 14, T. 31 S., R. 20 W., on the East Summit mining claims (fig. 2).

Oil and gas leases cover part of the eastern WSA, mostly within Beaver and Iron counties, Utah (fig. 2). Pliocene or Pleistocene lake beds, favorable strata for hydrocarbon accumulations, are directly east of the area in Hamlin Valley (Tschanz and Pampeyan, 1970). There was no field evidence of any geophysical surveys nor have any test wells been drilled for oil and gas within or near the study area. Sandberg (1983) concluded that the WSA has zero petroleum potential because the area consists predominantly of extrusive igneous rocks. Any hydrocarbons that may have existed within the area would have been destroyed by the high temperatures associated with the Tertiary volcanics.

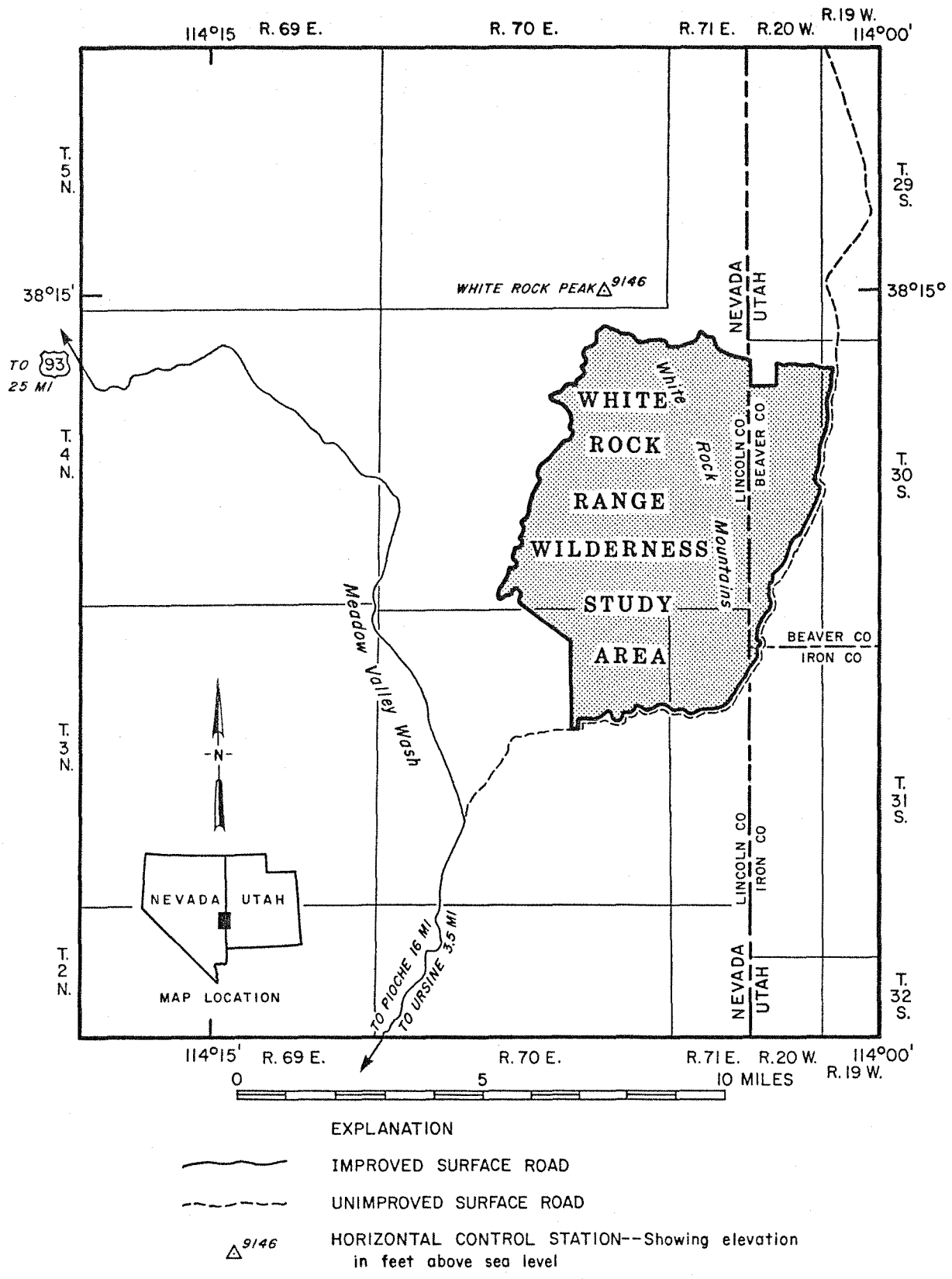


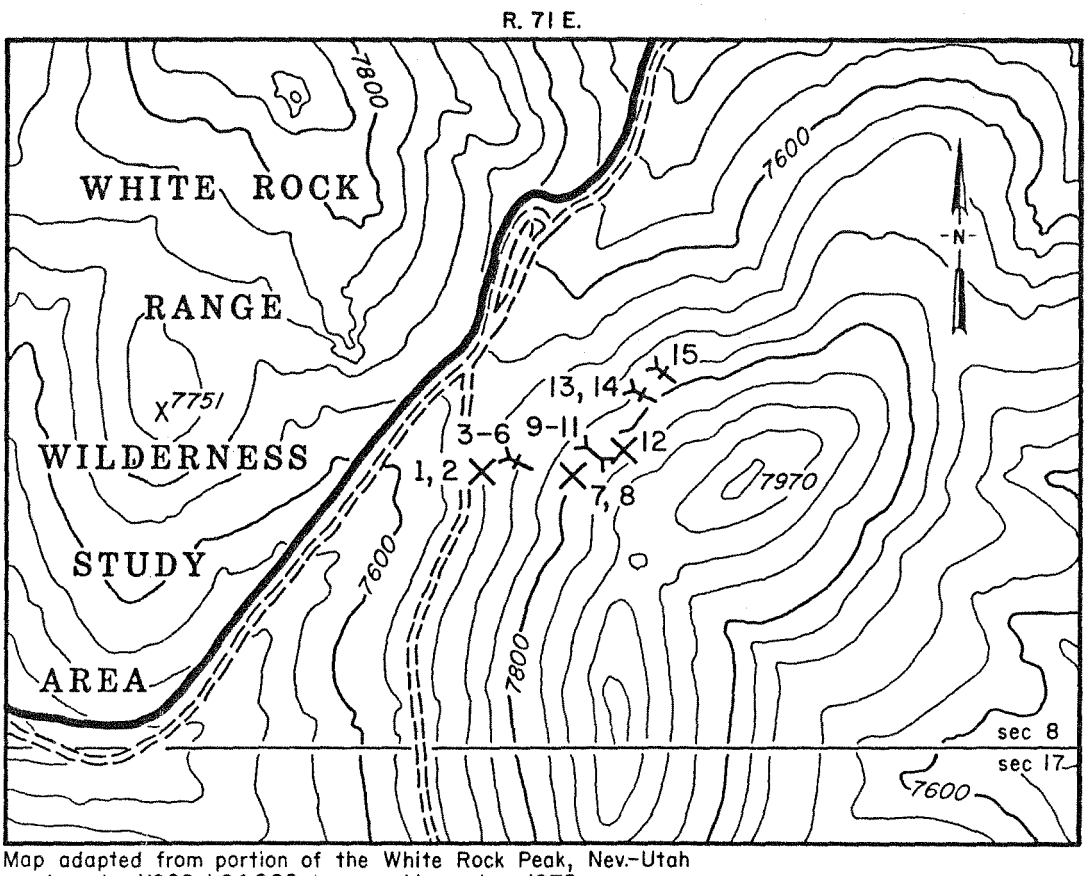
Figure 2.--Map showing mining claims and oil and gas leases within and near the White Rock Range Wilderness Study Area.

MINING DISTRICTS AND MINERAL OCCURRENCES

The White Rock Range WSA is approximately 8 mi northwest of the Stateline mining district, which is along the Utah-Nevada border. Mineral deposits in this district are gold- and silver-bearing fissure veins in silicified and iron-stained altered rhyolite or andesite (Tschanz and Pampeyan, 1970; Thomson and Perry, 1975).

Several northwest-trending, nearly vertical breccia veins in the rhyolite of the Tertiary Isom Formation (Toth, 1985) have been explored by means of 3 pits, 1 trench, and 3 caved adits approximately 500 ft east of the WSA, in sec. 8, T. 3 N., R. 71 E (fig. 3). The veins occur along faults and consist of rhyolite breccia, limonite, hematite, clay, pyrite, and manganese oxides in a quartz matrix. Quartz also occurs as boxwork structures on the surface of the vein. The structure forms a rhombohedral outline and may indicate the replacement of a carbonate. Most pyrite grains visible in hand specimen and polished section have been partially oxidized to hematite. Feldspar phenocrysts in the rhyolite breccia have been altered to clay. Manganese oxides and hematite form veinlets throughout the vein. Mineralization is similar to that described by Thomson and Perry (1975) in the Stateline mining district. Judging from the size of the dumps at the adits, the underground workings probably are not extensive.

Fifteen samples were taken by Bureau personnel from surface exposures of the veins and from the dumps of the workings (table 1). Thirteen of the 15 samples contain from a trace to 0.10 oz gold per ton; five contain from 0.1 to 0.2 oz silver per ton. Barium, up to 0.3 percent, was present in all samples and zinc of 200 ppm in one sample, were the only other elements in high concentrations. No resource was identified at the site. More detailed



Map adapted from portion of the White Rock Peak, Nev.-Utah quadrangle, USGS 1:24,000 topographic series, 1972.

0 600 1200 1800 2400 3000 3600 FEET

CONTOUR INTERVAL 40 FEET

EXPLANATION

APPROXIMATE BOUNDARY OF THE WHITE ROCK RANGE WILDERNESS STUDY AREA

UNIMPROVED ROAD

SURFACE OPENINGS--Showing sample numbers

X1, 2 Prospect pit

3-6 Inaccessible adit

9-11 Trench

7600 INDEX CONTOUR--Showing elevation in feet above sea level

INTERMEDIATE CONTOUR

X7751 CHECKED SPOT ELEVATION--Showing elevation in feet above sea level

7970 UNCHECKED SPOT ELEVATION--Showing elevation in feet above sea level

Figure 3.--Map showing sample locations 1-15, White Rock Range Wilderness Study Area.

geological mapping to delineate the size of the vein, additional sampling, and eventually a drilling program would be needed to determine whether a gold and silver resource exists within the area. No mineralized veins were found within the study area boundaries; however, similar country rock and faulting does occur in the WSA and there is a possibility that other veins containing gold and silver could exist along these faults (fig. 4).

CONCLUSIONS

Neither evidence of past mining activity nor resources were identified in the WSA during this study. Small gold- and silver-bearing breccia veins, occur approximately 500 ft east of the WSA. Surface samples from the fissure veins and the dumps contained from a trace to 0.10 oz gold per ton and from 0.1 to 0.2 oz silver per ton. No veins were found within the WSA; however, similar country rock and faulting exists in the study area and there is a possibility of a similar mineral occurrence existing along one or more of these faults.

Oil and gas leases cover part of the WSA; however, no test wells are known to have been drilled for oil and gas within the study area and the area has been rated as having zero petroleum potential.

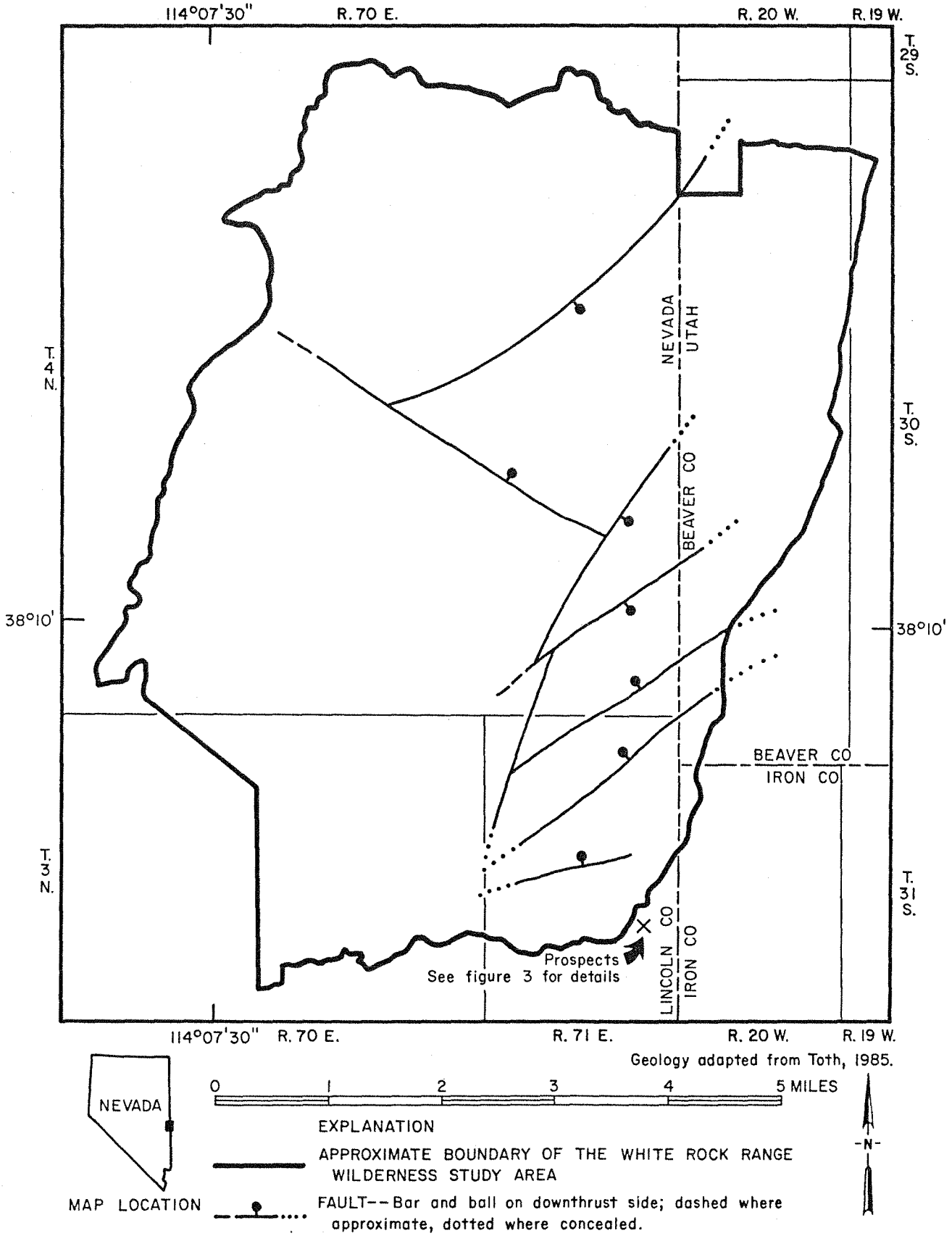


Figure 4.--Map showing normal faults within the White Rock Range Wilderness Study Area.

Table 1.--Analytical data and descriptions of samples 1-15, White Rock Range, Nevada.
[Au, gold; Ag, silver; ---, assayed for but not detected; n.a., not applicable; detection limit for gold is 0.005 oz/ton and 0.05 oz/ton for silver]

Sample			Assay data		
No.	Type	Length (feet)	Au oz/ton	Ag	Remarks
1	chip	4.0	0.02	---	Altered rhyolite; abundant limonite and hematite, slickensides, chalcedony.
2	select	n.a.	.01	---	Dump; altered rhyolite; abundant limonite and hematite, chalcedony, manganese oxides.
3	grab	5-ft-grid	.02	0.2	Dump; brecciated rhyolite; limonite and hematite.
4	chip	5.0	.01	---	Fissure vein in rhyolite; abundant clay, limonite, small hematite veins.
5	chip	1.5	---	---	Brecciated rhyolite; clay, limonite, and hematite.
6	grab	5-ft-grid	.02	---	Dump; brecciated rhyolite and quartz veinlets.
7	chip	5.0	.02	.2	Brecciated rhyolite; abundant limonite and hematite veins.
8	select	n.a.	.02	.1	Dump; altered, brecciated rhyolite; drusy quartz, abundant limonite and hematite veins.
9	chip	4.0	.01	.1	Vuggy quartz veins up to 0.5 in. thick in altered rhyolite.
10	chip	2.0	.01	.1	Alteration zone in rhyolite; limonite and hematite, secondary quartz.
11	chip	3.0	.01	---	Vuggy quartz veins in rhyolite.
12	chip	3.4	trace	---	Altered, brecciated fissure vein in rhyolite; abundant limonite and hematite, small quartz veins.
13	chip	1.2	.02	---	1.2-ft-wide fault; clay, limonite, and hematite.
14	select	n.a.	---	---	Dump; altered and bleached rhyolite; quartz.
15	select	n.a.	.10	---	Dump; brecciated, altered rhyolite; vuggy quartz, quartz veins, abundant limonite and hematite.

REFERENCES

Ekren, E. B., Orkild, P. P., Sargent, K. A., and Dixon, G. L., 1977, Geologic map of Tertiary rocks, Lincoln County, Nevada: U.S. Geological Survey Miscellaneous Investigations Series Map I-1041, scale 1:250,000.

Sandberg, C. A., 1983, Petroleum potential of wilderness lands, Nevada: U.S. Geological Survey Miscellaneous Investigations Series Map I-1542, scale 1:100,000.

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Toth, Margo, 1985, Geologic map of the White Rock Range Wilderness Study Area, Lincoln County, Nevada, and Beaver and Iron Counties, Utah: U.S. Geological Survey, Denver Federal Center, Bldg. 25, unpublished map.

Tschanz, C. M. and Pampeyan, E. H., 1970, Geology and mineral deposits of Lincoln County, Nevada: Nevada Bureau of Mines Bulletin 73, 188 p.

APPENDIX--Semiquantitative optical emission spectrographic analysis detection limits, U.S. Bureau of Mines, Reno Research Center.

Element	Detection limit (percent)	Element	Detection limit (percent)
Ag	0.002	Mo	0.0001
Al	.001	Na	.3
As	.01	Nb	.007
Au	.002	Ni	.0005
B	.003	P	.7
Ba	.002	Pb	.001
Be	.0001	Pt	.0001
Bi	.01	Re	.0006
Ca	.05	Sb	.06
Cd	.0005	Sc	.0004
Co	.001	Si	.0006
Cr	.0003	Sn	.001
Cu	.0006	Sr	.0001
Fe	.0006	Ta	.02
Ga	.0002	Te	.04
K	2.0	Ti	.03
La	.01	V	.005
Li	.002	Zn	.0001
Mg	.0001	Zr	.003
Mn	.001	Y	.0009

These detection limits represent an ideal situation. In actual analyses, the detection limits vary with the composition of the material analyzed. These numbers are to be used only as a guide.

Area Name, Number, Classification, Size

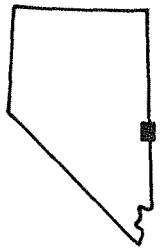
White Rock Range Wilderness Study Area
NV-040-202
23,625 acres

State

Nevada

BLM Resource Area

Ely



Mineral/Commodity Significance

Gold and silver-bearing veins 500 ft east of the study area; no mineralized veins were found in the study area.

Recorded Production

None

Mining Districts, Mines, and Claims

No claims within WSA. Stateline mining district southeast of study area; small cyanide heap leach known as the Bargain Mine, 1 mi south of study area on the East Summit claims.

Recent Company Activity

None.

Mineral Setting

Breccia veins along normal faults in rhyolite.

Recommendations

In order to further explore and evaluate the mineralized veins, detailed geological mapping, additional sampling, and a drilling program would be needed.

References

Ekren, E. B., Orkild, P. P., Sargent, K. A., and Dixon, G. L., 1977, Geologic map of Tertiary rocks, Lincoln County, Nevada: U.S. Geological Survey Miscellaneous Investigations Series Map I-1041, scale 1:250,000.

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