This open file report summarizes the results of a Bureau of Mines wilderness study and will be incorporated in a joint report with the U.S. Geological Survey. The report is preliminary and has 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.
STUDIES RELATED TO WILDERNESS
Bureau of Land Management Wilderness Study Area

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 their mineral resource potential. Results must be made available to the public and be submitted to the President and the Congress. This report presents the results of a mineral survey of the Emmett Wash Wilderness Study Area, Coconino County, Arizona.
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## ILLUSTRATIONS

- **Plate 1.** Mines and prospects map of the Emmett Wash Wilderness Study Area, Coconino County, Arizona
- **Figure 1.** Emmett Wash Wilderness Study Area
INTRODUCTION

Comprising 12,913 acres in Coconino County, Arizona, the Emmett Wash study area is contiguous with the Paria Canyon-Vermilion Cliffs study area (Bush and Lane, 1980).

The study area, about 14 air miles southwest of Page, Arizona, lies between Marble Canyon and U.S. Highway 89A; Marble Canyon is the extreme eastern portion of the Grand Canyon.

Two dominant topographic features are in the area, Vermilion Cliffs and Marble Canyon. Forming a picturesque escarpment to the north, Vermilion Cliffs is of Navajo Sandstone with shear walls several hundred feet high. Grand Canyon National Park abuts the study area on the south along Marble Canyon, a shear-walled gorge with the walls dropping several hundred feet to the Colorado River.

No mining has been conducted within the study area. However, several locations north of Highway U.S. 89A have been mined, and a small prospect (Universal) lies about 2.5 miles west of the study area (Bush and Lane, 1980).

MINING DISTRICTS AND MINERALIZED AREAS

No mining districts are in the study area. In the 1950's intense prospecting for uranium occurred along Vermilion Cliffs; several mines are located within a few miles of the study area. The mineralized areas are in the Shinarump and Petrified Forest members of the Chinle Formation, mostly in the Shinarump. Because these units are not within the study area, preliminary indications are that uranium is absent.
Figure 1--Emmett Wash Wilderness Study Area
The Jasper mine consists of a 40-foot (12.2-m) adit in the SW 1/4 sec. 27, T. 39 N., R. 6 E., (pl. 1) (samples 13-17) about 300 feet (91 m) north of U.S. 89A and about 1/4 mile (0.4 km) east of Cliff Dwellers Lodge.

The adit was driven N. 6° E. in poorly sorted Shinarump conglomerate of rounded quartzite pebbles and quartz sand. On the walls near the floor, siltstone is interbedded with mudstone (Moenkopi). The Moenkopi contains minor copper staining. The mudstone and siltstone comprise the lower 29 inches (74 cm) of the wall, and conglomerate comprises the upper 36 inches (91 cm). Sample 13 (pl. 1), taken in the mudstone and siltstone, contains 0.018 percent U₃O₈, and sample 14 taken directly above in the conglomerate contains no U₃O₈. Sample 15, taken above the siltstone in the lower portion of the wall in indurated conglomerate, contained 0.019 percent U₃O₈. Sample 16, taken above sample 15 in poorly consolidated conglomerate, contained 0.135 percent U₃O₈. Here, the conglomerate was composed of poorly sorted quartz and quartzite pebbles, small siltstone lenses, and some copper staining. Sample 17 taken outside the adit adjacent to the portal in the Moenkopi just below the contact, assayed 0.085 percent U₃O₈.

ASSESSMENT OF MINERAL-RESOURCE POTENTIAL

Mineral-resource potential for the Emmett Wash study area is extremely low because of lack of mineral-bearing horizons such as the Shinarump and Petrified Forest Member of the Chinle Formation.

West of the Kaibab Plateau are several breccia-pipe collapse-type structures; some containing copper and uranium. Stratigraphically, these structures are found below the Kaibab Limestone. Perhaps these structures could be found at depth in the Emmett Wash study area since the study area is primarily Kaibab Limestone. However, there is no evidence at this time that any such features exist in the study area.
REFERENCES


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Petersen, R. G., 1960, Detrital-appearing uraninite grains in the Shinarump Member of the Chinle Formation in northern Arizona: Economic Geology, v. 55, no. 1, p. 138-149.

