

**GEOLOGIC MAP OF THE
PAINTED ROCK MOUNTAINS,
MARICOPA COUNTY, ARIZONA**

by

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Open-File Report 93-7

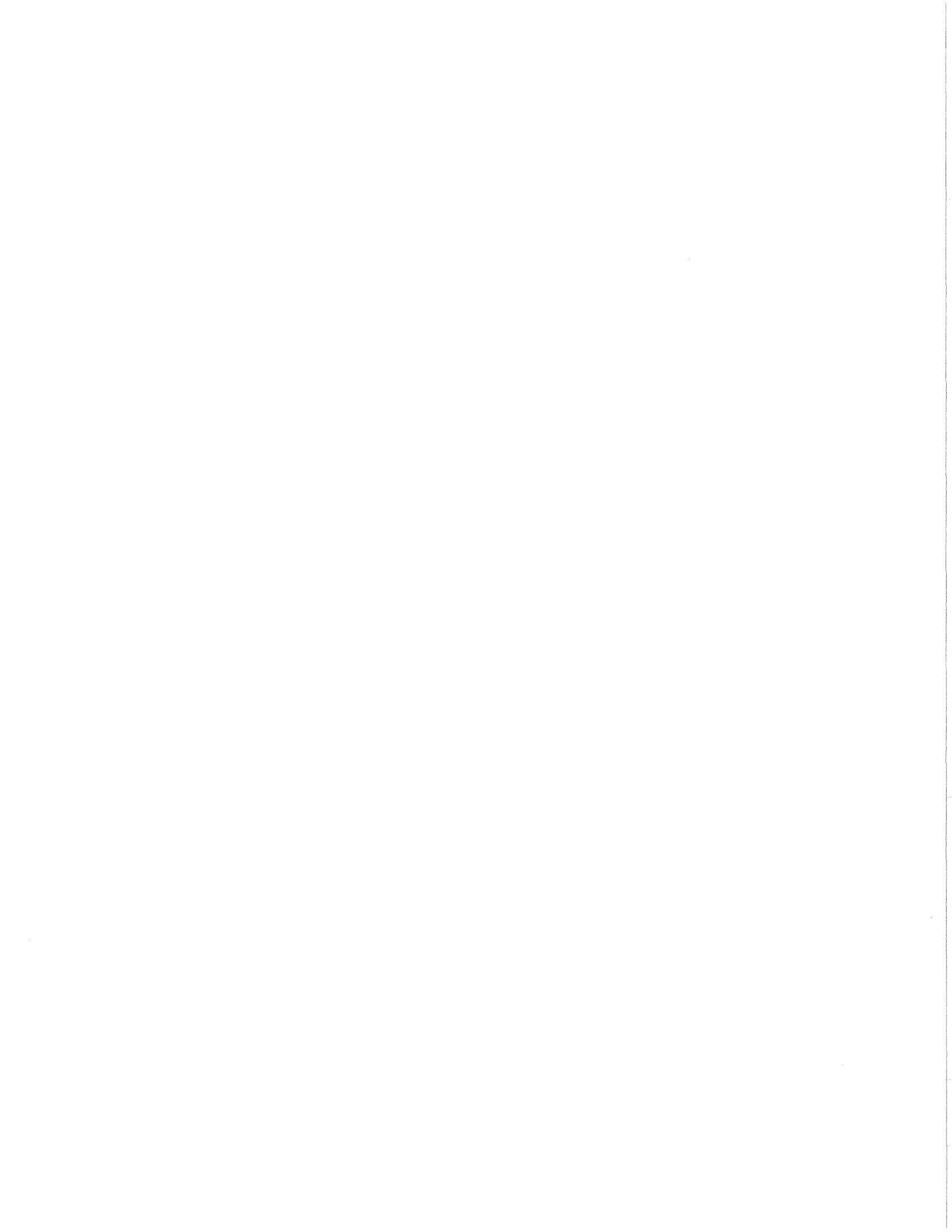
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Includes map, scale 1:24,000, and 5 page text.

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This report is preliminary and has not been edited
or reviewed for conformity with Arizona Geological Survey standards



INTRODUCTION

The Painted Rock Mountains are about 15 miles west of the town of Gila Bend in southwestern Maricopa County, Arizona (Fig. 1). The narrow north-south trending mountain range is approximately 12 miles long and 2 to 4 miles wide. The range is easily accessible by use of the paved Painted Rock Road which crosses the historic Butterfield Stage Route (once the Gila Trail and the route followed by the Mormon Battalion in 1846), and extends northward to Painted Rock Dam. The study area encompasses parts of the following 1:24,000 scale U.S. Geological Survey topographic maps: Citrus Valley West, Theba, Dendora Valley, and Sentinel NE. Bedrock consists mostly of Miocene intermediate to felsic volcanic rock that has been intruded by a granitic pluton and is overlain by basalt (Plate 1; Fig. 2).

Field work during February and March, 1993, coincided with filling of the Painted Rock Reservoir to peak capacity and overflow of the spillway (the first time since the dam was constructed). The high water level is marked on Plate 1. The nomenclature for the rock descriptions was adopted and modified from both the U.S. Army Corps of Engineers Painted Rock Dam 1987 Red Book report and U.S. Geological Survey Open-File Report 87-347.

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PREVIOUS INVESTIGATION

Previous geologic studies of the study area include reconnaissance surveys incorporated into the State geologic map by Wilson and others (1969) and Reynolds (1988). A slightly more detailed survey of the southern Painted Rock Mountains was completed as part of the Ajo 1° x 2° Quadrangle (Gray et al., 1987). The Woolsey Peak Wilderness Area directly north of the study area was mapped at 1:48,000 scale by Peterson and others (1989) and includes the northeastern corner of the study area.

GEOLOGIC SETTING

The Painted Rock Mountains are within the Basin and Range physiographic province. They are characterized by low to moderately high hills surrounded by aprons of alluvium. Most of the bedrock consists of felsic to intermediate flows and pyroclastic rocks. Locally, the felsic rocks are interbedded with andesitic basalt and basaltic andesite. In the northern half of the range the rocks dip 6° to 20° to the northeast. In the central mountains they dip about 20° to the northwest, and in the south they dip 30° to 40° to the southwest. On a regional scale the mountain range forms a broad anticline trending about N30°W and plunging 10° northwest.

A Tertiary granite to granodiorite pluton intrudes volcanic rocks in the north central part of the range, and it is finer-grained and rich in epidote near its intrusive contact. Locally, there are rare exposures of nonfoliated dark green hornblende gabbro within the pluton.

Tertiary basalt and andesitic basalt unconformably overlie the plutonic and felsic volcanic rocks. They form northwest-dipping dip slopes in the central part of the range and northeast-dipping outcrops north of Painted Rock Dam.

Voluminous basalt flows of the Sentinel Volcanic Field border the west side of the range. A small basaltic shield volcano, probably the same age as the Sentinel Volcanic Field, outcrops on the northeast side of the range and overlies flat-lying Pliocene to Quaternary sediments.

STRUCTURE

Few faults are visible. Those that are dip moderately to steeply to the northeast and strike approximately N30°W. Faulting appears to be concentrated at the north end of the range at Painted Rock Dam and at the south end of the range. At Painted Rock Dam there are several closely spaced northeast- and southwest-dipping faults bounding small, narrow fault blocks (see Plate 5, U.S. Army Corps of Engineers, 1987) and Plate 1 (this report). Possibly, the Gila River cut through the range in this area of faulting and fracturing because the rocks were more easily eroded than elsewhere in the range. Since the overflow of the spillway, several other northeast-trending faults have been discovered in the spillway. However, they were not mapped because their displacements were less than two meters. In the south, moderately northeast-dipping normal faults bound fault blocks with steeply southwest-dipping strata.

Although the plutonic/volcanic contact is clearly intrusive along the southern half of the contact, the northern half is rather linear and dips steeply to the northeast. The contact there is mostly obscured by slope wash but its character suggests a fault. The contact is also parallel to a fault cutting through the Rowley Mine to the northeast.

MINERALIZATION

There are three mining regions in the Painted Rock Mountains. The first, the Rowley mine, is located on the northwest side of the range within the Painted Rock Mining District as defined by Keith and others (1983). The second is a group of prospects about one mile north of Painted Rock Dam. The third is an unnamed group of prospects on the southwest side of the range.

The Rowley mine, known also as Reliance mine, Rainbow mine and Theba mine, was opened in 1909 and has been worked occasionally since. An andesite porphyry dike follows a fault zone striking N30°W to N37°W and dipping 37° to 50° degrees east that cuts andesite and dacite. A series of closely spaced mineralized veins that fill the fault zone reach a total thickness of up to 13 meters. According to Wilson and Miller (1974) primary mineralization consisted of barite, quartz, fluorite, galena, pyrite and possibly chalcopyrite and sphalerite. The chalcopyrite and sphalerite have been almost completely removed or altered by weathering. Examination of the mine dump revealed the minerals wulfenite, cerargyrite, vanadinite, ecdemite and colloidal chrysocolla (Hicks, 1979). Old assays show copper, gold and some lead (Hicks, 1979, Kirkemo, 1965, King, 1969, Brobst, 1969). The veins cannot be traced very far and seem to outcrop only on a small isolated hill. The workings include two inclined shafts and one vertical shaft, which extend down between 100 and 280 feet, with several adits.

North of Painted Rock Dam there is one large pit and a few smaller pits dug into basalt and light blue-gray pumice. Apparently, the area was mined for pumice (Peterson et al., 1989). No other mineralization is visible. Apache Tears have also been mined from the south wall of the spillway in glassy, tuffaceous rocks.

The smaller series of prospects on the southwest side of the range consists of two shafts, the deepest about 40 feet deep, and a few smaller pits. They were dug along a fracture or fault striking N35°W and dipping 52° north. The visible mineralization is chrysocolla and platy crystals of hematite.

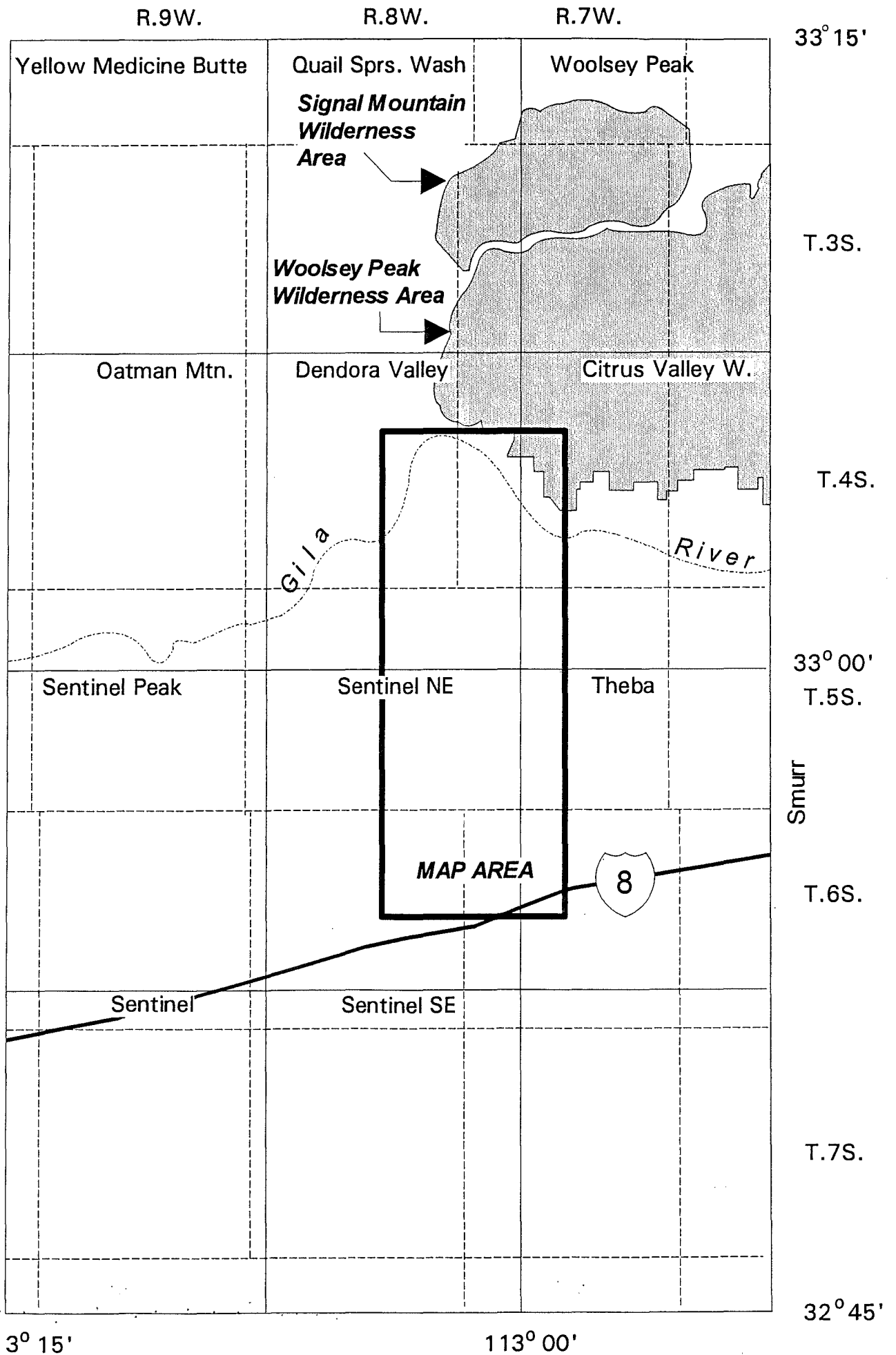
ACKNOWLEDGEMENTS

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FIG. 1



Correlation of Map Units

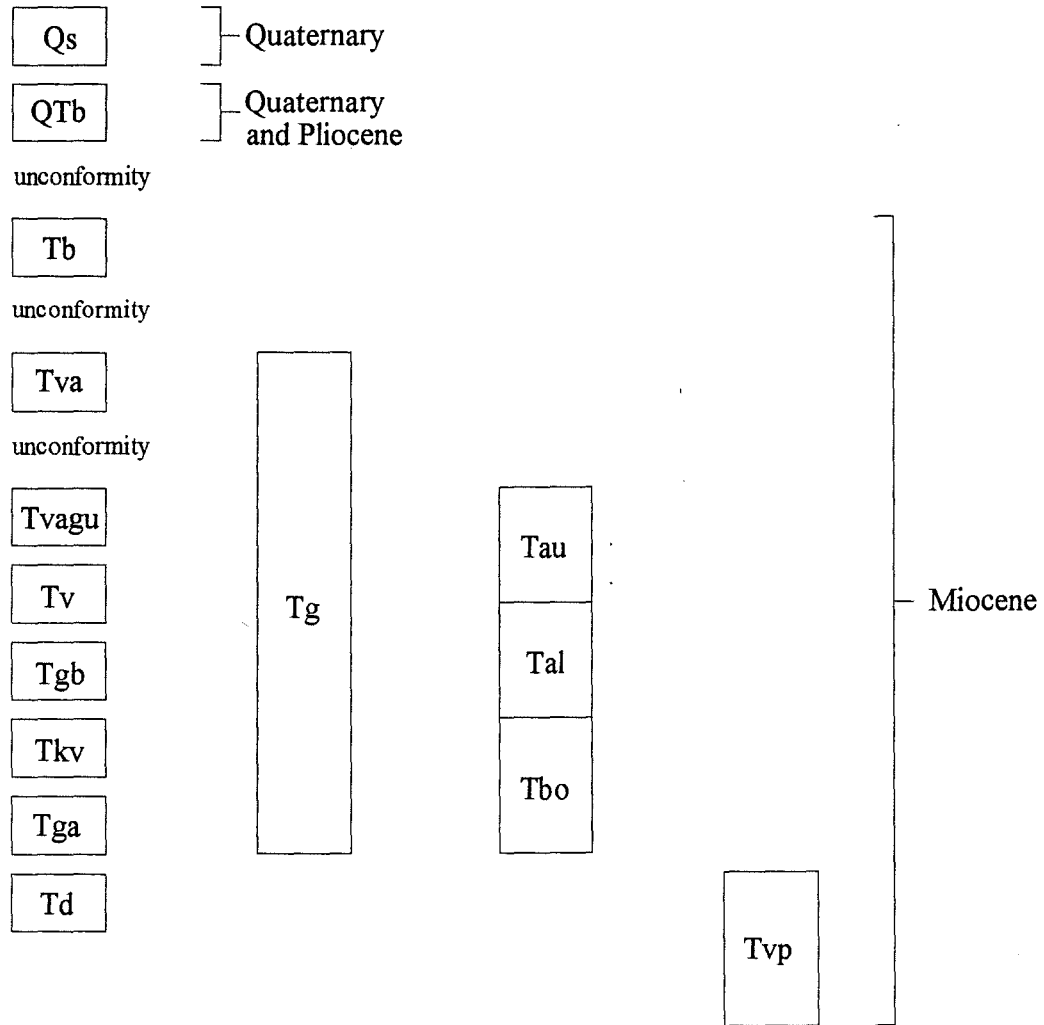


Fig. 2

