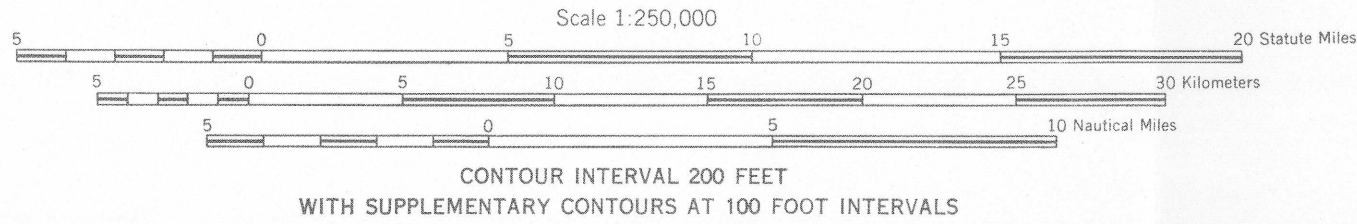


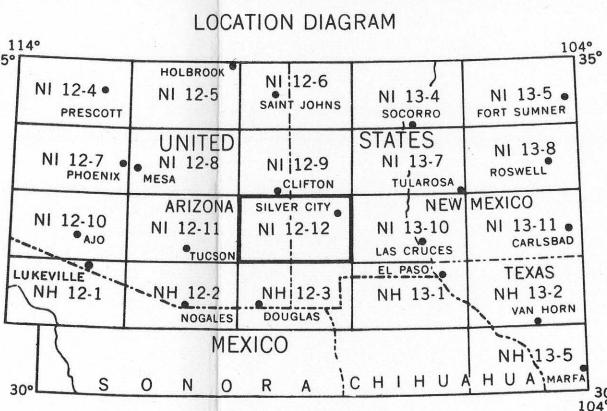
Base from U.S. Geological Survey, 1970

Data mapped by Gary L. Raines in 1979



PRELIMINARY MAP SHOWING LIMONITIC AREAS IN THE SILVER CITY 1° X 2° QUADRANGLE, ARIZONA AND NEW MEXICO

By
Gary L. Raines
1984



- EXPLANATION
- Anomalous limonitic area interpreted from a Landsat color-ratio composite image. Not evaluated in the field
 - Area where vegetation completely obscures rock and soil from Landsat observation

INTRODUCTION

This map is a part of a folio of maps of the Silver City 1° x 2° quadrangle, Arizona and New Mexico, prepared under the Conterminous United States Mineral Assessment Program. As a part of this study Landsat images were used to map the anomalous areas of limonitic materials as a guide to hydrothermal alteration which, in turn, acts as a guide to mineralized systems. The term limonite, defined by Blanchard (1968) as a general term for undifferentiated ferric oxide precipitates, is here modified to include any material with the typical spectral reflectance properties of the ferric oxide minerals such as hematite and goethite, as defined by Hunt (1980). The map shows anomalous areas of limonitic materials that might be associated with mineralization.

The Silver City quadrangle is located in the Basin and Range Province of the southwestern United States. The area is characterized by large northwest-trending, sediment-filled basins surrounding tilted blocks of metamorphic, igneous, and sedimentary rocks.

METHODS

The methods used for identification are based on the Landsat color-ratio composite technique of Rowan and others (1974). Color-ratio composite images of the Landsat data, produced by digital image processing (Raines and others, 1978), are interpreted by inspection and by application of the Munsell-classification procedure of Raines (1977); Landsat images 825117034 and 825117041 were used. The Munsell-classification procedure allows for simple classification of specific colors in a Landsat color image, such as the characteristic green color of limonitic areas in the color-ratio composite image used here. A thematic map of limonitic areas is produced by this procedure. Combining this thematic data with the visual inspection of the color-ratio composite results in a thorough and accurate mapping of the anomalous limonitic areas where the rocks and soil are not obscured from Landsat observation by vegetation.

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