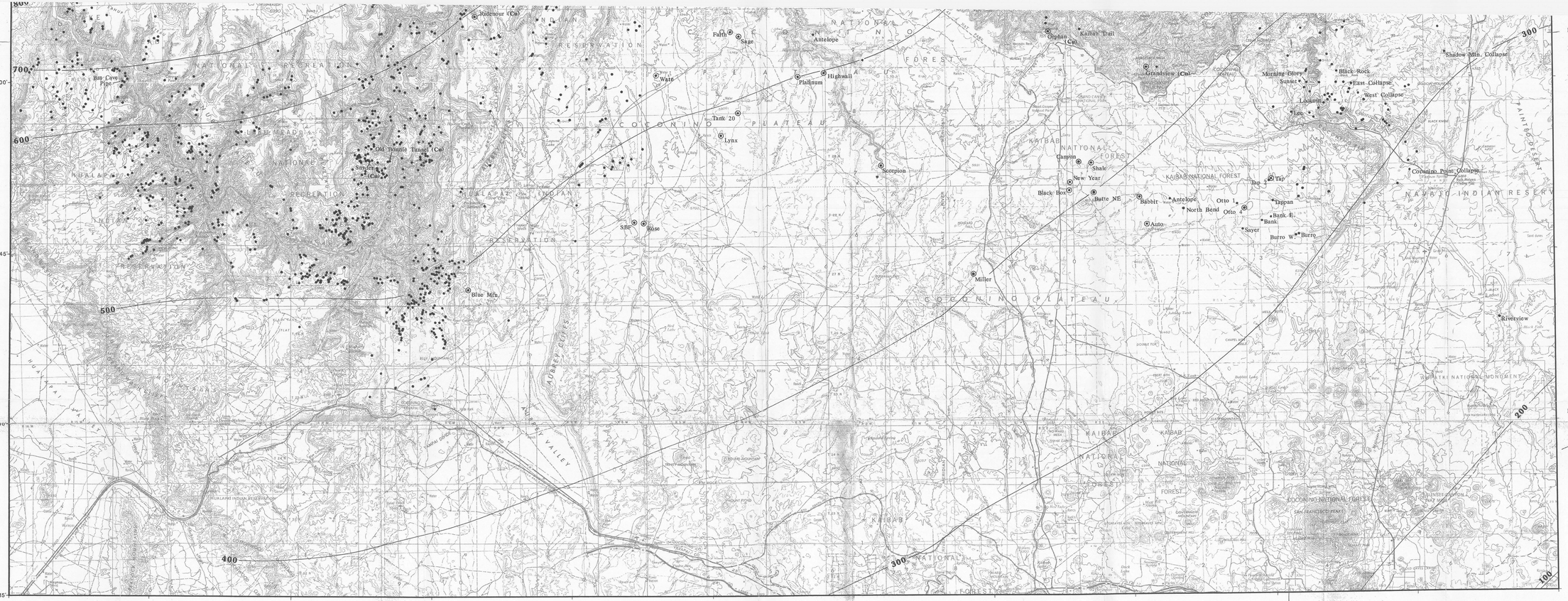

Base from U.S. Geological Survey, 1:250,000
Flagstaff, Grand Canyon, Marble Canyon,
and Williams, Arizona, 1954

This report is preliminary and has not been reviewed for conformity with U.S. Geological Survey editorial standards and stratigraphic nomenclature.

MAP LOCATION

CONTOUR INTERVAL 200 FEET
WITH SUPPLEMENTARY CONTOURS AT 100 FOOT INTERVALS

MAP OF LOCATIONS OF COLLAPSE-BRECCIA PIPES IN THE GRAND CANYON REGION OF ARIZONA

By

H.B. Sutphin and K.J. Wenrich

1989

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EXPLANATION

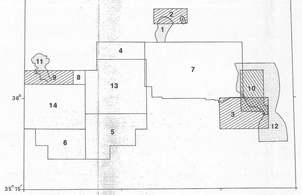
● **Breccia Pipe**–May contain exposed breccia outcrop, or when located plateau surface, consist of a circular depression with inward-dip beds

⊙ **Mineralized Breccia Pipe**–Breccia pipe containing ≥1 vertical foot of percent U_3O_8 or equivalent radioactivity

Hack **Name of Breccia Pipe**–Pipes are generally named by mining compan personnel. Most of the pipes that lack a name are either with Grand Canyon itself, or on Reservation land, and are thus wit from mineral entry

Ridenour (Cu) **Historic mine**–Late 1800's to early 1900's mine or prospect within a pipe. Mined or explored primarily for copper. Pipe structure unknown at the time.

300 **Isopach**–Thickness contours for the Redwall Limestone at 100 ft in (from Peirce and others, 1970, pl. 12A)



INDEX OF SOURCES SHOWING PIPE LOCATIONS

1–Billingsley, personal commun.
2–Billingsley and others, 1983
3–Billingsley and others, 1985
4–Billingsley and Huntoon, 1983
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7–Huntoon and others, 1986
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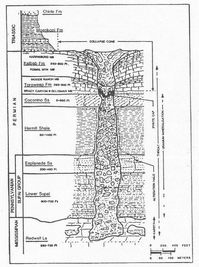

Figure 1. Schematic cross section of a breccia pipe and general stratigraphy of the host rocks (from Krewedl and Carisey, 1986).