DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

MISCELLANEOUS FIELD S
MAP MF-699


Base from U.S. Geological Survey, 1956-69

Data as of June 1975

Scale 1:250,000

20 Statute Miles

30 Kilometers

15 Nautical Miles

CONTOUR INTERVAL 200 FEET
WITH SUPPLEMENTARY CONTOURS AT 100 FOOT INTERVALS

TRANSVERSE MERCATOR PROJECTION

1955 MAGNETIC DECLINATION FOR THIS SHEET VARIES FROM 14°45' EASTERLY FOR THE CENTER OF THE WEST EDGE TO 14°00' EASTERLY FOR THE CENTER OF THE EAST EDGE. MEAN ANNUAL CHANGE IS 0°03' WESTERLY

## EXPLANATION

Areas inferred to be underlain by landslide deposits resulting from landsliding, avalanching, block gliding, debris sliding or flowing, earthflows, mudflows, rocksliding, rockfalls, rotational slides, slab or flake sliding, slumping, talus accumulation, and translational sliding. Rock glacier deposits, colluvium, and solifluction deposits are included in some areas. Some till is mapped with landslide deposits because distinguishing these two deposits from one another is difficult. Furthermore, in some areas till has failed by landsliding and other types of mass movements. Movement within the deposits varies from none to rapid; rates of movement may also be variable in any given landslide within the same year. Ages of deposits range from early Pleistocene to Holocene.

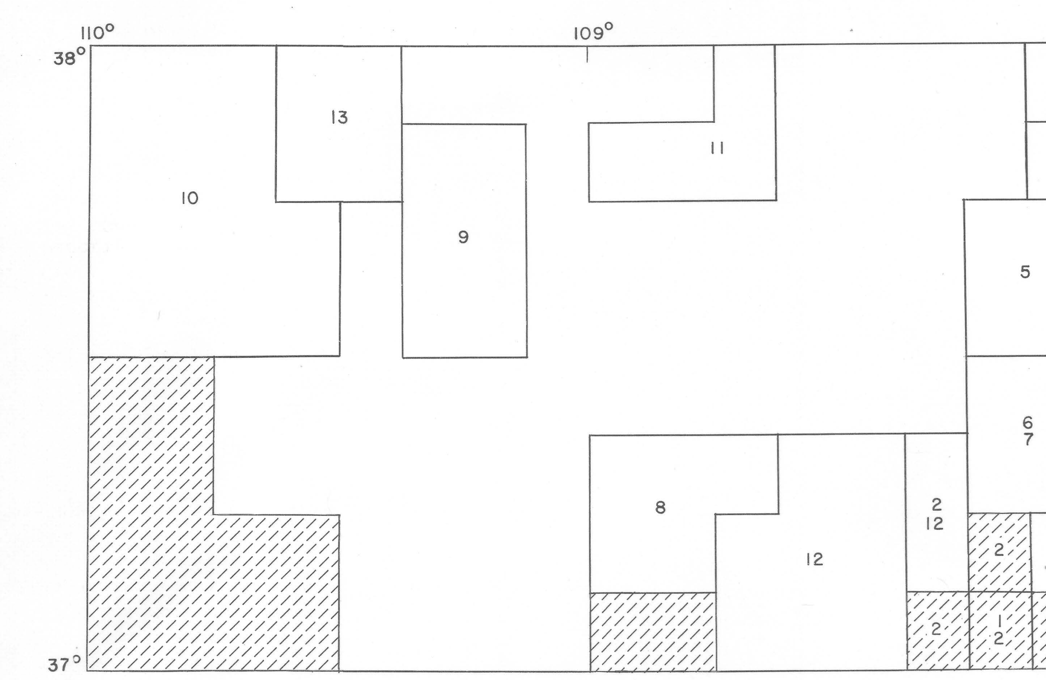
## FACTORS AFFECTING MAP ACCURACY*

Landslide deposits that formed since the aerial photographs were taken are not shown. Landslides are more difficult to recognize in heavily forested areas and consequently such areas are less accurately mapped than nonforested areas. Map accuracy varies according to the quality of aerial photographs used. Haze, cloud cover, poor sun angle, and shadows make photointerpretation difficult. Mapping of landslides by photointerpretation presents many problems such as: distinction between terrace-shaped slump-type landslide deposits and alluvial terrace deposits where both are adjacent to stream courses; recognition of landslide deposit boundaries (the upslope boundary is commonly defined by an easily recognized scarp but the toe or downslope boundary is seldom well defined and thus is difficult to locate exactly); recognition of stable masses of bedrock surrounded by landslide deposits, especially where only a small knob projects through; and separation of landslide deposits from glacial deposits.

## SUGGESTIONS FOR MAP USERS*

This map should not be used to determine th ability of future landsliding, as geologic climatic changes during the past few hundre thousand years have altered slope stability because this map does not provide informati regarding composition and type of movement individual landslide deposits. Therefore, map is not a substitute for careful detaile large-scale site investigations by engineer geologists and soils engineers. Areas susc tible to landslide and related activity sho be carefully studied before any development begins. This map has been prepared to prov a regional context for interpreting detaile site investigations and should be used in conjunction with topographic, slope, surfic bedrock, and soils maps, aerial photographs and other available information. The limit tions of this map should be obvious inasmuc as one inch (2.54 cm) on the map equals approximately 3.9 miles (6.4 km) on the gro

*Modified from Nilsen, T. H., 1972, Preliminary photointerpretation map of landslide and other surficial deposits of the Mount Hamilton quadrangle and parts of the Mount Boardman and San Jose quadrangles, Alameda and Santa Clara Counties, California: U.S. Geol. Survey Misc. Field Studies Map MF-339.




## SOURCES OF INFORMATION

Vertical and oblique aerial photographs covering the entire quadrangle at various scales (1:60,000 and larger) and in various years were interpreted by R. B. Colton in 1975. Most aerial photographs used are small-scale (1:60,000) Army Map Service Project 137AV, 1954-55 (available from U.S. Geological Survey).

Area of no known landslides and related deposits, or area of minor landslides and related deposits too small to be shown at the present scale.

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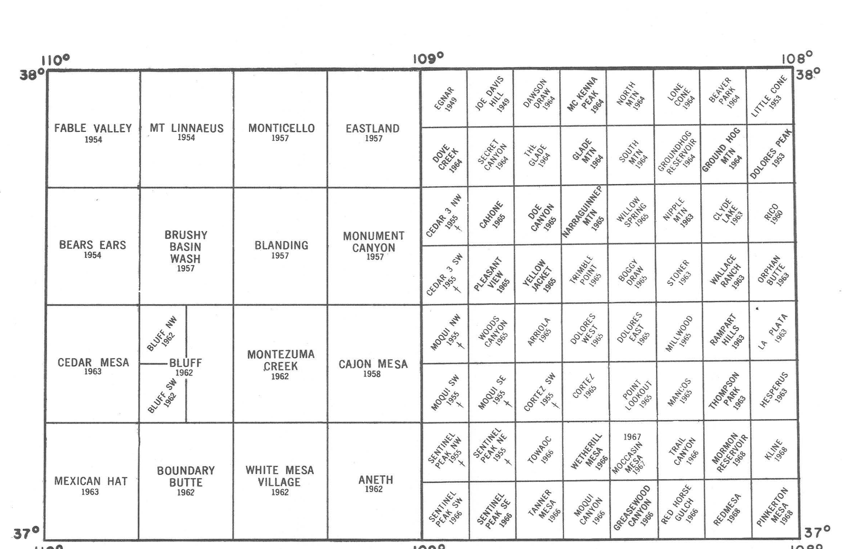
12. Wanek, A. A., 1954, Geologic map of the M Verde area, Montezuma County, Colorado: Geol. Survey Oil and Gas Inv. Map OM-152.
13. Witkind, I. J., 1964, Geology of the Aba Mountains area, San Juan County, Utah: U Geol. Survey Prof. Paper 453.

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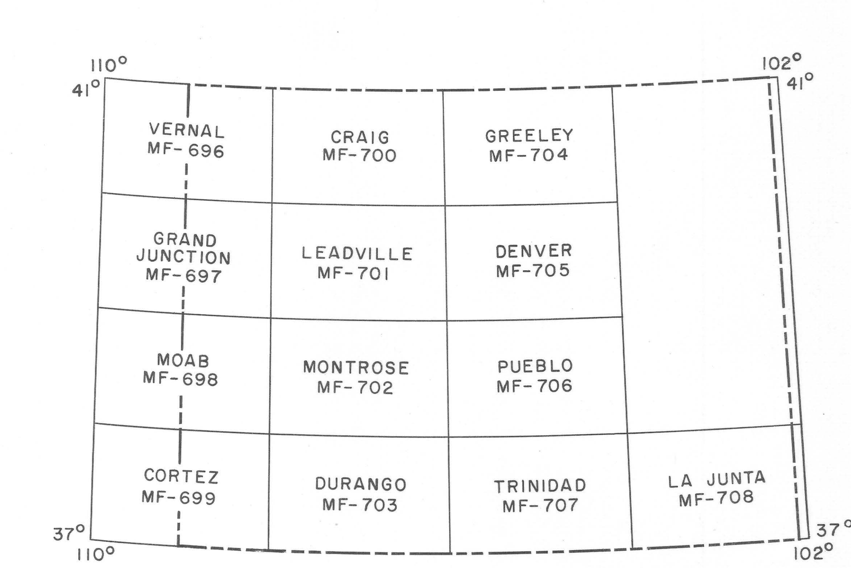
# PRELIMINARY MAP OF LANDSLIDE DEPOSITS, CORTEZ 1°X2° QUADRANGLE COLORADO AND UTAH

By

Roger B. Colton, Larry W. Anderson, Jeffrey A. Holligan, Penny E. Patterson, and Kenneth C. Shaver

1975




1°X2° QUADRANGLES INCLUDED IN LANDSLIDE STUDY

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