



- EXPLANATION**
- KNOWN LANDSLIDE DEPOSITS
 - OLD DEPOSITS OF PROBABLE LANDSLIDE ORIGIN AND OTHER SURFICIAL DEPOSITS THAT ARE UNSTABLE UNDER CERTAIN CONDITIONS
 - AREAS OF ROCKFALL PROBABILITY – Includes some areas subject to slides and earthflows, and small areas of no probability or slight probability
 - AREAS OF NO LANDSLIDE PROBABILITY OR SLIGHT PROBABILITY

The term "landslide" is broadly defined as any "downward and outward movement of slope-forming materials composed of natural rock, soils, artificial fills, or combinations of these materials. The moving mass may proceed by any one of three principal types of movement: falling, sliding, or flowing, or by their combinations" (Varnes, 1958). Landslides and areas of potential landslides are fairly common in the rugged terrain of the Salina quadrangle. In much of the western half of the map area, relatively high rainfall, steep slopes, and flat layers of hard rock on top of very soft incompetent rock all favor landsliding, chiefly as slides and earth flows. In arid parts of the quadrangle, principally the east half, alternating flat layers of hard and soft rocks are eroded to bare cliffs separated by benches, and rockfalls are the dominant type of landsliding. Landslides were more active in the wetter climate of the Pleistocene Epoch, which ended several thousand years ago (Smith and others, 1963, p. 52). Although landslide deposits are abundant in the Salina quadrangle, few landslide movements have been documented during historic time, partly because landslides are generally less active now than during Pleistocene time, partly because movement is commonly very slow and thus escapes notice, and partly because of the remoteness and sparse population of the area.

On the map, areas are designated according to type of landslide and degree of probability of landslide occurrence. *Known landslide deposits* are confined to the western half of the quadrangle (Williams and Hackman, 1971); these predominantly are large slides and earth flows. Some deposits apparently are stabilized, but others are known to be active at the present time (Shroder, 1971; Smith and others, 1963, p. 51-52). *Old deposits of probable landslide origin and other surficial deposits* include glacial moraines of late Pleistocene age and weathered rubble older than late Pleistocene, that originated in part as moraines and in part as landslides. Many of these deposits now are stable but are likely to move if they are deeply excavated or if they receive excessive moisture. *Areas of rockfall probability* coincide with cliffs and steep slopes; in the western half of the quadrangle, small slides and earth flows are also potential hazards.

As a general rule, the probability of landslide occurrence is greatly increased by man's interference with natural slopes, especially if he oversteepens them by excavation, or if he applies water in excessive amounts to the ground.

REFERENCES

- Shroder, J. F., 1971, Landslides of Utah: Utah Geol. and Mineralog. Survey Bulletin 90, 51 p.
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Varnes, D. J., 1958, Landslide types and processes, in Eckel, E. B., ed., Landslides and engineering practice: Washington, Highway Research Board Spec. Rept. 29, NAS-NCR Pub. 544, p. 20-47.
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MAP SHOWING LANDSLIDES AND AREAS OF POTENTIAL LANDSLIDING IN THE SALINA QUADRANGLE, UTAH

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