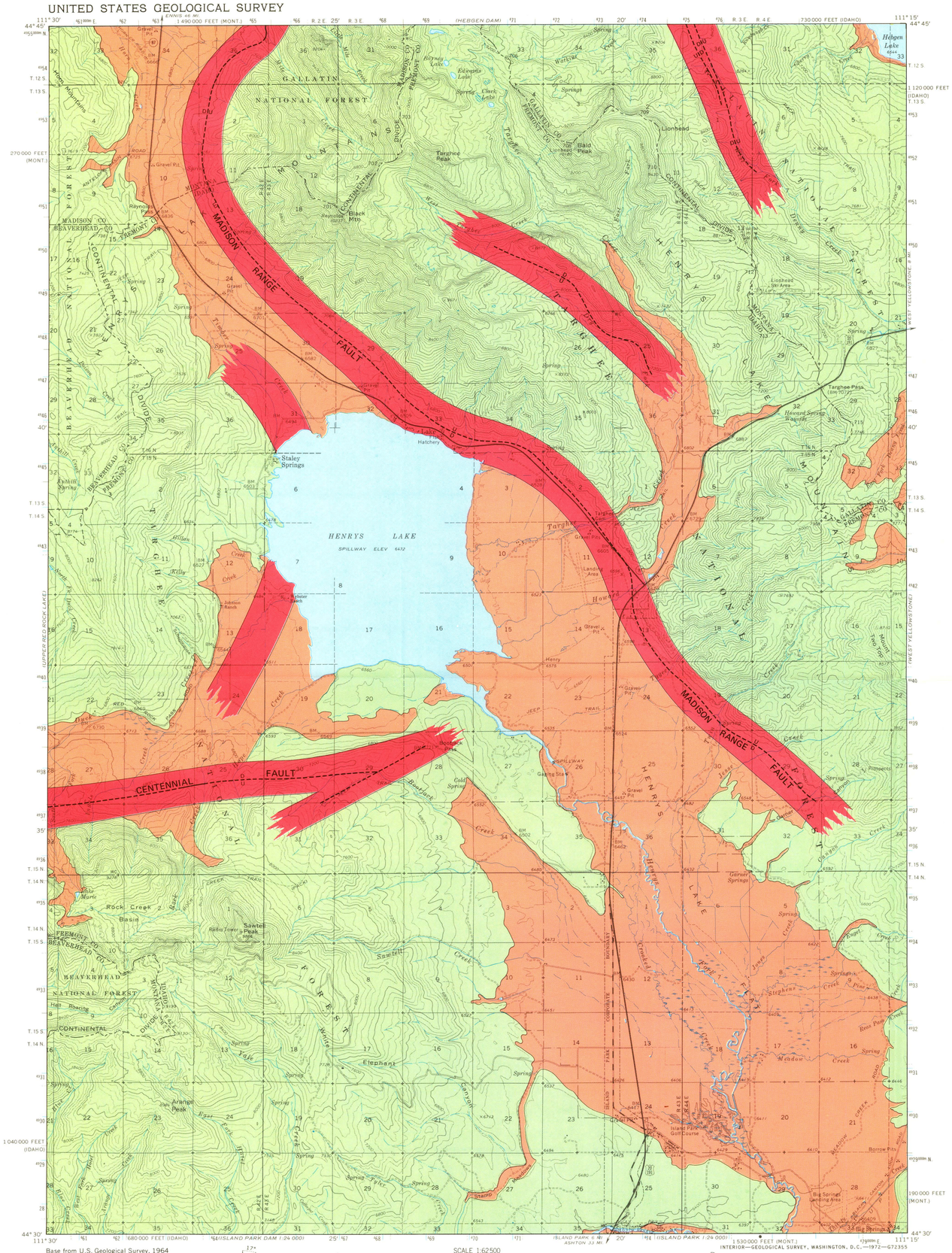
DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY



EXPLANATION

This map is one in a series that depicts the geologic events, such as landsliding and seiches (periodic oscillations of standing bodies of water such as lakes), which will occur if the area is shaken by a major local earthquake. Such a possibility is very real, for on the Seismic Map of the United States (Algermissen, 1969) the Henrys Lake quadrangle is wholly within seismic risk zone 3, defined as an area in which "major destructive earthquakes may occur."

ZONE 1 – Area in which major ground breakage may occur during a major earthquake

ZONE 2 – Area in which moderate ground breakage may occur during a major earthquake

ZONE 3 – Area in which minor ground breakage may occur during a major earthquake

Of the many faults known in the Henrys Lake quadrangle, only those considered to be active are shown; all others have been omitted from this map.

Two types of ground breakage can be expected in this area if there is any renewed movement on the faults shown. The first type of ground breakage would occur along the trace of a reactivated fault and would consist of scarps, some conceivably as much as 20 feet high. Parallel to and near these major scarps would be other somewhat smaller ones. Both types of fault scarps would probably be confined to a zone about half a mile wide astride and along the trace of the reactivated fault.

The second type of breakage would result from the shaking the area underwent during the earthquake. Most of this breakage would occur in the loose unconsolidated sand and gravel deposits which form the floor of the Henrys Lake basin. Both open fractures and scarps would form. All, however, would be short and irregular. These would be randomly distributed and would reflect more the degree of compaction produced by shaking and vibration than any other factor. The scarps would probably be a foot or two high, and the open fractures would probably range from less than an inch to as much as 6-8 inches wide at the top and be closed at depths of a few feet.

Minor ground breakage would also be expected in semiconsolidated and unconsolidated deposits on steep slopes everywhere. There would also be multiple breakage and slump in the unconsolidated materials which form lakeshores and the banks of streams and rivers.

It has long been known that manmade structures built on loose or partly consolidated surficial materials are more likely to be damaged by vibration during a major earthquake than are comparable structures built on bedrock.

To a great extent the intensity of structural damage that may occur in this area (if there were movement on one of the shown faults) would have a pattern similar to that of the severity of ground breakage. Obviously, structures within areas of major ground breakage (Zone 1) are likely to be severely damaged by the abrupt displacement of ground during fault movement. Zone 2, areas of moderate ground breakage, delineates areas underlain mainly by unconsolidated sand and gravel. Structures built on these materials are likely to be shaken more, and therefore damaged more, than similar structures built in Zone 3 – areas of minor ground breakage – chiefly because Zone 3 includes all areas underlain by bedrock.

U/D Fault – Dashed where inferred or concealed. U, upthrown side; D, downthrown side

REFERENCE

Algermissen, S. T., 1969, Seismic risk studies in the United States: World Conference on Earthquake Engineering, 4th, Santiago, Chile.

Base from U.S. Geological Survey, 1964
10,000-foot grids based on Idaho coordinate system, east zone and Montana coordinate system, south zone
1000-meter Universal Transverse Mercator grid ticks, shown in blue

SCALE 1:62500
CONTOUR INTERVAL 80 FEET
DATUM IS MEAN SEA LEVEL

APPROXIMATE MEAN DECLINATION, 1972

IDAHO
QUADRANGLE LOCATION

MAP SHOWING FAULTS AND GROUND-BREAKAGE HAZARDS IN THE HENRYS LAKE QUADRANGLE, IDAHO AND MONTANA

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