



PURPOSE AND METHODS OF THIS MAP

As part of the Energy Lands Program of the U.S. Geological Survey, the authors are mapping the surficial and engineering geology of the Kemmerer and Evanston 30' x 60' quadrangles. Prior to this work only the three largest faults on this map, namely the faults on the west side of the Crawford Mountains and the fault in the valley of Rock Creek, had been recognized as being Quaternary in age. Discovery of many more faults with Quaternary displacement prompted publication of this map.

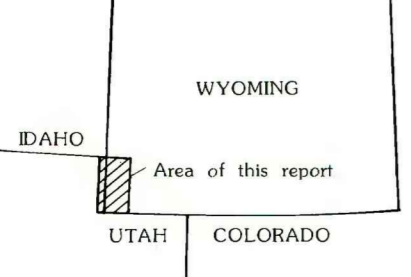
In the report area geologically young faults are commonly inconspicuous on the ground. Recognition was mainly accomplished on high-altitude air photographs in black-and-white, supplemented in some areas by intermediate-scale vertical photography in false-color infrared. Once located, all faults and probable faults were examined on the ground.

With one exception, the sole test for fault movement of Quaternary age (2,000,000 years old) was offset of erosion surfaces or of materials (soils and deposits) dating from some stage in the development of the present landscape. At Whitney Canyon, fossil snail shells from alluvium showing fault offset were collected for absolute age determination. Amino acid racemization ratios by Gifford Miller of the University of Colorado Institute of Arctic and Alpine Research suggest ages of 2000, 2000, and 7000 years for fossil shells of *Limnaea*. Age calibration for these dates was provided by Linnaea from nearby Lake Bonneville sediments.

In reasonable agreement with the amino acid ages are radiocarbon age dates by Meyer Rubin of the U.S. Geological Survey Radiocarbon Laboratory, Boston, Virginia. The age of one post-fault sample (W-5102) was 1260±70 years. Dates from two pre-fault samples, 60 to 65 cm and 30 cm, respectively, below the top of the faulted beds, were 2360±60 years B.P. (W-5104) and 1400±300 years B.P. (W-5109). The dates are consistent with the stratigraphic positions of the samples, but the 1400-year date is considered not very reliable. It was determined on the poorly preserved remains of a rodent that may have burrowed into its final resting place. The other two samples consisted of charcoal dispersed in horizontal beds. This evidence indicates that the last movement on the Whitney Canyon Fault occurred between 1200 and 2400 years ago.

- EXPLANATION**
- Fault with Quaternary movement; has fault scarp, offsets materials (soils or deposits) of Quaternary age. Dotted where concealed. Bar and ball on downthrown side of fault. Number is approximate height in meters of scarp at site where indicated. Scarp height is not necessarily amount of displacement of last fault movement.
 - Fault with probable Quaternary movement; has fault scarp, offsets erosion surfaces of probable Quaternary age. Dotted where concealed. Enchured on downthrown side.
 - Probable fault with Quaternary movement, marked by photolineation in materials of Quaternary age for which no non-fault explanation was evident; lacks recognizable fault scarp.
 - Sag pond or dry closed depression
 - Location of sample for age date

Base from U.S. Geological Survey Kemmerer, 1979; Evanston, 1980; and undated advance prints of Ogden and Logan



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



Photogeology, 1979-80
Field-checked, 1980-81

QUATERNARY FAULTS IN LINCOLN AND UINTA COUNTIES, WYOMING, AND RICH COUNTY, UTAH

By
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