were 8.3m in 1872 and 7.6m in 1935, but 12.9m in 1969, this is 50% greater. The changes in river morphology must be a response to changes in water and sediment discharge through the system. The meteorological records give no evidence of a progressive climatic change which could have affected water discharge, and there have been no land use changes which could have changed sediment discharge. However, population in the watershed has doubled since 1930, and it appears that the hydrologic changes resulting from urbanization have influenced the river regime. There is evidence that the mean annual flood has increased over the last 20 years; it is suggested that such a change in river regime has caused the observed channel straightening and widening in the study reach.

GEOTHERMAL RESOURCES OF THE NORTHERN ROCKY MOUNTAINS

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Geothermal resources comprise that part of the earth's natural heat concentrated at depths accessible to drilling in geologic situations permitting extraction and utilization under foreseeable economics. For electrical generation, present technology and economics require a large volume, permeable reservoir at depths less than 3 km and temperatures greater than 180°C. The distribution of post-Miocene silicic volcanic rocks in the northern Rocky Mountains of the United States suggests that such high-temperature hydrothermal systems are most likely to be found in the eastern Snake River Plain and Yellowstone areas. Although regional heat flow in much of the northern Rocky Mountains is relatively high, geological considerations indicate that most of the thermal springs of the region result from deep circulation along faults and do not imply shallow, high-temperature, hydrothermal systems overlying abundant high-level, post Miocene intrusive bodies. Heat flow values greater than 3 HFU measured locally at shallow depths commonly are related to underlying convective cells of thermal water rather than to near-surface young intrusive bodies. Fault-controlled geothermal systems of moderate reservoir temperature appear to be common in the northern Rocky Mountains and may prove economic for generation of electricity using a low-boiling fluid or for space heating, agricultural, or industrial applications.

DISTRIBUTION AND GENESIS OF A COPPER MINERALIZATION NEAR POCATELLO, IDAHO

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A Cu-Fe sulfide localization in allochthonous Precambrian lithologies in the Fort Hall mining district appears to be spatially related to both an orthogeosynclinal sedimentation and a submarine vulcanism. The cupriferous localization is chiefly controlled lithologically within a sequence of pelitic-dolomitic beds in a transitional unit containing quartzites, argillites, conglomerates, diamictites and carbonates. Variable amounts of cupriferous minerals are also present in a chronostratigraphically correlative meta-basalt. The basalt commonly exhibits pillow-structures and is compositionally similar to a sodium-rich spilite when the unit lacks major metasomatic alteration.