

Mass Wasting Studies in the La Biche River Map Area (NTS 95C), Southeast Yukon and Southwest Northwest Territories

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Mass wasting is widespread and ongoing throughout the study area, and represents a significant hazard to existing and future economic development. Within bedrock, the nature and distribution of mass wasting appears to be strongly correlated with specific rock types and geological structure. Poorly-indurated sandstone and shale members of the Lower Carboniferous Mattson Formation, and Permian Fantasque and Tika formations, appear highly susceptible to aeolian, solution and periglacial weathering. When combined with the fact that these beds are moderate to steeply dipping (25-74°) along the flanks of the Liard, Kotaneelee, and La Biche ranges, it is not surprising that slumps and rock slides are prominent (many >5 km²). In places, bedrock slumps/slides have initiated a cascade series of failures downslope, triggering extensive debris slides and flows in overlying Quaternary sediment.

Within the north-south oriented valleys between ridges, ice and deglacial rivers have carved a series of peneplains into moderate to shallow-dipping (20-6°) shale, siltstone and sandstone of the Lower Cretaceous Sully Formation through to the Triassic Toad-Grayling Formation. Slumping and debris flows occur extensively along the face of these peneplains. Other mass wasting in these strata tend to be smaller, more shallow-seated slumps, generated by undercutting along modern stream and river courses.

Mass wasting in Quaternary material is most commonly associated with thick accumulations of till and glaciolacustrine sediment in valley bottoms. Areas of discontinuous permafrost and massive ground ice are also found in the study area, and are noted as being particularly sensitive to disturbance.