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INTRODUCTION

The movement of snowmelt water with respect to frozen ground is of importance because this water may constitute potential groundwater recharge and/or compose a flood generated from surface runoff. In areas of discontinuous permafrost, a multi-layered soil regime consisting of differing physical properties may exist because of the presence of both organic and mineral soils and the thermal states of these soils. In interior Alaska near Fairbanks, areas underlain by permafrost generally have a very thick organic layer (25-40 cm), with an active layer of 50-100 cm, except for well-drained sites where the active layer is thicker. Permafrost-free soils have a 5-10-cm layer of decaying organic material with the depth of seasonal frost again being directly related to the moisture content. A combined field, laboratory, and modeling study was carried out to assess the groundwater recharge characteristics of frozen soils for various areas.