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Deep leads are numerous in the area, beneath Tertiary basalt. The pre basalt topography was rugged, and basalt flows plus the effects of Tertiary and Quaternary glaciation have been major influences in the formation of the present topography.

Greybilly occurs locally beneath the basalt. It resembles the Roland Conglomerate in composition and texture, but lacks joint systems, which helps to distinguish it from the conglomerate.

The sheet areas effectively cover a synclinorium containing all the known occurrences of Gordon Limestone or its metasomatized equivalents.

Prominent structures trend E-W or NW; these include both faults which are nearly vertical and gently undulating open folds with near vertical fold axes.

One major fault, the Bismuth Creek Fault, occurs on Sheet 1. This will be covered in more detail below and in other reports. A parallel fracture system exists throughout the area; there is a prominent system trending through sheets 2 and 3, which I have named the Iris River Fault Zone.

The basal parts of the Gordon Limestone throughout the area are metasomatized to some extent, but the best developments of skarns occur adjacent to faulted areas. The faults and fractures have acted as the major plumbing system to enable mineralizing fluids to reach the limestone from the granite below, and the contact of Moine sandstone and Gordon limestone is a relatively minor part of the plumbing system.

The major skarn areas are at the Shepherd and Murphy Mine area, which will be dealt with in detail below, the Tea Tree Creek skarn, Stormont Bismuth Mine skarn, and possibly a poorly exposed skarn yet to be fully investigated north of Fletcher's Adit on the Lea River.

The level of erosion on the Lea River sheet area and the western part of the Iris River area is at the base of the limestone, so there are only patchy outcrops of limestone, calc-silicate rock or skarn, which correspond generally to gentle undulating folds or to downfaulting.

The thickest section of limestone is on the Iris River sheet, probably in the vicinity of the Department of Mines drill hole DOM 1, where the limestone is 178 m thick. This corresponds to the centre of the basin shaped synclinorium. Lake Gairdner covers much of this central section.

The Bismuth Creek Fault defines the known eastern edge