WESTERN MINES LIMITED

GEOLOGY RECONNAISSANCE between TENNENT LAKE and EAST TENNANT CREEK (for Proposed Creek Diversion)

A. Topography

The East Tennant watershed is part of the steeply rising ground from Buttle Lake-Myra Creek Valley (about 725 feet above sea level) to Mt. Myra (elevation 5,932 ft.) In the area of interest more rugged topography is replaced by a plateau of glaciated, mostly gently rolling knobs of igneous rock between elevations 3,200' and 3,500' plus. They are mostly barren of topsoil and vegetation and following each other in quick succession, the narrow valleys contain small lakes and tarns and vegetation of alpine fir, hemlock and pine, which is fighting its way up the more gentle slopes and is following fertile fractures to some of the hill tops.

B. Geology

Lithology resembles granodiorite. Smoke colored quartz, pinkish feldspar (orthoclase of potash feldspar) and whitish-grey feldspar defined by its fine striations as plagioclase and as mafic constituents dark greenish-black hornblende and some mica (biotite) are united in phaneritic texture.

The granodiorite in the Western part of the area of interest (from Tennent Lake to about lake A) consists of medium to small sized crystals and orthoclase and plagioclase occur in about equal numbers. In the Eastern part (about lake A to East Tennent Creek) medium to coarse grains prevail and plagioclase outnumbers orthoclase up to a relation of 2 to 1. Hornblende increases too.

Fracture cleavage is representing different planes whose genesis must be traced back to the cooling processes in an intrusive rock of batholitic dimensions.

B. Geology (cont'd)

One plane has a bearing of 75° and is dipping 85° to the north-west. It is clifface-forming, especially on the south side of the knobs. This plane was exposed to considerable pressure. Areas up to 3 feet parallel to the 75° bearing are broken in coarse polygonal patterns. The glaciation used these weak zones in the defense for erosion and abrasion with the result that most lakes and valleys and adjoining chains of knobs are aligned along this bearing.

A second plane coincides with tension fractures, bearing 170°, dip 75° south-west. They provide narrow openings filled with rubble and soil, giving a firm base for vegetation otherwise unable to conquer the ridges of bare rock.

The third plane forms the gentle dipping tops of the knobs; bearing 90°, dip 17° south.

A fourth system, bearing 15°, dip 65° south-east commands some importance north-easterly from Lake A.

The close relationship between fracture cleavage and morphology is apparent everywhere but should have little bearing on the ground conditions in the proposed tunnels. This granodiorite is as competent a rock as one can get despite the fracture cleavage whose importance was exaggerated on surface by the excruciating forces of the glaciation, but should be no disturbing factor for any length of tunneling. Should there be some water loss in a tension fracture, cementing might become necessary. There is no caving to be expected.

Since the granodiorite is suspected to be part of the jurassic or lower cretaceous coast intrusions, curiosity called for an excursion toward the east, where the intrusive contact to the triassic Vancouver group and (or) to the permian sicker group was to be expected. On the hike up to Mt. Myra, inclusions of tuffaceious fragments up to headsize were encountered in granodiorite at elevation 4,160 feet. Aplitic dikes in tuffaceous hornfels provided more evidence of intrusion at elevation 5,900 feet. Near the summit, at about 5,900 feet, chilled granodiorite contacts tuffaceous hornfels.

C. Summary

The properties of the granodiorite in the Tennent Lake watershed should prove optimal for tunneling.

Report by

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