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THE GEOLOGY OF
THE NDOLA AND BWANA MKUBWA AREAS

EXPLANATION OF
DEGREE SHEETS 1228, PART OF SE. QUARTER,
AND 1328, PART OF NE. QUARTER

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BUILDING SAND

A thin layer of fine white sand is present on top of the dambo clays at the edges of the valleys in areas of basement gneiss. The deposits are rarely thick or pure enough to be worked for building sands. The better ones have been worked extensively in the Kasongo dambo, south-west of Kasongo Siding; in the Twapia dambo, near the Ndola-Mufulira road; and in the Baluba valley. These sands are nearly exhausted, and possibly extensive reserves along tributaries of the Kafulafuta River may be too far removed from Ndola and the Copperbelt to be of economic significance. The building sands closest to Ndola occur in the Chondwe valley 3 1/2 miles south of Chondwe Farm, and in the area around Fiwale Hill.

WATER SUPPLY

A town of the size of Ndola requires a large and consistent water supply. This is provided largely by one aquifer constituted by the limestones and dolomites of the Kakontwe Formation. The water is tapped by direct pumping, as at Lake Ishiku, and by damming of the Itawa, or Kafubu River as it becomes farther downstream. At present the water is conserved by a wall across the Itawa at the Richmond Smith Drive crossing. Although pumping tests at Lake Ishiku show (table 1) that the water-table is not greatly depressed by pumping, the Town Engineer's Department, Ndola, has decided not to expand future supplies from this source. Instead a new large dam has been constructed across the Kafubu River near the confluence with the Mwanje, 6 miles south-south-west of Ndola. Pumping tests at Lake Ishiku indicate that natural supply from the aquifer will maintain a fairly high level in the Kafubu Dam.

Another conclusion to be reached from the Lake Ishiku pumping test is that water may be supplied to the Itawa dambo by a considerable strike length of the aquifer both east and west of the Congo border. This supposes a large system of cavities, fissures and underground drainage within the Kakontwe carbonate beds. Confirmation of this is supplied by surface phenomena such as sink-holes.

Carbonate horizons of other formations, such as the Upper Roan and Mwashia Groups, are also probably good aquifers, but little is known of their capabilities in this respect. The Footwall quartzites are generally poor aquifers, but two springs, one at Monkey Fountain Park and the other near the Castle Brewery, issue from them on the margins of the Ndola dome. Water draining off the basement rocks in the core of the dome may be held up at the base of the Katanga System and released through joints as springs. Artesian water was encountered in Lower Roan rocks intersected in a borehole near the Brewery Spring.

South of Ndola the large rivers are perennial, but the smaller ones, especially in areas underlain by gneisses, dry up during the dry season to form a string of disconnected pools. The Kafulafuta and Kafubu Rivers are the major perennial streams and have the greatest flow. In the case of the former this is due to the large catchment area and the large perennial tributaries including the Luamphi, Miengwe and Chondwe. The source of the Kafulafuta is a strong perennial spring near the base of the scarp formed by Footwall quartzites along the Congo border. The Kafubu River has a large flow mainly because it rises in the perennial swamp of the Itawa dambo and also because two of its main tributaries, the Little Munkulungwe and Munkulungwe, flow for much of their length over the outcrop of the Kalonga Formation, which contains good aquifers in the form of thick dolomite beds.