WEST TENSLEEP LAKE RESERVOIR SITE, BIG HORN COUNTY

Location: Sec. 33, T. 50 N., R. 86 W.

Date Examined: June 4, 1957

Storage: To increase the storage capacity of West Tensleep Lake to 1176 acre-feet by construction of a 40-foot dam.

Geology

The present lake occupies a relatively broad and shallow glaciated valley that has been eroded entirely in pre-Cambrian gneiss and gneissic granite.

The east abutment of the proposed dam will rest on and adjoin glacial debris of what is probably a lateral moraine. Cropping out on the hill adjoining the west abutment are exfoliated-appearing and slabby pre-Cambrian rocks of two lithologic types. In places the rock is a light pinkish gray medium-grained graphic granite composed of quartz, orthoclase and biotite. Associated with it is an alternating pinkish to dark gray gneiss with a somewhat porphyroblastic texture. The porphyroblasts are orthoclase (microcline ?) and are enclosed in a matrix of quartz, orthoclase and biotite. No outcrops were observed which would aid in interpreting the structural relationships of the two rock types. Both are cut by a random network of simple pegmatite dikes up to four inches in width.

No diagnostic joint pattern is present here; however, some of random attitude were observed. The exfoliated (?) or slablike appearance may possibly be due to an arcuate joint surface which strikes N. 20° E., and dips 13° to 24° SE., or to glaciation.

The outlet of the present lake passes between both abutments of the damsite, and from inspection appears to be flowing on or close to bedrock.

The rocks observed here are large slabs of lithologic type previously described, but their bedrock appearance is deceiving since these may be part of the morainal debris. It is difficult to estimate the depth to sound rock which may vary from less than one foot to as much as thirty feet.

Conclusion

The dam and reservoir site is satisfactory from a geological standpoint. A trench, however, should be excavated by a large bulldozer across the inlet to determine whether the outlet is flowing on bedrock. This would aid in designing the dam. Drill holes, on the other hand, would be difficult in this type of terrane.

The Island Park damsite, several miles downstream, was also briefly examined by the writer. The geological conditions there are similar to those described above and no problems should be anticipated at the Island Park damsite. Bedrock at the damsite, however, is expected to be deeper than at the West Tensleep Lake site.

William H. Wilson
Assistant State Geologist