

McLEOD DAMSITE, PLATTE COUNTY, AND DODGE CREEK DAMSITE  
ALBANY COUNTY

McLeod Damsite

Location: - Sec. 14, T. 23N., R. 69W. on Sybille Creek

Date Examined: - November 13, 1956

Geology

The geology of the damsite is unusual in that the rocks cropping out at both abutments are of different lithologic types and geological ages. The rock cropping out on the northwest abutment consists of a light gray medium- to coarse-grained granitic gneiss of pre-Cambrian age. The gneiss contains several bands or layers of biotite schist that are oriented parallel to the foliation which strikes N. 70°-85°W., and dips from 70°SW. to vertical. Major joint sets exposed in the gneiss have the following strike and dip: N. 56°E., 39°NW.; N. 20°E., 80°NW.; N. 20°E., 20°SE.

The southeast abutment adjoins poorly exposed rocks of Miocene age that are eroded into a terrace-like topography. In fact, the only good exposure is in an irrigation canal cut near the top of the uppermost terrace. The unit here consists of 12-15 feet of very light gray soft calcareous tuffaceous sandstone which is capped by several feet of gravel composed of fragments of pre-Cambrian rocks. It is also noted that this tuffaceous sandstone crops out in various places on both sides of the proposed reservoir.

The topography developed on the granitic gneiss is a resurrected erosion surface; the Miocene rocks having been deposited on the irregular and hilly surface which was eroded in the gneiss. Because of this fact it is impossible to determine the thickness of the Miocene rocks at the southeast abutment by surface examination.

### Conclusion

The rock forming the southeast abutment is not suitable as an abutment without some artificial reinforcement, or unless these rocks can be removed to encounter the gneiss at relatively shallow depth. Since the Miocene sandstone is soft and has a calcium carbonate cement, it will weather readily, and wind and water, particularly wave action, could easily scour away this abutment. It may be, however, that a coating of gunnite overlain by rip-rap would help reinforce this abutment and prevent disintegration from weathering. The writer seriously doubts that a grout curtain would help, since the pressure exerted by injection of the grout would probably disrupt and fracture the soft rock itself.

No difficulty is foreseen with the northwest abutment. If further investigation is to proceed on this damsite, the writer suggests three drill holes to determine the depth to sound bedrock (granitic gneiss). These should be drilled in the center of the hayfield between the two abutments, and the other two at the southeast abutment. These should be cable tool holes since the Miocene rocks are too soft for good core recovery by diamond drilling.

### Dodge Creek Damsite

Location: - SW 1/4 Sec. 25, T. 23N., R. 73W., about 300 feet east of the confluence of Dodge Creek with the Laramie River.

Date Examined: - November 28, 1956

### Geology

The Laramie River, at the damsite, cuts through a narrow, "V-shaped" gorge that varies in depth from 100 feet on the northeast abutment to 200 feet on the southwest abutment.

The rocks cropping out in this area, which are pre-Cambrian in age, consist of a massive grayish pink moderately crystalline granite gneiss and a pink coarsely crystalline granite that contain layers or lenses of biotite-hornblende schist. These rocks are strongly jointed and weather into large blocks varying from several feet to as much as fifteen feet in their longest dimension. Major joint systems have the following strike and dip respectively: N. 20°W., 26°SW. to 13°NE.; N. 25°E., Vertical; N. 65°W., Vertical; East-West, Vertical; N. 55°E., 50°SE.

#### Conclusion

The rocks at the damsite are competent to support a dam, but the joints should be thoroughly grouted to minimize leakage. Since the Laramie River flows on bedrock, the writer believes that no drilling is necessary in the area.

Finally it should be noted that there are several other alternative damsites in the one and one-half stretch of the Laramie River, immediately upstream from Dodge Creek, that are also suitable from a geological standpoint.

William H. Wilson  
Assistant State Geologist  
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