

LEGEND

- | | | |
|-------------|---|--|
| CENOZOIC | 5 | QUATERNARY
RECENT ALLUVIUM: sand, gravel |
| | 4 | TALUS |
| | 3 | GLACIO-FLUVIAL: sand; silty, minor gravel |
| PROTEROZOIC | 2 | QUARTZITE: medium-grained, grey to brown, thick-bedded |
| | 1 | QUARTZITE, SLATE, PHYLLITE |
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- | | |
|---|-------|
| Bedding | ————— |
| Jointing | ————— |
| Schistosity | ————— |
| Edge of outcrop | ————— |
| Geological boundary (approximate) | ————— |
| Area where frozen soil was encountered within 12 inches of ground surface | ————— |
- Magnetic declination: 33 30' E. (approximate)

General Description

A result of this preliminary investigation is that, from the viewpoint of geology, it is feasible to construct a small dam for the development of hydroelectric power at the downstream end of Prevo Canyon. The hydroelectric power potential at Prevo Canyon could be developed in one of two ways: a dam greater than 100 feet in height could be constructed at the canyon which would create a reservoir extending 16 miles upstream into Sheldon Lake or two smaller dams could be built, one in the canyon for power and the other upstream near the lake for storage. It is beyond the scope of this report to indicate which of these projects is the more feasible. Considerable more information is required before a decision can be made. Test borings will be necessary to determine the existence of a buried channel in bedrock between Prevo Canyon and Canol Road and of the thickness and permeability of the overburden in the walls of the canyon. Also the area upstream from the canyon should be investigated for a site suitable for a storage dam. With the exception of impervious soil construction materials are readily available in the vicinity of Prevo Canyon.

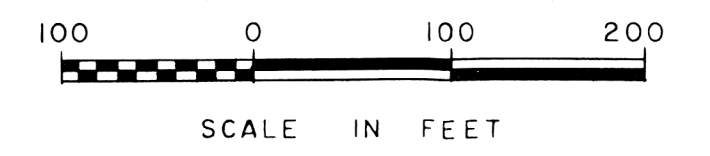
Overburden in the vicinity of Prevo Canyon consists chiefly of glacio-fluvial deposits of silty sand and fine- to coarse-grained, sandy gravel. These materials are exposed in numerous cuts along Canol Road and were used extensively as fill during construction of the Road. The coarse-grained gravel could probably be processed to produce aggregate. At Prevo Canyon, Ross River is flowing along a narrow, steep-walled valley which in post-Pleistocene time has been cut down through the overburden to bedrock. In the dam site area the river makes an abrupt 90 degree turn from an east to a south direction. The reason for this is not clear. No stretch of the river is parallel to a bedrock structure. The possibility a buried channel in bedrock exists between Prevo Canyon and Canol Road should be investigated. Such a channel, if filled with permeable materials, could cause leakage of reservoir water. A large slide in silty sand which occurred along the right side of the river a few hundred feet upstream from the dam site was the result of undercutting by the river. The material in the talus formed by the mechanical disintegration of adjacent bedrock varies from huge, angular blocks derived from thick-bedded quartzite to small, platy fragments of phyllite, slate and quartzite. The size and shape of the fragments from the thick quartzite beds indicates this rock would be an excellent source of riprap.

Bedrock at Prevo Canyon dam site can be divided into two units. One consists of massive, thick-bedded, brown-weathering quartzite which is exposed in the steep bluffs along the canyon in the upstream and downstream parts of the site area and the other of interbedded phyllite, slate and thin quartzite beds. The latter occurs in the less precipitous areas in the centre of the site where there are few or no bedrock exposures. In the upstream part of the dam site area the river drops 2 to 4 feet where it flows across a contact from massive quartzite to the softer, thin-bedded rocks. Bedding is irregular particularly near the sharp bend in the river. In general it strikes northwest and dips to the northeast. The jointing is also irregular with no prominent sets. Faulting was not observed.

The massive quartzite exposed in the downstream part of the dam site area would provide the most satisfactory foundation and abutment material. The same beds are also exposed in the upstream part of the area. Numerous seepages of groundwater from the overburden occur along both sides of the river in the vicinity of the bend. The water which is relatively cold (35° F) is probably the result of the thawing of frozen soil along the sides of the canyon. Frozen soil was encountered within 24 inches of ground surface in several test pits (July 5, 1966). It probably occurs extensively in the area adjacent to Prevo Canyon. Groundwater was frequently encountered immediately above the frost line. Ice lenses up to 1 inch in width are common in the frozen silty sand.

WATER LEVEL
2736' JULY 1958

Ross River community
approximately 53 air miles



YUKON RIVER DRAINAGE BASIN
SITE NO. 29

PREVO CANYON SITE
ROSS RIVER

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GEOLOGY BY E. B. OWEN, 1966