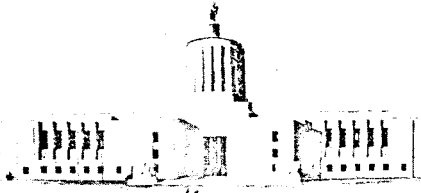


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STATE OF OREGON  
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*Canyon  
Grant*

May 15, 1968

To: George J. Kernan, Chief Engineer, State Game Commission  
From: Herbert G. Schlicker, Engineering Geologist, State Department  
of Geology and Mineral Industries  
Subject: Inspection of Canyon Creek Meadows Dam

On April 10, 1968, inspection was made of the Canyon Creek Meadows Dam, located on the East Fork of Canyon Creek, 21 miles southeast of John Day. The inspection was made in the company of Mr. Albert Petska of the State Engineer's office, and conclusions herein are based on personal observations and discussions with Mr. Petska.

The purpose of the inspection was to determine the geologic conditions at the dam and recommend a method for correcting the leakage.

The dam presently will not completely fill due to leakage through the left abutment. Springs in the left side of the canyon a few hundred feet downstream from the dam reportedly have a discharge varying with the height of water in the reservoir.

During construction ice was reported in the talus-like rock slope at the left abutment of the dam. Ice filled the interstices in the talus even during late summer with the outside temperature 80° to 100° F. During core drilling the ice was not detected.

### Geology of the Site

The dam is located in a narrow canyon in mountainous terrain. The stream is in a narrow V-shaped canyon which is about 50 feet deep at the dam and increases to more than 100 feet deep a short distance downstream. At the dam the left abutment is in a broken rhyolite extending about 600 feet above the dam. The valley adjacent to the right abutment is gently sloping and is composed of soil and rock colluvium with no rock in place showing at the surface.

Immediately downstream from the left abutment the canyon walls contain layers of bentonitic type clay and weathered perlite.

The left abutment is composed of broken rock and continues to about 300 feet upstream from the dam and from the base of the dam to the top of the slope estimated to be about 600 or 700 feet high.

Inspection of the site from an airplane and study of photographs indicate that the left abutment is located in a landslide which has formed the cirque-like notch at the top of the slope at the head of the slide. The dimensions of the slide are such that the disruption of rocks could be too deep to grout economically.

Previously employed corrective measures included installation of a grout curtain extending from the left abutment of the dam to the rock slope, a distance of about 50 feet, and the placement of an impermeable blanket on the bottom and sides of the reservoir from the dam to about 200 feet upstream from the dam with no apparent effect.

Conclusions and Recommendations

The left abutment appears to be in a landslide which extends upstream about 300 feet in the reservoir where apparently solid rock is exposed in place. The slide is more than 600 or 700 feet high and extends to the top of the slope.

The grout curtain is not sufficient to dam off the water, and it is doubtful that it could be done here by that method within economic limits.

The impermeable blanket was extended from the dam upstream about 100 feet short of that needed to encompass the broken rock in the landslide area.

I would recommend placing a tracing element in the reservoir area beginning immediately upstream from the impermeable blanket area to determine whether or not water is escaping through this part of the landslide area. If the leaking area is located I would recommend extending the blanket upstream at least to the area not affected by the landslide.

*Herbert G. Schlicker*

Herbert G. Schlicker  
Engineering Geologist

HGS:lk  
Encl. - Color slides