State Department of Geology and Mineral Industries

1069 State Office Building
Portland 1, Oregon

Illinois River
Investigations

GEOLOGIC INVESTIGATION OF THE ILLINOIS RIVER FALLS AREA FISH LADDER SITE

Josephine County, Oregon

Location: SW¼ sec. 33, T. 37 S., R. 9 W.

Purpose and scope of investigation: The investigation was made at the request of the Oregon State Game Commission to describe the geology and the engineering characteristics of the rock for the benefit of the prospective bidding contractors present. About two hours' time was spent at the location and about eleven contractors were present.

General geology: Rocks in the vicinity are all moderately to highly metamorphosed sediments and volcanics of upper Jurassic age (Wells, 1948). They are the Galice formation composed of slate, sandstone, grit, conglomerates, and interbedded lavas and tuffs; and the Rogue formation composed of massive light- to dark-gray-green altered lava flows, tuffs, agglomerates and flow breccias (Wells, 1955). These formations have been intruded by large masses of ultrabasic peridotites and serpentines, and smaller bodies of hornblende diorite locally.

Geology of the falls: The principal rock type in the vicinity of the Illinois River Falls is a metamorphosed basic lava, probably a basalt. There are associated interbedded metavolcanic and metasedimentary rocks including tuffs, agglomerates, sandstones, and conglomerates in the vicinity but not at the actual construction site. All of the rocks are hardened and partly recrystallized so that they have similar physical properties.

The basalt at the falls is amygdaloidal and quite hard and fresh. Alteration by low-grade metamorphism appears to be mainly chloritization,

silicification, and possibly saussuritization. Both calcite and quartz have been deposited in fractures.

The metabasalt is massive and has a well developed joint pattern. Closely spaced joints of varying strength cut the rock in many directions so that it breaks into angular blocks from 1 inch to 8 inches in dimension. It is estimated that overbreak will require approximately 25 percent to 35 percent additional concrete in floor or single-form wall construction.

The joint pattern as measured is listed with the most frequent attitude and strongest direction first.

Strike of joint	Dip
N 10° W to N 25° W (most frequent)	60° to 80° NE
N 45° W to N 60° W (strongest)	Vertical
N 55° E to N 75° E	60° to 85° NW
N 10° E to N 30° E	75° to 90° SE
N - S	Vertical
E - W	Vertical

A more detailed study of the joint pattern could probably relate the jointing to the transverse compressional stresses that caused folding in the area. The predominant trend of the fold axes is N 30° E.

Report by: H. G. Schlicker and Len Ramp

Visited: May 18, 1960.

References: Wells, F. G., and others, Preliminary geologic map of the Kerby quadrangle: State of Oregon Dept. of Geology and Mineral Industries Map, 1948.

_____, Preliminary geologic of southwestern Oregon: U. S. Geol. Survey Map MF 38, 1955.