

# State Department of Geology and Mineral Industries

702 Woodlark Building  
Portland, Oregon  
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## REPORT ON THE SLUMPING AT THE W. J. MULKEY AND FRED NICKESS PLACES

### INTRODUCTION

The Department of Geology and Mineral Industries was asked to investigate the slumping which occurred along the Agate Beach section of the Oregon coast following heavy rains late in March 1943. This was one of the localities visited. A crack some eight inches wide, at least eight feet deep, and 125 feet long was formed at a distance of several feet in front of the W. J. Mulkey residence and extended under the front of the house of Fred Nickess. The seaward block affected by this fissuring was not appreciably lowered.

The properties lie in sec. 32, T. 10 S., R. 11 W., on top of the sea cliff which here rises by several step-like benches 70 feet above the beach. The locality is sketched in figure 1.

### GEOLOGICAL SETTING AND EXPLANATION OF THE SLUMPING

The houses are located on a slight projection of land indented near the southeast corner of the Mulkey house and north of the Nickess place. The houses are set on somewhat compacted and cemented Pleistocene sands, some 15 feet thick, which here lie on the wave-cut bench which cuts into Miocene sandy shales, dipping 20° to the west (see figure 1.). The Miocene beds are fairly homogeneous in character and though subject to normal erosion along steep slopes, are not being rapidly cut away at the base of the cliff. As the land on which the houses are situated is separated by several step-like benches from the beach, the chances are against any large slumping action (like that at Newport) in the near future.

The present fissure seems to be mainly in the Pleistocene sands. It cuts across from the indentation (partly filled) in the terrace at the southeast corner of the Mulkey residence, under the Nickess house, to another slight notch 125 feet to the north. The crack was not seen along the front of the slope. These indentations in the surface of the terrace on which the houses rest take away some of the lateral support. Thus without any lateral support on the seaward side and with that on the north and south ends reduced, this strip depended largely on its underlying portions for support. When saturated from the recent heavy rains, the sands lost part of their supporting strength and a block gave way under its own weight plus that of the added water. The sands on the east side of the crack are better tied to the land and may resist further slumping for a considerable number of years if the mass in front of the house can be saved.

Predicting the future of land along sea cliffs is little more than guessing, based on past performances and the geologic makeup of the locality. There is no assurance that the slumping that has taken place will not recur. The chances are that it will, but not necessarily in the near future. The intangible "view" value as well as the tangible real value of the properties warrants the taking of certain preventive measures.

by John Eliot Allen and Wallace Lowry

SUGGESTIONS

1. Fill the crack throughout its entire extent, as tight as possible. Probably the best material for this is angular (sharp) fine gravel at the base and finer material like the sand on which the house sets toward the top. Pack down hard as material is added. If crack washes open, fill up and watch to see where sand is going and try to plug escape.

2. Plant "rooty" shrubs, small trees and grass along the front of the slope.

Expressly to Mulkey:

3. Put in uncemented tile drainway (about 6-inch tile) at depth of 4 feet (with slight slope) from near drainpipe on north side of house across crack to front of slope - about parallel to the fence. Avoid washing at outlet. Pack sands down hard over tile to avoid washing away of material.

4. Similar, but short, tileway to take runoff from south side of house - get this water down off the bench-level below - shrubs and grass will help prevent washing away of dirt from this lower level.