Tiller Drew
Douglas Co.

DOMPIER CREEK SLIDE

By Len Ramp and Norm Peterson

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Introduction:

The rumbling of a giant landslide startled residents in the vicinity of Dompier Creek, 3 miles up the South Umpqua River from Tiller. The most spectacular movement of the slide took place the second week in February, 1962. Mr. W. R. Godwin, resident of the area, reported that the slide was most active Tuesday, February 12th (Oregonian February 17, 1962). Possible danger to nearby residents and the potential property damage stimulated the State of Oregon Department of Geology and Mineral Industries to investigate the slide area.

Location and extent:

The new slide is located on the west side of Dompier Creek canyon in secs. 14, 15, 22, and 23, T. 30 S., R. 2 W. (see accompanying map). The sliding mass is roughly circular, approximately 4,000 feet in diameter, and contains about 300 acres. The lower edge of the slide has temporarily stabilized about 1/3 mile from the South Umpqua River road which follows along the north bank of the river.

Geologic setting:

The sliding area is entirely within pyroclastic volcanic rocks of Upper Eocene and Oligocene age (Peck 1961). Older (Mesozoic) rocks of the Klamath Mountains are exposed a short distance west of the slide area. These rocks consist of metavolcanics, metasediments, and gneiss of the Applegate formation, dioritic intrusives, and serpentine.

The pyroclastic volcanic rocks were deposited on an uneven erosional surface and later uplift of the older rocks has resulted in warping of the layered volcanics.

Volcanic rocks:

The base of the volcanic section is made up mainly of basalt flows, intermixed locally with small amounts of tuffaceous sediments. Overlying the basalts are massive light-colored ash-flow tuffs. These are white, tan, and buff to purplish in color and in places attractively iron-stained. They appear to be rhyolitic in composition and contain abundant crystals of quartz and feldspar, with common to abundant biotite mica. The overall thickness of these white tuffs in the area east of Dompier Creek could be as much as 600 feet, but they appear to be very limited to entirely missing from parts of the area west of Dompier Creek. In the bluffs east of Dompier Creek the white tuffs are exposed in vertical cliffs as much as 100 feet high.

Overlying the light-colored tuffs in the east half of section 14 are massive to thin layers of dark brown tuff and tuff breccia which weathers easily to a rubble of rock fragments and clay. This is very similar to the tuff and breccia involved in the slide area west of Dompier Creek and is believed to be part of the same horizon. The thickness of this brown tuff in the vicinity of the slide, judging from its exposure in the upper scarp of the slide, is in excess of 80 feet. It probably varies from 50 to over 100 feet thick in the immediate area.

Structure:

The older steeply-dipping Mesozoic rocks have a regional trend of north to northeast. The longer dimensions of the intrusive bodies of serpentine and diorite also conform to this northerly trend.

The overlying Tertiary volcanic rocks strike northwest and dip gently northeast. Reliable attitudes in the volcanic section show strikes from

N. 20 to N. 45° W. and dips of 15° northeast.

A northwest-trending fault or fault zone on the east side and parallel to Dompier Creek appears to be one of the main structural features. The type or amount of displacement is not known but the position of the brown clayey tuff breccia indicates that it has been displaced downward on the west side of the fault. Other northwest-trending faults are known to occur in the area up the river to the east. A parallel fault has also been mapped west of Dompier Creek and there is evidence of relatively small displacement since deposition of the Tertiary volcanic rocks. Neither of the faults mapped show evidence of recent movement that might have triggered sliding.

<u>Nature and cause of slide activity:</u>

The new landslide closely approximates the area of an old landslide. Aerial photographs taken in 1936 and again in 1960 show the outlines of the old slide area. In a few places outside the area of recent sliding but inside of the old slide scars there are trees showing no evidence of movement or tilting, growing through the older slide debris. This indicates the principal movement of the old slide occurred at least 50 years ago and possibly much earlier. Large quantities of marketable timber were damaged or destroyed by the recent sliding. Some of the damaged trees can be salvaged during the summer when there is little danger of movement within the slide.

The sole or slip plane of the new slide is irregular and appears to lie along the contact between the tuff breccia above and basalt and ash-flow tuffs below. The irregular surface of the basalt is reflected in the irregular outlines and directions of movement within the land slide mass.

At the toe of the slide in Dompier Creek, the creek has cut a deep channel into the basalt and brown tuff. The stable ridge to the west, which appears to be largely basalt, deflects the sliding mass to the northeast from its predominant southeast direction of flow. This constriction has resulted in the damming of Dompier Creek forming a new lake in the southwest quarter of section 14. This constriction also results in pressure ridges near the toe of the slide and in the area below an old sag pond, locally called Hart Lake. These pressure ridges may also reflect a raised basalt surface under this area. Some of the pressure ridges have been forced as much as 50 feet higher than adjacent depressions on the slide surface.

The recent movement in the area of older sliding can be attributed to deep weathering and development of clays aided by the easy access of ground water and atmosphere along the many fractures in the old slide. It may have been further aided by stream erosion of the toe of the old slide and fresh breaks in the surface by recent logging roads and skid trails near the upper margin. Many other small areas in the immediate vicinity show evidences of older sliding which could be re-activated at some future time.

The history of most old landslides is one of several periods of movement. Often excavation of the toe by stream erosion or by man will cause an old slide to move again.

Possible future slide movement:

Further movement can be expected to take place in the Dompier Creek slide area. In attempting to predict the magnitude and timing of future sliding one must consider several variables. Rainfall is probably the most critical. The amount of water absorbed by the sliding material has a direct bearing on its stability. For this reason we should expect further sliding during the season of greatest rainfall which in this area is normally November through March.

Potential danger of future sliding can be predicted in three areas:

1. The first area of possible slide danger is the narrow canyon of Dompier Creek below the present toe of the recent slide. The added weight and lubrication of winter rains will very likely cause further progress of the slide down stream.

2. Possible renewal of sliding in the area of an old landslide which at one time apparently progressed down to the road and river between the easternmost patch of serpentine shown on the map and a point about 1200 feet west of the mouth of Dompier Creek. Added pressure from the new slide breaking over the upper scarp of this old slide could be a contributing factor.

3. Another recently active slide is recognized in the SE$\frac{1}{4}$ sec. 22. The toe of this slide has been disturbed by the road and future periodic movement is indicated.

There appears to be little likelihood of catastrophic movement of any of the recognized landslides which would endanger lives in the foreseeable future. It is more apt to be a periodic but gradual process. One possible exception could be a sudden break of the dam in Dompier Creek formed by the toe of the slide. This could release a flood of water, mud, and boulders down the creek channel which could result in damage to the highway or anything else in its path. This potential hazard can be eliminated, however, by cutting a channel through the dam if it is judged desirable to drain it.

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 Herb Schlicker

Nature & Cause of Slide Activity:

The landslide closely approximates the area of an old landslide. Aerial photographs taken in 1936 and again in 1960 show the outlines of the old slide area. In a few places the outlines of the recent slide inside of the old scars have trees showing no movement or tilting growing through the slide debris. This indicates the old slide occurred at least 50 years ago and possibly much earlier.

The sole or the lowest slip plane of the slide is irregular and appears to be along the contact between the tuff breccia above and basalt and ash flow tuffs below. The irregular surface of the basalt is reflected in the irregular outlines and directions of movement within the slide mass. At the toe of the slide in Dompier Creek the creek has cut a steep channel into the basalt. The ridge to the northwest appears to be basalt and squeezes the sliding mass forcing it to the northeast. / Page 5

Pressure ridges near the toe of the slide and just below the sag pond, locally called Hart Lake, are the result of the basalt being closer to the surface in this area. The ridges have been forced as much as 50 to 70 feet higher than adjacent depressions on the slide surface.

The recent movement in the area of older sliding can be attributed to deep weathering and development of clays due to the easy access of groundwater and atmosphere along the many fractures caused by the old slide, and possibly stream erosion of the toe of the old slide. Many other areas in the immediate vicinity show evidence of older sliding which could be reactivated at some future time.

The history of most old landslides is one of several periods of movement. Often excavation of the toe by stream erosion or by man will cause an old slide to move again. Landslides are evident almost everywhere erosion of steep topography is taking place in weak materials. A soft material resting on a dipping resistant rock will be affected by sliding.

~~Clinton Dunn~~

#1 At small knob 1750' elevation - float material only, nothing in place - weathered iron-stained tuff - XL tuff.

#2 Soil zone thick - rocks weather from white- to iron stained XL tuff - rhyolite - to dark brown red soil - looks rich —

#3 rhyolite ash flow tuff in place. —

#4 ash flow tuffs massive - poor attitude N25°W dip 5° to the East -

#5 following cliff formed in massive tuff flow as much as 100' to 150' thick here - tan, buff, white, secondary iron staining in patterns - XLS of qtz + feldspar abundant - some biotite. Tremendous view of slide - Lake is visible at S42°W sizeable pond just below farmhouse. Slightly hazy and sun to the SW and not too photogenic - 1 photo from here. Generally no jointing or fracturing - the few cracks generally parallel the scarp of the cliff. Massive weathers overhangs etc. around

#6 The ~~[illegible]~~ tuff becomes somewhat coarser grained + could be called a lapilli tuff - lapilli of pumice are weathered out giving a moth eaten appear also there appears to have been a small slump of material from here —

Small sag pond - 100' x 100' small amount of water + tules - caused by old landslide -

#9 massive cliffs of lapilli tuff same composition - small l+ block here -

#10 brown lapilli tuff - high percentage of rock frags - weathers easily to small rubble, [redacted] ~~John Kimberley~~ N. Peterson

~~66372~~

Area to the northeast of Dampier Creek in sec. 14 and sec. 15.

The rocks in the northwest trending ridge that parallels Dampier Creek are massive light colored ash flow tuffs. The tuffs are white, tan, buff, to purplish in color and locally are highly iron stained. They appear to ~~probably~~ be of rhyolitic composition. Quartz and feldspar crystals are abundant with biotite mica common to abundant.

They typically outcrop in steep cliffs with little or no jointing or fracturing. The few cracks ~~fractures~~ that are present are large scale features and parallel the ridge ~~and~~. Large blocks of the massive tuff have broken off and rolled to the bottom of the steep slopes. At some places the tuffs are visible in vertical outcrops as much as 100 feet thick.

Attitudes are not easily measured in the massive tuff ~~Just to the east~~ but where some lineation is present the strike is N25°W and the dip up to 15° to the east.

Just to the east the light colored tuffs are overlain by layered to massive dark brown tuffs + tuff breccias. These are similar to the tuffs in the slide area and weather easily to a rubble of clay + rock fragments. These ~~appear to be~~ are conformable and ~~the s~~ a good attitude near the center of sec. 14, T. S., R. W. shows a strike of N25°W and a dip of 15° to the NEast.

There is probably a fault or fault zone paralleling and just east of Dampier Creek with the upthrown side on the east. This results in the older light colored tuffs being exposed in the high resistant ~~ridge~~ NW trending ridge.

Landsliding on a small to large scale can be seen at several places in sections 14 and 15 and this is probably ~~is~~ typical of the whole area that is underlain by ~~the~~ the incompetent easily weathered volcanic tuffs and tuff breccias.