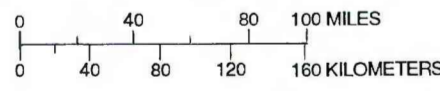
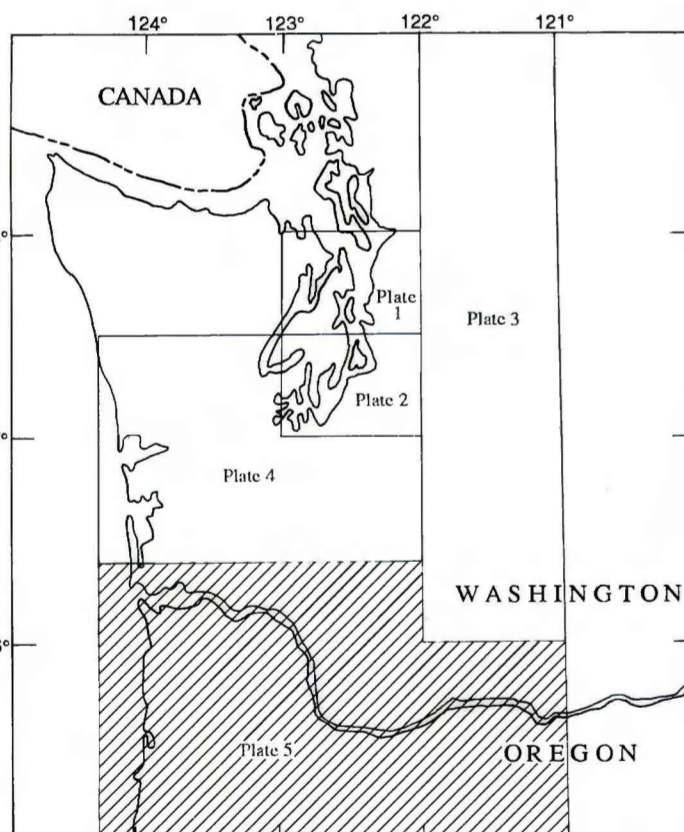
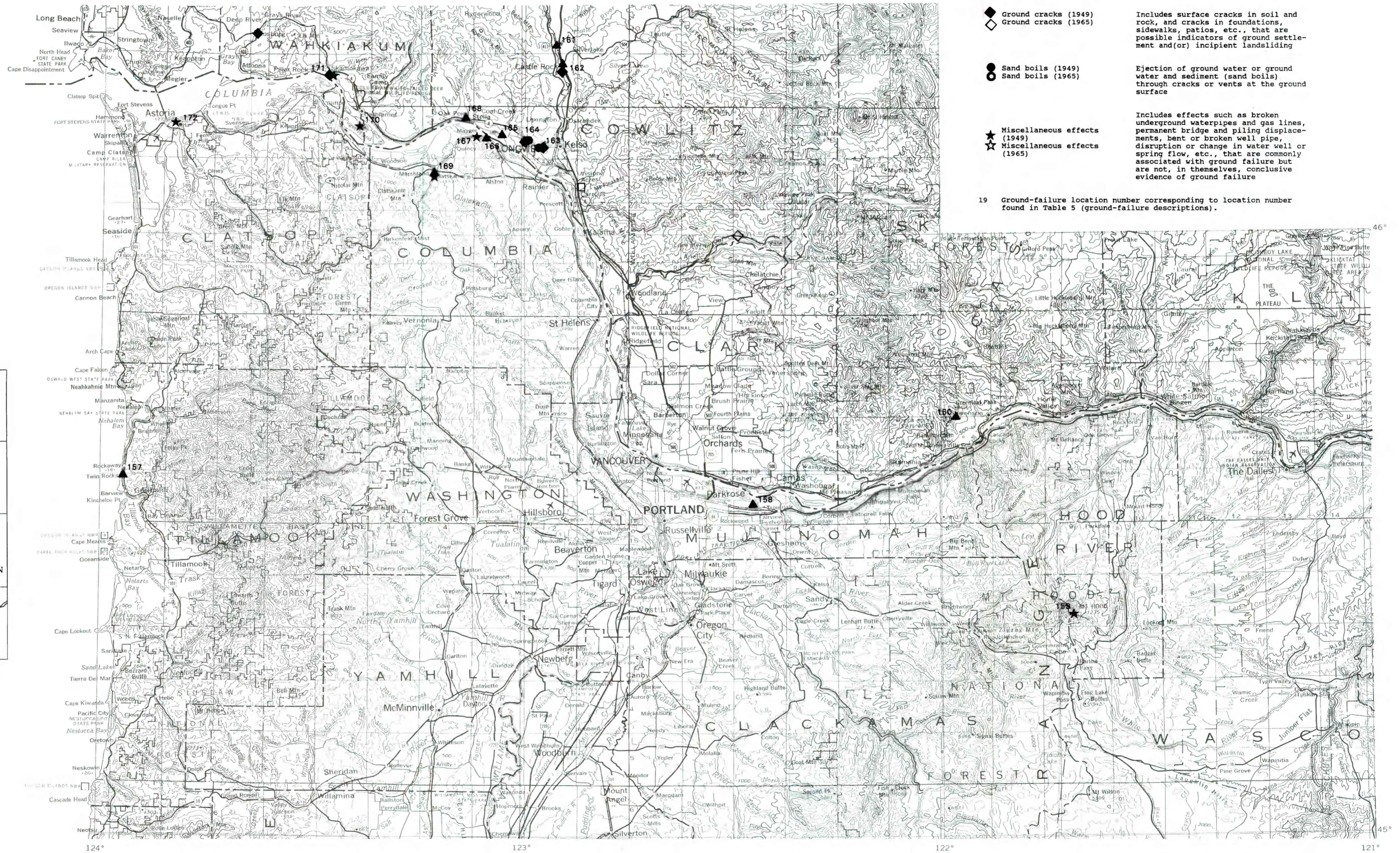


EXPLANATION

Ground failures induced by the April 13, 1949, Olympia earthquake and the April 29, 1965, Seattle-Tacoma earthquake are indicated by the following symbols (1949, closed symbols; 1965, open symbols). Quotations and comments describing selected ground failures (numbered locations) are found in Table 5.

- ▲ Landslides (1949)
 - △ Landslides (1965)
 - Ground settlement (1949)
 - Ground settlement (1965)
 - ◆ Ground cracks (1949)
 - ◇ Ground cracks (1965)
 - Sand boils (1949)
 - Sand boils (1965)
 - ★ Miscellaneous effects (1949)
 - ☆ Miscellaneous effects (1965)
- Includes rotational slides (slumps), translational slides, rockfalls, soil falls, lateral spreads, flows, and avalanches
- Settlement of the ground surface not clearly related to landsliding
- Includes surface cracks in soil and rock, and cracks in foundations, sidewalks, patios, etc., that are possible indicators of ground settlement and/or incipient landsliding
- Ejection of ground water or ground water and sediment (sand boils) through cracks or vents at the ground surface
- Includes effects such as broken underground waterpipes and gas lines, permanent bridge and piling displacements, bent or broken well pipe, disruption or change in water well or spring flow, etc., that are commonly associated with ground failure but are not, in themselves, conclusive evidence of ground failure

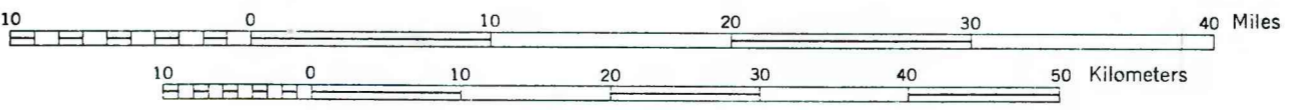
19 Ground-failure location number corresponding to location number found in Table 5 (ground-failure descriptions).



Base from U.S. Geological Survey
Washington and Oregon 1:500,000 series

LOCATION MAP OF GROUND FAILURES IN THE WESTERN COLUMBIA RIVER REGION, WASHINGTON AND OREGON

Scale 1:500,000
1 inch equals approximately 8 miles



Contour interval 500 feet

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