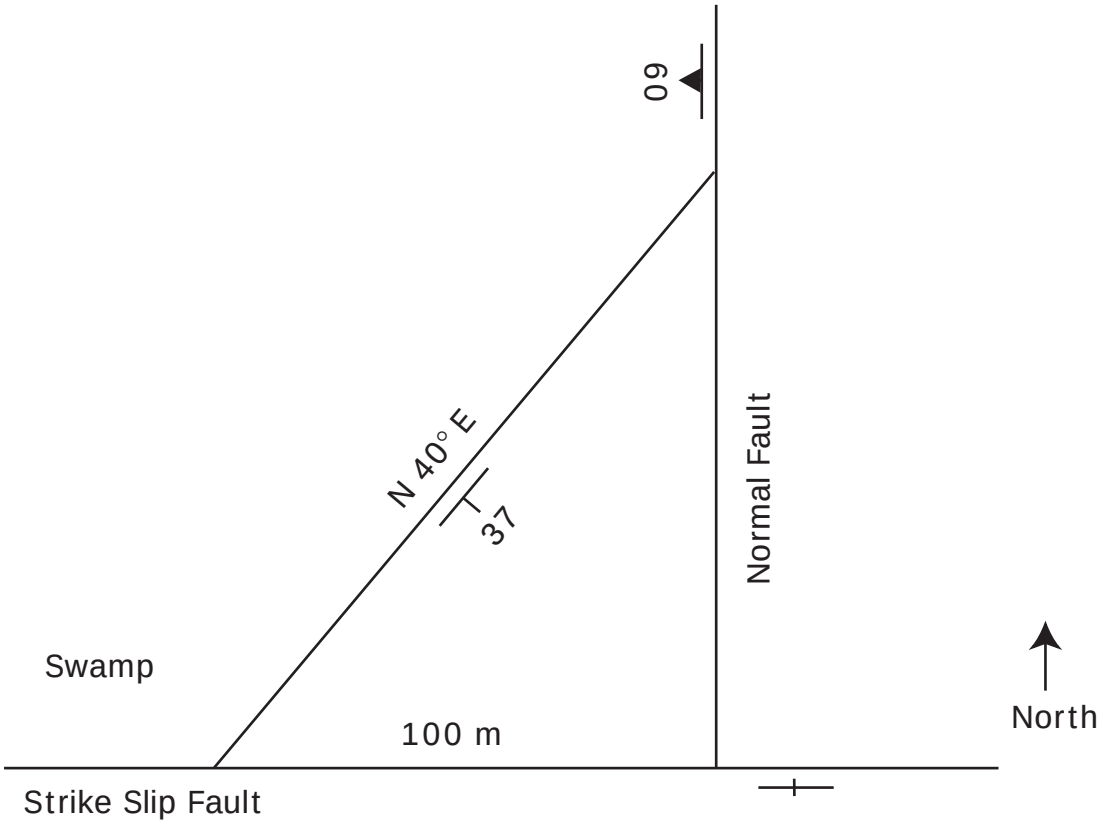
Structures Hydrology Problem



The town of Dedaichtuoh has a problem. It has been getting its water for years from a 63.88 m thick unit, the Mambo Sandstone, striking N40E, dipping 37 SE, which has a porosity of 20%. As it grew and developed, its need for water increased. New and deeper wells were drilled. Soon folks found that the unit beneath the Mambo Sandstone was an impermeable shale, and the subsurface extent of the Mambo Sandstone was limited by the juxtaposition of other impermeable units when it extended to either a N-S normal fault, with a dip of 60° W, or a vertical strike-slip fault extending E-W. Worse yet, whenever a well was drilled to a depth greater than 60 m, remaining in the Mambo Sandstone, it encountered Creosote. Discovering this Creosote should not have been a complete surprise, as a plant treating telephone poles with this DNAPL pollutant had been operating in the town until only a few years ago. Faced with a potentially large cleanup or mitigation bill, the town has hired you to estimate the amount of Creosote that they have to deal with.

When you go to help them out, you find that the top of the Mambo Sandstone crops out 100 m to the West of the intersection of the two faults, as shown in the sketch map. How much Creosote is lurking down there?

(The volume of an irregular tetrahedron with one face horizontal, is one third of the area of that face times the difference in elevation between that face and the other corner.)