Predicting the Likelihood and Severity of Sinkholes Occurring in Khutsong Due to Leakage From Underground Water Pipes

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Purpose: This research explored if soil saturation contributes to the formation of sinkholes. This research also investigated if Khutsong households are at risks of new sinkholes. Method: The hypothesis was tested through research and experiments. Three beakers were placed on a level surface and over each beaker, a funnel was placed. Over the funnel a filter paper was placed then the funnels were filled with 20ml of soil from 3 sinkholes sites, individually. These were further labeled accordingly and flooded with 20ml of water. It was inspected how much water seeped through the soil. The same method was followed with a sample from stable ground. A survey was also conducted to determine if households in Khutsong display signs of possible sinkholes. Results: The soil samples from all sinkhole sites all saturated 6-7 ml of water. The soil sample from stable site saturated slightly more, 8ml of water. The rest of the water went through the funnel. Observations: From areas surrounding the sinkhole sites, most houses had signs of sinkholes. There were deep cracks in walls and a few tension cracks in soil. Some houses have had their trees and walls fall off or sink. Most household have had a water pipe issue, either bursting or blocking. The stable site, however, also had many cracked walls and a few tension cracks in soil. The residents reported issues with water pipes and also leaning structures. This also shows signs of a sinkhole. Conclusion: The hypothesis was accepted as more water had soaked through the soil. The results might indicate that the soil does, indeed, contribute to the formation of sinkholes in Khutsong.

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