

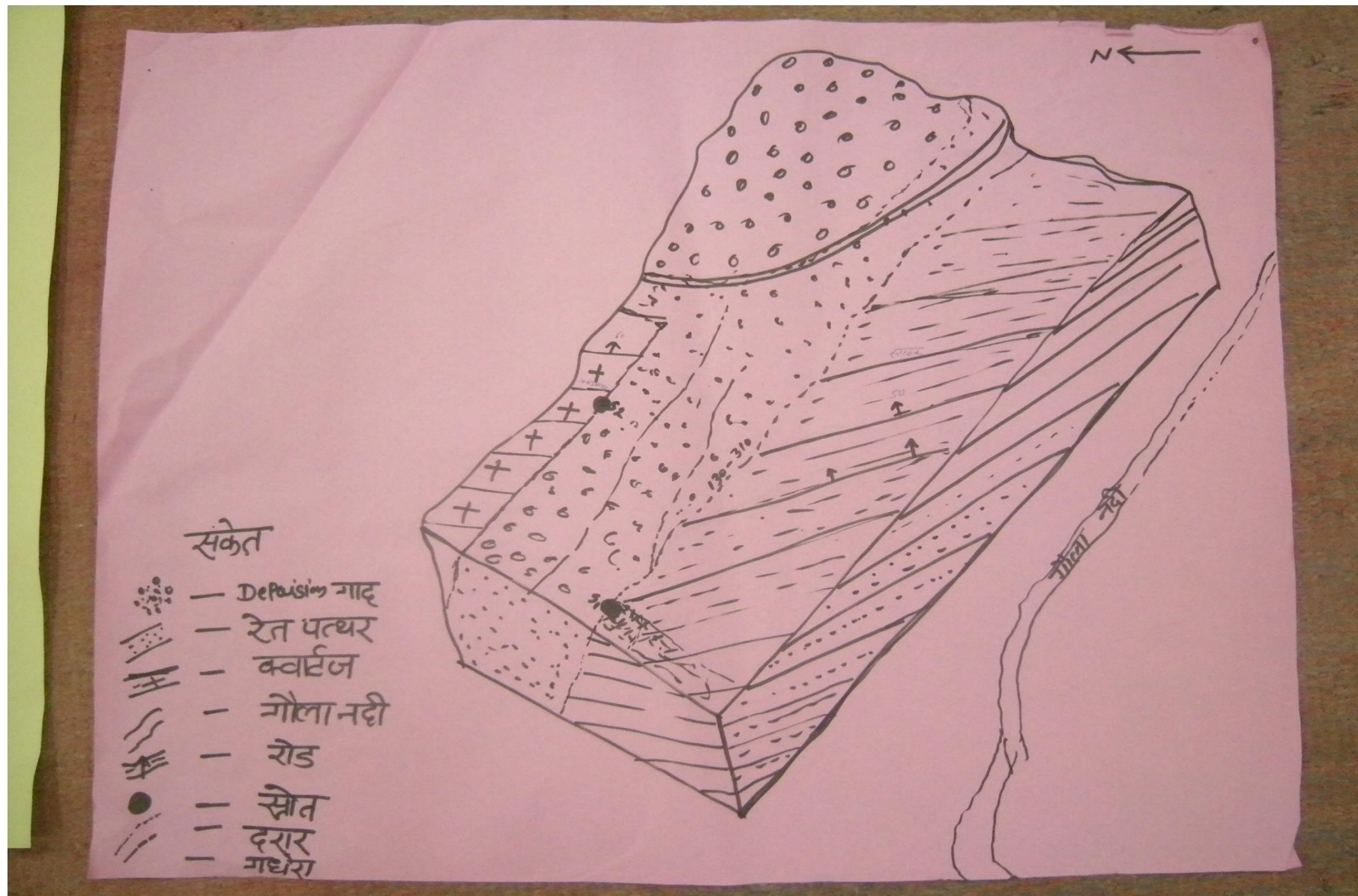
# PROCESS OF MAPPING

## Applying the Science of Hydrogeology



Advanced Center for Water Resources Development And Management





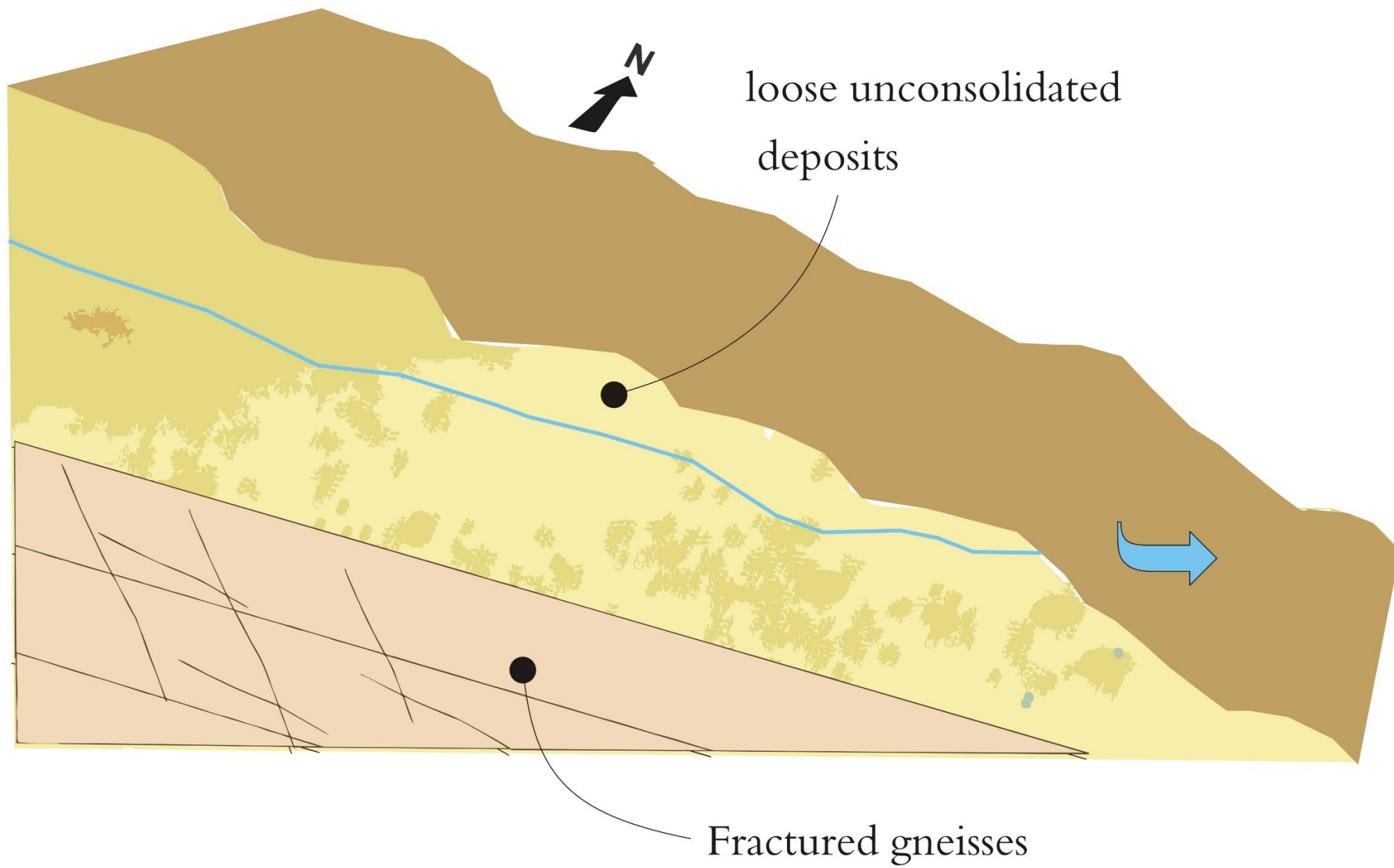
CHIRAG



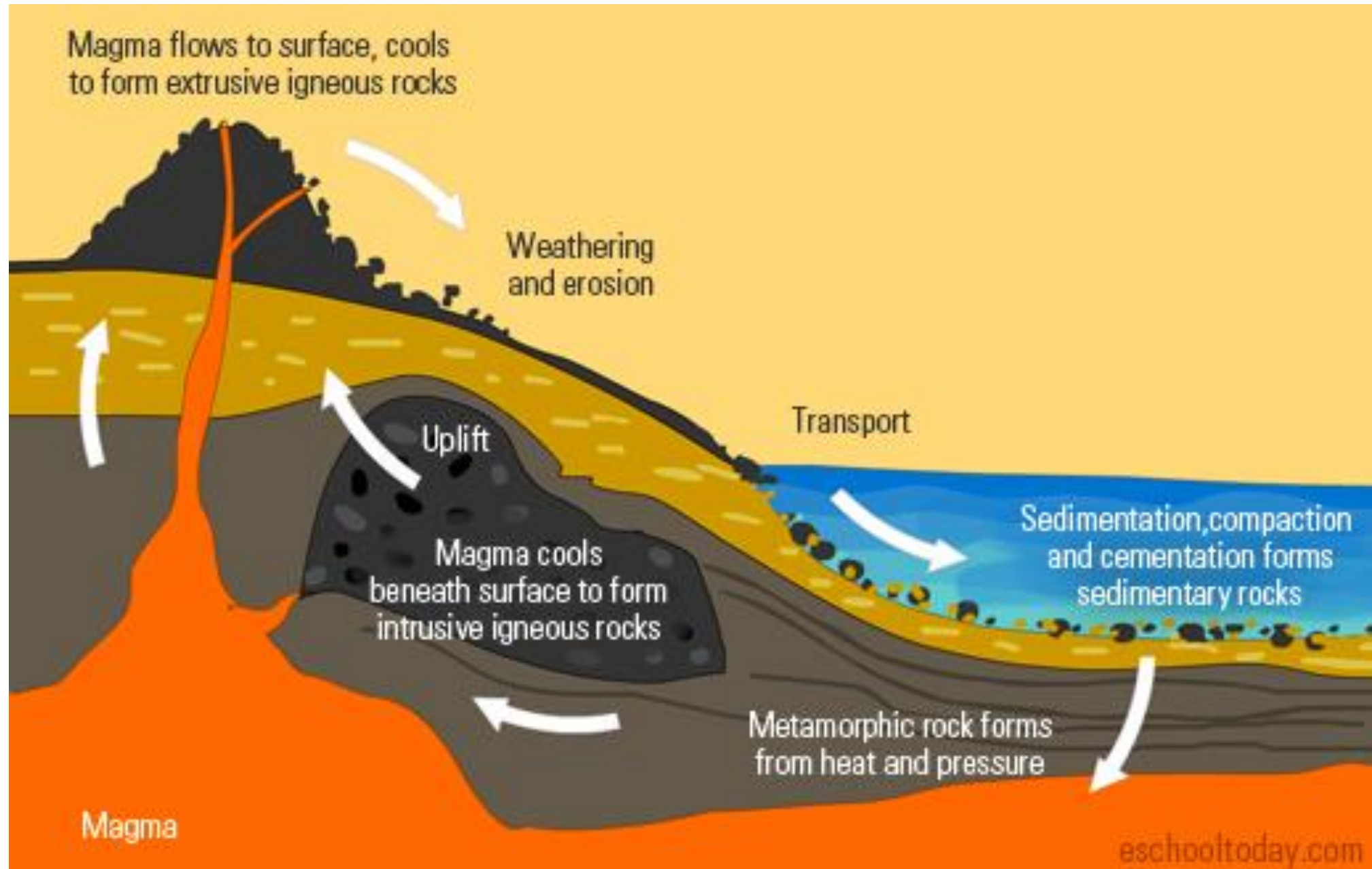
What is behind a spring????

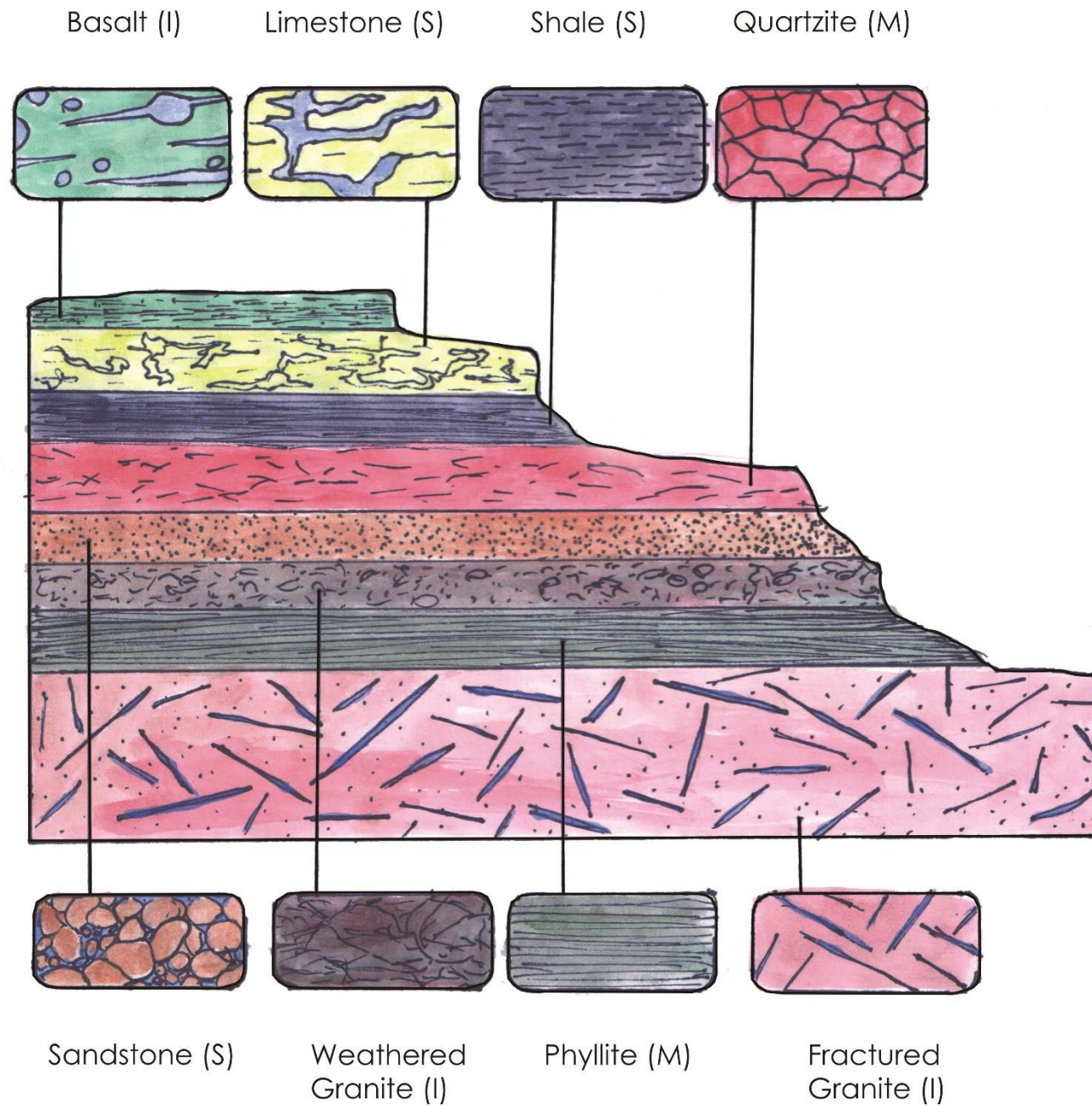




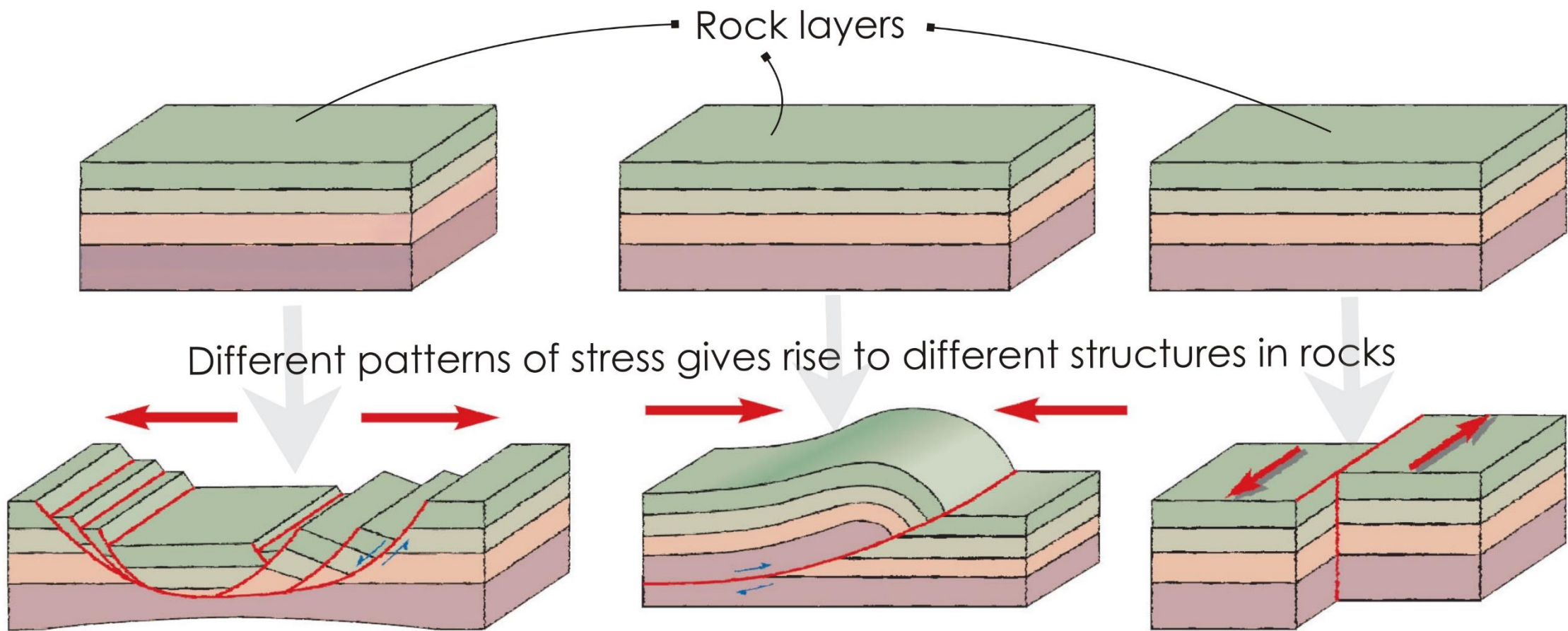


# Rock Cycle...

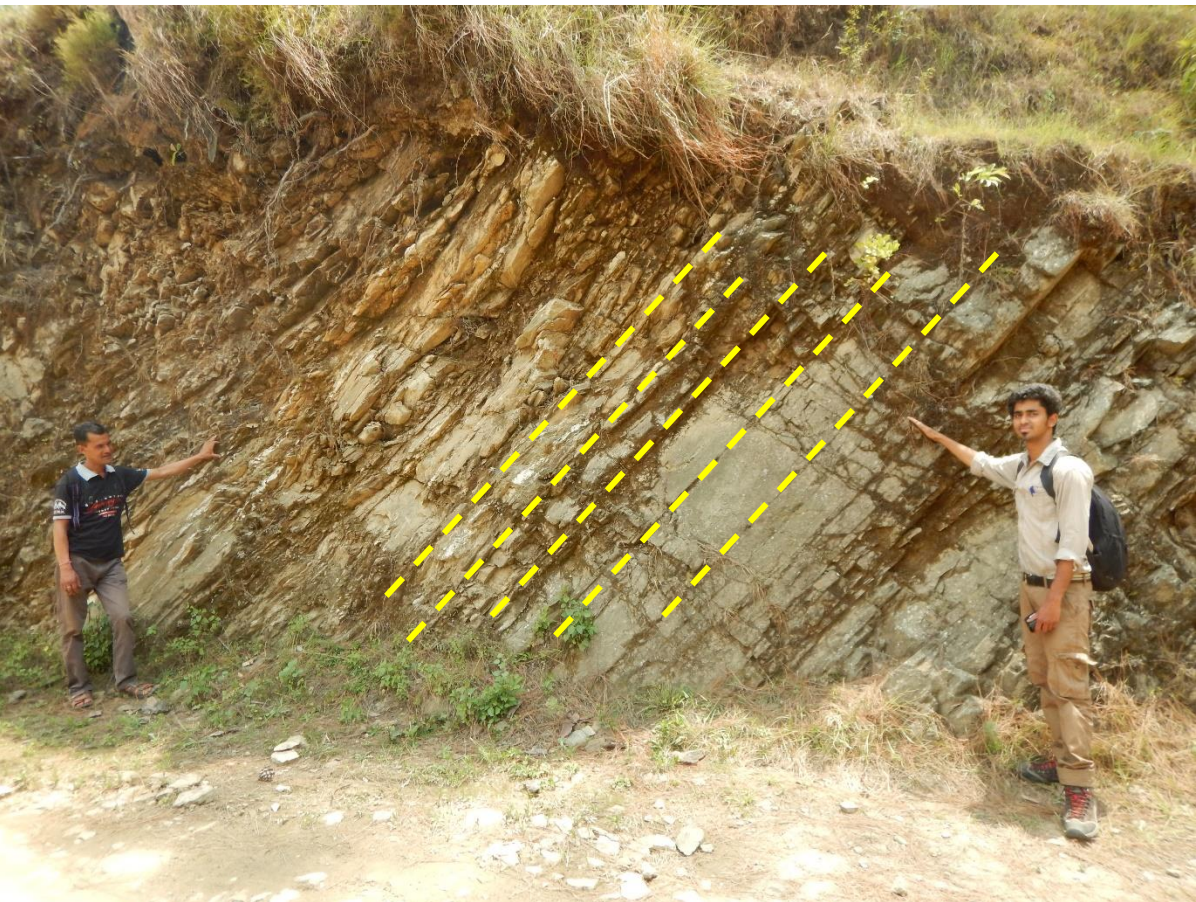










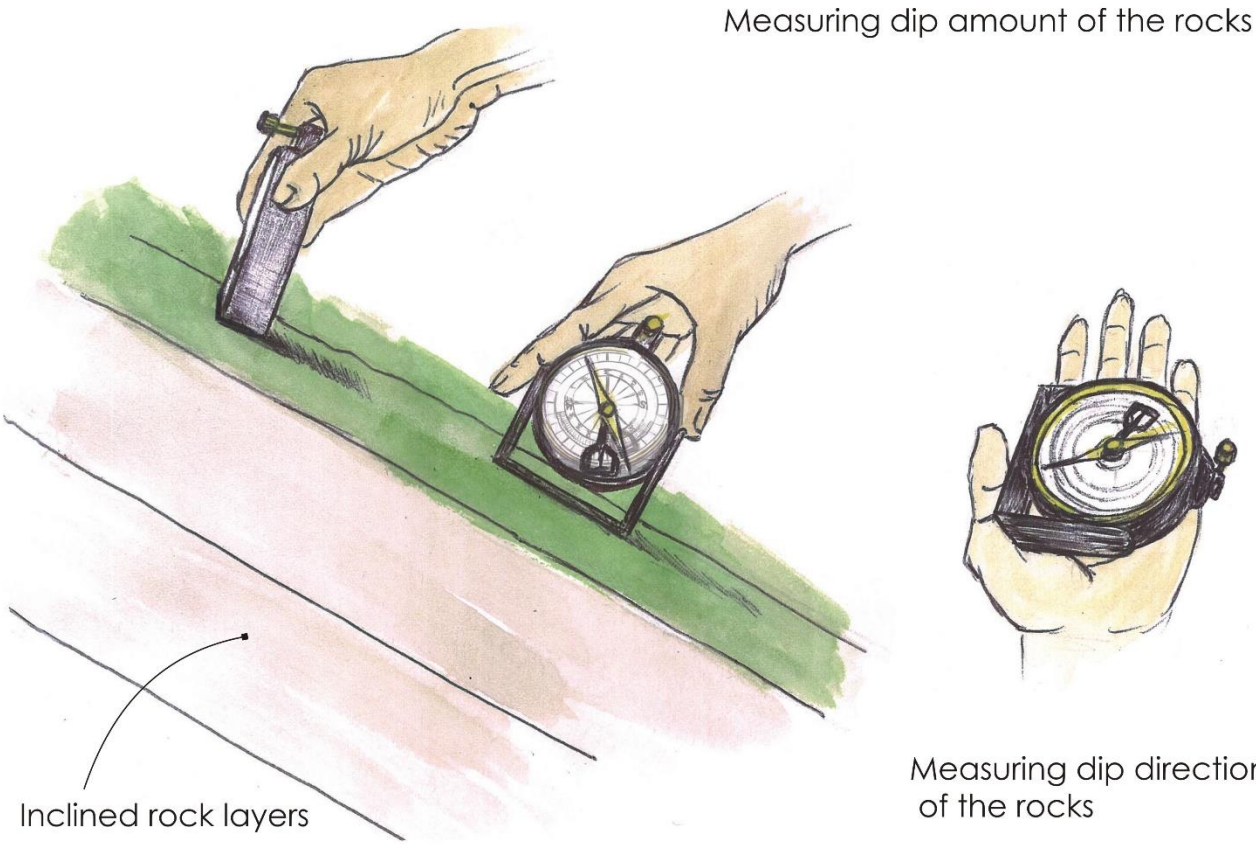
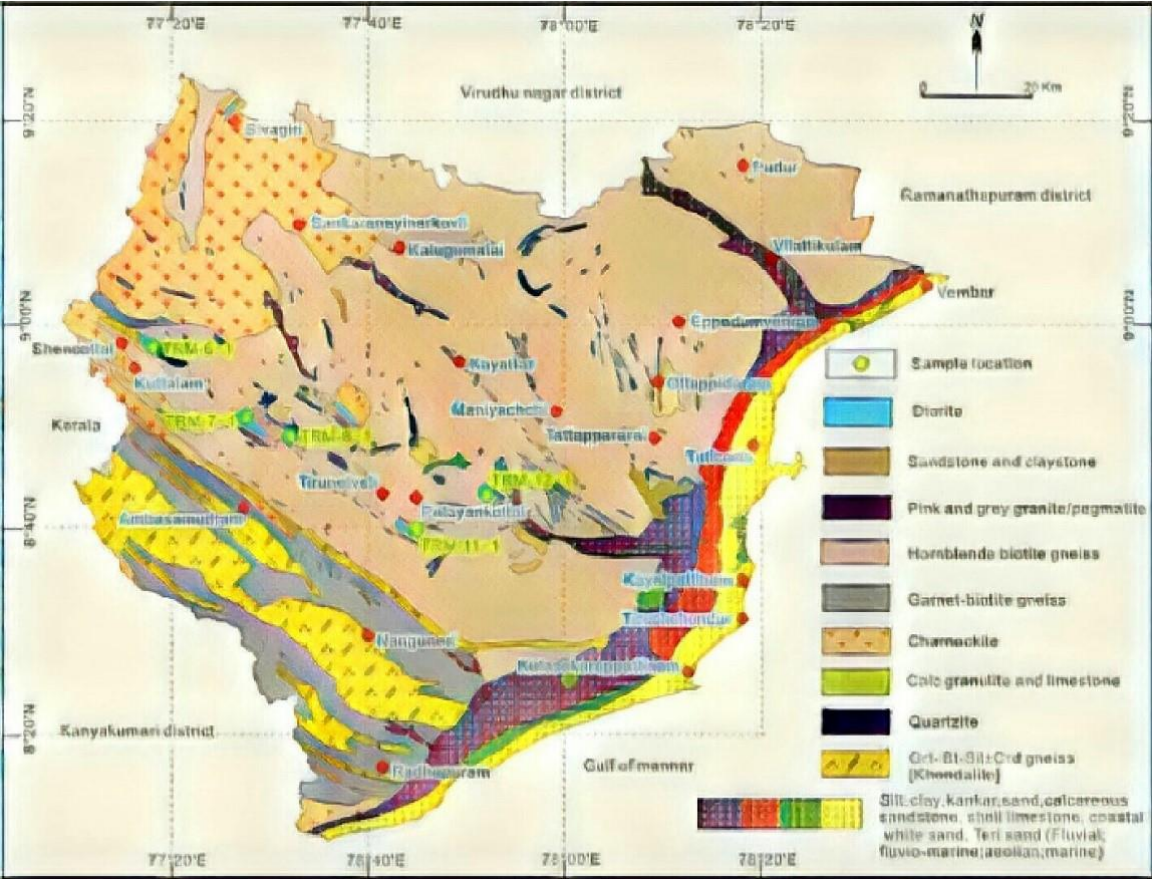


Inclined (dipping) rock.....





# Mapping Hydrogeology.....





# Hydrogeological mapping

- GPS
- Hammer
- Clinometer
- Basemap (Hand drawn  
/toposheet/google earth image)

## GPS (codes)

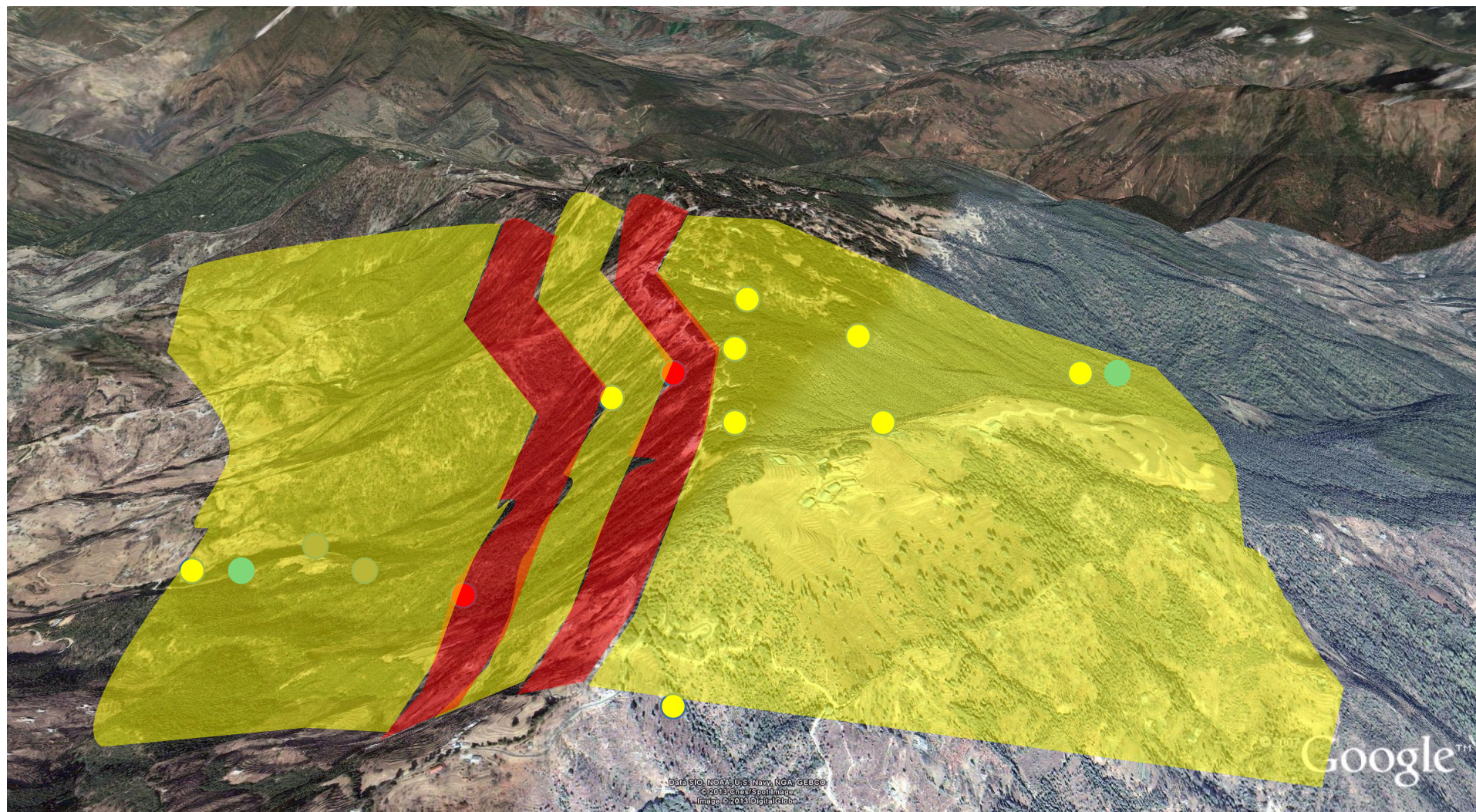
- Geology (G1,2,3,4,...)
- Fractures (F1,2,3,4.....)
- Spring/dhara (S1,2,3,.....)
- Naula (N1,2,3,.....)

## Geological mapping

- traverse along pre identified  
fracture zones from google image/toposheet
- stream channels
- road cuttings
- along dip direction

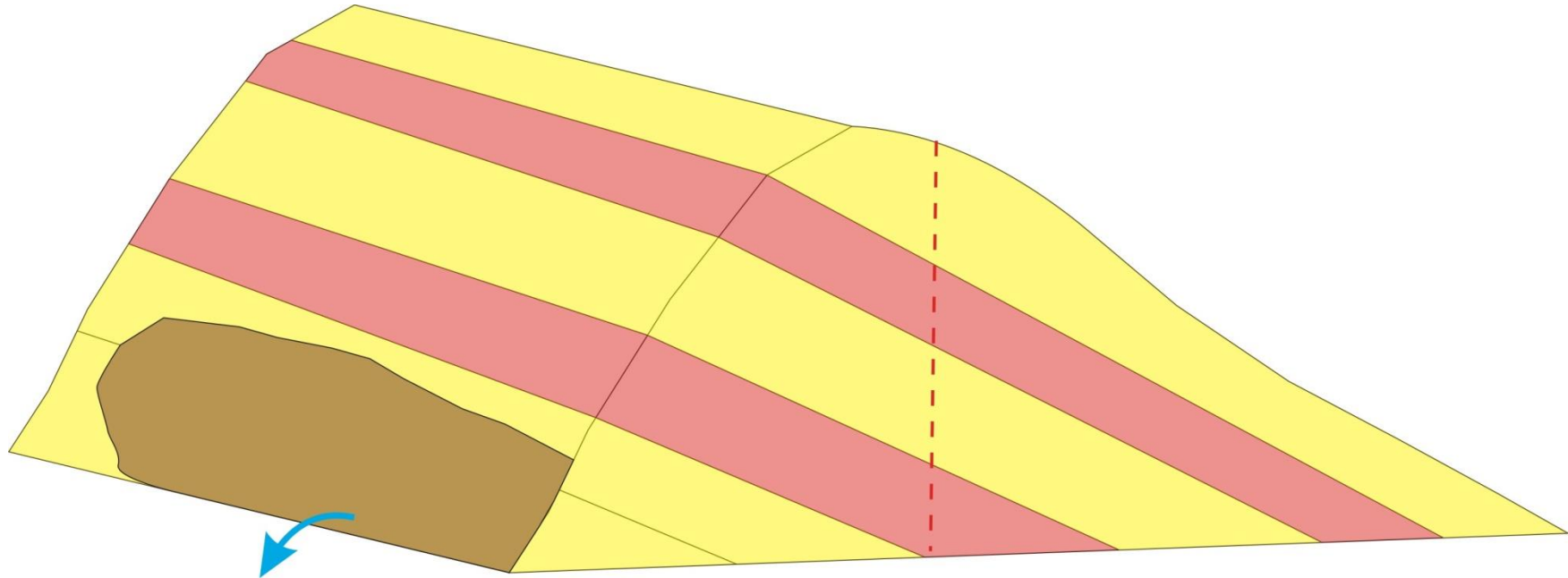
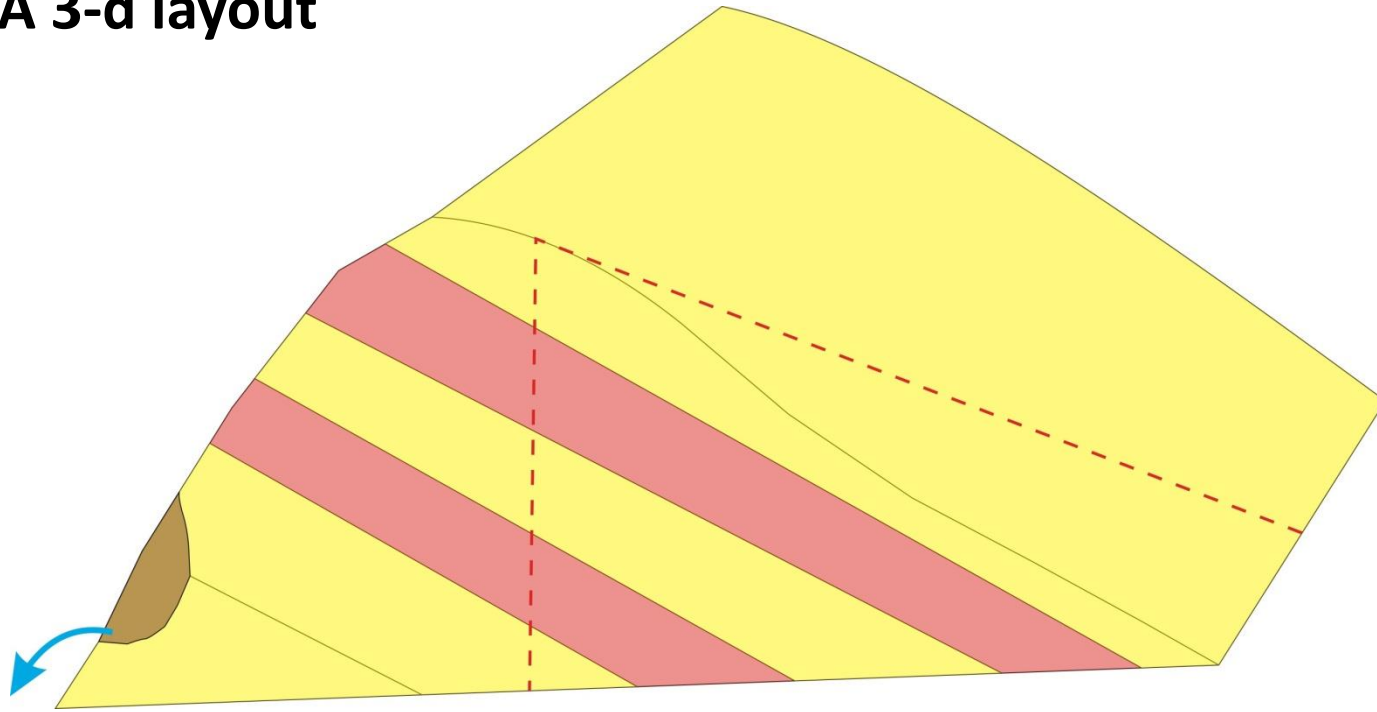


## Interpolating geology



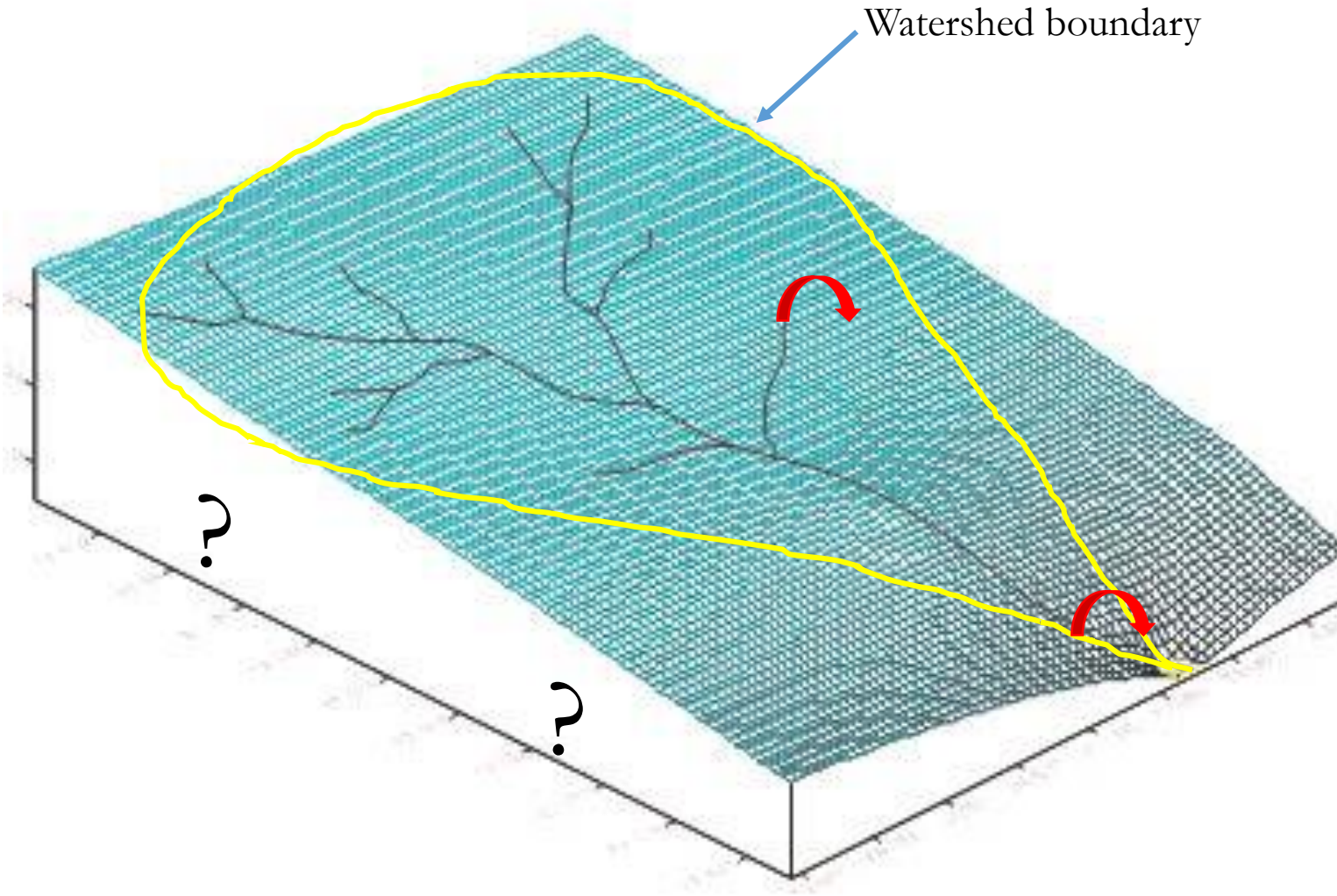


## A 3-d layout





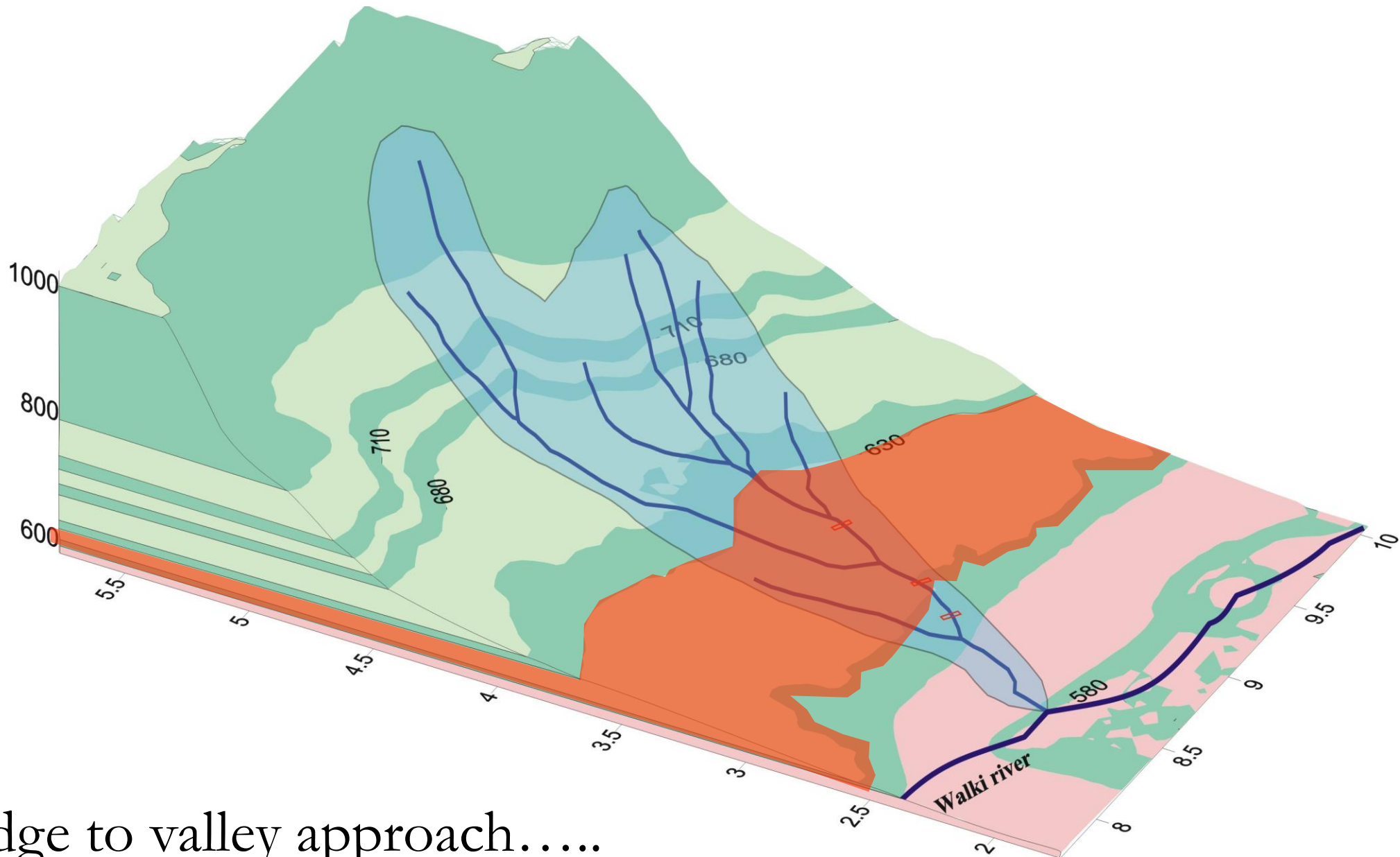
# What is Watershed?



Watershed is an area which is bounded by a ridge area from all sides and drains out through a common point



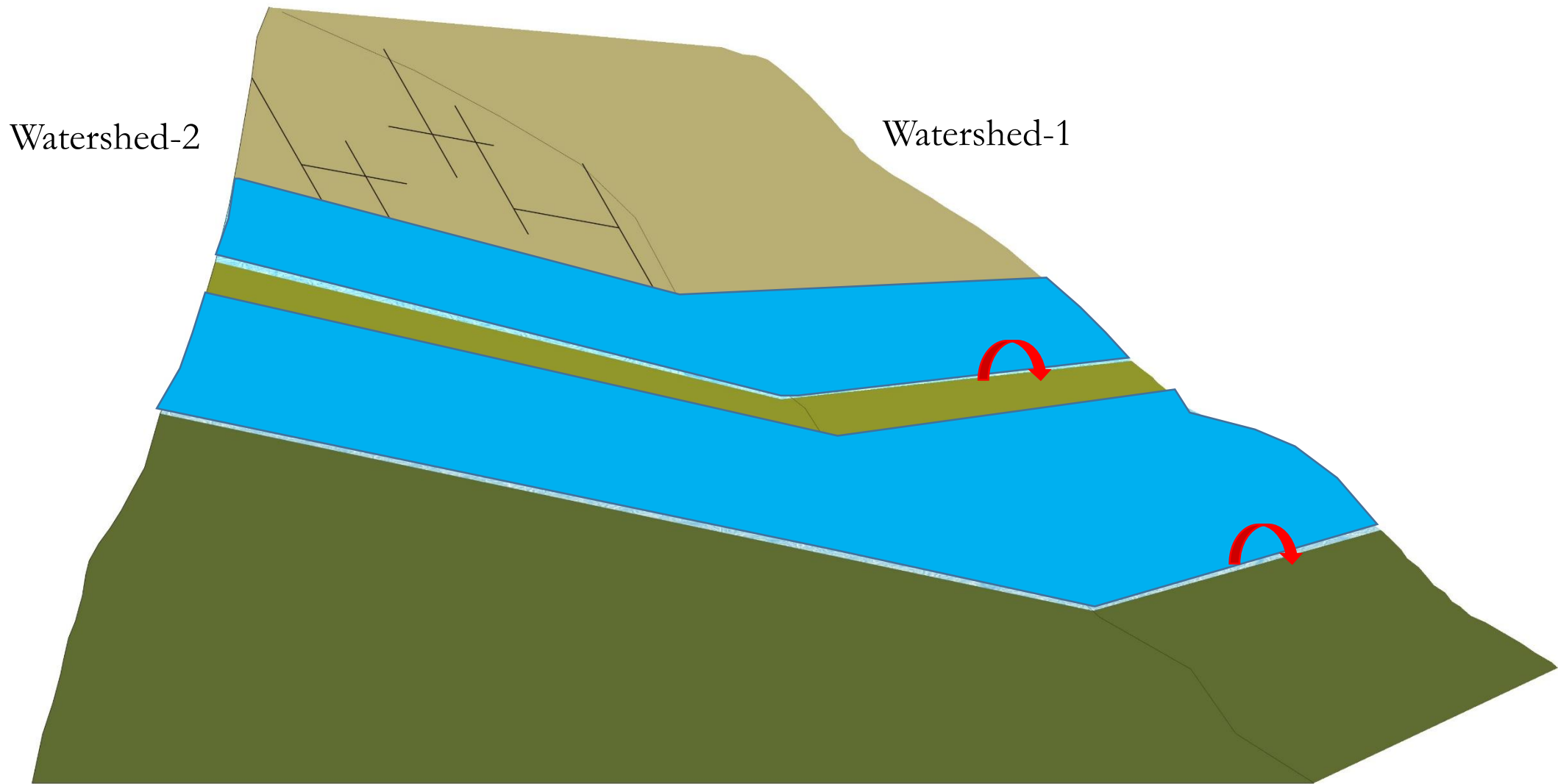
Classical watershed....



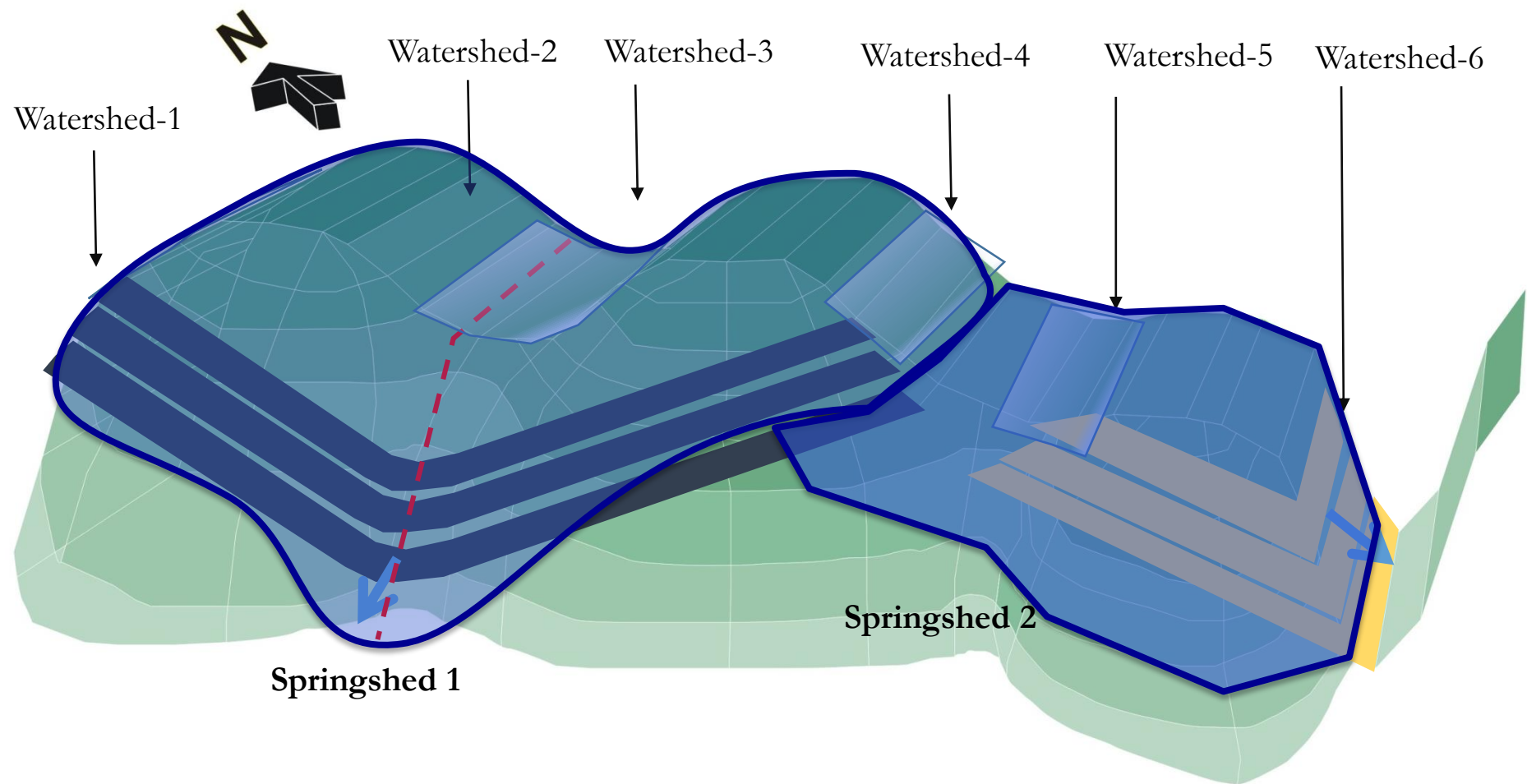
Ridge to valley approach.....



Concept of springshed , a springshed is a set of watersheds and aquifers that integrate into a system that supplies water to the springs in the springshed.



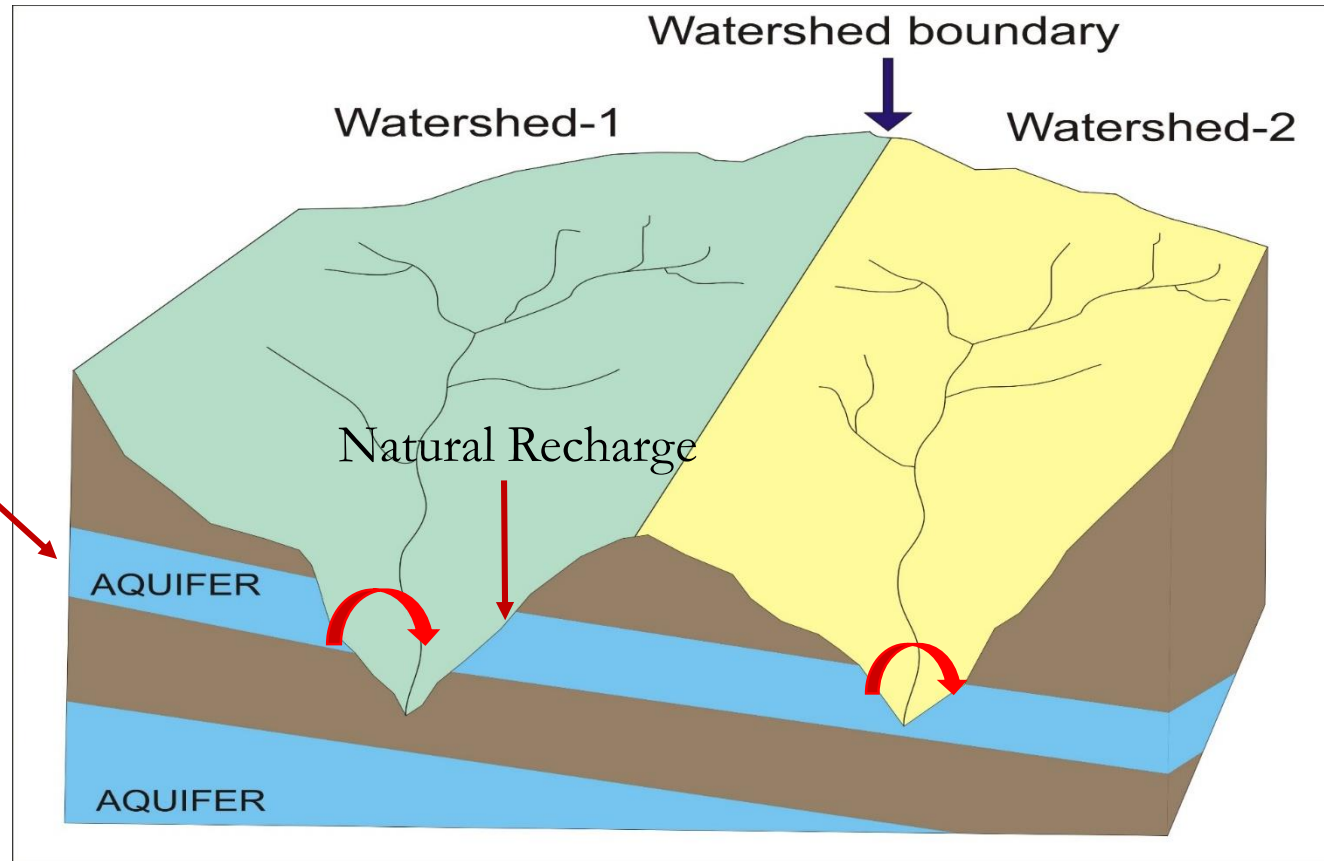






# Connect between Watershed and aquifer to delineate springshed

Natural Recharge



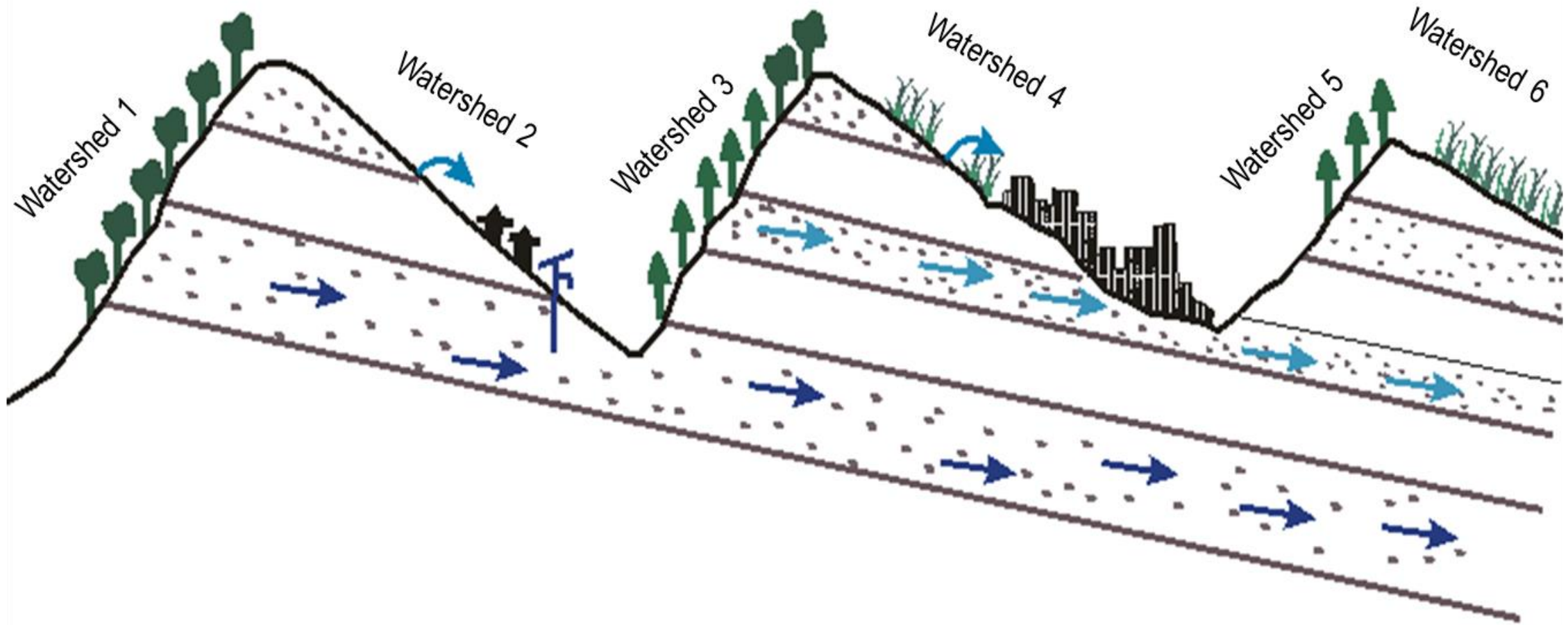
Cases :

- A springshed, which includes one watershed and one aquifer.
- A springshed with one watershed and more than one aquifers but the aquifers not being part of adjoining watersheds
- A springshed which includes more than one watershed and usually with a single or multiple aquifers

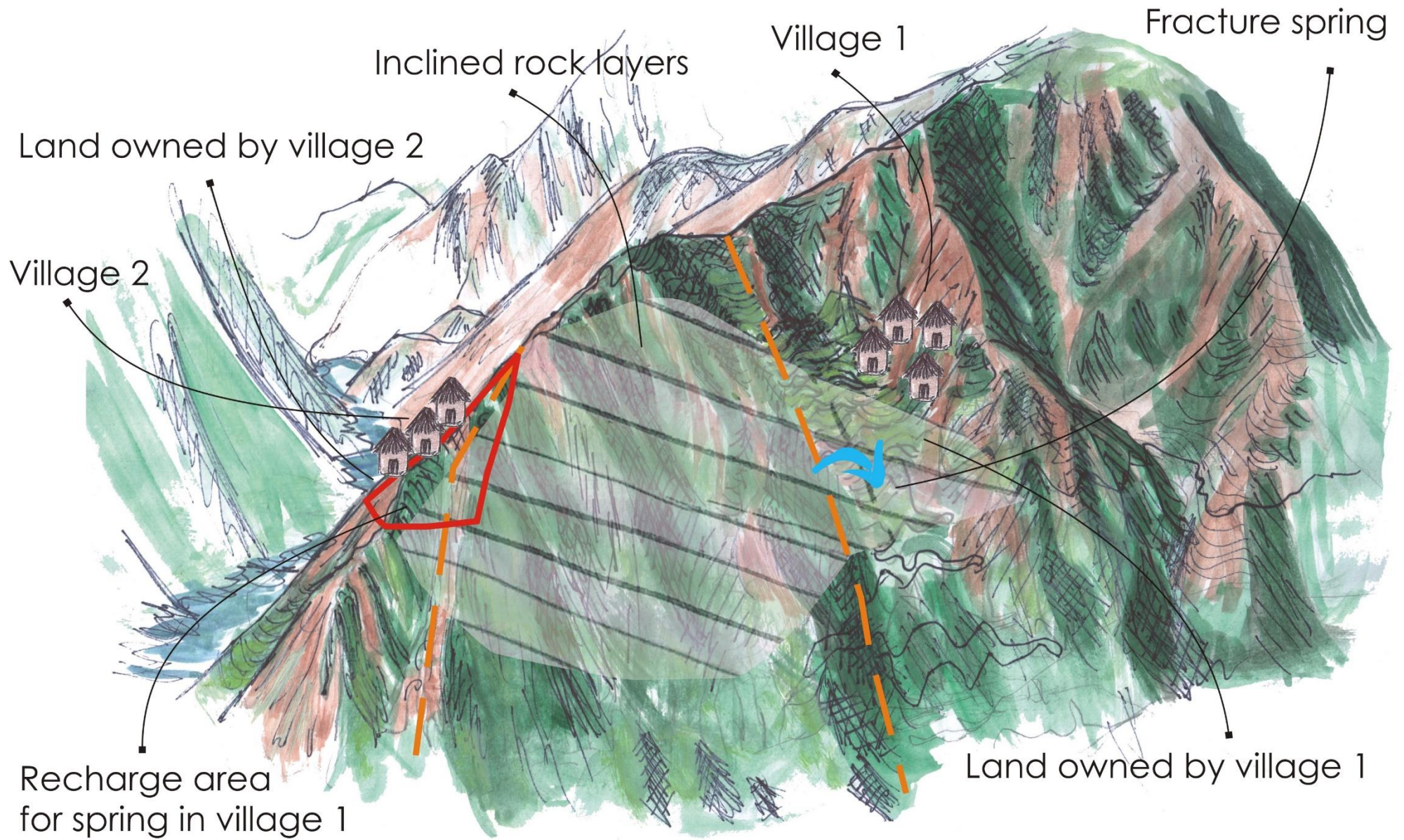


# Hydraulic Continuity across watersheds

## Valley to valley approach

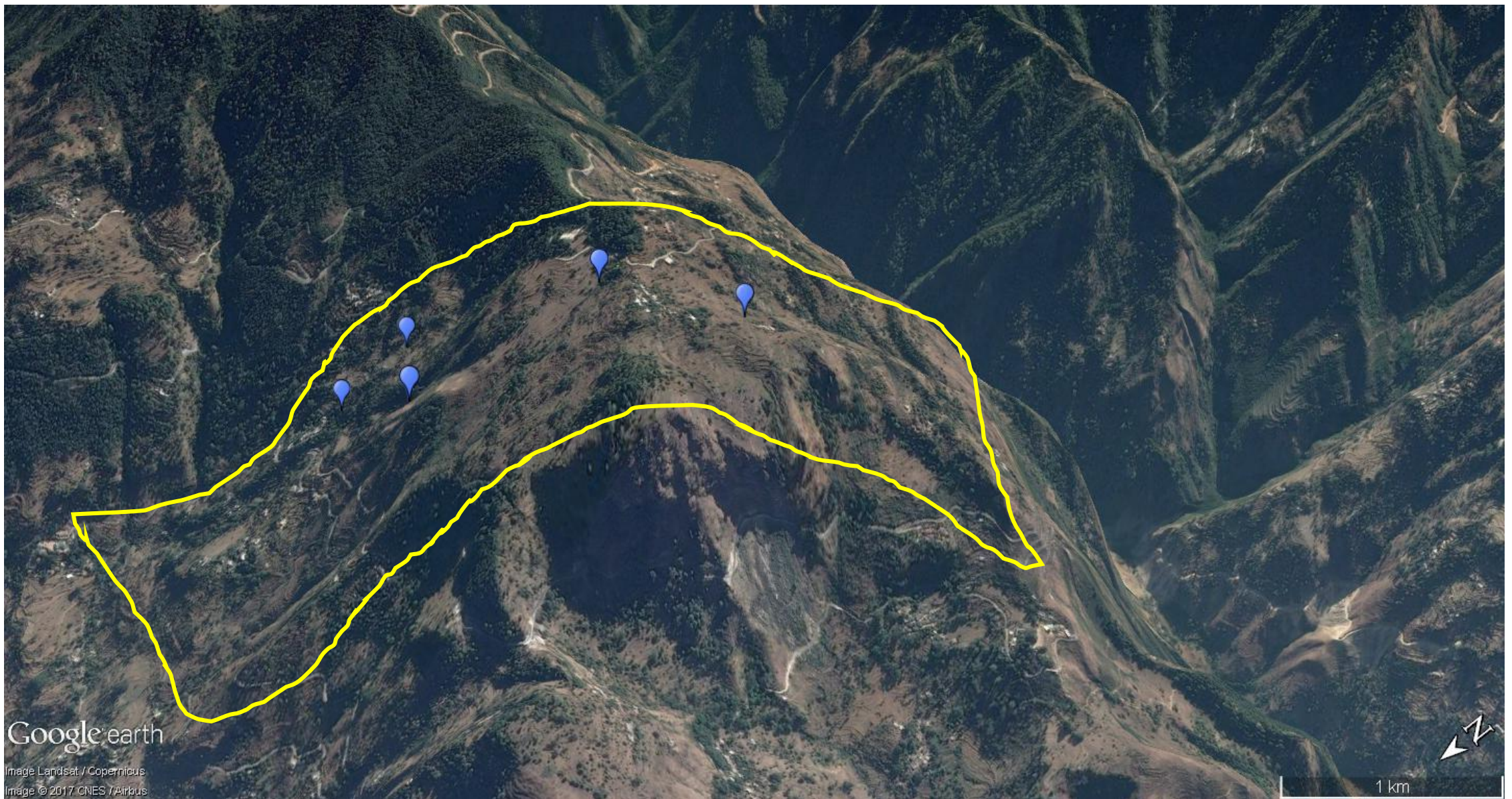






A conceptual drawing of the springshed

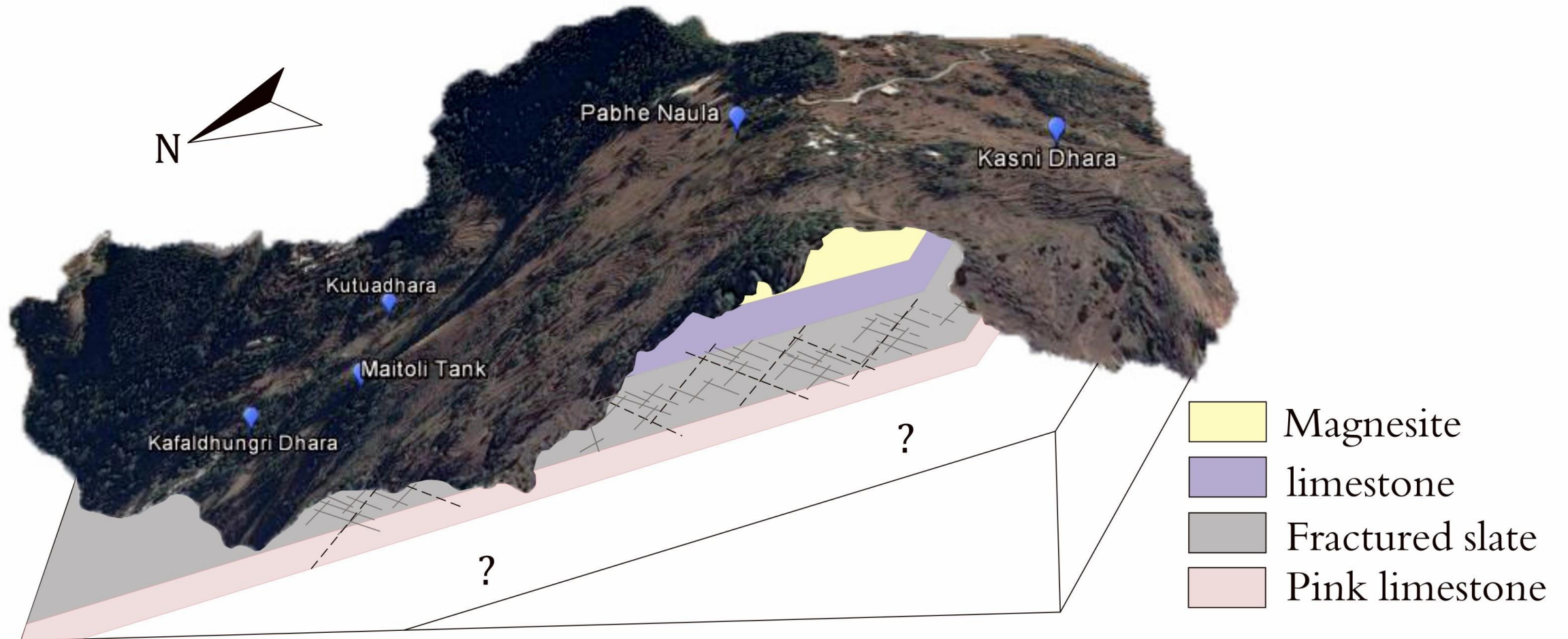




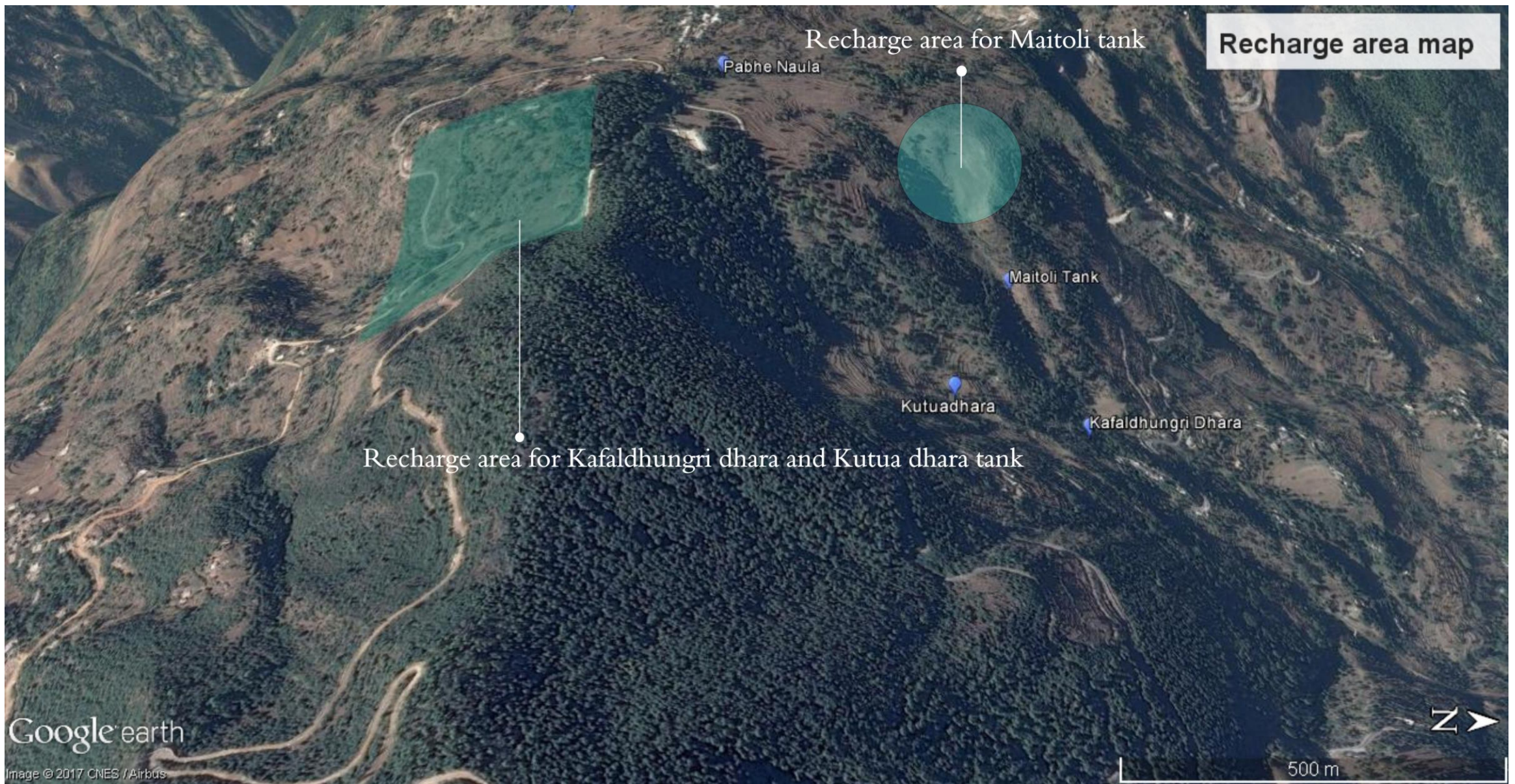
Bans-Maitoli Springshed  
part of larger Chandak-Aulaghat watershed



# Understanding hydrogeology to draw hydraulic continuity.....











A Spring model





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