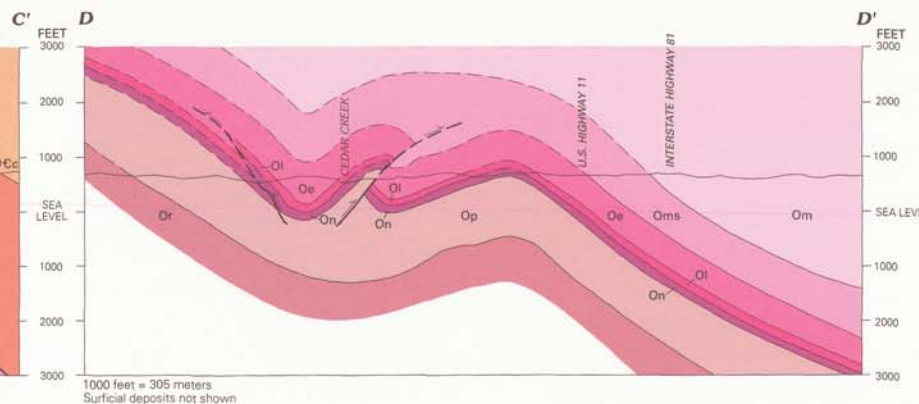
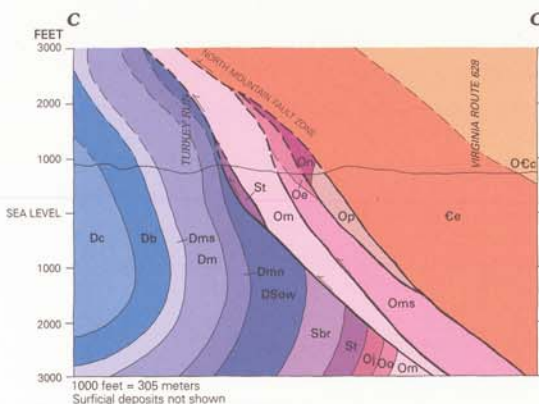
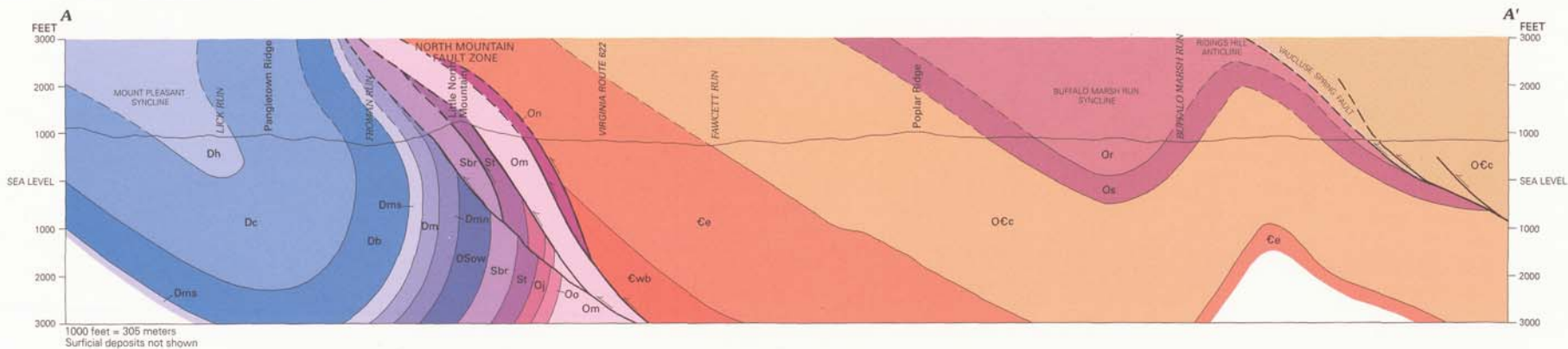




Geologic Aspects of Karst in the Great Valley

West

East



Cross sections through the Shenandoah Valley
Middletown 7.5 min. quad, Frederick County



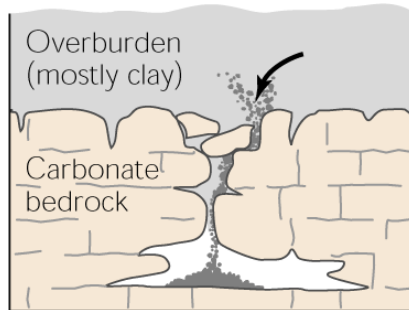
From “*Living on Karst*”



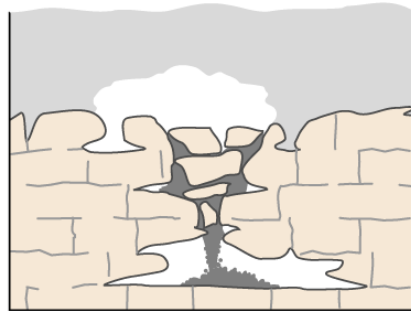


Evolution of a cover-collapse sinkhole

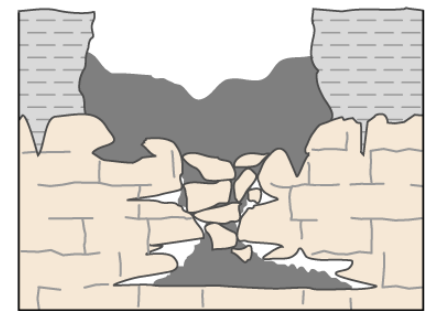
Sediments spill into a cavity. As spalling continues, the cohesive covering sediments form a structural arch.



The cavity migrates upward by progressive roof collapse.



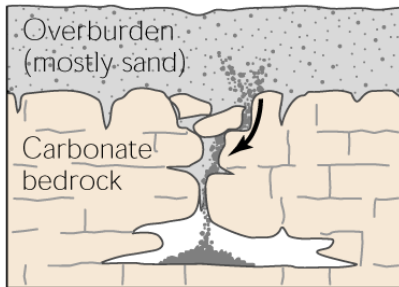
The cavity eventually breaches the ground surface, creating sudden and dramatic sinkholes.



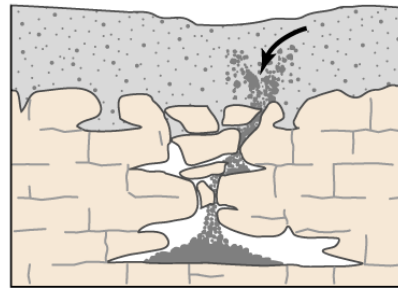


Evolution of a cover-subsidence sinkhole

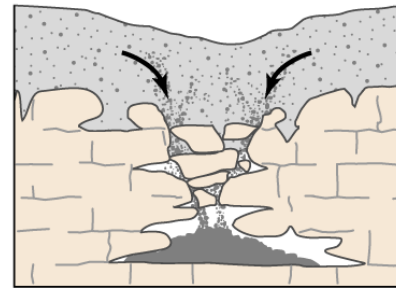
Granular sediments spill into secondary openings in the underlying carbonate rocks.



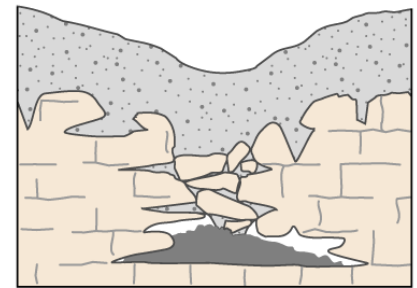
A column of overlying sediments settles into the vacated spaces (a process termed "piping").

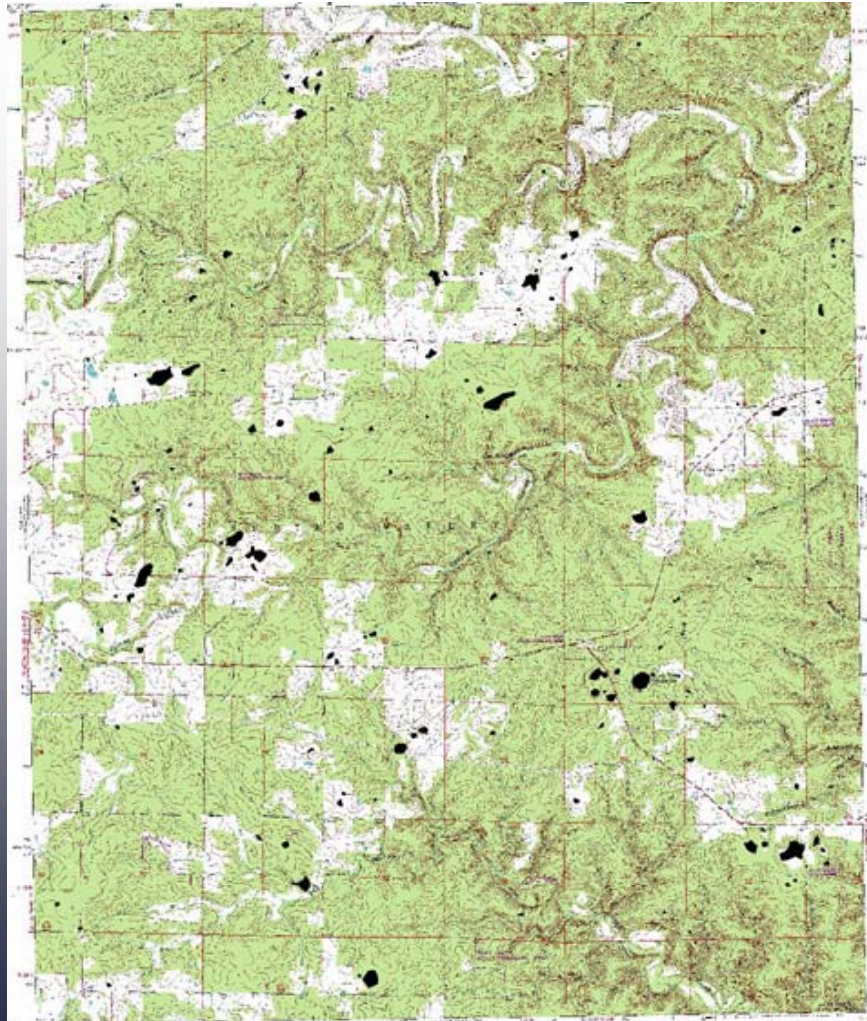


Dissolution and infilling continue, forming a noticeable depression in the land surface.

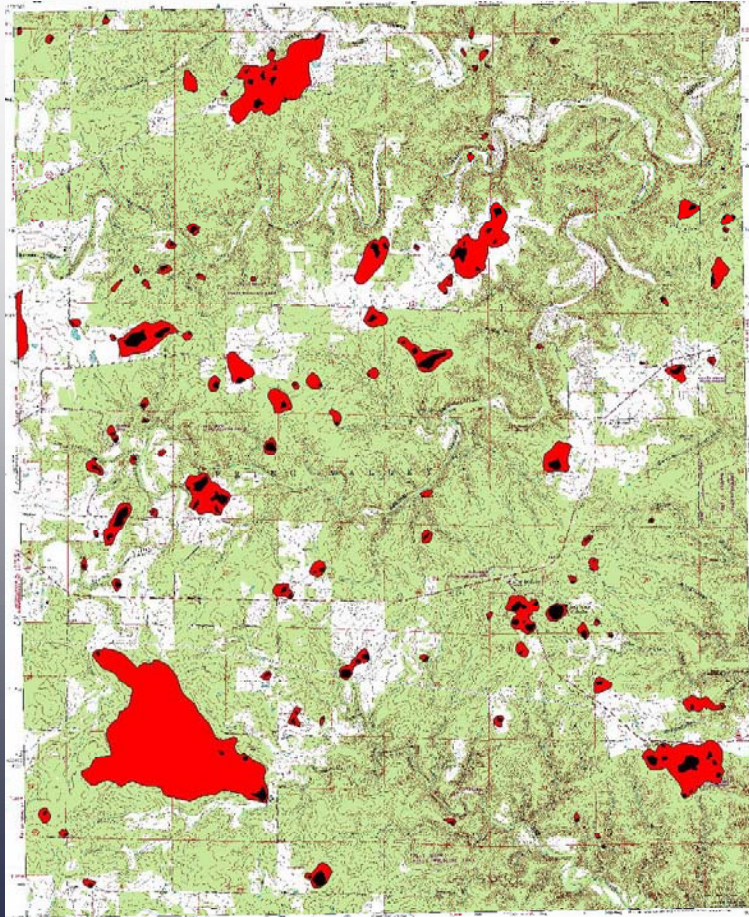


The slow downward erosion eventually forms small surface depressions 1 inch to several feet in depth and diameter.





**7.5-min. map
showing sinkholes
shaded in black.**



■ Sinkholes
(789,345 sq meters, 0.5% of area)

■ Area drained by sinkholes
(9,017,287 sq meters, 5.86% of area)





Geologic map of the Leetown area, Jefferson County, WV showing sinkholes (in blue)





ELEMENTS OF FRACTURE MAPPING

- Orientation
- Intensity
- Persistence
- Aperture
- Mineralization

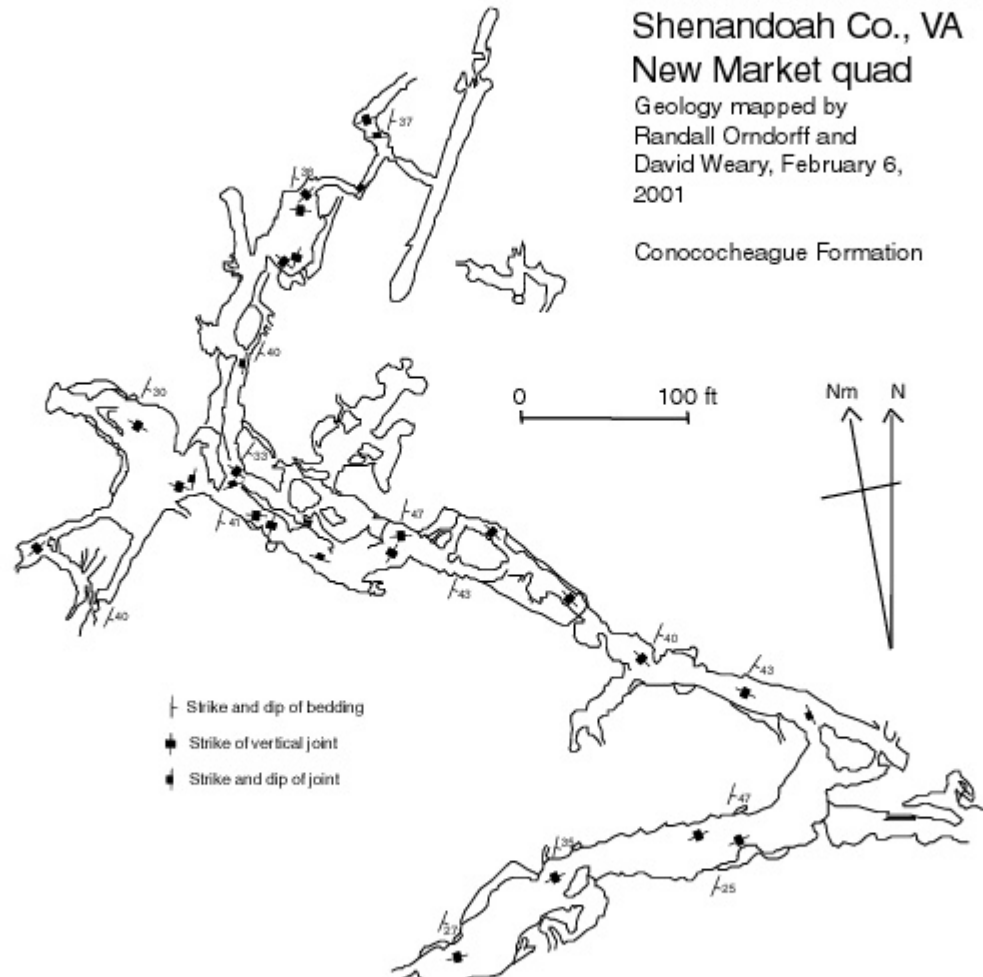


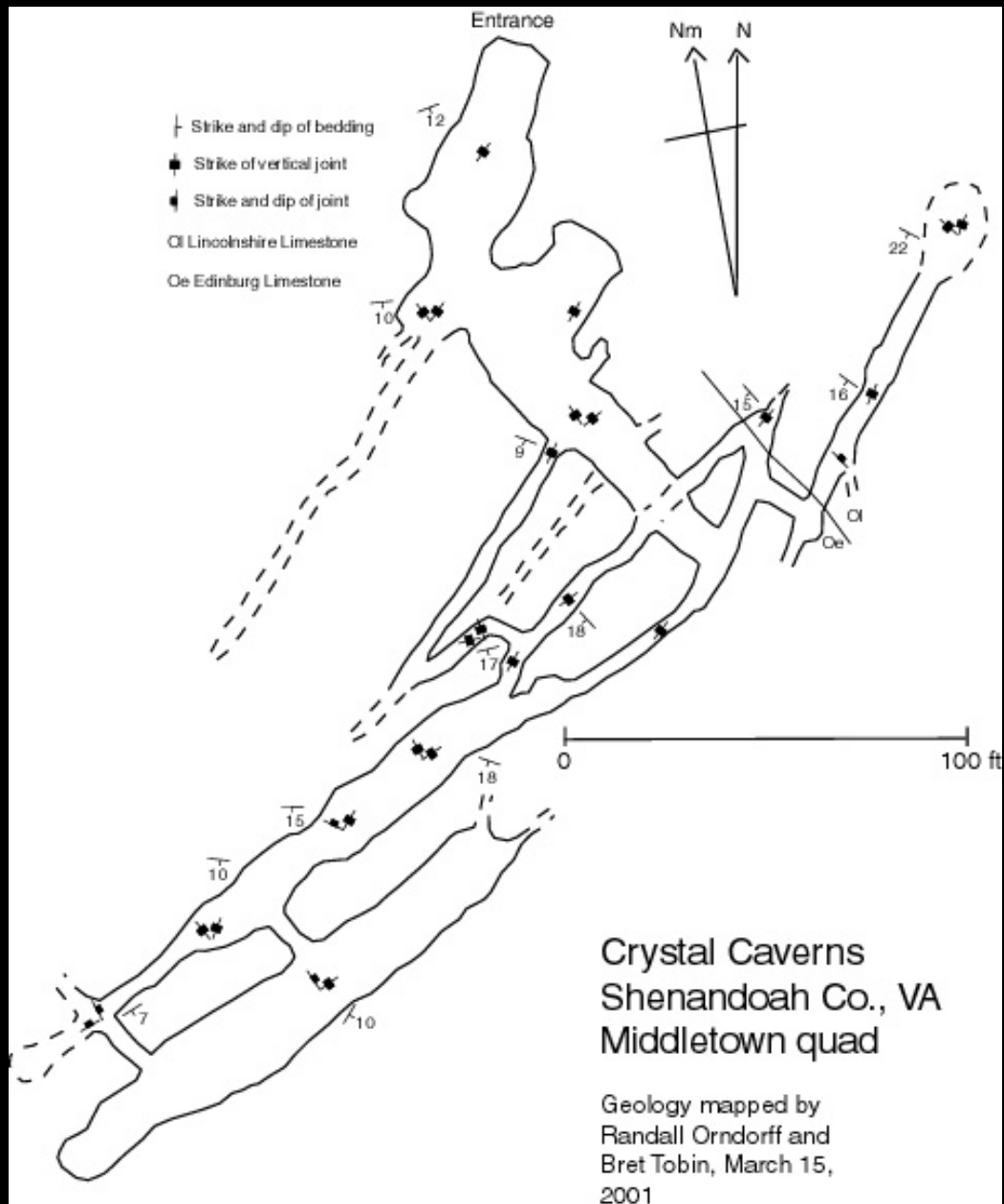


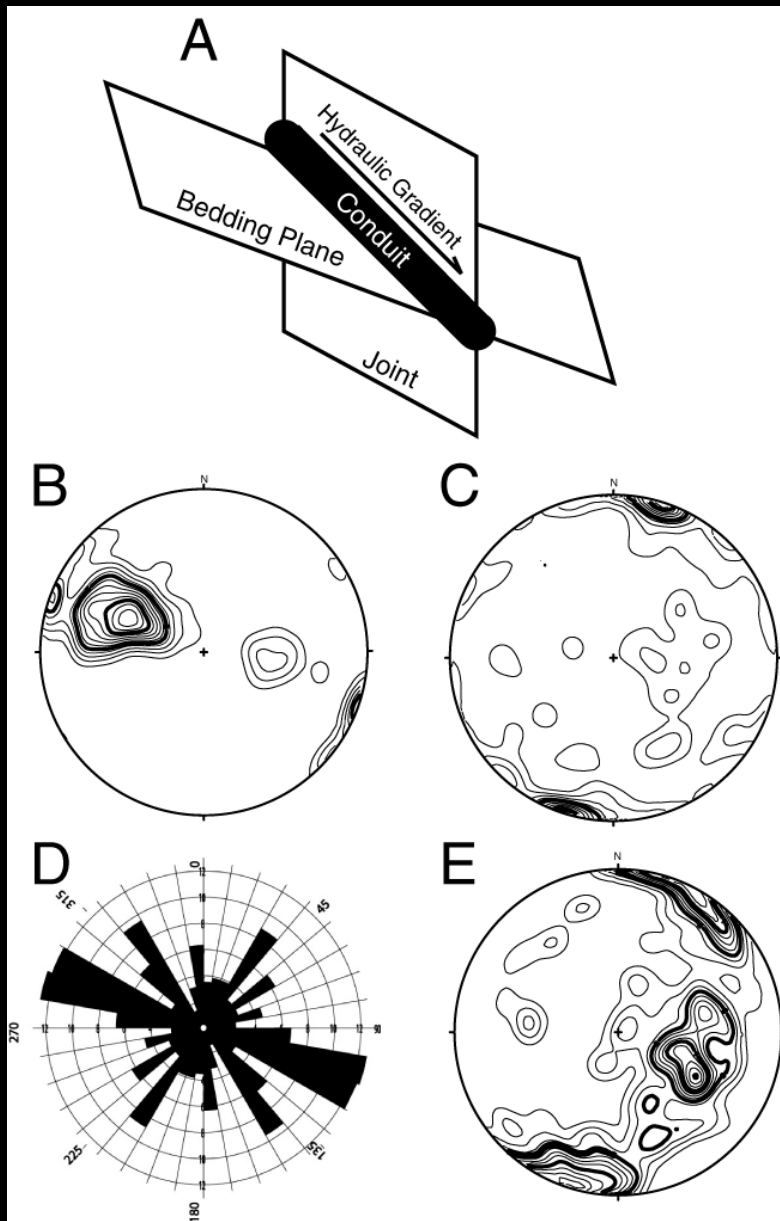
Shenandoah Caverns
Shenandoah Co., VA
New Market quad

Geology mapped by
Randall Orndorff and
David Weary, February 6,
2001

Conococheague Formation

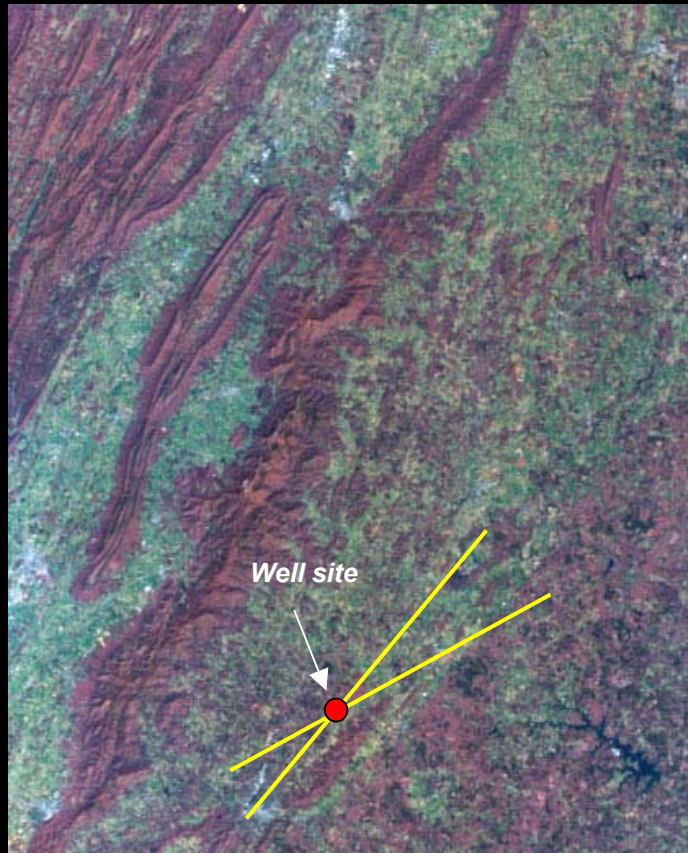




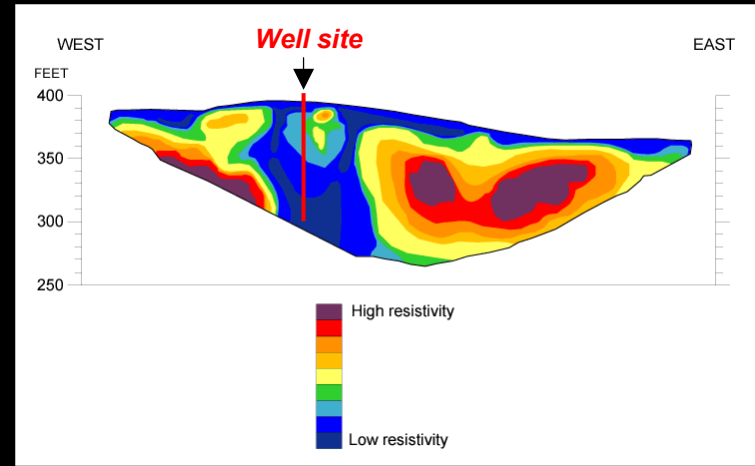


- A. Conduit at intersection of bedding and joint**
- B. Stereographic projection of poles to bedding**
- C. Stereographic projection of poles to joints**
- D. Compass-rose diagram joints**
- E. Stereographic projection of lineation defined by the intersection of bedding to joints**

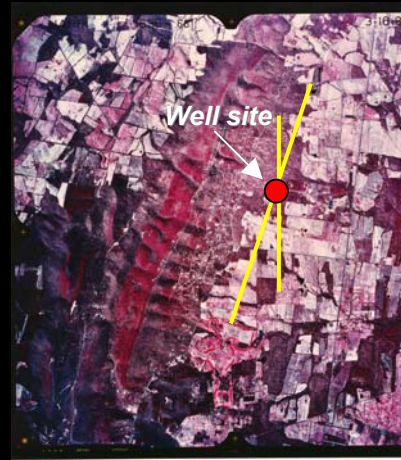
Siting Wells in Fractured Rock Terranes



Satellite Imagery



Geophysical Methods



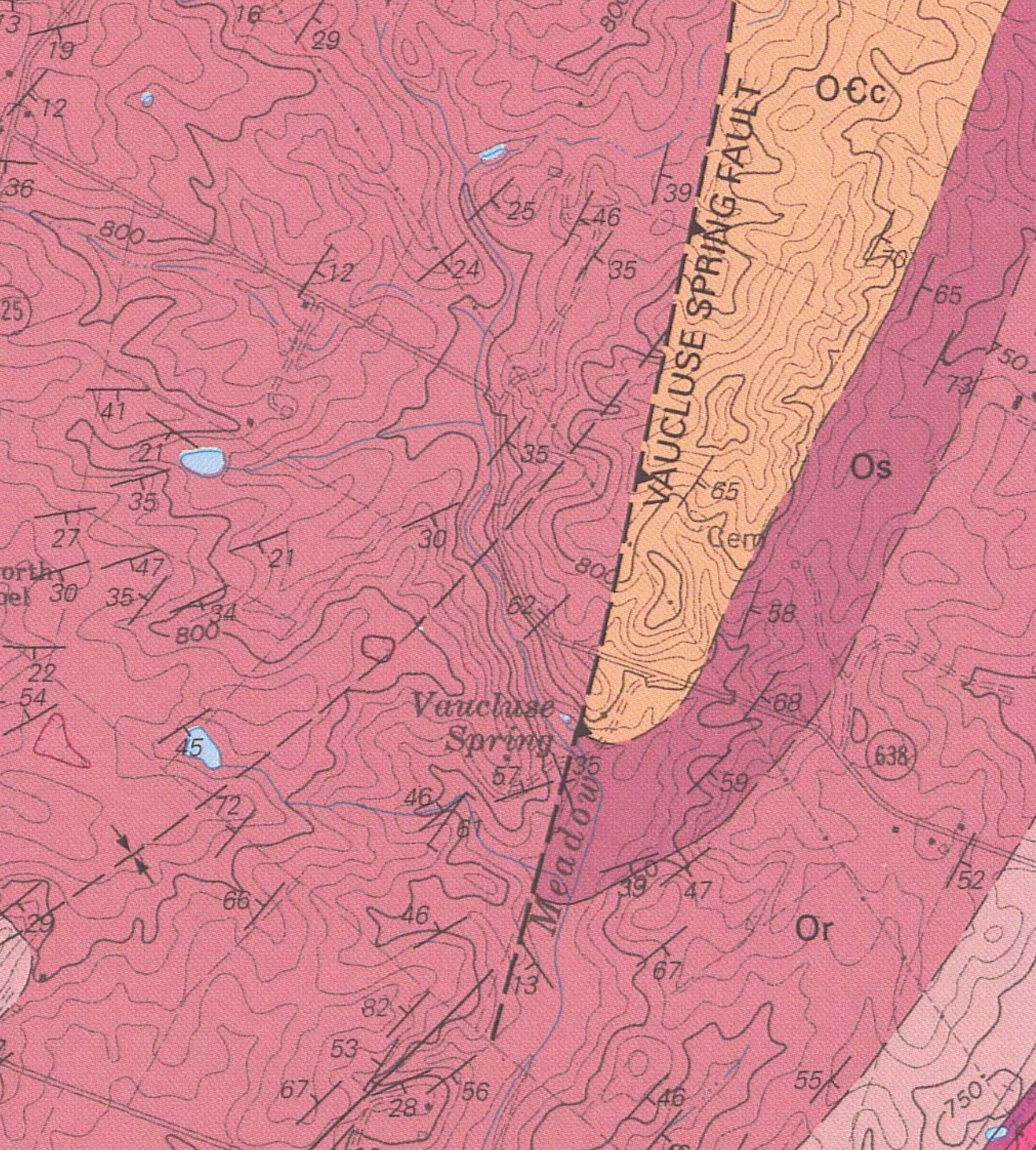
Aerial Photograph

EXPLANATION

- Lineament or fracture trace
- Well site







Geologic map
of the area
around
Vaucluse Spring,
Frederick Co., VA

Rouss Spring



