Landslide field exercise

In this field exercise***, you will make observations*** of a major landslide which occured on May 24, 2016 after a period with several heavy rains and has destroyed the infrastructure in an area where under road embankment are old mine galleries from Husnicioara Coal Mine.
On a stretch of 500 meters, has appeared a crater up to 20 meters deep and a horizontal landslide, affecting the entire platform of the road and adjoining land.
The area where this landslide is located is affected by instability phenomena, some active, others temporarily stabilized. At triggering of the landslides compete a number of natural factors such as: lithological constitution of geological formations, mass precipitations, erosion and movement of water from seepage through masses of earth, slope energy.
You will take individual field notes in this field notebook and you will work with the others members of your group to ***make a joint report*** about the investigated landslide area.
Your field notes must contain all the observations that later will turn up in your report.
Document your observations with **sketches, verbal descriptions, pictures**.
Take **photographs** of the studied area of landslide to support your report.
Content necessary of the report

- ✓ Must locate landslide
- ✓ Must identify the type of movement (falls, slides rotational, topples, lateral spreads, flow, complex)
- ✓ Must give a description of the geologic settings
- ✓ Must give a description of the landscape
- ✓ Must characterize the overall level of landslide activity
- ✓ Must specify the causal and triggering factors
- ✓ Must have a field sketch of the investigated area.
- ✓ Must present remedy measures of slope instability

1. Location of the landslide

Latitude ..... Longitude .....

On the perimeter of Husnicioara village
Distance to the nearest city: 15 km to Drobeta Turnu Severin
County: Mehedinti, Romania.

2. Date of documentation: Day/ Month/Year

...../...../.....

3. Description of the landscape

- ☐ Hilly
- ☐ Mountainous
- ☐ Plain
- ☐ With valleys and forested areas with oak
- ☐ With spontaneous herbaceous vegetation

4. Size of the landslide area: 500 m long and aprox. 50,000 sqm

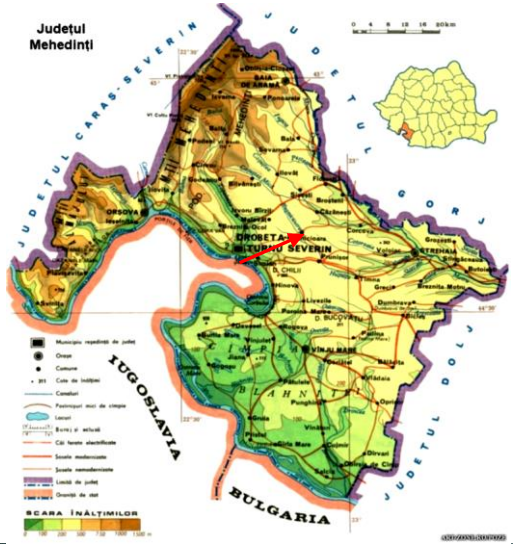
5. Slope deformation according affected depth

- ☐ Shallow (1-5 m)
- ☐ Medium deep (5-50 m)
- ☐ Very deep (more than 50m)
- ☐ Unknown

6. Type of movement

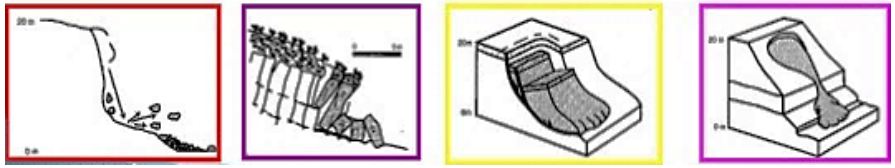
Using the classification of Varnes (1978)

- ☐ Falls
- ☐ Topples
- ☐ Slides
- ☐ Lateral spreads
- ☐ Flows
- ☐ Complex



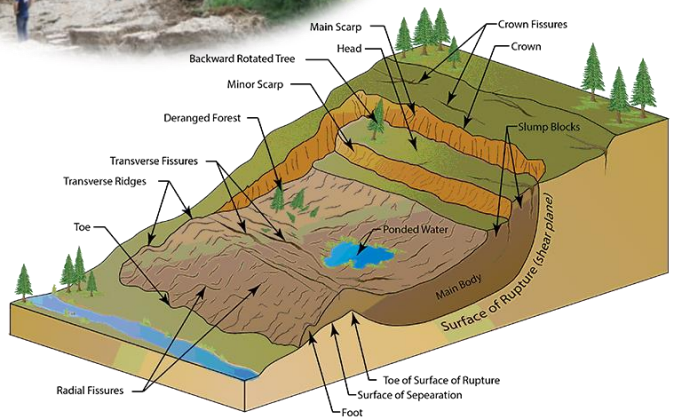
Varnes (1978)

TYPE OF MOVEMENT		TYPE OF MATERIAL		
		BEDROCK	ENGINEERING SOILS	
			Predominantly coarse	Predominantly fine
FALLS		Rock fall	Debris fall	Earth fall
TOPPLES		Rock topple	Debris topple	Earth topple
SLIDES	ROTATIONAL	Rock slide	Debris slide	Earth slide
	TRANSLATIONAL			
LATERAL SPREADS		Rock spread	Debris spread	Earth spread
FLOWS		Rock flow (deep creep)	Debris flow (soil creep)	Earth flow
COMPLEX		Combination of two or more principal types of movement		



7. Main scarp

Estimated height :_____

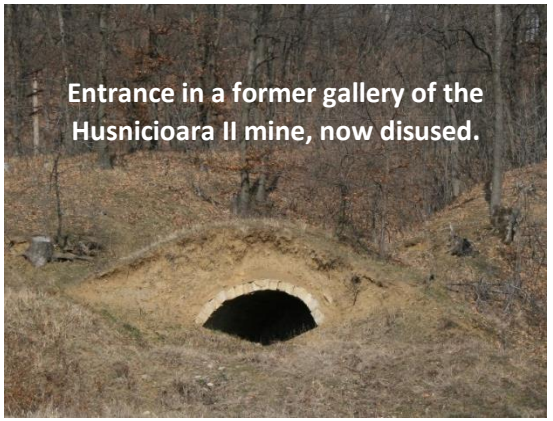


12. Land use

- ☐ Forest
- ☐ Bush
- ☐ Meadow, pasture
- ☐ Field
- ☐ Urbanized area
- ☐ Road pavement
- ☐ Other

13. Causal factors are defined as conditions that contribute to instability but may not initiate failure.

- ☐ weak soil and rock units
- ☐ weathering
- ☐ mass-movement history
- ☐ deconsolidation
- ☐ mining activities



14. Triggering factors

☐ Precipitation/water saturation

☐ Seismic activity/tectonic activity

☐ Change of slope geometry
- Natural
- Anthropogenetic

☐ Human activity

☐ Unknown

15. Remedy measures of slope instability near the damaged road

a. Performed

_____

_____

b. Proposed

☐ Reconstruction of the road

☐ Mitigation strategy that stabilizes the bedrock

☐ Construction of another road outside the Husnicioara Coal Mine area

8. Hydrogeology

Surface state

☐ Dry

☐ Locally wet

☐ Springs

☐ Undrained depression

☐ Brook/river

9. Geomorphic setting:

☐ nearness to road embankment

☐ nearness to a stream

☐ open cracks

☐ ditches

10. Phase of slope deformation evolution

☐ Initial (main movement is expected)

☐ Developed

☐ Final (there is no space for next movement)

☐ Unknown

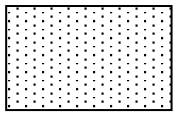
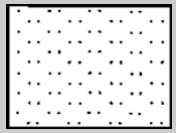
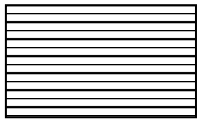
11. Degree of activity

☐ Active

☐ Dormant

☐ Stabilized

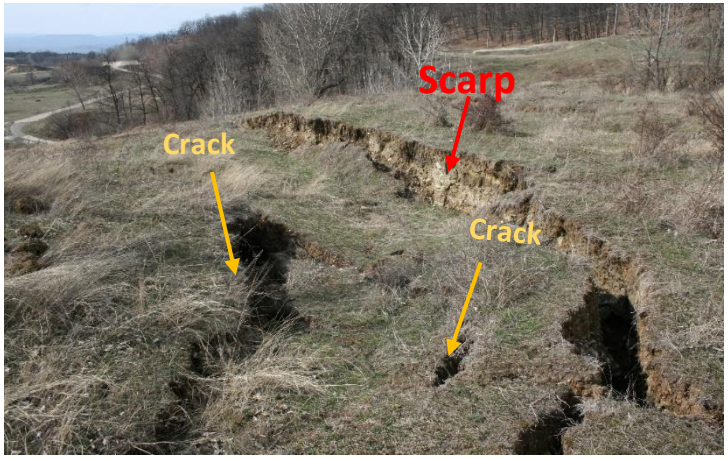
16. Soil type symbols

Type of soil	Image	Symbol	Observations
GRAVEL			
SAND			
SILT			***Silt is granular material of a size between sand and clay***
CLAY			***Thin clay layers play an important role in causing landslides.***
COAL			
TOPSOIL			

18. Sketch of the work site area

a. You will identify:

- scarps
- cracks
- number of transvers cracks
- number of radial cracks
- movement direction



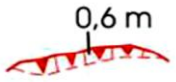
b. Measurements:

☐ Scarps
- Height

☐ Cracks
- Width - a
- Depth – b
- Lenght - c

$$\frac{a, b}{c}$$

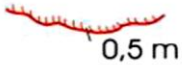
c. Make a sketch of the site using the following symbols:



scarp, height of the scarp is marked

crack

movement direction



toe, height is marked

terrain edge, slope is marked

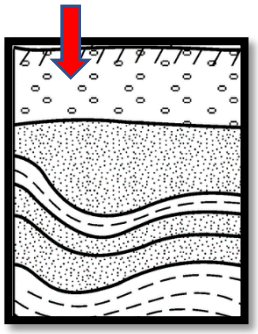
tree

spring

cross section

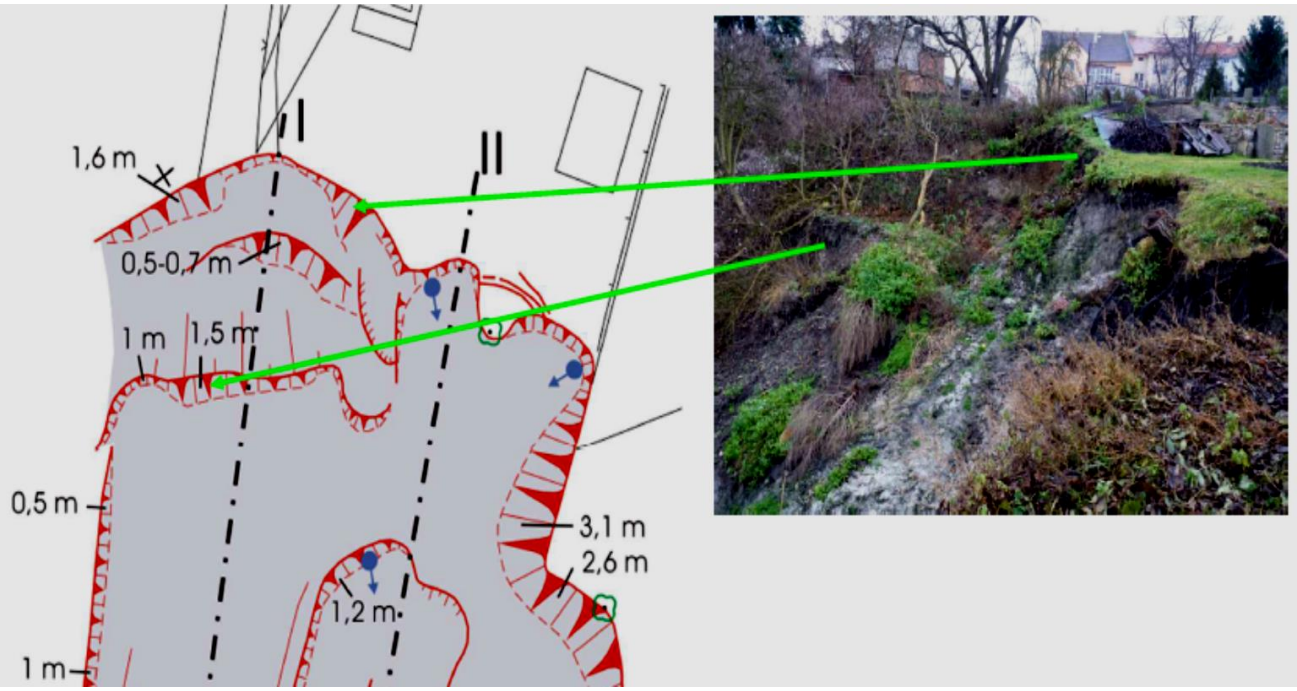
17. Sketch of the soil rupture using the symbols

Sketch exemple



Here will be your drawing

Exemple of sketch



My notes