



**LANDSLIDES IN
CLERMONT COUNTY**



What is a Landslide?

- General term for wide variety of downslope movements of earth materials (soil, rock, vegetation) under the influence of gravity
- Debris avalanche, rockslides, mudslides, creep, subsidence, etc.



Types of Landslides

- Rotational
- Earthflow
- Rockfall



Causes of Landslides

CLERMONT COUNTY

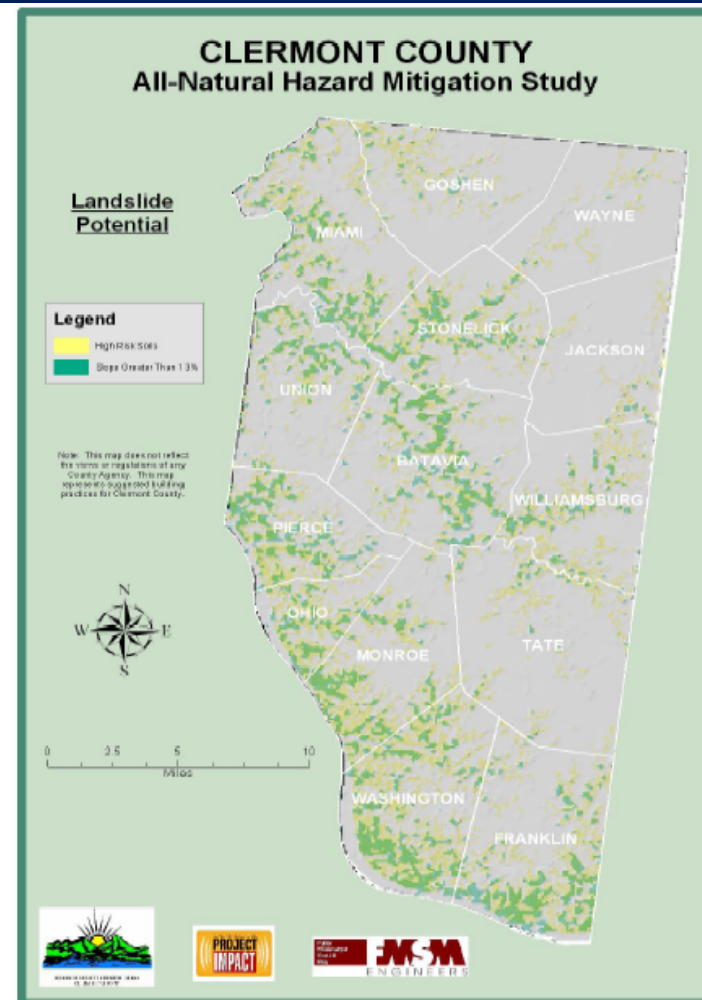
- Steep slopes
- Presence of Kope bedrock formation or till
- Source of water (natural or manmade)
- Poor soil drainage
- Poor vegetative cover

OTHER FACTORS

- Increased weight on slope (fill, structures, roads)
- Vibrations (machinery, traffic, blasting, thunder)
- Oversteepened slopes (natural or manmade)
- Earthquakes and Volcanic Eruptions



Landslide Prone Areas



Some Recent Clermont Landslides

- Bear Creek Rd., Washington Twp. (1997) - \$350,000
- Miami Trails, Miami Twp. (2001)– \$25,000
- Benton Rd., Stonelick Twp. (2001) - \$240,000 (road only)



Warning Signs

- **Slow-developing, widening cracks on the ground or paved areas**
- **Fences, retaining walls, utility poles or trees that tilt or move**
- **Bulging ground at the base of slopes**
- **Doors or windows that jam or stick for the first time**
- **New cracks that appear in plaster, tile, brick or foundations**
- **Outside walls, walks or stairs that pull away from the building**
- **The breakage of underground utility lines**
- **Water breaking through to the surface in a new location**



Prevention & Precaution

- Proper site selection
- Proper geotechnical investigations and engineering
- Limit slope alteration
- Limit tree and vegetation removal
- Proper water disposal (septic, sump, roof gutters, surface water)
- Education (landowners, development community, etc.)
- Hillside ordinances
- Conservation easements (i.e. – Hillside Trust)
- Be vigilant during prolonged wet weather and during heavy storms (in your house and on the road)



Mitigation

- Mitigation funds for landslide stabilization
- Landslide Insurance (Currently Not Available in Ohio)
- Develop & Implement Local Landslide Protection and Mitigation Plans





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