4.8 Expansive Soil

Expansive soils contain minerals such as smectite clays that are capable of absorbing water. When they absorb water they increase in volume. The more water they absorb the more their volume increases. Expansions of ten percent or more are not uncommon. This change in volume can exert enough force on a building or other structure to cause damage.

Cracked foundations, floors and basement walls are typical types of damage done by swelling soils. Damage to the upper floors of the building can occur when motion in the structure is significant.

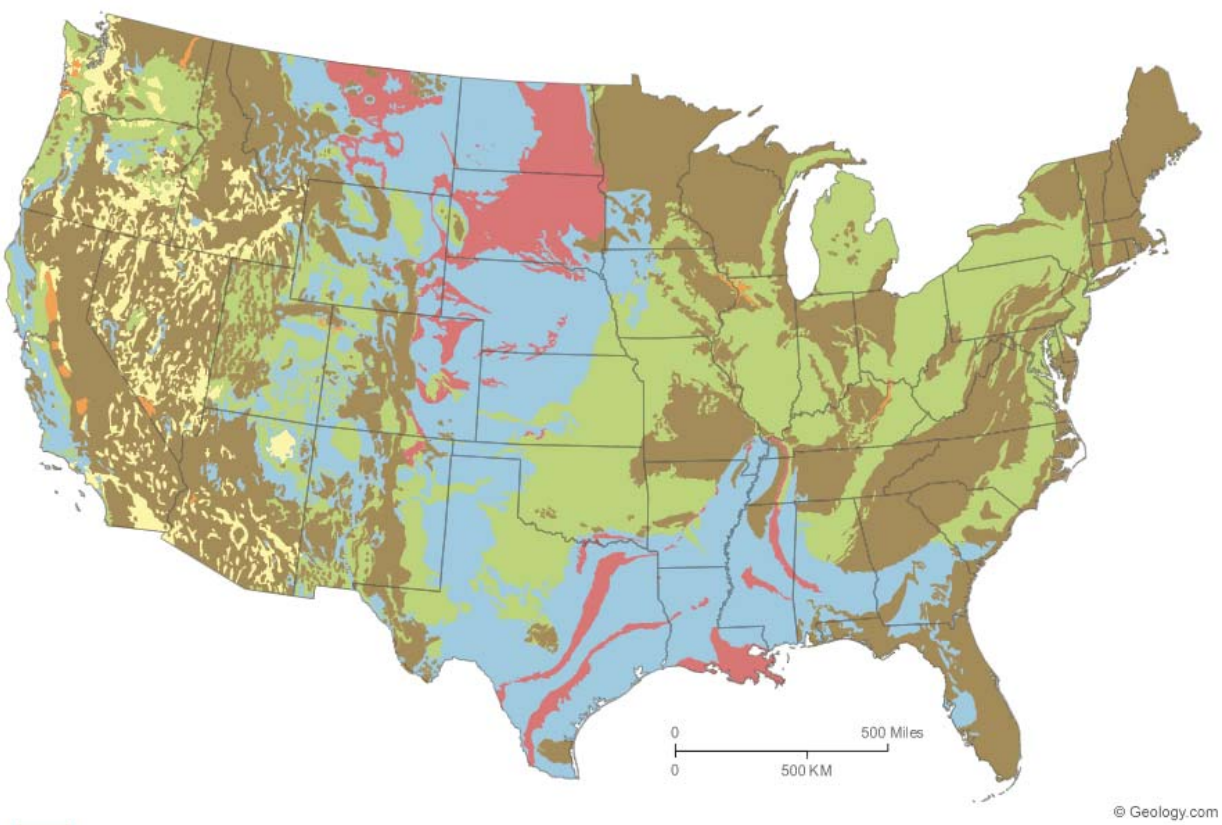
Expansive soils will also shrink when they dry out. This shrinkage can remove support from buildings or other structures and result in damaging subsidence. Fissures in the soil can also develop. These fissures can facilitate the deep penetration of water when moist conditions or runoff occurs. This produces a cycle of shrinkage and swelling that places repetitive stress on structures.

The map, “Swelling Clays Map of the Conterminous United States” below is meant to show general trends in the geographic distribution of expansive soils. It is not meant to be used as a property evaluation tool. It is useful for learning areas where expansive soils underlie a significant portion of the land and where expansive soils might be a localized problem.[68]

RHMP Committee nor any of the county/city hazard mitigation members could find any losses nor had knowledge of any losses due to expansive soil in the region. The risk of losses, from Expansive Soil, was not considered significant enough to be considered for mitigation by the RMPC.

[68] Geology.com, Expansive Soil and Expansive Clay; http://geology.com/articles/expansive-soil.shtml

Swelling Clays Map of the Conterminous United States



Over 50 percent of these areas are underlain by soils with abundant clays of high swelling potential.

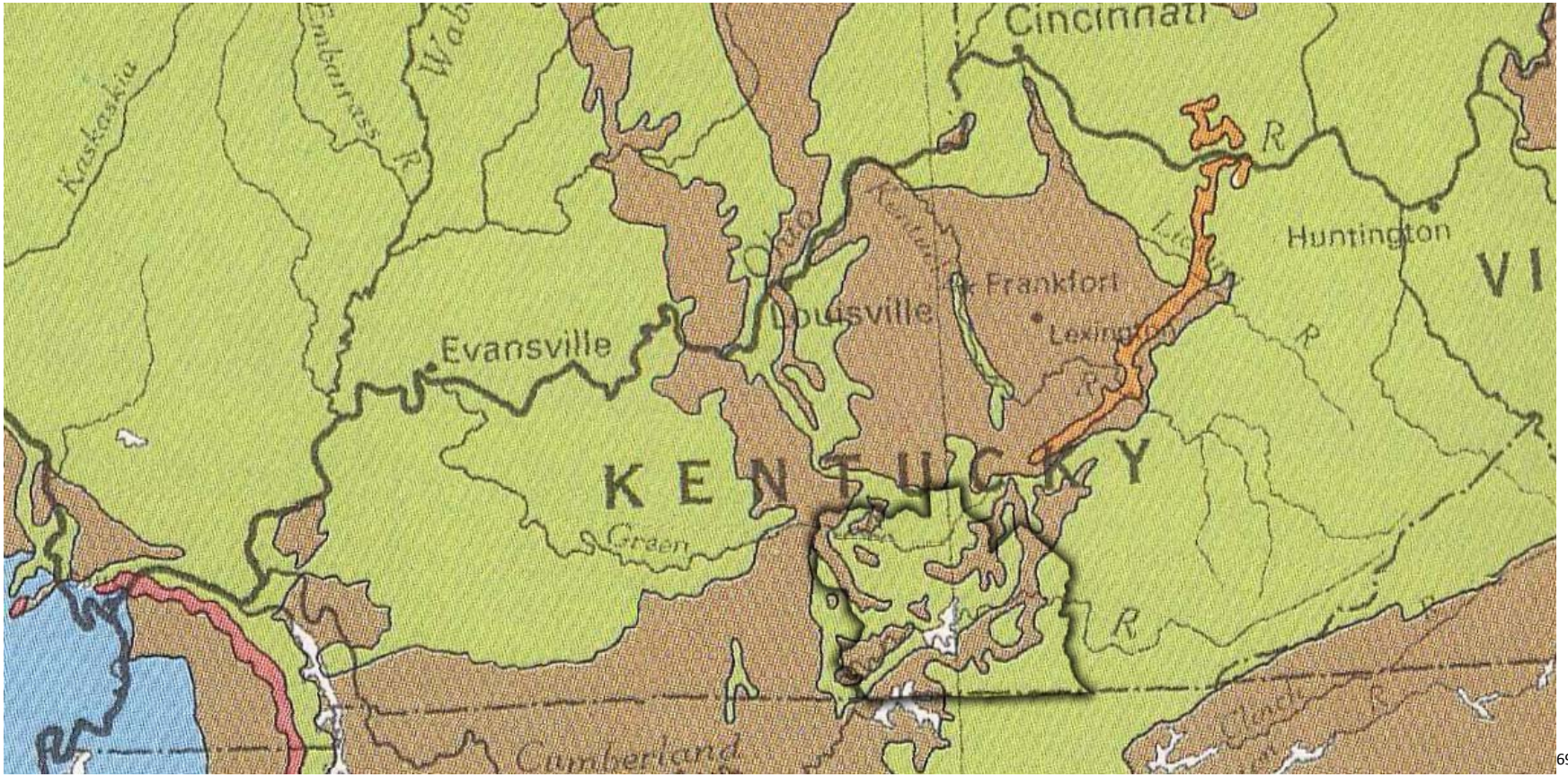
Less than 50 percent of these areas are underlain by soils with clays of high swelling potential.

Over 50 percent of these areas are underlain by soils with abundant clays of slight to moderate swelling potential.

Less than 50 percent of these areas are underlain by soils with abundant clays of slight to moderate swelling potential.

These areas are underlain by soils with little to no clays with swelling potential.

Data insufficient to indicate the clay content or the swelling potential of soils.



[69]

[69] U.S. Geological Survey, Swelling clays map of the conterminous United States; http://ngmdb.usgs.gov/Prodesc/proddesc_10014.htm

Summary

Hazard Location:

- Expansive Soil.
  - The researched data did show that the entire region has the possibility of being affected by this hazard
  - The Region has two expansive soil zones: Green Highlighted - less than 50 percent of these areas are underlain by soils with abundant clays of slight to moderate swelling potential and Brown Highlighted - these areas are underlain by soils with little to no clays with swelling potential.

Potential Damage (All Hazards):

- Expansive Soil.
  - No previous occurrences of Expansive Soil could be located for the LCADD Region
  - No probability of a future hazard event for Expansive Soil could be projected for with the available data.

Scale / Extent:

- Expansive Soil.
  - Little or no damage

Previous Occurrences:

- Expansive Soil.
  - None identified

Likelihood of Future Occurrences:

- Expansive Soil.
  - Possible but no history to indicate a likely event