ABSTRACT

Hardsetting soil is recorded for the first time in Iraq within a claystone bed about 2 meter thick, which is developed mostly as alluvium deposits. A dry medium tough claystone bed collapses, fragmented, and becomes powder within few seconds upon wetting with hearable structural fragmentation. Preliminary mineralogical, chemical and morphological investigations using X-ray diffraction, X-ray fluorescence and scanning electron microscopy have revealed that the mineralogical composition includes clay minerals as chlorite, kaolinite, and illite and non-clay minerals as quartz, feldspar (albite), and calcite. These mineral phases affect on the distribution of major and trace elements that were associated with or adsorbed to most of them especially clay minerals. The morphological characteristics of the clay fraction indicate their re-transportation and re-deposition from older clastics in the region. The studied soil was formed pedogenically as slurry in erosional lag concentrates weathered from marl and claystone of the Miocene Fatha and Injana formations.

KeyWords: Hardsetting soil, alluvium sediments, sinjar area, Iraq