
***SOIL, WATER, AND CLIMATE
MS DEFENSE SEMINAR***

***Case study for Determining the Presence of the Moorsh-
Forming Process in Drained Peat (Markey Muck) Soils,
Anoka County, Minnesota, USA***

by

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S415 Soil Science Building

ABSTRACT:

My thesis evaluates the physical characteristics of moorsh and evidence of the moorsh-forming process in the upper 30 cm (surface) of organic soils in a drained peatland in east-central Minnesota, USA. The study site is located at the headwaters of a county ditch system established in 1908, but historical documentation of area land use indicates that agricultural practices were not used at this site. The study site was compared to an undrained natural peatland at the Cedar Creek Ecosystem Science Reserve in east-central Minnesota, USA. Moorsh was first described by the Polish Society of Soil Science in 1974 as those organic soils used for agricultural purposes that have physically, chemically, and biologically transformed due to prolonged drainage. This study evaluates whether the moorsh-forming process occurs in a natural peatland affected by prolonged drainage, but not used for agricultural purposes. This study includes laboratory analyses documenting physical transformations of organic soils in drained peatland soils, specifically, increases in bulk density and aggregation. Organic matter content analyses were also completed in the laboratory. These data were further substantiated by /in situ /evidence of the moorsh-forming process relative to groundwater depth and physical profiles of drained organic soils with moorsh characteristics. Maximum height of groundwater in the peatland is closely correlated to the maximum depth of moorsh development at the surface of drained organic soils.