6. Soil Mapping and Interpretations; Essex County Soil Survey, New Jersey

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Abstract:
Historically, USDA-Natural Resources Conservation Service (NRCS) soil surveys were deficient on soil information in urban areas. Currently, NRCS acknowledges the importance of soil mapping in urban areas for land use planning, storm water management and even climate change. Essex County Soil Survey is the first survey in the state of New Jersey with highly detail urban mapping and interpretations.

Essex County is in the northeast part of New Jersey. The county is bordered by the Passaic River on the west and northwest, Passaic County on the northeast, the Newark Bay on the east, and Union County on the south. The total land area of the county is 83,000 acres (33,615 hectares).

The soil survey, published in 2007, is the first survey of the county using modern soil taxonomy. The previous surveys with information on the Essex County area were the Soil Survey of the Bernardsville Area (1923) and the Soil Survey of the Bergen Area (1925), published by the United States Department of Agriculture. The 2007 soil survey provides updated information with modern interpretations and maps showing the soils in detail.

The objective of the soil survey was not just to provide a map delineating areas impacted by human activity; but, a guide with information of percentage and composition, kind of depositions and intrinsic properties of the diverse material in the area. Soils were mapped at the series level; for example, Bigapple series (*mixed, mesic Typic Udipsamments*; USDA or *Haplic Arenosol (Transportic)*, WRB); taxon above family (*Udorthents*, USDA or *Haplic Regosols (Transportic)*, WRB), and miscellaneous areas (Urban land) with different soil phases in consociations and complex with different percent of impervious surface.

The initial mapping was done using the same technique as in natural areas. Broad delineations were created using base information like topography, geology and percent of impervious surface. Then field observations like slope length, steepness and shape, drainage class, particle size, and percent of anthropogenic material and kind, to mention a few, were gathered from open areas (parks, golf courses, construction sites, and community gardens) to refine the delineations.

Since the Urban land is a broad concept in a conventional NRCS soil survey, we decided to add more information and make it more useful that just “Urban land”. Therefore, the Urban land component in the map unit is a phase that provides information about the human transported material, and the substratum of the natural soil before been disturbed. The concept gave us an opportunity to put together some properties and interpretations. Now, the user has the capability to generate interpretations for urban land as well as any soil at the series or taxon above family for dwellings and small commercial buildings, roads and streets, shallow excavations, lawns and landscaping, sewage disposal, and others.

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