

ABSTRACT

The origin and extent of a created slope wetland was investigated using hydrologic, geologic, and geomorphic methods. The area of investigation is situated on a gradual slope and supports hydrophytic vegetation such as black willow, soft rush, and cattail. The extent and elevation of the water table in the wetland was determined using a network of shallow piezometers. Head measurements at the source and within the wetland area documented the required saturation of the root zone in excess of 5% of the 235 ± 20 day growing season in central Mississippi. Based on several topographic surveys conducted over the past 51 years, the wetland's formation is a result of continued landscape alteration made since the late 1970s to accommodate Millsaps College's baseball field. Pleistocene age terrace deposits removed from the adjacent hill-top to level the playing surface were used in extending and re-contouring the adjacent slope which is composed of the Eocene age Yazoo Clay. Three 5 m auger holes drilled upslope of the source area of the wetland encountered well developed sand at the base of the terrace deposit. During construction, a swale in the Yazoo Clay on the slope was filled in with porous terrace material which created an unconfined aquifer on top of the impermeable Yazoo. Precipitation-sourced groundwater draining from the terrace sediment sources the wetland. Because the natural hydrology was only recently altered, only hydrophytic vegetation and a saturated root zone are required by the US Army Corp of Engineers to delineate the area as a wetland. Fully developed hydric soils have not had sufficient time to form. The created slope wetland encompasses approximately 0.5 hectare which is large enough to be protected under U.S. Army Corp of Engineers guidelines. The created slope wetland serves as an excellent educational research tool and highlights the important practical application of geology and hydrology in respect to engineering design and construction.